

## DEPARTMENT OF THE INTERIOR

## Fish and Wildlife Service

## 50 CFR Part 17

[Docket No. FWS-R1-ES-2013-0117; MO 92210-0-0008 B2]

RIN 1018-BA27

**Endangered and Threatened Wildlife and Plants; Threatened Status for *Lepidium papilliferum* (Slickspot Peppergrass) Throughout Its Range**

**AGENCY:** Fish and Wildlife Service, Interior.

**ACTION:** Final rule.

**SUMMARY:** We, the U.S. Fish and Wildlife Service (Service), determine threatened status under the Endangered Species Act of 1973, as amended, for *Lepidium papilliferum* (slickspot peppergrass), a plant species from the State of Idaho. *Lepidium papilliferum* was added to the List of Endangered and Threatened Plants as a threatened species through the publication of a final rule on October 8, 2009. The Idaho District Court subsequently vacated the listing of *L. papilliferum* and remanded the final rule to the Service for the purpose of reconsidering the definition of the “foreseeable future” in regard to this particular species. The Court did not question the science underlying the Service’s determination of threatened status for the species. We have reconsidered the definition of “foreseeable future” for *L. papilliferum* in this final rule; therefore, it addresses the Court’s remand. The effect of this regulation is to reinstate threatened species status of *L. papilliferum* on the List of Endangered and Threatened Plants.

**DATES:** This rule becomes effective September 16, 2016.

**ADDRESSES:** This final rule is available on the Internet at <http://www.regulations.gov> and <http://www.fws.gov/idaho>. Some of the comments and materials we received, as well as supporting documentation we used in preparing this rule, are available for public inspection at <http://www.regulations.gov>, under Docket Number FWS-R1-ES-2013-0117. All of the comments, materials, and documentation that we considered in this rulemaking are available by appointment, during normal business hours at: U.S. Fish and Wildlife Service, Idaho Fish and Wildlife Office, 1387 S. Vinnell Way, Room 368, Boise, ID 83709; telephone 208-378-5243; facsimile 208-378-5262.

**FOR FURTHER INFORMATION CONTACT:**

Dennis Mackey, Acting State Supervisor, U.S. Fish and Wildlife Service, Idaho Fish and Wildlife Office, 1387 S. Vinnell Way, Room 368, Boise, ID 83709; telephone 208-378-5243; facsimile 208-378-5262. If you use a telecommunications device for the deaf (TDD), call the Federal Information Relay Service (FIRS) at 1-800-877-8339.

**SUPPLEMENTARY INFORMATION:****Executive Summary**

*Why we need to publish a rule.* Under the Endangered Species Act of 1973, as amended (ESA or Act), a species may warrant protection through listing if it is endangered or threatened throughout all or a significant portion of its range. Listing a species as an endangered or threatened species can only be completed by issuing a rule.

This rule reaffirms the listing of *Lepidium papilliferum* (slickspot peppergrass) as a threatened species throughout its range, as initially published on October 8, 2009 (74 FR 52014).

*Purpose of this document.* We are responding to the U.S. District Court for the District of Idaho’s August 8, 2012, Memorandum Decision and Order vacating our October 8, 2009, final rule listing *Lepidium papilliferum* (slickspot peppergrass) as a threatened species (74 FR 52014) (2009 final listing rule) and remanding the rule to the Service for further consideration consistent with the Court’s decision. The Act defines an endangered species as any species that is “in danger of extinction throughout all or a significant portion of its range” and a threatened species as any species “that is likely to become endangered throughout all or a significant portion of its range within the foreseeable future.” The Act does not define the term “foreseeable future.” With respect to the Service’s finding of threatened status for *L. papilliferum*, the Court was supportive, stating that “. . . the Service’s finding underlying the above conclusion [that *L. papilliferum* is likely to become an endangered species within the foreseeable future] are (*sic*) supported by the administrative record and entitled to deference.” *Otter v. Salazar*, Case No. 1:11-cv-358-CWD, at 50 (D. Idaho, Aug. 8, 2012) (*Otter v. Salazar*). However, the Court took issue with the Service’s application of the concept of the “foreseeable future” in the 2009 final listing rule (74 FR 52014, October 8, 2009). Although it found “no problem with the agency’s science,” the Court stated that “without a viable definition of foreseeable future, there

can be no listing under the ESA.” *Otter v. Salazar*, at 55. Based on this conclusion, the Court vacated the 2009 listing determination and remanded it to the Secretary for further consideration consistent with the Court’s decision.

In order to ensure that our present determination remains based on the best scientific and commercial data available, we have evaluated any new scientific information that may have become available since our 2009 final listing rule (74 FR 52014, October 8, 2009), and re-evaluated the status of *Lepidium papilliferum* under the Act with an amended definition of the foreseeable future, consistent with the Court’s opinion and as applied specifically to this species.

*The basis for our action.* Section 4 of the Act and its implementing regulations (50 CFR part 424) set forth the procedures for adding species to the Federal Lists of Endangered and Threatened Wildlife and Plants. A species may be determined to be an endangered species or threatened species due to one or more 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 manmade factors affecting its continued existence. Listing actions may be warranted based on any of the above threat factors, singly or in combination. We have determined that *Lepidium papilliferum* meets the definition of a threatened species under the Act, based on the present or threatened destruction, modification, or curtailment of its habitat and range due to the increased frequency and extent of wildfires under a wildfire regime modified and exacerbated by the spread of invasive nonnative plants, particularly nonnative annual grasses such as *Bromus tectorum* (cheatgrass). In addition, even under conservative projections of the consequences of future climate change, the threats posed by wildfire and the invasion of *B. tectorum* are expected to further increase into the future. Other threats to the species include competition and displacement by nonnative plant species, development, potential seed predation by harvester ants, and habitat fragmentation and isolation of small populations.

*Public Comment.* We sought comment on our interpretation of the foreseeable future as it applies specifically to *Lepidium papilliferum*, and solicited

any new scientific and commercial data that may have become available since the publication of our October 8, 2009, final listing rule (74 FR 52014). The initial comment period on the reconsideration of final rule for *Lepidium papilliferum* was open for 30 days, from February 12, 2014, through March 14, 2014 (79 FR 8416, February 12, 2014). On April 21, 2014, we reopened the comment period for an additional 45 days, through June 5, 2014 (79 FR 22076). In developing this final rule, we considered all comments and information received during the comment periods.

#### Previous Federal Actions

On July 15, 2002, we proposed to list *Lepidium papilliferum* as an endangered species (67 FR 46441). On January 12, 2007, we published a document in the **Federal Register** withdrawing the proposed rule (72 FR 1622), based on a determination at that time that listing was not warranted (for a description of Federal actions concerning *L. papilliferum* between the 2002 proposal to list and the 2007 withdrawal, please refer to the 2007 withdrawal document). On April 6, 2007, Western Watersheds Project filed a lawsuit challenging our decision to withdraw the proposed rule to list *L. papilliferum*. On June 4, 2008, the U.S. District Court for the District of Idaho (Court) reversed the decision to withdraw the proposed rule, with directions that the case be remanded to the Service for further consideration consistent with the Court's opinion (*Western Watersheds Project v. Kemphorne*, Case No. CV 07-161-E-MHW (D. Idaho)).

After issuance of the Court's remand order, we published a public notification of the reinstatement of our July 15, 2002, proposed rule to list *Lepidium papilliferum* as an endangered species and announced the reopening of a public comment period on September 19, 2008 (73 FR 54345). To ensure that our review of the species' status was based on complete information, we announced another reopening of the comment period on March 17, 2009 (74 FR 11342). On October 8, 2009, we published a final rule (74 FR 52014) listing *L. papilliferum* as a threatened species throughout its range.

On November 16, 2009, Idaho Governor C. L. "Butch" Otter, the Idaho Office of Species Conservation, Theodore Hoffman, Scott Nicholson, and L.G. Davison & Sons, Inc., filed a complaint in the U.S. District Court for the District of Columbia challenging the 2009 final listing rule (74 FR 52014, October 8, 2009) under the Administrative Procedure Act and the

Endangered Species Act. Subsequently, the issue was transferred to the U.S. District Court for the District Court of Idaho (Court), and the parties involved consented to proceed before a Magistrate Judge. On August 8, 2012, the Court vacated the final rule listing *Lepidium papilliferum* as a threatened species under the Act, with directions that the case be remanded to the Service for further consideration consistent with the Court's opinion. *Otter v. Salazar*, Case No. 1:11-cv-358-CWD (D. Idaho).

On February 12, 2014, we published in the **Federal Register** a proposed reconsideration of the final rule and request for comments (79 FR 8416). That document presented the Service's interpretation of the term "foreseeable future" as it applies specifically to *Lepidium papilliferum* and, based upon an evaluation of threats to the species under this timeframe, proposed to reinstate threatened status for the species. We sought public input on our definition of the foreseeable future for *L. papilliferum*, as well as on our proposed determination to reinstate threatened status for the species, during two public comment periods. The first comment period opened with publication of the reconsideration of final rule on February 12, 2014 (79 FR 8416), and closed on March 14, 2014. On April 21, 2014, in response to a request from the Idaho Governor's Office of Species Conservation, we reopened the comment period for an additional 45 days (79 FR 22076); that comment period closed on June 5, 2014.

Subsequent to the October 8, 2009, listing of *Lepidium papilliferum* as a threatened species (74 FR 52014), but prior to the August 8, 2012, Court vacatur of that final rule, we published a proposed rule to designate critical habitat for *L. papilliferum* (76 FR 27184, May 10, 2011). We suspended rulemaking on the proposed critical habitat following the Court's ruling vacating the listing. However, on February 12, 2014, concurrent with our publication of the proposed reconsideration of the listing, we published a revision of the proposed critical habitat for *L. papilliferum* (79 FR 8402; please see that document for a summary of all comment periods associated with the proposed critical habitat rule). We will finalize our critical habitat designation for *L. papilliferum* subsequent to this rulemaking.

In this final rule, after considering all comments and information received, we have concluded that threatened status should be reinstated for *Lepidium papilliferum*, and reinstate its listing as a threatened species on the Federal List

of Endangered and Threatened Plants, as originally published on October 8, 2009 (74 FR 52014).

#### Background and New Information

A complete description of *Lepidium papilliferum*, including a discussion of its life history, ecology, habitat requirements, and monitoring of extant populations, can be found in the October 8, 2009, final listing rule (74 FR 52014). However, to ensure that we are considering the best scientific and commercial data available in our final decision, here we present new scientific information that has become available to us since our 2009 determination of threatened status, and evaluate that new information in light of our previous conclusions regarding the status of the species.

#### New Information Related to the Listing of *Lepidium papilliferum*

We have evaluated information presented in the 2009 final listing rule (74 FR 52014, October 8, 2009), as well as new information, regarding population status, trends, or threats, that has become available since 2009, including current element occurrence (EO) data provided to us by the Idaho Fish and Wildlife Information System (IFWIS) database (formerly the Idaho Natural Heritage Program database), updated fire-history data, the new rangewide Habitat Integrity and Population (HIP) monitoring data, information on current developments being proposed within the range of *Lepidium papilliferum*, and the most current data on seed predation by Owyhee harvester ants (*Pogonomyrmex salinus*), as described in the Factors Affecting the Species section, below.

Relatively limited new data regarding population abundance or trends have become available since our 2009 final listing rule (74 FR 52014, October 8, 2009). In 2011, 2012, and 2013 the total number of *Lepidium papilliferum* plants counted was the lowest since 2005, when complete counts for this species were initiated (16,462 plants in 2011; 9,245 plants in 2012; and 6,351 in 2013) (Kinter 2012, *in litt.*; Kinter 2015, *in litt.*). In 2014, however, 45,569 total plants were counted, which represented the third highest number of plants observed over the 10 years of HIP monitoring (Kinter 2015, *in litt.*). Previously, the lowest total number of plants counted occurred in 2006, with 17,543 plants, and the highest count was in 2010, with 58,921 plants (Idaho Department of Fish and Game (IDFG) 2012, p. 5). Meyer *et al.* (2005, p. 21) suggest that *L. papilliferum* relies on years with extremely favorable climatic

elements to resupply the seed bank (*i.e.*, high bloom years with good weather), and during unfavorable years, it is dependent upon a persistent seed bank to maintain the population. The large differences in abundance seen over the past few years is thus not unexpected, and is consistent with our earlier observation that the extreme variability in annual counts poses a challenge in terms of assessing trend information (74 FR 52014, p. 52024; October 8, 2009).

In 2009, there were 80 extant *Lepidium papilliferum* EOs documented according to IFWIS data. Survey efforts over the past few years have located additional *L. papilliferum* occupied sites. According to IFWIS data, some existing EOs have been expanded (and in some cases merged with other EOs to meet the definition of an EO, by grouping occupied slickspots that occur within 1 kilometer (km) (0.6 miles (mi)) of each other), and 11 new EOs have been located. According to the most recent IFWIS data, there are now 91 extant *L. papilliferum* EOs. The discovery of some new occupied sites is not unexpected, given that not all potential *L. papilliferum* habitats in southwest Idaho have been surveyed. While the discovery of these new sites is encouraging, they are located near or in the vicinity of existing EOs, and, therefore, do not expand the known range of the species. Furthermore, they are all subject to the same threats affecting the species, and for the EOs that have been ranked, their associated ranks indicate they are not high-quality EOs. The existing EOs have not been re-ranked since 2005; however, the ranks given to the new EOs include one BC, one BD, three C, two CD, and one D. Three additional EOs are currently unranked (IFWIS data from January 2015). See the Monitoring of *Lepidium papilliferum* Populations section in the October 8, 2009, final listing rule (74 FR 52014) for a more detailed discussion of EOs and an explanation of the ranking system.

As discussed below in the section Factors Affecting the Species, the new information is consistent with our 2009 conclusions on the present distribution of *Lepidium papilliferum*, its status and population trends, and how the various threat factors are affecting the species.

#### Foreseeable Future

As indicated earlier, the Act defines a “threatened species” as any species (or subspecies or, for vertebrates, distinct population segments) that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. The Act does not define the term

“foreseeable future.” In a general sense, the foreseeable future is the period of time over which events can reasonably be anticipated; in the context of the definition of “threatened species,” the Service interprets the foreseeable future as the extent of time over which the Secretary can reasonably rely on predictions about the future in making determinations about the future conservation status of the species. It is important to note that references to “reliable predictions” are not meant to refer to reliability in a statistical sense of confidence or significance; rather the words “rely” and “reliable” are intended to be used according to their common, non-technical meanings in ordinary usage. In other words, we consider a prediction to be reliable if it is reasonable to depend upon it in making decisions, and if that prediction does not extend past the support of scientific data or reason so as to venture into the realm of speculation.

In considering threats to the species and whether they rise to the level such that listing the species as a threatened species or endangered species is warranted, we assess factors such as the imminence of the threat (is it currently affecting the species or, if not, when do we expect the effect from the threat to commence, and whether it is reasonable to expect the threat to continue into the future), the scope or extent of the threat, the severity of the threat, and the synergistic effects of all threats combined. If we determine that the species is not currently in danger of extinction, then we must determine whether, based upon the nature of the threats, it is reasonable to anticipate that the species may become in danger of extinction within the foreseeable future. As noted in the 2009 Department of the Interior Solicitor’s opinion on foreseeable future, “in some cases, quantifying the foreseeable future in terms of years may add rigor and transparency to the Secretary’s analysis if such information is available. Such definitive quantification, however, is rarely possible and not required for a foreseeable future analysis” (M–37021, January 16, 2009; p. 9), available at <https://solicitor.doi.gov/opinions/M-37021.pdf>.

In some specific cases where extensive data were available to allow for the modeling of extinction probability over various time periods (*e.g.*, greater sage-grouse (75 FR 13910; March 23, 2010), the Service has provided quantitative estimates of what may be considered to constitute the foreseeable future. We do not have such data available for *Lepidium papilliferum*. Therefore, our analysis of

the foreseeable future for the purposes of assessing the status of *L. papilliferum* must rely on the foreseeability of the relevant threats to the species over time, as described by the Solicitor’s opinion (M–37021, January 16, 2009; p. 8). The foreseeable future extends only so far as the Secretary can explain reliance on the data to formulate a reliable prediction, based on the extent or nature of the data currently available, and to extrapolate any trend beyond that point would constitute speculation.

In earlier evaluations of the status of *Lepidium papilliferum*, the Service assembled panels of species and ecosystem experts to assist in our review through a structured decision-making process. As part of those evaluations, to help inform the decisions to be made by the Service managers, experts were asked to provide their best estimate of a timeframe for extinction of *L. papilliferum*, and were allowed to distribute points between various predetermined time categories, or to assign an extinction probability of low, medium, or high between time categories (*e.g.*, 1 to 20 years, 21 to 40 years, 41 to 60 years, 61 to 80 years, 81 to 100 years, 101 to 200 years, and 200 years and beyond). We note that this type of exercise was not intended to provide a precise quantitative estimate of the foreseeable future, nor was it meant to provide the definitive answer as to whether *L. papilliferum* is likely to become an endangered species within the foreseeable future. Rather, this type of exercise is used to help inform Service decision-makers, and ultimately the Secretary, as to whether there is broad agreement amongst the experts as to extinction probability within a certain timeframe.

In fact, the species experts expressed widely divergent opinions on extinction probabilities over various timeframes. As an example, in 2006, the estimated timeframes for extinction from seven different panel members fell into every time category presented ranging from 21 to 40 years up to 101 to 200 years. Because the species experts’ divergent predictions were based on “reasonable, best educated guesses,” we did not consider the range of timeframes to represent a prediction that can be reasonably relied upon to make a listing determination. As noted in the Solicitor’s opinion, “the mere fact that someone has made a prediction concerning the future does not mean that the thing predicted is foreseeable for the purpose of making a listing determination under section 4 of the ESA” (M–37021, January 16, 2009; p. 10).

In our October 8, 2009, final listing rule (74 FR 52014), we did not present species experts with predetermined potential timeframes within which to estimate extinction probability for the species. Rather, we asked peer reviewers to provide us with their estimated projection of a time period for reliably predicting threat effects or extinction risk for the species. In response, most peer reviewers declined, stating that such future projections were likely speculative. One peer reviewer suggested that, given current trends in habitat loss and degradation, *L. papilliferum* “is likely at a tipping point in terms of its prospect for survival,” and doubted that the species would persist in sustainable numbers beyond the next 50 to 75 years (74 FR 52055, October 8, 2009).

As suggested in the Solicitor’s opinion, for the purposes of the present analysis, we are relying on an evaluation of the foreseeability of threats and the foreseeability of the effect of the threats on the species, extending this time period out only so far as we can rely on the data to formulate reliable predictions about the status of the species, and not extending so far as to venture into the realm of speculation. Therefore, in the case of *Lepidium papilliferum*, we conclude that the foreseeable future is that period of time within which we can reliably predict whether or not *L. papilliferum* is likely to become an endangered species as a result of the effects of wildfire, invasive nonnative plants, and other threats to the species. As explained below, with respect to the principal threat factors, the foreseeable future for *L. papilliferum* is at least 50 years.

#### Factors Affecting the Species

Section 4 of the Act and its implementing regulations (50 CFR part 424) set forth the procedures for adding species to the Federal Lists of Endangered and Threatened Wildlife and Plants. The Service may determine a species is an endangered species or threatened species due to one or more 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 manmade factors affecting its continued existence. Listing actions may be warranted based on any of the above threat factors, singly or in combination.

A detailed discussion and analysis of each of the threat factors for *Lepidium*

*papilliferum* can be found in the 2009 final listing rule (74 FR 52014, October 8, 2009). For the purpose of this document, we are limiting our discussion of foreseeable future to the threats we consider significant in terms of contributing to the present or threatened destruction, modification, or curtailment of *L. papilliferum*’s habitat or range, as identified in that final listing rule. These include the two primary threat factors: Altered wildfire regime (increasing frequency, size, and duration of wildfires), and invasive, nonnative plant species (e.g., *Bromus tectorum*), both of which are further exacerbated by climate change; as well as contributing threat factors of planned or proposed development, habitat fragmentation and isolation, and the emerging threat from seed predation by Owyhee harvester ants (*Pogonomyrmex salinus*). Here we present a brief summary of each of the primary threats to *L. papilliferum* for the purposes of considering new information received since 2009 and of analyzing these threats in the context of the foreseeable future, in order to reconsider whether *L. papilliferum* meets the definition of a threatened species.

In considering potential threatened species status for *Lepidium papilliferum*, it is useful to first describe what endangered species status for *L. papilliferum* would be (in danger of extinction throughout all or a significant portion of its range). *Lepidium papilliferum* will be in danger of extinction (an endangered species) when the anticipated and continued synergistic effects of increased wildfire, invasive nonnative plants, development, and other known threats affect the remaining extant *L. papilliferum* habitats at a level where the species would persist only in a small number of isolated EOs, most likely with small populations and fragmented from other extant populations, such that the remaining populations would be incapable of interchange sufficient to maintain the long-term existence of the species.

Wildfire usually results in a mosaic of burned and unburned areas, and while some EOs may persist for a time in unburned habitat “islands” within burned areas, the resulting habitat fragmentation will subject any such EOs to a high degree of vulnerability, such that they will likely not be viable over the long term. For example, wildfire often leads to a type conversion of native sagebrush-steppe to annual grassland, in which the habitat goes through successional changes resulting in grasslands dominated by invasive nonnative grasses, rather than the

slickspot habitat needed by *L. papilliferum*. Therefore, although a few individuals of the species may continue to be found in burned areas, those individuals would be subject to the full impact of the threats acting on the species, and thus be highly vulnerable to local extirpation and finally extinction, as detailed in the *Summary of Factors Affecting the Species*, below.

In order to estimate when this situation (reaching the point of endangerment) might occur, we chose a threshold of 80 to 90 percent loss of or damage to the currently remaining unburned habitat. We based this threshold on the rationale that should this loss of 80 to 90 percent of current habitat happen, we conclude the remaining 10 to 20 percent of *L. papilliferum*’s present habitat would be so highly fragmented that it would detrimentally affect successful insect pollination and genetic exchange, leading to a reduction in genetic fitness and genetic diversity, and a reduced ability to adapt to a changing environment. There would be little probability of recolonization of formerly occupied sites at this point, and remaining small, isolated populations would be highly vulnerable to local extirpation from a variety of threats. In addition, smaller, more isolated EOs could also exacerbate the threat of seed predation by Owyhee harvester ants, as small, isolated populations deprived of recruitment through their seed bank due to seed predation would be highly vulnerable to relatively rapid extirpation. All of these effects are further magnified by the consideration that *L. papilliferum* is a relatively local endemic, and presently persists in specialized microhabitats that have already been greatly reduced in extent (more than 50 percent of known *L. papilliferum* EOs have already been affected by wildfire). Therefore, if *L. papilliferum* should reach this point at which 80 to 90 percent of its present remaining habitat, as yet unburned, is severely impacted by the effects of wildfire, invasive nonnative plants, and other threats, we predict it would then be in danger of extinction.

We have analyzed and assessed known threats to *Lepidium papilliferum*, and used the best available information to carefully consider what effects these known threats will have on this species in the future, and over what timeframe, in order to determine what constitutes the foreseeable future for each of these known threats. In considering the foreseeable future as it relates to these threats, we considered information presented in the 2009 final listing rule

(74 FR 52014, October 8, 2009), and information we have obtained since the publication of that rule, including: (1) The historical data to identify any relevant existing trends that might allow for reliable prediction of the future effects of the identified threats; (2) any information that suggests these threats may be alleviated in the near term; and (3) how far into the future we can reliably predict that these threats will continue to affect the status of the species, recognizing that our ability to make reliable predictions into the future is limited by the quantity and quality of available data. Below, we provide a summary of our analysis of each known threat, and discuss the information regarding the timing of these threats, on which we base our conclusions regarding the application of the foreseeable future.

#### Altered Wildfire Regime

The current altered wildfire regime and invasive, nonnative plant species were cited in the 2009 final listing rule (74 FR 52014, October 8, 2009) as the primary cause for the decline of *Lepidium papilliferum*. The invasion of nonnative plant species, particularly annual grasses such as *Bromus tectorum* and *Taeniatherum caput-medusae* (medusahead), has contributed to increasing the amount and continuity of fine fuels across the landscape. As a result, the wildfire frequency interval has been drastically shortened from a historical range of approximately 60 to over 300 years, depending on the species of sagebrush and other site-specific characteristics, to less than 5 years in many areas of the sagebrush-steppe ecosystem at present (Wright and Bailey 1982, p. 158; Billings 1990, pp. 307–308; Whisenant 1990, p. 4; USGS 1999, *in litt.*, pp. 1–9; West and Young 2000, p. 262; Bukowski and Baker 2013, p. 557). Not only are wildfires burning far more frequently, but these wildfires tend to be larger and burn more uniformly than those that occurred historically, resulting in fewer patches of unburned vegetation, which affects the post-fire recovery of native sagebrush-steppe vegetation (Whisenant 1990, p. 4). The result of this altered wildfire regime has been the conversion of vast areas of the former sagebrush-steppe ecosystem to nonnative annual grasslands (USGS 1999, *in litt.*, pp. 1–9). Frequent wildfires promote soil erosion and sedimentation (Bunting *et al.* 2003, p. 82) in arid environments such as the sagebrush-steppe ecosystem. Increased sedimentation can result in a silt layer that is too thick for optimal *L. papilliferum* germination (Meyer and Allen 2005, pp. 6–7). Wildfire also

damages biological soil crusts, which are important to the sagebrush-steppe ecosystem and slickspots where *L. papilliferum* occur because the soil crusts stabilize and protect soil surfaces from wind and water erosion, retain soil moisture, discourage annual weed growth, and fix atmospheric nitrogen (Eldridge and Greene 1994 as cited in Belnap *et al.* 2001, p. 4; Johnston 1997, pp. 8–10; Brooks and Pyke 2001, p. 4).

Several researchers have noted signs of increased habitat degradation for *Lepidium papilliferum*, most notably in terms of exotic species cover and wildfire frequency (*e.g.*, Moseley 1994, p. 23; Menke and Kaye 2006, p. 19; Colket 2008, pp. 33–34), but only recently have analyses demonstrated a statistically significant, negative relationship between the degradation of habitat quality (both within slickspot microsites and in the surrounding sagebrush-steppe matrix) and the abundance of *L. papilliferum*. Sullivan and Nations (2009, pp. 114–118, 137) found a consistent, statistically significant, negative correlation between wildfire and the abundance of *L. papilliferum* across its range. Their analysis of 5 years of Habitat Integrity and Population (HIP) monitoring data indicated that *L. papilliferum* “abundance was lower within those slickspot [sic] that had previously burned” (Sullivan and Nations 2009, p. 137), and the relationship between *L. papilliferum* abundance and fire is reported as “relatively large and statistically significant,” regardless of the age of the fire or the number of past fires (Sullivan and Nations 2009, p. 118). The nature of this relationship was not affected by the number of fires that may have occurred in the past; whether only one fire had occurred or several, the association with decreased abundance of *L. papilliferum* was similar (Sullivan and Nations 2009, p. 118).

The evidence also points to an increase in the geographic extent of wildfire within the range of *Lepidium papilliferum*. Since the 1980s, 63 percent of the total *L. papilliferum* management area acreage rangewide has burned, more than double the acreage burned in the preceding three decades (from the 1950s through 1970s) (Hardy 2015, *in litt.*; note this is a different calculation than the 53 percent of the total EO area that has burned, cited below). Management areas are units containing multiple EOs in a particular geographic area with similar land management issues or administrative boundaries, as defined in the 2003 Candidate Conservation Agreement for *Lepidium papilliferum* (State of Idaho

2006, p. 9). Based on previous available information, approximately 11 percent of the total management area burned in the 1950s; 1 percent in the 1960s; 15 percent in the 1970s; 26 percent in the 1980s; 34 percent in the 1990s; and as of 2007, 11 percent in the 2000s (data based on geographic information system (GIS) fire data provided by the Bureau of Land Management (BLM) Boise and Twin Falls District; I. Ross 2008, pers. comm. and A. Webb 2008, pers. comm., as cited in Colket 2008, p. 33).

Incorporating more recent data (fire data up to 2015), 21 percent of the total management area has burned since 2000 (Hardy 2016, *in litt.*). Based on the negative relationship observed between fire, *L. papilliferum*, and habitat quality as described above, we conclude that this increase in area burned translates into an increase in the number of *L. papilliferum* populations subjected to the negative effects of wildfire.

More specifically, an evaluation of *Lepidium papilliferum* EOs for which habitat information has been documented (79 of 80 EOs) demonstrates that most have experienced the effects of fire. Fifty-five of 79 EOs have been at least partially burned (14 of 16 EOs on the Boise Foothills, 30 of 42 EOs on the Snake River Plain, and 11 of 21 EOs on the Owyhee Plateau), and 75 EOs have adjacent landscapes that have at least partially burned (16 of 16 EOs on the Boise Foothills, 39 of 42 EOs on the Snake River Plain, and 20 of 21 EOs on the Owyhee Plateau) (Cole 2009, Threats Table).

In the October 8, 2009, final listing rule (74 FR 52014), we presented a geospatial data analysis that evaluated the total *Lepidium papilliferum* EO area affected by wildfire over 50 years (from 1957 to 2007). This analysis found that the perimeter of previous wildfires had encompassed approximately 11,442 ac (4,509 ha) of the total *L. papilliferum* EO area rangewide (Stoner 2009, p. 48). However, in this analysis, areas that burned twice were counted twice. When we eliminate reoccurring fires and reanalyze the data to account only for how much area burned at least once, we find that the perimeter of wildfires that had occurred over the same time period (1957–2007) encompassed approximately 7,475 ac (3,025 ha), or 47 percent of the total *L. papilliferum* EO area rangewide (Hardy 2013, *in litt.*).

At the time of the 2009 final listing rule (74 FR 52014; October 8, 2009), the total area of known EOs was estimated to be approximately 16,000 ac (6,500 ha) (this area reflects only the immediate known locations of individuals of *Lepidium papilliferum* as recognized in

the IFWIS database, and does not represent the much larger geographic range of the species, which can be thought of as the “range map” or broad outer boundary encompassing all known occurrences of *L. papilliferum*). For the purposes of this rulemaking, we used GIS to calculate the area of known EOs using the most current EO data, resulting in a more accurate area equaling 15,825 ac (6,404 ha).

Since the 2009 listing, wildfires have continued to affect *Lepidium papilliferum* EOs and the surrounding habitat. Data collected from 2008 to 2014 indicates there were 25 additional fires that burned approximately 1,834 ac (742 ha) of *L. papilliferum* EOs, with approximately 864 ac (350 ha) located in areas that had not previously burned (Hardy 2015, *in litt.*). Using new fire information since 2009, and considering only impacts to new, previously unburned areas, we updated the geospatial analysis and found that over the past 59 years (1957–2015), the perimeters of 147 wildfires occurring within the known range of *L. papilliferum* have burned approximately 8,348 ac (3,378 ha), or 53 percent of the total *L. papilliferum* EO area rangewide (Hardy 2016, *in litt.*).

We recognize that caution should be used in interpreting geospatial information as it represents relatively coarse vegetation information, and may not reflect that some EOs may be located within remnant unburned islands of sagebrush habitat within fire perimeters. However, it is the best available information and provides additional cumulative evidence that increased wildfire frequency is ongoing and, as detailed in the October 8, 2009, final listing rule (74 FR 52014), is likely facilitating the continued spread of invasive plant species and Owyhee harvester ant colony expansion, all of which negatively affect *Lepidium papilliferum* and its habitat.

In addition to the geospatial information, the most recent general landscape assessment conducted during HIP transect monitoring revealed that the landscape within 500 m (0.31 mi) of 54 transects (70 percent) had lost cover of native *Artemisia tridentata* (sagebrush) due to fire (IDFG 2013, p. 9).

The understanding of impacts from climate change has not changed substantially since publication of the 2009 final listing rule (74 FR 52014, October 8, 2009). Climate change models project a likely increase in wildfire frequency within the semiarid Great Basin region inhabited by *Lepidium papilliferum*. Arid regions such as the Great Basin where *L. papilliferum* occurs are likely to become

hotter and drier; fire frequency is expected to accelerate, and fires may become larger and more severe (Brown *et al.* 2004, pp. 382–383; Neilson *et al.* 2005, p. 150; Chambers and Pellant 2008, p. 31; Karl *et al.* 2009, p. 83; Miller *et al.* 2011, pp. 179–184). Although there is not yet any detectable upward trend in annual area burned, the findings of Baker (2013, pp. 15–17) suggest that current fire rotations in the Snake River Plain may be too short to allow recovery of sagebrush after fire. Baker (2013, p. 17) attributes this to the cheatgrass-fire cycle, and notes that fires on the Snake River Plain are becoming larger, due to the extensive *Bromus tectorum* invasion in that region.

Warmer temperatures and greater concentrations of atmospheric carbon dioxide create conditions favorable to the growth of *B. tectorum*, thus continuing the positive feedback cycle between the invasive annual grass and fire frequency that poses a threat that is having a significant negative effect on *L. papilliferum* (Chambers and Pellant 2008, p. 32; Karl *et al.* 2009, p. 83). Under current climate-change projections, we anticipate that future climatic conditions will favor further invasion by *B. tectorum*, that fire frequency will continue to increase, and the extent and severity of fires may increase as well. If current projections are realized, the consequences of climate change are, therefore, likely to exacerbate the existing primary threats to *L. papilliferum* of frequent wildfire and invasive nonnative plants, particularly *B. tectorum*.

As the Intergovernmental Panel on Climate Change (IPCC) projects that the changes to the global climate system in the 21st century will likely be greater than those observed in the 20th century and current trends in the climate system—increasing temperature, increasing duration and intensity of drought, decreasing snow-pack, increasing heavy precipitation events, and other extreme weather—are likely to continue through the 21st century (IPCC 2007, p. 45; IPCC 2013, p. 7), we anticipate that these effects will continue and likely increase in the future. See *Climate Change* under Factor E, in the October 8, 2009, final listing rule (74 FR 52014) for a more detailed discussion of climate change.

To determine the rate at which wildfire is impacting *Lepidium papilliferum* habitats and how far into the future we can reasonably predict the likely effects of wildfire on the species, we assessed the available data regarding the extent of *L. papilliferum* habitat that is likely to burn each year. As reported above, over the past 59 years (1957 to

2015), the perimeters of 149 wildfires occurring within the known range of *L. papilliferum* have burned approximately 8,348 ac (3,378 ha), or 53 percent of the total *L. papilliferum* EO area rangewide (Hardy 2016, *in litt.*). Thus the annual mean habitat impact due to wildfire over the past 59 years is estimated at 141 acres per year (ac/yr) (57 hectares per year (ha/yr)). As noted above, we have adjusted our analysis to avoid the potential “double counting” of areas that have burned more than once, and this rate is representative of the rate at which new (previously unburned) areas of *L. papilliferum* habitat are affected by wildfire.

At present, we estimate there are approximately 7,477 ac (3,025 ha) of *L. papilliferum* habitat remaining that have not yet been negatively impacted by fire. It is our best estimate that future rates of habitat impact will continue at least at the recently observed rate of 141 ac/yr (57 ha/yr). We believe this is a conservative estimate, as it does not account for potentially greater rates of loss due to the likely effects of climate change and increasing coverage of *Bromus tectorum*. Based on the 59 years of accurate data regarding wildfire impacts accumulated so far, we can reasonably and reliably predict that this rate will continue into the future at least until the point when no unburned habitat for the species will likely remain, which is approximately 50 years (Figure 1; USFWS 2015, *in litt.*). Thus, 50 years represents a minimum estimate of the foreseeable future for the threat of wildfire. Based on the observed rates of habitat impact due to wildfire, we can reliably predict that approximately 80 to 90 percent of the remaining *L. papilliferum* habitat not yet impacted by fire will be negatively affected by wildfire within an estimated 43 to 48 years (Figure 1). Or, to look at it another way, within an estimated 43 to 48 years, only 10 to 20 percent of currently unburned *L. papilliferum* habitat will likely remain unaffected by wildfire.

As discussed above (and in more detail below in the *Summary of Factors Affecting the Species*), when *Lepidium papilliferum* reaches this threshold, at which 80 to 90 percent of its present remaining unburned habitat has become negatively affected by wildfire and associated threats, then we conservatively conclude that the species will become in danger of extinction (will meet the definition of an endangered species). Thus, because we can reasonably predict that *L. papilliferum* is likely to become an endangered species in, at the most, approximately 43 to 48 years, we

consider that projection to occur within the foreseeable future, which is at least 50 years based on extrapolation of the rate at which we expect the primary effect of wildfire will act on the species. Because of the synergistic interaction between wildfire and the invasion of nonnative plant species, by association, we assume that future colonization of *L. papilliferum* habitat by invasive nonnatives will proceed on approximately the same timetable (discussed further below). This is a conservative estimate because threats to the species other than wildfire and invasive species (e.g., development) are likely to negatively affect at least some of the habitat that remains unburned

within the next 50 years, reducing or eliminating the ability of that unburned habitat to support the species' life-cycle needs. Consequently, the approximation of 43 to 48 years until only 10 to 20 percent of the species' habitat remains unburned is likely an overestimate of the time it will take for the species to become endangered.

We recognize that our model (Figure 1; USFWS 2015, *in litt.*) is relatively simple, assuming, for example, that unburned habitats have similar wildfire vulnerability, and that the impacts to habitat from wildfire will continue to occur at a constant rate over time, when in reality some habitats may differ in their resistance to wildfire and the

extent of area affected by wildfire will vary from year to year. However, for our purposes of developing a reliable estimate of a timeframe within which *Lepidium papilliferum* is likely to become endangered, we believe this projection uses the best scientific data available to predict the effects of wildfire on the species over time. As noted above, because of the close and synergistic association between the occurrence of wildfire and invasion by nonnative plants, followed by habitat loss and fragmentation, we believe this timeframe similarly applies to the primary threat of invasive nonnative plants and fragmentation and isolation.

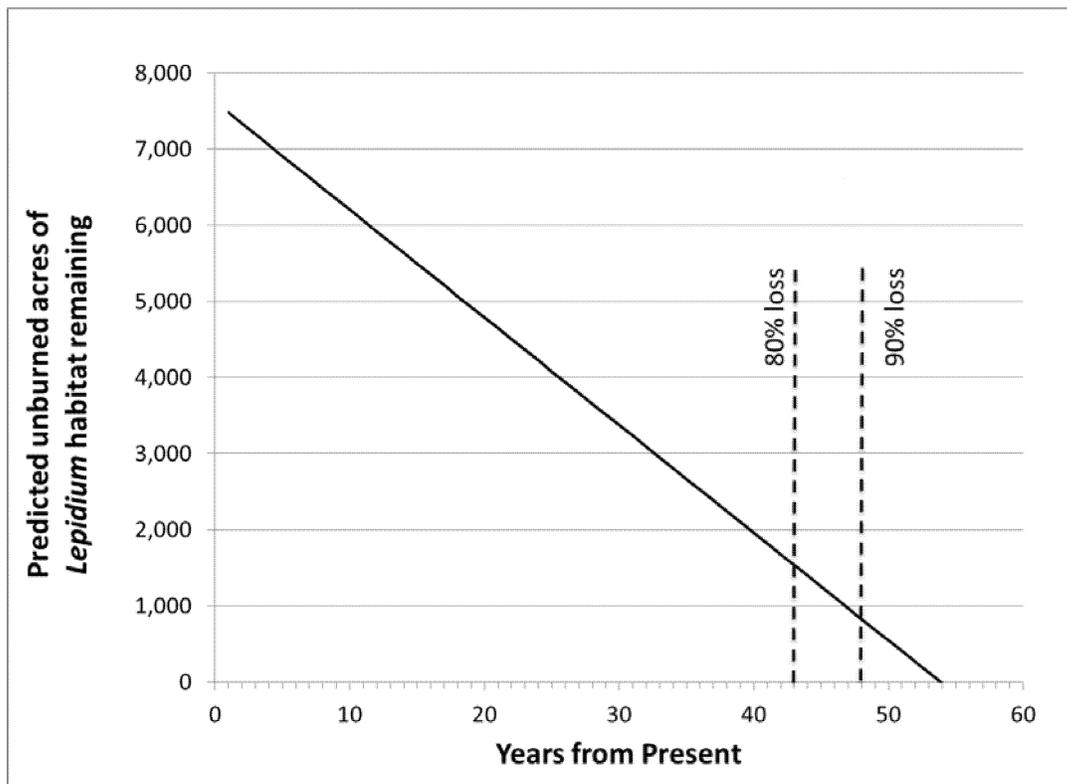


Figure 1. Rate of ongoing impacts due to wildfire in remaining *Lepidium papilliferum* habitat (USFWS 2016, *in litt.*).

In summary, wildfire effects have already impacted 53 percent of the total *Lepidium papilliferum* EO area rangewide. At the current rate of habitat impacted by wildfire, we anticipate that 80 to 90 percent of the remaining unburned *L. papilliferum* habitat will be affected by wildfire within approximately the next 43 to 48 years. Because we can reliably predict the threats of wildfire, and, by association,

invasive, nonnative plant species, through at least the next 50 years, the estimated time period of 43 to 48 years in which we predict the species will become endangered is within the foreseeable future.

*Invasive, Nonnative Plant Species*

The rate of conversion from native sagebrush-steppe to primarily nonnative annual grasslands continues to accelerate in the Snake River Plain of

southwest Idaho (Whisenant 1990, p. 4), and is closely tied to the increased frequency and shortened intervals between wildfires. The continued spread of *Bromus tectorum* throughout the range of *Lepidium papilliferum*, coupled with the lack of effective methods to control or eradicate *B. tectorum*, leads us to conclude that the extent and frequency of wildfires will continue to increase indefinitely, given

the demonstrated positive feedback cycle between these factors (Whisenant 1990, p. 4; D'Antonio and Vitousek 1992, pp. 73, 75; Brooks and Pyke 2001, p. 5; Brooks *et al.* 2004, p. 678; Balch *et al.* 2013, pp. 177–179). Under current climate change projections, we also anticipate that future climatic conditions will favor further invasion by *B. tectorum*, that fire frequency will likely increase, and that the extent and severity of fires may increase as well (Brown *et al.* 2004, pp. 382–383; Neilson *et al.* 2005, p. 150; Chambers and Pellant 2008, pp. 31–32; Karl *et al.* 2009, p. 83; Bradley *et al.*, 2009 p. 5). As summarized in our 2009 final listing rule (74 FR 52014, p. 52032), if the invasion of *B. tectorum* continues at the rate witnessed over the last century, an area far in excess of the total range occupied by *L. papilliferum* could be converted to nonnative annual grasslands within the foreseeable future.

Invasive, nonnative plants have become established in *Lepidium papilliferum* habitats by spreading through natural dispersal (unseeded) or have been intentionally planted as part of revegetation projects (seeded). Invasive nonnative plants can alter multiple attributes of ecosystems, including geomorphology, wildfire regime, hydrology, microclimate, nutrient cycling, and productivity (Dukes and Mooney 2003, pp. 1–35). They can also negatively affect native plants through competitive exclusion, niche displacement, hybridization, and competition for pollinators; examples are widespread among native taxa and ecosystems (D'Antonio and Vitousek 1992, pp. 63–87; Olson 1999, p. 5; Mooney and Cleland 2001, p. 1).

Invasive nonnative plant species pose a serious and significant threat to *Lepidium papilliferum*, particularly when the synergistic effects of nonnative annual grasses and wildfire are considered. Invasive, nonnative, unseeded species that pose threats to *L. papilliferum* include the annual grasses *Bromus tectorum* and *Taeniatherum caput-medusae* that are rapidly forming monocultures across the southwestern Idaho landscape. Evidence that *B. tectorum* is likely displacing *L. papilliferum* is provided by Sullivan and Nations' (2009, p. 135) statistical analyses of *L. papilliferum* abundance and nonnative invasive plant species cover within slickspots. Working with 5 years of HIP data collected from 2004 through 2008, Sullivan and Nations found that the presence of other plants in slickspots, particularly invasive exotics such as *Bassia prostrata* (forage kochia), a seeded nonnative plant species, and *B. tectorum*, was associated

with the almost complete exclusion of *L. papilliferum* from those microsites (Sullivan and Nations 2009, pp. 111–112). According to their analysis, the presence of *B. tectorum* in the surrounding plant community shows a consistently significant negative relationship with the abundance of *L. papilliferum* across all physiographic regions (Sullivan and Nations 2009, pp. 131, 137), and a significant negative relationship with *L. papilliferum* abundance within slickspots in the Snake River Plain and Boise Foothills regions (Sullivan and Nations 2009, p. 112).

Additionally, we have increasing evidence that nonnative plants are invading the slickspot microsite habitats of *Lepidium papilliferum* (Colket 2009, Table 4, pp. 37–49) and successfully outcompeting and displacing the species (Grime 1977, p. 1185; DeBolt 2002, *in litt.*; Quinney 2005, *in litt.*; Sullivan and Nations 2009, p. 109). Monitoring of HIP transects shows that *L. papilliferum*-occupied sites that were formerly dominated by native vegetation are showing relatively rapid increases in the cover of nonnative plant species (Colket 2008, pp. 1, 33; IDFG 2013, p. 11). Regarding *Bromus tectorum* in particular, vast areas of the Great Basin are already dominated by this nonnative annual grass, and projections are that far greater areas are susceptible to future invasion by this species (Pellant 1996, p. 1). In addition, most climate change models project conditions conducive to the further spread of nonnative grasses such as *B. tectorum* in the Great Basin desert area occupied by *L. papilliferum* in the decades to come (see *Climate Change* under Factor E, below).

Geospatial analyses indicate that by 2008 approximately 20 percent of the total area of all *Lepidium papilliferum* EOs rangewide was dominated by introduced invasive annual and perennial plant species (Stoner 2009, p. 81). Because this analysis only considered areas that were 'dominated' by introduced invasive species, it does not provide a comprehensive estimate of invasive species presence within the range of *L. papilliferum*. For example, similar to 2008 HIP monitoring results, which were described in the 2009 final listing rule (74 FR 52014, October 8, 2009), the 2012 results (which represent the most recent published HIP data), revealed that all 80 HIP transects monitored within 54 EOs had some nonnative, unseeded plant cover (Colket 2009, Table 4, pp. 37–49; IDFG 2013, Table 4, pp. 29–30). The 2008 (Colket 2009, Table 4, pp. 37–49) HIP monitoring results also revealed that, of the 80 HIP transects, 18 transects had

some level of nonnative, seeded plant cover (similar comparisons for nonnative, seeded plant cover was not presented in the 2013 HIP monitoring report). In addition, monitoring of HIP transects rangewide indicated that nonnative plant cover is continuing to increase at a relatively rapid pace. For example, Colket (2008, pp. 1–3) reported increases in nonnative plant species cover of 5 percent or more over the span of 4 to 5 years in 28 percent of the HIP transects formerly dominated by native plant species. More recent data collected by the Idaho Department of Fish and Game (IDFG) since 2009 indicates that the number of transects with a 5 percent or more increase in nonnative cover since establishment of the transects has significantly increased from 40 transects in 2009 to 61 transects in 2011 (IDFG 2012, pp. 12–13). In the 2013 report (IDFG p. 11), this number was down slightly with 52 transects documenting a 5 percent or more increase in nonnative cover; however, it was noted that "many transects had far more than a 5% increase, and some were so heavily invaded that they were barely recognizable as slickspots."

Bradley and Mustard (2006, p. 1146) found that the best indicator for predicting future invasions of *Bromus tectorum* was the proximity to current populations of the grass. Colket (2009, pp. 37–49) reports that 52 of 80 HIP transects (65 percent) had *B. tectorum* cover of 0.5 percent or greater within slickspots in at least 1 year between 2004 and 2008; nearly 95 percent of slickspots had some *B. tectorum* present. If current proximity to *B. tectorum* is an indicator of the likelihood of future invasion by that nonnative species, then *Lepidium papilliferum* is highly vulnerable to future invasion by *B. tectorum* throughout its range. If the invasion of *B. tectorum* continues at the rate witnessed over the last century, an area far in excess of the total range occupied by *L. papilliferum* could be converted to nonnative annual grasslands in the near future. First introduced around 1889 (Mack 1981, p. 152), *B. tectorum* cover in the Great Basin is now estimated at approximately 30,000 mi<sup>2</sup> (80,000 km<sup>2</sup>) (Menakis *et al.* 2003, p. 284), translating into an historical invasion rate of approximately 300 mi<sup>2</sup> (700 km<sup>2</sup>) a year over 120 years. In addition, climate change models for the Great Basin region also predict climatic conditions that will favor the growth and further spread of *B. tectorum* (See *Climate Change* under Factor E in the 2009 final listing rule (74 FR 52014, October 8,

2009) for a more detailed discussion of climate change.).

Given the observed negative association between the abundance of *Lepidium papilliferum* and invasive nonnative plants both within slickspot microsites and in the surrounding plant community, the demonstrated ability of some nonnative plants to displace *L. papilliferum* from slickspots, and the recognized contribution of nonnative plants such as *Bromus tectorum* to the increased fire frequency that additionally poses a primary threat to the species, we consider invasive nonnative plants to pose a threat that is having a significant effect on *L. papilliferum*. Currently, there are no feasible means of controlling the spread of *B. tectorum* or the subsequent increases in wildfire frequency and extent once *B. tectorum* is established on a large scale (Pellant 1996, pp. 13–14; Menakis *et al.* 2003, p. 287; Pyke 2007, entire; Weltz *et al.* 2014, p. 44A). The eradication of other invasive nonnative plants poses similar management challenges, and future land management decisions will determine the degree to which seeded nonnative plants may affect *L. papilliferum*.

In summary, data show that all 80 HIP monitoring transects have some level of invasive nonnative plant species; that by 2008, 20 percent of the total area of all *Lepidium papilliferum* EOs rangewide was dominated by introduced invasive plant species; and that nonnative plant cover is continuing to increase at a relatively rapid rate. Given the synergistic relationship between wildfire and the spread of invasive nonnative plant species, such as *Bromus tectorum*, combined with the fact that broadscale eradication methods for controlling these threats have not been developed, we anticipate that 80 to 90 percent of the remaining unburned *L. papilliferum* habitat will be affected by invasive nonnative plant species, to the point where they are outcompeting *L. papilliferum*, on a timeframe similar to that of increased wildfire effects. As with the primary threat of wildfire, we can reliably predict the trend of the associated primary threat of invasive, nonnative plant species over at least the next 50 years. Therefore, this threat will also cause the species to become in danger of extinction in approximately 43 to 48 years, which is within the foreseeable future.

#### Planned or Proposed Development

Although the threat of development is relatively limited in geographic scope, the effect of development on *Lepidium papilliferum* can be severe, potentially resulting in the direct loss of

individuals, and perhaps more importantly, the permanent loss of its unique slickspot microsite habitats. As described in the Background section of the 2009 final listing rule (74 FR 52014, October 8, 2009), *L. papilliferum* occurs primarily in specialized slickspot microsites. Slickspots and their unique edaphic and hydrological characteristics are products of the Pleistocene period, and they likely cannot be recreated on the landscape once lost. The potential, direct loss of slickspots to the effects from development, particularly those slickspots that are currently occupied by the species and provide the requisite conditions to support *L. papilliferum*, is, therefore, of great concern in terms of providing for the long-term viability of the species.

Development can also affect *Lepidium papilliferum* through indirect effects by contributing to increased habitat fragmentation, nonnative plant invasion, human-caused ignition of wildfires, and potential reductions in the population of insect pollinators. Development in sagebrush-steppe habitat is of particular concern in the Boise Foothills region, which, although relatively limited in its geographic extent, supports the highest abundance of *L. papilliferum* plants per HIP transect (Sullivan and Nations 2009, pp. 3, 103, 134). Past development has eliminated some historical *L. papilliferum* EOs (Colket *et al.* 2006, p. 4), and planned and proposed future developments threaten several occupied sites in the Snake River Plain and Boise Foothills regions (see below). Most of the recent development effects have occurred on the Snake River Plain and Boise Foothills regions, which collectively comprise approximately 83 percent of the extent of EOs; development has not been identified as an issue on the Owyhee Plateau (Stoner 2009, pp. 13–14, 19–20).

In the 2009 final listing rule (74 FR 52036, October 8, 2009), we were aware of 10 approved or proposed development projects planned for these regions (State of Idaho 2008, *in litt.* pp. 3–5), which would affect 13 out of 80 EOs (16 percent of EOs). However, many of these proposed developments and associated infrastructure projects are no longer being considered for implementation. Currently, we are aware of only three projects that could potentially affect *Lepidium papilliferum* and its habitat (Chaney, pers. comm. 2013a). The Spring Valley Planned Community (a.k.a. the M3 Development) is a 5,600-ac (2,300-ha) development in the foothills north of Eagle. Construction is planned for five phases over a 20-year period. It is expected that

the development and its associated infrastructure on adjacent Federal lands will result in some effects to the species and its habitat at three EOs (EOs 52, 76, and 108) (Hardy, pers. comm. 2013). The Dry Creek Ranch Development is a 1,400-ac (570-ha) development located north of Hidden Springs in Idaho. It is proposed to be built in five phases over a 10-year period (Chaney, pers. comm. 2013b). This development appears to overlap slightly with EO 38 (a D-ranked EO). Due to the low quality of the development map, the amount of overlap is uncertain, although it appears to be a very small area relative to the size of the EO polygon (Chaney, pers. comm. 2013c). This area is currently proposed as a designated natural area of the development; therefore, direct effects associated with construction of the development are expected to be minimal.

In addition, the Gateway West Transmission Line Project, which is scheduled to be constructed in phases from 2016 through 2021, would likely affect the species and its habitat, including proposed critical habitat, in southwestern Idaho. Although a final routing of the project has not yet been determined, the Gateway West Transmission Line Project could potentially affect 5 EOs within the project footprint and a total of 11 EOs within the Action Area (defined as the right-of-way footprint and the additional 0.5-mi (0.8-km) buffer (Tetra Tech 2013, p. 64)). While conservation measures incorporated into the proposed project design are expected to avoid or minimize some adverse effects to *Lepidium papilliferum*, not all adverse effects will be avoided (USFWS, 2013 entire) and portions of the project may occur in unburned habitat.

Though these developments and associated infrastructure projects have not yet been constructed, they are at least at the proposed stage and, thus, foreseeable. Given the current information, based on approved or proposed project plans and proposed construction timelines, we anticipate that approximately 17 percent of known *Lepidium papilliferum* EOs will be affected by development within the next 20 years. This period of time represents the foreseeable future with respect to development, as this is the period of time over which we can reasonably predict development and associated infrastructure projects that will likely occur. The threat of development will have a negative effect on the species in combination with the primary threats of wildfire and invasive, nonnative plants. However, the effects of development are secondary to the effects on the species

from the primary threats of an altered wildfire regime and invasive nonnative plants; thus, we do not anticipate that the threat of development alone will cause *L. papilliferum* to become an endangered species within this timeframe. However, any development that does occur in unburned habitat will contribute to shortening that timeframe.

#### *Habitat Fragmentation and Isolation of Small Populations*

*Lepidium papilliferum* occurs in naturally patchy microsite habitats, and the increasing degree of habitat fragmentation produced by wildfires and development threatens to isolate and fragment populations beyond the distance that the plant's insect pollinators are capable of traveling. Genetic exchange in *L. papilliferum* is achieved through either seed dispersal or insect-mediated pollination (Robertson and Ulappa 2004, pp. 1705, 1708; Stillman *et al.* 2005, pp. 1, 6–8), and plants that receive pollen from more distant sources demonstrate greater reproductive success in terms of seed production (Robertson and Ulappa 2004, pp. 1705, 1708). *Lepidium papilliferum* habitats separated by distances greater than the effective range of available pollinating insects are at a genetic disadvantage, and may become vulnerable to the effects of loss of genetic diversity (Stillman *et al.* 2005, pp. 1, 6–8) and a reduction in seed production (Robertson *et al.* 2004, p. 1705). A genetic analysis of *L. papilliferum* suggested that populations in the Snake River Plain and the Owyhee Plateau may already have reduced genetic diversity (Larson *et al.* 2006, p. 17; note the Boise Foothills were not analyzed separately in this study).

Many of the remaining occurrences of *Lepidium papilliferum*, particularly in the Snake River Plain and Boise Foothills regions, are restricted to small, remnant patches of suitable sagebrush-steppe habitat. When last surveyed, 31 EOs (37 percent) each had fewer than 50 plants (Colket *et al.* 2006, Tables 1 to 13). Many of these small remnant EOs exist within habitat that is degraded by the various threat factors previously described. Small *L. papilliferum* populations are likely persisting due to their long-lived seed bank, but the long-term risk of depletion of the seed banks for these small populations and the elimination of new genetic input make the persistence of these small populations uncertain. Providing suitable habitats and foraging habitats for the species' insect pollinators is important for maintaining *L. papilliferum* genetic diversity. Small

populations are vulnerable to relatively minor environmental disturbances such as wildfire, herbicide drift, and nonnative plant invasions (Given 1994, pp. 66–67), and are subject to the loss of genetic diversity from genetic drift and inbreeding (Ellstrand and Elam 1993, pp. 217–237). Smaller populations generally have lower genetic diversity, and lower genetic diversity may in turn lead to even smaller populations by decreasing the species' ability to adapt, thereby increasing the probability of population extinction (Newman and Pilson 1997, p. 360).

Habitat fragmentation from the effects of development or wildfires has affected 62 of the 79 EOs for which habitat information is known (15 of 16 on the Boise Foothills, 35 of 42 on the Snake River Plain, and 12 of 21 on the Owyhee Plateau), and 78 EOs (all except one on the Owyhee Plateau) have fragmentation occurring within 1,600 ft (500 m) of the EOs (Cole 2009, Threats Table). Additionally, development projects are planned within the occupied range of *Lepidium papilliferum* that would contribute to further large-scale fragmentation of its habitat, potentially resulting in decreased viability of populations through decreased seed production, reduced genetic diversity, and the increased inherent vulnerability of small populations to localized extirpation (see *Development*, above).

In summary, the increasing degree of fragmentation of *Lepidium papilliferum* and its habitat is primarily produced by wildfires, loss and conversion of surrounding sagebrush-steppe habitats, and the effects of development. We can reliably predict that habitat fragmentation effects will continue at a rate similar to wildfire and other threat effects, such that 80 to 90 percent of the remaining unburned *L. papilliferum* habitat will be affected within an estimated 43 to 48 years, which is within the foreseeable future of 50 years for the primary threats of wildfire and invasive, nonnative plant species.

#### *Owyhee Harvester Ants*

In recent years, concern has emerged over the potential detrimental effects of seed predation on *Lepidium papilliferum* by the Owyhee harvester ant (Robertson and White 2009). Robertson and White reported that Owyhee harvester ants can remove up to 90 percent of *L. papilliferum* fruits and seeds, either directly from the plant or by scavenging seeds that drop to the ground (Robertson and White 2009, p. 9). A more recent study (Robertson and Crossman 2012, pp. 14–15) validated the results from Robertson and White (2009), and went further by showing

that seed loss through Owyhee harvester ant predation remains high, with a median of 92 percent, even when considering total seed output for individual plants. In one of their paired samples, they found 4,861 seeds beneath the control plant and only 301 seeds beneath the treatment plant (exposed to ants), while in another they found 2,328 seeds beneath the control plant, but only 365 beneath the treatment plant. These results demonstrate that Owyhee harvester ants have the capacity to remove a large percentage of the seeds produced by *L. papilliferum*, even when thousands of seeds are produced.

Owyhee harvester ants are a native species, common in open grassy areas throughout southwest Idaho, including areas occupied by *Lepidium papilliferum*. Owyhee harvester ant colony expansion into areas adjacent to occupied slickspots, and the associated increase in seed predation, has the potential to significantly affect *L. papilliferum* recruitment and the replenishment of the seed bank, which could in turn affect the long-term viability of *L. papilliferum*. Due to the increased occurrence of wildfire and the associated replacement of sagebrush by grasses within *L. papilliferum* habitat, a study was initiated in 2010 to monitor Owyhee harvester ant colony dynamics and to document if, and at what rate, Owyhee harvester ants are increasingly colonizing areas occupied by *L. papilliferum*. In 2010, researchers recorded 843 harvester ant colonies across 15 study sites, which coincided with *L. papilliferum* EOs. Results from 2012 demonstrated that, only 2 years later, that number had increased to 956 colonies. However, data collected in 2014, following an extended period of drought in the spring and summer of 2013, showed colony numbers had declined to 878 (Robertson 2015, p. 2). Robertson concluded that the lack of consistent and substantial increases in colony numbers over the 5 years of monitoring at these sites, as well as the strong relationship between ant colony density and resources available at the sites, suggests that the sites chosen for this study were already at or near carrying capacities (Robertson 2015, p. 11). Robertson notes, however, that carrying capacity is a function of resource availability, and changes in resources likely will impact future colony recruitment and survival (Robertson 2015, p. 11).

Owyhee harvester ant research within *Lepidium papilliferum* habitat is ongoing. We lack enough data to develop a foreseeable future estimate for this threat at this time, although we

expect the threat to increase as the number of ant colonies continues to grow as a result of more wildfires and the associated conversion of sagebrush to grasses.

#### Consideration of Conservation Measures

The threats to *Lepidium papilliferum* are ongoing and acting synergistically to negatively affect the species and its habitat, and are expected to continue into the foreseeable future. Although conservation measures to address some of these threat factors have been considered by the Service, as described in the 2009 final listing rule (74 FR 52014, October 8, 2009), effective controls on a large enough scale to address the increased frequency of wildfire and eradicate the expansive infestation of nonnative plants throughout the range of *L. papilliferum* are not currently available, nor do we anticipate that controls will become available anytime soon that are likely to be effective on a scale sufficient to prevent the species from becoming in danger of extinction in the foreseeable future.

The Conservation Agreement (CA) for *Lepidium papilliferum* between the BLM and the Service was updated in 2014 (USBLM and USFWS 2014, entire). Significant changes to that CA included allowing for livestock trailing through EOs, proposed critical habitat, or occupied habitat on existing roads or historic routes within the BLM's Four Rivers Field Office area. It also added requirements to avoid use of potentially invasive nonnative plant species such as *Bassia prostrata* (forage kochia) in emergency stabilization and rehabilitation treatments and fuel breaks within 0.8 km (1.5 mi) of EOs, as well as to require rigorous monitoring and subsequent removal of *B. prostrata* if it establishes outside of seeded areas. The 2014 CA also clarified invasive nonnative plant species control requirements associated with land use permits, leases, and rights-of-way that overlap EOs. While these changes strengthen and clarify the CA, they are not sufficient to offset the threats to the species to the point that it is not likely to become an endangered species within the foreseeable future.

In addition to those conservation measures evaluated in the 2009 final listing rule (74 FR 52014, October 8, 2009) and those mentioned above, we considered a relatively new conservation measure. Rangeland Fire Protection Associations (RFPAs) are currently being established in some parts of southern Idaho, where important habitat for greater sage-grouse (*Centrocercus urophasianus*) ("sage-

grouse") occurs. These RFPAs are designed to provide ranchers and landowners in rural areas with the necessary tools and training to allow them to assist with wildfire prevention and respond quickly to wildfire. One of these RFPAs, the Three Creek RFPA, has been established within the *Lepidium papilliferum* Owyhee Plateau physiographic region, where both *L. papilliferum* and sage-grouse co-occur. Benefits from first response to wildland fires that are realized to sage-grouse within this RFPA may also extend to *L. papilliferum* habitat in that area. The Mountain Home RFPA, which was recently expanded in 2015 to include additional *L. papilliferum* EOs, also covers a portion of *L. papilliferum* occupied habitat within the Snake River Plain physiographic region.

Idaho Code Section 38-104 was amended during the 2013 legislative session to clarify the requirements and process for the establishment of the RFPAs (State Board of Land Commissioners 2013, *in litt.*). Applicants that meet the requirements of an RFPA enter into a Master Agreement with the State, which provides them with the legal authority to detect, prevent, and suppress fires in the RFPA boundaries. RFPAs also require a Cooperative Fire Protection Agreement between the individual RFPA and the appropriate Federal agency, which provides the RFPAs the authority to take action on Federal land (Houston 2013, pers. comm.; Glazier 2013, pers. comm.).

The Service acknowledges that RFPAs are a positive conservation step for sagebrush-steppe habitat, and we commend these efforts to protect habitats against wildfires in those areas where RFPAs have been designated; the Service has provided funding to help support RFPAs. One of the primary benefits of the RFPAs, as identified by the Idaho Department of Lands, is the protection of greater sage-grouse habitat. Consequently, most of the currently designated RFPAs are associated with greater sage-grouse habitat, and only approximately 34 percent of *Lepidium papilliferum* EOs are currently located inside of any designated RFPA boundaries. While benefits from first response to wildland fires within sage-grouse habitats may also extend to *L. papilliferum* habitat in those areas where the RFPA boundaries overlap (34 percent), a majority (66 percent) of currently occupied *L. papilliferum* habitat does not directly benefit from the sage-grouse-associated wildfire protection measures of the RFPAs. Furthermore, RFPAs within the range of *L. papilliferum* have been in effect for

only 1 to 3 years and, as such, have not yet demonstrated their ability to address the increased frequency or extent of wildfire across the range of *L. papilliferum*.

Although 34 percent of *Lepidium papilliferum* habitat is within RFPA boundaries, these areas are at a high risk of large catastrophic wildfires based on ecological conditions (Chambers *et al.* 2014, entire). This higher risk was analyzed in the resilience and resistance (R&R) matrix developed by the Western Association of Fish and Wildlife Agencies (WAFWA), in which they classified different ecological soil and moisture regimes into categories (low, moderate, and high) of resilience to disturbance and resistance to invasion by annual grasses (Chambers *et al.* 2014, entire). Of the areas occupied by *L. papilliferum*, 99 percent occur within areas classified as low R&R; these low R&R areas tend to be prone to invasion by cheatgrass and are at a higher risk of large catastrophic wildfires, thus the low R&R of these areas is a challenge to wildfire management and post-fire restoration.

In addition, RFPAs do not address the threat from existing invasive nonnative plant species, the second of the two primary threats identified for the species, and the conservation need for sagebrush-steppe habitat restoration. Our analysis of the conditions for *Lepidium papilliferum* over the foreseeable future takes into account the synergistic and cumulative effects of increased wildfire, invasive nonnative plants, development, and other threat factors that will affect the remaining *L. papilliferum* habitats.

Effective management of wildfire as a threat is often dependent on the timeliness of initial response efforts; therefore, while RFPAs have not yet shown to be sufficiently effective to offset the threats to the species to the point that it is not likely to become an endangered species within the foreseeable future, we view their formation as a positive conservation step for sagebrush-steppe habitat. We continue to support expanding and increasing the capacity of RFPAs, and encourage greater wildfire protection measures and sagebrush-steppe restoration in other areas with *L. papilliferum* habitats. However, the combination of adequately addressing the two primary threats of wildfires and invasive nonnative plant species will be necessary for long-term conservation of *L. papilliferum*.

### Summary of Factors Affecting the Species

The current status of *Lepidium papilliferum* reflects the past effects from the threats described above that have already affected or degraded more than 50 percent of the species' unique habitats, as well as the continued and ongoing vulnerability of the species' slickspot habitats to these same threats. Because we do not see strong evidence of a steep negative population trend for the species (consistent with what we described in our 2009 final listing rule (74 FR 52051, October 8, 2009)), we believe that *L. papilliferum* is not in immediate danger of extinction. We do, however, conclude that *L. papilliferum* is likely to become in danger of extinction in the foreseeable future, based on our assessment of that period of time over which we can reasonably rely on predictions regarding the threats to the species. Our analysis has led us to conclude that future effects from the synergistic and cumulative effects of increased wildfire, invasive nonnative plants, development, and other threat factors, including climate change, will affect the remaining *L. papilliferum* habitats such that the species would persist in only a small number of isolated EOs, with 80 to 90 percent of its remaining unburned habitat impacted by these threats, and most likely with small populations fragmented and isolated from other remnant populations. At the point at which these conditions are met, we would consider the species to then be in danger of extinction.

Given the wildfire history that has affected approximately 53 percent of the *L. papilliferum* habitat over the last 59 years (1957–2015), combined with the ongoing, expansive infestation of invasive nonnative plants across the species' range, and the fact that no broad-scale *Bromus tectorum* eradication methods or effective means for controlling the altered wildfire regime across the range of *L. papilliferum* have been developed, these threats to *L. papilliferum* can reasonably be anticipated to continue for at least 50 years, and perhaps indefinitely. This information (in concert with the observed negative association between these ongoing and persistent threats and the species' distribution and abundance throughout its range, along with reasonable predictions about future conditions) leads us to the conclusion that, at the current and anticipated rate of future habitat effects, *L. papilliferum* is likely to become in danger of extinction within the next 43 to 48 years, which is within the foreseeable

future (the time period of at least 50 years over which we can reliably predict the primary threat factors will continue to act upon the species).

### Summary of Changes From the Proposed Reconsideration of the Final Rule

Based upon our review of the public comments and new relevant information that has become available since the publication of our proposed reconsideration of the final rule (79 FR 8416; February 12, 2014), we have reevaluated and made changes to the content of that document as appropriate. Other than minor clarifications and incorporation of additional information on the species' biology and populations, this determination differs from the proposed reconsideration document in the following ways:

(1) The State of Idaho disagreed with the Service's assertion that RFPAs have not yet demonstrated their ability to address the increased frequency of wildfire across the range of *Lepidium papilliferum*. The State commented that increased fire response and suppression in *L. papilliferum* habitat would undoubtedly alter the point at which the plant would become endangered, and suggested our determination was no longer valid because 2013 RFPAs data was not factored into the Service's foreseeable future analysis.

To address the State's concern, we recalculated our foreseeable future estimate (the rate at which wildfire is impacting *Lepidium papilliferum* habitats), to include wildfire data from 2013 to 2015. Therefore, instead of using the past 56 years of data (1957 to 2012), we used the past 59 years of data (1957 to 2015) to assess how far into the future we can reasonably predict the likely effects of wildfire on the species. In the proposed reconsideration of the final rule, we stated that we used 55 years of wildfire data based on a time period between 1957 and 2012; we added the number of years incorrectly and have corrected the number for this time period to be 56 years.

In our proposed reconsideration of the final rule (79 FR 8416; February 12, 2014), we reported that, using the past 56 years of data, the perimeters of 126 wildfires occurring within the known range of *Lepidium papilliferum* burned approximately 8,324 ac (3,369 ha), or 53 percent of the total *L. papilliferum* EO area rangewide (Hardy 2013, *in litt.*). As reported in this final rule, over the past 59 years (1957 to 2015), the perimeters of 149 wildfires occurring within the known range of *L. papilliferum* have burned approximately 8,348 ac (3,378 ha), which is 53 percent of the total *L.*

*papilliferum* EO area rangewide (Hardy 2016, *in litt.*). Thus, the annual mean habitat impact due to wildfire changed from 150 acres per year (ac/yr) (61 ha/yr) over a 56-year time period to 141 acres per year (ac/yr) (57 ha/yr) over the past 59 years.

To be consistent, we also used the latest IFWIS EO data (January 2015) to calculate the *Lepidium papilliferum* habitat remaining that has not yet been negatively impacted by wildfire. In our proposed reconsideration of the final rule (79 FR 8416, February 12, 2014), we reported that there were 87 EOs currently identified in the IFWIS database (compared to 80 reported in 2009). However, we should have reported that there were 88 total EOs. Since the proposed reconsideration document was published, 3 more EOs have been identified in the IFWIS database, bringing the total to 91 extant *L. papilliferum* EOs. Using the latest EO data changed our estimate from approximately 7,567 ac (3,064 ha) to 7,479 ac (3,026 ha) of *Lepidium papilliferum* habitat remaining that has not yet been affected by wildfire.

Based on the observed rates of habitat impact due to wildfire using this longer time range and updated EO information, we can reliably predict that approximately 80 to 90 percent of the remaining *Lepidium papilliferum* habitat not yet impacted by wildfire will be affected within approximately the next 43 to 48 years, which is a change and refinement from the estimate of 36 to 47 years in the proposed reconsideration of the final rule (79 FR 8416, February 12, 2014).

Considering the most recent wildfire data (2013 to 2015), as requested by the State, did not alter our conclusion that *Lepidium papilliferum* is likely to become in danger of extinction within the foreseeable future. Therefore, we still conclude that the RFPAs have not yet demonstrated their ability to address the increased frequency of wildfire throughout the range of *L. papilliferum*. In addition, RFPAs do not address the threat from existing invasive nonnative plant species, the second of the two primary threats identified for the species, and the conservation need for sagebrush-steppe habitat restoration.

Based on the changes discussed above, we refined our graph in Figure 1 to reflect this new information.

(2) We received comments regarding our use of a 5-year dataset that resulted in the upper-bound calculation of 170 ac (69 ha) of habitat burned per year presented in the proposed reconsideration of the final rule (79 FR 8416, February 12, 2014). Some commenters stated that this short

timeframe is arbitrary, as it is based on a small sample size, and suggested that it should not be relied upon. We agree with the commenters that our 5-year estimate is too short a timeframe to accurately reflect the average impact of wildfire. Therefore, we removed this upper-bound estimate from this final rule. However, we believe our long-term estimate of an average future rate of 141 ac (57 ha) of habitat burned per year (based on the last 59 years) is a reliable and reasonable estimate and represents the best available data.

(3) In the Background and New Information section of the preamble, we corrected our HIP plant count numbers and some HIP data analysis based on new information received.

(4) In the Factors Affecting the Species section of the preamble, we updated information in the *Owyhee Harvester Ant* section based on new research results received.

(5) In the Factors Affecting the Species section of the preamble, *Altered Wildfire Regime* section, we updated the HIP transect data information to reflect the most recent results of the 2012 HIP monitoring. Based on a public comment, we also updated this section to include more recent climate change information, as well as more recently described fire-return intervals.

(6) In response to a comment from the State of Idaho, we expanded our discussion in the Consideration of Conservation Measures section of the preamble to include additional information regarding RFPAs.

### Summary of Comments and Recommendations

In our proposed reconsideration of the final rule published on February 12, 2014 (79 FR 8416), and in the document reopening the comment period (April 21, 2014, 79 FR 22076), we requested that all interested parties submit written comments on our proposed interpretation of the foreseeable future and reinstatement of threatened status for *Lepidium papilliferum*. We contacted appropriate Federal and State agencies, scientific experts and organizations, and other interested parties, and invited them to comment on our proposed reconsideration of the final rule. We did not receive any requests for a public hearing. During these comment periods we received 11 comment letters. We appreciate all public comments submitted and their contributions to the improvement of the content and accuracy of this document.

We received several comments related to the prior listing decision published on October 8, 2009, such as comments regarding the taxonomy of this species,

population trend, and our analysis of threats as described in the 2009 final listing rule (74 FR 52014). We also received comments related to other issues that are outside the scope of this rulemaking, such as comments related to the National Environmental Policy Act. For the purposes of this rulemaking, we considered only comments directly relevant to the proposed reconsideration of the final rule for *Lepidium papilliferum*, as published on February 12, 2014 (79 FR 8416). Comments that did not provide new information or that were related to issues outside the scope of this rulemaking are not addressed here.

All substantive information provided has either been incorporated directly into this final rule or addressed below.

### Federal Agency Comments

We did not receive any comments from Federal agencies.

### Comments From the State of Idaho

Comments received from the State regarding our proposed reconsideration of the final rule for *Lepidium papilliferum* (79 FR 8416, February 12, 2014) are addressed below, and also in a written response to the State of Idaho per section 4(i) of the Act that states, “the Secretary shall submit to the State agency a written justification for his failure to adopt regulations consistent with the agency’s comments or petition.”

(1) *Comment:* The State pointed out that in the proposed reconsideration of the final rule (79 FR 8416, February 12, 2014), the foreseeable future is determined to be “at least 50 years”; however, the phrase “at least” is not quantifiable nor does it provide any sideboards for determining what number of years after 50 would be considered foreseeable. The State argued that, for the purpose of analyzing whether *Lepidium papilliferum*’s risk of endangerment is within the foreseeable future, 50 years is the threshold since “at least” creates an equivocal timeframe.

*Our Response:* We consider the foreseeable future to be that period of time within which we can make a reasonable prediction about the future status of the species, based on the nature of the threats, how the species is affected by those threats, and how those relevant threats operate over time. In this case, one of the primary threats is wildfire, and we can reasonably predict how that threat will operate over time based on 59 years of fire data and the observed effects of wildfire on *Lepidium papilliferum*. We defined the timeframe for when *L. papilliferum* is likely to

become in danger of extinction (endangered) as that point in the future when only 10 to 20 percent of its remaining, as-yet-unburned habitat persists unaffected by wildfire, because we conclude that under those conditions the remaining habitat will be too small and fragmented to provide for the persistence of the species, such that the species will become in danger of extinction at that time. Because *L. papilliferum* has not yet reached that point, we can conclude that it is not currently in danger of extinction (*i.e.*, not endangered). However, based on the best available data, we have reasonably projected that the species is likely to reach that point (when it will *become* in danger of extinction) in approximately 43 to 48 years.

Because we can reasonably predict the time period in the future at which the species is likely to become endangered (as opposed to merely speculating as to when it might occur), that point in time is by definition within the foreseeable future. In turn, because we can reasonably and reliably predict that this rate will then continue into the future at least until the point when no unburned habitat for the species will likely remain, which is approximately 54 years (Figure 1; USFWS 2016, *in litt.*), 50 years represents a reasonable minimum estimate of the foreseeable future. This led to our description of the timeframe for the foreseeable future being “at least” 50 years (simply rounding down from 54 years). Perhaps a better way of explaining it is that we can reasonably predict the transition from threatened to endangered status to occur within the next 50 years. The number of years beyond 50 that would be considered foreseeable is a moot point, since we have reasonably concluded that *L. papilliferum* will become in danger of extinction prior to that time. We used the term “at least” in an attempt to communicate the uncertainty around the timeframe of 50 years, as we believe that setting a single endpoint beyond that timeframe implies a degree of precision in defining the foreseeable future that simply cannot be achieved with the best available data.

(2) *Comment:* The State suggested that the Service did not follow the District Court’s guidance on appropriately defining *Lepidium papilliferum*’s foreseeable future, citing the following guidance from the Court: “remand may very well require additional fact-finding; the Service may decide that an expert panel needs to be reconvened to offer an opinion on what constitutes foreseeable future. . . .” The State commented that the Service chose to forego convening an expert panel and

unilaterally concluded the foreseeable future to be at least 50 years, and further predicted that the species would likely become endangered in the next 36 to 47 years based on current and historical trend data related to the major threats facing *L. papilliferum*, namely wildfire. While the State agreed that this approach constitutes a valid viewpoint, they felt that prior agency precedent related to *L. papilliferum* indicates that this represents only one opinion in a field where experts' opinions have varied greatly. They recommended the Service exercise its discretionary authority to extend the proposed listing determination by 6 months to convene a diverse panel of experts in order to more accurately assess when the scientific community believes the species is likely to become endangered. Several other commenters recommended that, in order to properly analyze the impacts of beneficial projects, such as Rangeland Fire Protection Associations (RFPAs), the Paradigm Fuel Break Project, and State plans aimed at fire prevention (such as the Idaho and Southern Montana Greater Sage-Grouse Draft Land Use Plan Amendment and Environmental Impact Statement), we should convene an expert panel, including fire and fuels specialists, to determine future wildfire risk to *L. papilliferum* and analyze the potential benefits of these activities on the longevity of the species, and then reassess the foreseeable future.

**Our Response:** In accordance with section 4(b)(1)(A) of the Act, our determination is based solely on the best scientific and commercial data available. We recognize the potential value in convening expert panels to assist in our status reviews, especially for issues where significant uncertainty exists. We did not find that to be the situation here. We based our definition of the foreseeable future specific to *Lepidium papilliferum* on the best scientific data available to us regarding the observed rate at which the primary threats are acting on the species. This is a quantitative estimate and not a qualitative opinion as the State suggests. With the availability of this quantitative estimate to frame the foreseeable future, we did not find that convening an expert panel for the purpose of soliciting qualitative opinions was necessary. Please also see our discussion of the outcome of earlier expert panels under "Foreseeable Future," above.

(3) **Comment:** The State and the Idaho State Department of Agriculture (ISDA) commented that the proposed reconsideration of the final rule (79 FR 8416, February 12, 2014) does not

adequately analyze the RFPAs. The State suggested that a large portion of *Lepidium papilliferum* habitat exists on rangeland currently covered by RFPAs. The State also disagreed with the Service's assertion that RFPAs have not yet demonstrated their ability to address the increased frequency of wildfire within the range of *L. papilliferum*. They asserted that, after just 2 years in existence, the RFPAs have proven successful, offering that the Three Creek and Mountain Home RFPAs, both established within *L. papilliferum* habitat, provided initial attack and/or assistance on numerous wildfires during the 2013 wildfire season. They added that, on many of these fires, the quick actions taken by the RFPAs directly prevented additional acres from burning, which likely would have included occurrences of *L. papilliferum*.

The State acknowledged that it is impossible to quantify the number of acres saved due to the implementation of RFPAs, but felt the information from 2013 illustrates the tangible progress the RFPAs are making across their range. They contended that, since 2013 RFPA data was not factored into the Service's foreseeable future analysis, the determination is no longer valid, arguing that increased fire response and suppression in *L. papilliferum* habitat would undoubtedly alter the point at which the plant would become endangered. They added that, in order to adequately support this determination, the Service would have to provide information describing how recent wildfire reduction measures within the species' range would not affect *L. papilliferum*'s timeline for becoming endangered. Several additional commenters also commented that the proposed reconsideration of the final rule (79 FR 8416, February 12, 2014) did not adequately analyze the RFPAs and the associated positive effects they have had in reducing the size of wildfires in *L. papilliferum* habitats. One of these commenters stated that currently there are 5 RFPAs comprising more than 250 private citizens who are properly trained and equipped to provide initial attack on over 4 million acres of private, State, and Federal land and 6 more RFPAs that are in the process of formation and training to be ready for the 2015 wildfire season.

**Our Response:** The Service acknowledges that RFPAs are a positive conservation step for sagebrush-steppe habitat, and we commend these efforts to protect habitats against wildfires in those areas where RFPAs have been designated. One of the primary benefits of the RFPAs, as identified by the Idaho

Department of Lands, is for the protection of greater sage-grouse habitat. Consequently, most of the currently designated RFPAs are associated with greater sage-grouse habitat. However, only approximately 34 percent of *L. papilliferum* EOs are currently located inside of any designated RFPA boundaries. While benefits from first response to wildland fires within sage-grouse habitats may also extend to *L. papilliferum* habitat in those areas where the RFPA boundaries overlap (34 percent), a majority (66 percent) of currently occupied *L. papilliferum* habitat does not directly benefit from the sage-grouse-associated wildfire protection measures of the RFPAs. Furthermore, RFPAs within the range of *L. papilliferum* have only been in effect for 1 to 3 years and, as such, have not yet demonstrated their ability to address the increased frequency or extent of wildfire across the range of *Lepidium papilliferum*.

Although 34 percent of *Lepidium papilliferum* habitat is within RFPA boundaries, these areas are at a high risk of large catastrophic wildfires based on ecological conditions (Chambers *et al.* 2014, entire). This higher risk was analyzed in the R&R matrix developed by the WAFWA, in which they classified different ecological soil and moisture regimes into categories (low, moderate, and high) of resilience to disturbance and resistance to invasion by annual grasses (Chambers *et al.* 2014, entire). Of the areas occupied by *L. papilliferum*, 99 percent occur within areas classified as low R&R; these low R&R areas tend to be prone to invasion by cheatgrass and are at a higher risk of large catastrophic wildfires, thus the low R&R of these areas is a challenge to wildfire management, particularly for catastrophic wildfires.

Further, as the State pointed out, it is impossible to quantify the number of acres saved due to implementation of the RFPAs. We did consider, in response to the State's request, whether it was appropriate to evaluate the potential effectiveness of RFPAs based on wildfire data since their date of establishment, which varies from 2013 to 2015. However, relying on 1 to 3 years of wildfire data (the short duration of time that RFPAs have been in effect) is too small a sample size to determine if there is a long-term change in the rate of number of acres burned as a result of RFPAs.

However, we have recalculated the foreseeable future by adding 2013 thru 2015 wildfire data and have updated this information in the Factors Affecting the Species section of this final rule. Based on the observed rates of habitat

impact due to wildfire using this longer time range and updated EO information, we can reliably predict that approximately 80 to 90 percent of the remaining *Lepidium papilliferum* habitat not yet impacted by wildfire will be affected within an estimated 43 to 48 years, which is a change from the estimate of 36 to 47 years in our proposed reconsideration of the final rule (79 FR 8416, February 12, 2014). Therefore, considering the most recent wildfire data (2013 to 2015), as requested by the State, did not alter our conclusion that *L. papilliferum* is likely to become in danger of extinction within the foreseeable future.

In addition, our analysis of the foreseeable future takes into account the synergistic and cumulative effects of increased wildfire, invasive nonnative plants, development, and other threat factors that will affect the remaining *L. papilliferum* habitats. While RFPAs have the potential to influence the overall effect of wildfires, they do not address the threat from existing invasive nonnative plant species, the second of two primary threats identified for the species, or the conservation need for sagebrush-steppe habitat restoration.

Therefore, while we view the formation of RFPAs as a positive conservation step for sagebrush-steppe habitat, RFPAs have not yet shown to be sufficiently effective to offset the threats to the species to the point that it is not likely to become an endangered species within the foreseeable future.

(4) *Comment:* The State and the ISDA commented that the proposed reconsideration of the final rule (79 FR 8416, February 12, 2014) did not adequately address the benefits derived from the Paradigm Fuel Break Project. The State cited one of the objectives of the Paradigm Project, to “[p]rotect existing native shrub habitat for slickspot peppergrass and greater sage-grouse, that would reduce the likelihood of large-scale wildfire.” They contended that, while a record of decision for the Paradigm Project has not been issued, the project still must be considered by the Service when analyzing the future threat from wildfire since this project will have an appreciable effect on the number and magnitude of fires within the project area and associated *Lepidium papilliferum* habitat. Likewise, seven additional commenters questioned why we did not analyze the effects the Paradigm Fuel Break Project will have on the foreseeable future for *L. papilliferum*. Five of these commenters suggested that the proposed reconsideration of the final rule (79 FR 8416, February 12, 2014) did not adequately address the benefits derived

from the Paradigm Project. Several of these commenters stated that this project will slow the spread of wildfires and assist in fire suppression efforts. Several commenters thought this would greatly extend or shift the foreseeable future or entirely preclude the need to consider ESA listing for the species. One commenter stated that it is not unreasonable to expect this project will be implemented within the Service’s 50-year timeline. Conversely, two of the commenters stated that this project will negatively impact *L. papilliferum* by introducing invasive nonnative plants, such as *Bassia prostrata*, as fuel breaks across a large amount of *L. papilliferum* habitat. One of these commenters stated that existing *B. prostrata* seedlings have already invaded *L. papilliferum* habitat. The other added that, given the competitiveness of *B. prostrata* and a lack of proper planning, the *L. papilliferum* habitat near fuel breaks will soon be invaded by *B. prostrata*, and *L. papilliferum* will become extinct.

*Our Response:* We are aware of the potential future long-term benefits that may occur associated with compartmentalization of future wildfires in this area. We also acknowledge, as discussed in detail under Factor A of the 2009 final listing rule (74 FR 52037–52040, October 8, 2009), the risks associated with seeded nonnative invasive plant species like *Bassia prostrata*, in areas that support *Lepidium papilliferum*. As such, we continue to encourage our partners to minimize any potential adverse impacts of proposed fuel break projects in the vicinity of *L. papilliferum* habitat. For example, guidance on how to avoid or minimize potential effects of fuels management projects on *L. papilliferum* and its habitat has been provided in the 2014 Conservation Agreement (CA) for *L. papilliferum* between BLM and the Service, and we anticipate the BLM will adhere to the CA. Subsequent to the publication of our proposed reconsideration of the final rule, the Service coordinated with the BLM regarding strategies to avoid or minimize potential effects of the proposed Paradigm Project on *L. papilliferum* prior to the BLM signing the Decision Record for this project on April 24, 2015. However, the Paradigm Fuel Break Project only encompasses about 18 percent of the total area of *L. papilliferum* habitat rangewide.

In addition, the Service is not aware of any long-term data regarding suppression effectiveness of fuel breaks in areas of low R&R, which is where more than 99 percent of *L. papilliferum* occurs. Moreover, our analysis of foreseeable future takes into

account the synergistic and cumulative effects of increased wildfire, invasive nonnative plants, development, and other threat factors that will affect the remaining *L. papilliferum* habitats. While the Paradigm Project has the potential to influence the overall effect of wildfires within a limited area of *L. papilliferum* habitat, it does not currently address the threat from existing invasive nonnative plant species, one of two primary threats identified for the species, or the conservation need for sagebrush-steppe habitat restoration. Considering all of these factors, it is unknown if the Paradigm Project will significantly alter the rangewide foreseeability of threats to this species.

(5) *Comment:* The State and the ISDA commented that the Service did not consider the benefits to *Lepidium papilliferum* associated with recent sage-grouse planning efforts in Idaho. They pointed out that, as with *L. papilliferum*, the primary threats to sage-grouse habitat are wildfires and invasive species, and the Idaho and Southwest Montana Subregional sage-grouse planning effort includes a wildfire management component that focuses efforts on fire prevention, suppression, and habitat restoration. The State suggested that some of the *L. papilliferum* habitat will incidentally benefit from the protections afforded to sage-grouse through this strategy, and given the overlap of sage-grouse and *L. papilliferum* habitat, these planning efforts would have a positive influence on *L. papilliferum* and its habitat. Five additional commenters also had similar comments. Several commenters questioned whether the Service has taken into consideration other State plans aimed at fire prevention and habitat preservation, like the Idaho and Southwestern Montana Greater Sage-Grouse Draft Land Use Plan Amendment and Environmental Impact Statement. One commenter stated that the two primary threats to *L. papilliferum* are also the primary threats to the greater sage-grouse and the proposed reconsideration of the final rule does not consider any of the organizations and tools that have been created to protect against those threats, such as the amendments to BLM Resource Management Plans (RMPs). This commenter argued that factoring all of these benefits in will alter the foreseeable future.

*Our Response:* The Service recognizes the future potential benefits to sagebrush-steppe habitats associated with the BLM’s efforts to conserve greater sage-grouse through amendment of existing land use plans, including

increased measures to limit wildfire impacts to sagebrush steppe habitats and revegetation efforts. We considered several greater sage-grouse conservation efforts that may provide benefits to *Lepidium papilliferum* habitat, including the land use plan amendments, the Fire and Invasives Team (FIAT) planning areas, and activities identified in response to Secretarial Order (SO) 3336.

Less than 21 percent of the known area of *Lepidium papilliferum* occurrences overlap with greater sage-grouse habitats where the BLM will implement land use plan amendment conservation measures (including habitat restoration and fire suppression actions). Furthermore, conservation measures within the BLM land use plan amendment for sage-grouse are largely directed at Priority and Important Habitat Management Areas. Only 17 percent of the known *L. papilliferum* occurrences overlap with designated Important Habitat Management Areas (IHMA), 4 percent occur in General Habitat Management Areas, and none of the remaining 83 percent of known *L. papilliferum* occurrences are located in Priority Habitat Management Areas.

Although *Lepidium papilliferum* does occur in areas designated as IHMA, the actions identified in the land use management plan amendments were prioritized by the FIAT and are focused on providing benefits to sage-grouse. Projects were prioritized to address breeding habitat for sage-grouse within areas that are the most resistant and resilient to wildfire. Only a very small area, approximately 1 percent of *Lepidium papilliferum* EO acres, occurs in prioritized areas. The likelihood of projects occurring in *L. papilliferum* EOs is very low and, therefore, unlikely to provide a significant benefit to the species.

The SO 3336 commits to large-scale conservation to address fire and invasive nonnative plants; however, the initial focus is on sagebrush ecosystems and sage-grouse habitat. While the SO includes commitments to ensure restoration will be initiated following wildfire, since projects are prioritized relying on FIAT prioritization, areas where *Lepidium papilliferum* occurs have not been identified as a priority.

Differences exist in the vulnerability of sage-grouse and *Lepidium papilliferum* to landscape-level threats such as wildfire and invasive nonnative plants. Greater sage-grouse are distributed across a much wider range than *L. papilliferum* and occur in areas of varying resilience to disturbance and resistance to invasion by annual grasses. Due to the wider range and variety of

habitat conditions, sage-grouse rangewide are more capable of absorbing the impact of large wildfires. Conversely, *L. papilliferum* has a narrow range, is found overwhelmingly (99 percent of occurrences) in areas of low resilience to disturbance and resistance to invasion by annual grasses, and could be heavily impacted by a single catastrophic wildfire such as the 2015 Soda Fire in southwestern Idaho and Eastern Oregon, which burned 283,000 ac (114,000 ha) (National Interagency Fire Center 2015).

Further, sage-grouse conservation efforts have recognized the difficulty in preventing wildfire and controlling invasive nonnative plants in areas with low R&R (where 99 percent of *Lepidium papilliferum* occurs) and have thus focused on implementing fire prevention and restoration in areas within habitats with higher R&R.

As such, we do not anticipate the land use plan amendments will significantly alter the rangewide foreseeability of threats to *Lepidium papilliferum*. Based on our evaluation of the present threats to *L. papilliferum*, we conclude that the species is likely to become in danger of extinction within the foreseeable future after accounting for the Federal land use plan amendments to the RMPs.

(6) *Comment:* The State asserted that the aforementioned current and future conservation efforts in Idaho, along with the plant's inherent lack of predictability, are sufficient to preclude a listing under the ESA. They added that State management of slickspot peppergrass is proven to be just as effective as Federal management when dealing with ubiquitous threats like wildfire and invasive nonnative plant species. They requested the Service withdraw the proposal to reinstate the listing of *Lepidium papilliferum* as threatened under the ESA.

*Our Response:* In regard to the State's comment about current and future conservation efforts, please see our responses to comments 3, 4, and 5, above. Past population trend data were not used in making the listing decision for *Lepidium papilliferum* as "it would be inappropriate to rely on this model to predict any future population trajectory for *L. papilliferum*" (see pp. 52022–52025 of the final listing rule, 74 FR 52014; October 8, 2009). We acknowledge that above-ground numbers of *L. papilliferum* individuals can fluctuate widely from one year to the next; however, as stated in our 2009 final listing rule, we have information indicating a statistically significant negative association between *L. papilliferum* abundance and wildfire, and between *L. papilliferum* abundance

and cover of *Bromus tectorum* in the surrounding plant community. Our analysis of the foreseeable future for the purposes of assessing the status of *L. papilliferum* relies on the foreseeability of the relevant threats to the species over time, and the reasonably anticipated effects of those threats on the species over time. As described here, we anticipate the continuation or increase of all of the significant threats to *L. papilliferum* into the foreseeable future, even after accounting for ongoing and planned conservation efforts, and we find that the best available scientific data indicate that the negative consequences of these threats on the species will likewise continue or increase. As described above, population declines and habitat degradation will likely continue in the foreseeable future to the point at which *L. papilliferum* will become in danger of extinction. Regarding the comment that State management of *L. papilliferum* is just as effective as Federal management, we acknowledge (as we did in the 2009 listing rule (74 FR 52014, October 8, 2009)) the efforts of the State and other entities to implement conservation measures for the species. However, the best available information leads us to conclude that currently available management tools are not capable of effectively reducing or ameliorating the primary threats across the range of the species to the point where it does not require listing under the ESA. Please refer to the Evaluation of Conservation Efforts section of the 2009 final listing rule (74 FR 52014, October 8, 2009) for a more detailed discussion of our previous evaluation of conservation efforts being made by the State of Idaho and other entities to protect *L. papilliferum*.

(7) *Comment:* The State commented that, in order to support the threatened determination, the Service extrapolates wildfire data from the previous half-century in order to predict future wildfire trends. The State expressed that it is overly simplistic to base a listing on the assumption that, because on average 150 acres of habitat have burned each year for the past 50 years, 150 acres will continue to burn each year in the future, particularly when considering the proactive measures mentioned in the previous comments above.

*Our Response:* We recognize that our model (Figure 1; USFWS 2015, *in litt.*) is relatively simple, assuming, for example, that unburned habitats have similar wildfire vulnerability, and that the impacts to habitat from wildfire will continue to occur at a constant rate over time, when in reality some habitats may differ in their resistance to wildfire and

the extent of area affected by wildfire will vary from year to year. However, for our purposes of developing a reliable estimate of a timeframe within which *Lepidium papilliferum* is likely to become endangered, we believe this projection makes reasonable use of the best scientific data available to predict the effects of wildfire on the species over time. Regarding the reference to the conservation measures, please refer to responses to Comments 3–6. In addition, we anticipate that future climatic conditions will favor further invasion by *B. tectorum*, that fire frequency will continue to increase, and the extent and severity of fires may increase as well; given these considerations, we conclude that our estimate is relatively conservative.

(8) *Comment:* The State commented that the Service's use of a 5-year dataset that resulted in the 170 acres per year calculation is unreliable and unreasonable because it is based on a small sample size, during which Idaho experienced one of the worst fire seasons on record (2012). They argued that using such a short window of years to predict future trends is completely arbitrary and should not be relied upon. Another commenter also felt that our burn rate calculation method for determining the foreseeable future is too low and also flawed because we assume a uniform fire rate based on an arbitrary 5-year period of time. The commenter stated that the Service cannot "reasonably and reliably predict that this rate will continue," given current understanding of accelerating climate change threats and effects, *B. tectorum* effects, chronic grazing disturbance degradation effects, lack of resiliency of Wyoming big sagebrush habitats, the magnitude of damage that has already been done to these (no A-ranked sites even remain) and the synergistic effects of all of these (and other) threats, including drought and stochastic processes.

*Our Response:* To determine the rate at which wildfire is impacting *Lepidium papilliferum* habitats and how far into the future we can reasonably predict the likely effects of wildfire on the species, we assessed the available data regarding the extent of *L. papilliferum* habitat that is likely to burn each year. We used accurate, site-specific historical fire data to generate an average impact of a highly stochastic process. To do so, in the proposed reconsideration of the final rule, we used two time periods, one more conservative (the last 56 years (to generate the 150 ac/yr (61 ha/yr) rate)) and one estimate assuming potentially accelerated losses to fire, as based on observations over the last 5

years (as an indicator of recent changes, generating the 170 ac/yr (69 ha/yr) rate).

We agree with the commenters that our 5-year estimate is too short a timeframe to accurately reflect the average impact of wildfire, and we have removed this estimate from this final rule. However, we believe our long-term estimate (updated in this final rule to reflect the last 59 years of data, which resulted in a change from 150 ac/yr (61 ha/yr) to a rate of 141 ac/yr (57 ha/yr)) is a reliable estimate using the best available scientific data. We also believe it is a conservative estimate, as it does not account for potentially greater rates of loss due to the likely effects of climate change and increasing coverage of *Bromus tectorum*. We do not narrowly predict that every year 141 ac (57 ha) will burn. We estimate that over the foreseeable future, *on average* the impact of wildfire on unburned habitat will be 141 ac (57 ha) per year.

We recognize that caution should be used in interpreting geospatial information as it represents relatively coarse vegetation information, which may not reflect that some EOs may be located within remnant unburned islands of sagebrush habitat within fire perimeters. However, it is the best available information and provides additional cumulative evidence that increased wildfire frequency is ongoing and, as detailed in the October 8, 2009, final listing rule (74 FR 52014), is likely facilitating the continued spread of invasive plant species and Owyhee harvester ant colony expansion, all of which continue to negatively affect *L. papilliferum* and its habitat.

(9) *Comment:* Both the State and ISDA commented that livestock use should be removed from the list of threats to *Lepidium papilliferum*. The Idaho State Office of Species Conservation argued that, based on the Service's own analysis, mechanical damage to the plant and its habitat "does not pose a significant risk to the viability of the species as a whole." They added that the threat from livestock is essentially nullified when considering the associated benefits livestock use can have on *L. papilliferum* and its habitat. ISDA added that *L. papilliferum* listing would have more impact on ranchers on public lands than any other group, and that wildfire and the spread of invasive nonnative plant species, like *Bromus tectorum*, have done more to move *L. papilliferum* toward listing than any other factor. Several additional commenters made reference to livestock grazing as it relates to the 2009 final listing rule (74 FR 52014, October 8, 2009). Some of the commenters felt that it should be removed as a threat to *L.*

*papilliferum*. Other commenters felt it should be elevated from a secondary to a primary threat. No new information was provided by these commenters.

*Our Response:* For the purposes of this rulemaking, we addressed only comments directly relevant to the proposed reconsideration of the final rule, and, therefore, comments revisiting the listing decision that was published on October 8, 2009 (74 FR 52014), if they did not provide any new information that was not already considered, are not addressed in this rule. We fully considered and evaluated livestock use as a potential threat in the 2009 final listing rule (74 FR 52014, October 8, 2009). Because we concluded at that time that livestock use, as currently managed, is not a primary threat to the species, livestock use was not identified as a primary threat to the species in our proposed reconsideration of the final rule (79 FR 8416, February 12, 2014), and we did not include it in our foreseeable future discussion. A detailed discussion and analysis of each of the threat factors for *Lepidium papilliferum* can be found in the final listing decision for *L. papilliferum* (published in the **Federal Register** on October 8, 2009 (74 FR 52014)).

(10) *Comment:* The ISDA stated that the Service did not adequately consider biological and innovative controls for invasive nonnative plants as they relate to the foreseeable future of *Lepidium papilliferum*. The ISDA suggested that the Service take these ongoing research projects into consideration since invasive nonnative plant species, such as *Bromus tectorum*, is one of the primary threats to *L. papilliferum*, and these controls could likely be significantly reduced as a threat to the species in the very near future.

*Our Response:* The Service is encouraged by the emerging invasive nonnative plant controls. However, these invasive nonnative control methods are still being developed and are not yet available on a landscape scale, nor is effectiveness data currently available for these controls, thus accounting for them in our foreseeable future estimation would be no more than speculative. In addition, these biological controls are currently only approved on an experimental basis, not for widespread use, on Federal lands, where 87 percent of the total occupied *Lepidium papilliferum* habitat is located. However, we are hopeful that such methods may prove to be effective in the control of the significant threat posed by invasive nonnative plants on a landscape scale.

### Comments From Tribes

(11) *Comment:* The Shoshone-Bannock Tribes commented that the listing process must clearly recognize the Tribes' off-reservation right to hunt, fish, and gather on unoccupied lands of the United States, and requested that the listing state that the management shall in no way impinge upon Treaty Rights as the Indians understood them. They expressed that treaties of the Federal Government are the supreme law of the land, and their Treaty Rights should be clearly stated upfront and foremost in the listing process. They added that, under Article 5 of the 1868 Treaty with the Eastern Band Shoshoni and Bannock (15 Stat. 673), the Federal Government agreed that all cases of depredation on person or property will be taken to the Commissioner of Indian Affairs, now called the Assistant Secretary of the Interior for Indian Affairs, for due consideration. The Tribes reiterated that the Service has a trust responsibility to duly consider the vested rights and interests of the Tribes.

*Our Response:* In response to the concerns expressed by the Shoshone-Bannock Tribes and in accordance with Secretarial Order 3206, we recognize our trust responsibility and treaty obligations toward Indian tribes and tribal members. We also acknowledge that tribal trust resources, either on or off Indian lands, are protected by a fiduciary obligation on the part of the United States. *Lepidium papilliferum* is not known to occur on tribal lands, and we are not aware of specific tribal activities that may conflict with conservation of slickspot peppergrass. However, if new information reveals a need to address conflict between Tribal activities and the conservation needs of the species, we will work with the Tribes, in accordance with our Federal-Tribal trust responsibilities and obligations, to promote conservation of the species and its habitat.

### Public Comments

(12) *Comment:* One commenter argued that the Service did not analyze the considerable new scientific information that highlights the grave threats grazing disturbance poses to sagebrush ecosystems. Specifically, the commenter stated that, in the Factors Affecting the Species section of the proposed reconsideration of the final rule (79 FR 8416; February 12, 2014), the Service cites much too short historical fire-return intervals for its estimation of fire frequency and return intervals. The commenter suggested replacing the interval we referenced (60–100 years) with the fire-return

intervals used in the greater sage-grouse 12-month finding, which included intervals up to 350 years (75 FR 13910, p. 14016; March 23, 2010).

*Our Response:* This commenter provided numerous documents for our consideration. Many of the documents were previously submitted or had already been cited and considered in the 2009 final listing rule (74 FR 52014, October 8, 2009). However, some of the information provided was new information that has become available since our 2009 final listing rule. Although this new information did not specifically address direct or indirect impacts to *Lepidium papilliferum* and slickspots from livestock use, the commenter provided many general references that describe livestock impacts to sagebrush steppe habitats. After careful consideration of the new information provided by the commenter, we conclude that, while it supports and builds on information that we used in the 2009 final listing rule, it does not alter our 2009 listing determination. As we describe in the 2009 final listing rule, there are potential negative impacts to *L. papilliferum* populations and slickspots resulting from livestock grazing, but livestock use in areas that contain *L. papilliferum* has the potential to result in both positive and negative effects on the species, depending on factors such as stocking rate and season of use. The new information submitted does not alter our earlier conclusion that livestock use, as currently managed, is not a primary threat to the species.

The commenter provided literature that discusses the role that livestock grazing plays in contributing to annual grass cover. As discussed in the 2009 final listing rule (74 FR 52014, October 8, 2009), we acknowledge there are some case studies from western North America that suggest that grazing plays an important role in the decrease of native perennial grasses and an increase in dominance by nonnative annual species (as described in Reisner *et al.* 2013, which was provided by the commenter). However, invasion by nonnative grasses has been found to occur both with and without grazing in some areas. Today, nonnative annual plants such as *Bromus tectorum* are so widespread that they have been documented spreading into areas not impacted by disturbance (Piemeisel 1951, p. 71; Tisdale *et al.* 1965, pp. 349–351; Stohlgren *et al.* 1999, p. 45); therefore, the absence of livestock use no longer protects the landscape from invasive nonnative weeds (Frost and Launchbaugh 2003, p. 44), at least with respect to *B. tectorum*.

The commenter also provided literature that discusses the value of passive restoration in the form of reducing cumulative cattle grazing, as a means of restoring habitats, as well as research that raises concerns regarding proposals to use cattle grazing to control *Bromus tectorum* in ecosystems where remnant bunchgrass communities persist. In the 2009 final listing rule (74 FR 52014, October 8, 2009), we described that with careful management, livestock grazing may potentially be used as a tool to control *B. tectorum* (Frost and Launchbaugh 2003, p. 43) or, at a minimum, retard the rate of invasion (Loeser *et al.* 2007, p. 95), but that others have suggested that, given the variability in the timing of *B. tectorum* germination and development, and its ability to spread vegetatively, effective control of *B. tectorum* through livestock grazing may be a challenge (Hempy-Mayer and Pyke, 2008, p. 121).

In the 2009 final listing rule (74 FR 52014, October 8, 2009), we also specifically recognized the potential for negative impacts to *Lepidium papilliferum* populations and slickspots that may result from seasonal, localized trampling events. However, with the implementation of conservation measures to minimize potential direct and indirect impacts of livestock to *L. papilliferum*, such as restricting livestock access to areas occupied by *L. papilliferum* when slickspot soils are wet, and thus most vulnerable to damage, we consider livestock use to be a lesser threat to the species than the primary threats posed by the altered wildfire regime and associated increase in nonnative, invasive plant species within the range of *L. papilliferum*.

Evidence of the direct and indirect potential impacts to *L. papilliferum* and slickspots from livestock use is still relatively limited. We acknowledged in the 2009 final listing rule (74 FR 52014, October 8, 2009) that the available data may not be adequate to detect time-dependent issues associated with livestock use, as only 5 years of HIP data were available when the analysis was conducted (Sullivan and Nations 2009, p. 137). However, since the commenter did not provide any new data specific to *L. papilliferum*, the HIP analysis presented in the 2009 final listing rule still represents the best species-specific data available (as described in detail in “Livestock Use” under Factor A in the *Summary of Factors Affecting the Species* section of the 2009 final listing rule).

Taking all of the new information into account, we still conclude that livestock will have a negative impact on *Lepidium papilliferum*, primarily

through mechanical damage to individual plants and slickspot habitats; however, the current livestock management conditions and associated conservation measures address this potential threat such that it does not pose a significant risk to the viability of the species as a whole. However, we continue to encourage the ongoing implementation of conservation measures and associated monitoring to ensure potential impacts of livestock trampling to the species are avoided or significantly minimized. Because we limited our discussion of foreseeable future to the threats we consider significant in terms of contributing to the present or threatened destruction, modification, or curtailment of *L. papilliferum*'s habitat or range, as identified in the 2009 final listing rule (74 FR 52014, October 8, 2009), and because we concluded that the new information provided by the commenter does not alter our previous conclusion that livestock use is a secondary threat to *L. papilliferum*, we did not include an updated summary of livestock use in this final rule. We have included the new references provided by the commenter in our decision record, which can be accessed by contacting the Idaho Fish and Wildlife Office (see ADDRESSES, above). In reference to the commenter's request that we use more recently described fire-return intervals, we have updated this reference in the Factors Affecting the Species section of this final rule. However, it should be noted that, in our calculation of foreseeable future, we relied on empirical site-specific historical fire data, not general sagebrush-steppe fire-return interval estimates.

(13) *Comment:* One commenter expressed that *Bromus tectorum* risk mapping should be considered in this rule to determine foreseeable future.

*Our Response:* We carefully reviewed the information provided by the commenter. The commenter referenced a publication (Peterson 2007), which provides a map of annual grasses in the Owyhee Uplands developed in spring 2006. This is a dated, although still highly regarded, study. However, because it does not adequately cover *Lepidium papilliferum* habitat, we cannot use this information in a rangewide analysis for the species. In addition, this is a single-year mapping effort, making comparisons over time (as we did for our wildfire analysis) impossible. In this rule, we noted a geospatial analysis conducted by Stoner (2009, p. 81), which indicates that by 2008 approximately 20 percent of the total area of all *L. papilliferum* EOs rangewide was dominated by

introduced invasive annual and perennial plant species. However, because this analysis only considered areas that were 'dominated' by introduced invasive species, it does not provide a comprehensive estimate of invasive species presence within the range of *L. papilliferum*, and also cannot be used to determine the rate at which invasive nonnative plant species are impacting *L. papilliferum* habitats and how far into the future we can reasonably predict the likely effects of invasive nonnative species on *L. papilliferum*. Because we are unaware of any other site-specific *Bromus tectorum* or invasive nonnative plant species data that has been repeated over time, and because of the synergistic interaction between wildfire and the invasion of nonnative plant species, by association, we assume that future colonization of *L. papilliferum* habitat by invasive nonnatives will proceed on approximately the same timetable as wildfire.

(14) *Comment:* One commenter felt that current management practices are inadequate to protect or aid in the recovery of *Lepidium papilliferum*. The commenter cited as an example that the Candidate Conservation Agreement (CCA) for *L. papilliferum* states that water troughs near EOs will be moved or turned off, and, according to the commenter, this has not occurred. The commenter added that according to HIP monitoring several sites have been negatively disturbed by hoof action. Another commenter stated that the HIP monitoring for *L. papilliferum* shows declines in populations across its entire range and this decline is in spite of abundant spring moisture in 2013. The commenter argued that this decline shows a lack of adequate regulatory mechanisms to protect and conserve the species.

*Our Response:* We agree that, to date, we have not been notified of any livestock troughs that have been removed or turned off for *Lepidium papilliferum* conservation. However, HIP monitoring has detected a decline in livestock trampling triggers tripped over the 10 years of monitoring (the trampling "trigger" refers to a threshold for trampling set in the CCA, which was developed by the State of Idaho, BLM, and others in 2003, and is defined as breaking through the restrictive layer under the silt surface area of a slickspot during saturated conditions; State of Idaho *et al.* 2006, p. 9). The highest number was eight triggers tripped in 2007; more recent years have shown a low incidence of livestock triggers tripped (one livestock trigger tripped in 2012, zero livestock triggers tripped in

2013, and two livestock triggers tripped in 2014). While it is true that 2013 HIP monitoring resulted in the lowest *L. papilliferum* plant numbers observed in the 10 years of the HIP monitoring data available to date (6,351 plants), the spring of 2013 was dry and warm. Total precipitation from March through June 2013 in Boise, Idaho, was 2.49 inches (in) (6.32 centimeters (cm)). In contrast, March through June 2014 total precipitation was 5.36 in (13.6 cm) (National Weather Service, 2015). The 2014 HIP monitoring resulted in 45,569 total plants observed on HIP transects, the third highest number of plants observed over the 10 years of HIP monitoring (Kinter 2015, *in litt.*). It appears that the lower plant numbers in 2013 were likely related to climate conditions, although we do recognize that habitat conditions for *L. papilliferum* continue to decline across the range of the species.

(15) *Comment:* One commenter requested that additional factors be considered in the foreseeable future determination, such as seedings of invasive *Bassia prostrata* and *Agropyron cristatum* (crested wheatgrass) on BLM, State, or private lands. This same commenter also stated that our estimates of foreseeable future do not adequately address synergistic effects of multiple threats and disturbances and they do not address the non-linear rate of change in *Lepidium papilliferum* habitats and the ecological process distortion already set in motion. For example, the commenter suggested that slickspots with moderate levels of weeds are exceedingly likely to have surfaces choked with weeds as chronic livestock degradation continues. The commenter added that habitat degradation, once a considerable amount of weeds are present, is not reversible in slickspots.

*Our Response:* For the purpose of this rulemaking, we limited our discussion of foreseeable future to the threats we consider significant in terms of contributing to the present or threatened destruction, modification, or curtailment of *Lepidium papilliferum*'s habitat or range. These include the two primary threat factors: Altered wildfire regime (increasing frequency, size, and duration of wildfires), and invasive, nonnative plant species (*e.g.*, *Bromus tectorum*), as well as the contributing threat factors of planned or proposed development, habitat fragmentation and isolation, and the emerging threat from seed predation by Owyhee harvester ants. As acknowledged in our proposed reconsideration of the final rule (79 FR 8416, February 12, 2014), we recognize that our model is relatively simple,

assuming, for example, that the impacts to habitat from wildfire will continue to occur at a constant rate over time, when in reality the extent of area affected by wildfire will vary from year to year. Although a far more complex and exhaustive modeling effort might be possible that would incorporate elements of variability and stochasticity, the Act requires that we make our determinations based on the best scientific and commercial data available (emphasis ours). For our purposes of developing a reliable estimate of a timeframe within which *L. papilliferum* is likely to become endangered, we believe this projection makes reasonable use of the best scientific data available to predict the effects of wildfire on the species over time. As noted in the final rule (74 FR 52014, October 8, 2009), because of the close and synergistic association between the occurrence of wildfire and invasion by nonnative plants, followed by habitat loss and fragmentation, we believe this timeframe similarly applies to the primary threat of invasive nonnative plants and fragmentation and isolation as well.

(16) *Comment:* One commenter suggested that a direct relationship between climate change, wildlands fire, and *Lepidium papilliferum* population dynamics is mostly conjecture and not supported by science. The commenter stated that the climate change portion of this equation is based on the General Circulation Model and the Parallel Climate Model, which, like the Global Climate Models, apply to large areas, and do not necessarily apply to local situations like the Owyhee Desert or along the Snake River. The commenter added that the projected future effects of climate change at this time are hypothetical, and the effects of the stable climate over the past decade further complicate climate change models, obscuring hypothetical primary threats from wildfire and *Bromus tectorum*. Another commenter commented that the Service did not consider new climate change information. The commenter argued that impacts from wildfire will not occur over a constant rate, particularly when climate change effects are considered, causing our model to likely greatly overestimate the time period until *Lepidium papilliferum* is endangered.

*Our Response:* The Service recognizes that climate change is an important issue with potential effects to listed species and their habitats. We also recognize there are scientific differences of opinion on many aspects of climate change. In the 2009 final listing rule (74 FR 52014, October 8, 2009), we relied

primarily on the IPCC 2007 synthesis document, which presents the consensus view of a large number of experts on climate change, and which projected that the changes to the global climate system in the 21st century will likely be greater than those observed in the 20th century (IPCC 2007, p. 45). According to the more recent IPCC 2013 synthesis document (p. 7), which we have incorporated into this final listing rule, current trends in the climate system—increasing temperature, increasing duration and intensity of drought, decreasing snowpack, increasing heavy precipitation events, and other extreme weather—are likely to continue through the 21st century.

Although current climate change effects are documented in the western United States, the direct, long-term impact from climate change to *Lepidium papilliferum* is yet to be determined, and new studies have not significantly altered our understanding of how climate change is likely to affect *L. papilliferum* and its habitat. However, while the response of *L. papilliferum* to habitat changes resulting from climate change remain difficult to predict, even under conservative projections of the consequences of future climate change, we anticipate that in the foreseeable future climatic conditions will favor further invasion by *Bromus tectorum*, that fire frequency will continue to increase, and that the extent and severity of fires may increase as well. The positive correlations between these factors are well supported in the peer-reviewed literature, as referenced in the final listing rule and this final rule.

As stated elsewhere in this rule, for the purpose of this document, we limited our discussion of foreseeable future to the threats we consider significant in terms of contributing to the present or threatened destruction, modification, or curtailment of *L. papilliferum*'s habitat or range. We acknowledge that our foreseeable future estimate does not account for potentially greater rates of loss due to the likely effects of climate change and increasing coverage of *Bromus tectorum*. Our estimate is, therefore, a conservative estimate. However, we note that, even if revised calculations resulted in a potentially shorter period of time before *L. papilliferum* reaches the conditions under which we consider it to be endangered, our ultimate determination, that it currently meets the definition of a threatened species according to the Act, would remain the same. Our listing determination would change only if new information regarding existing threats or potential additional threats indicated that *L.*

*papilliferum* is currently in danger of extinction, and we have no scientific data at this point in time to suggest that this is the case. A complete description of the potential effects from climate change and our evaluation of this threat is found in Factor E of the *Summary of Factors Affecting the Species* discussion in the 2009 final listing rule.

(17) *Comment:* One commenter expressed that it is unreasonable to assume, without actual population estimates and without understanding threats, that *Lepidium papilliferum* is in danger of extinction within the next 36 to 47 years, or the foreseeable future. The commenter questioned our description of the future endangered status for *L. papilliferum* because actual rangewide population numbers are unknown. The commenter went on to add that hypothesizing the number of years (approximately 36 to 47 years) when 80 to 90 percent of its remaining habitat will have been affected, based on the ongoing rates of *L. papilliferum* habitat impacted by wildfire, is meaningless, because 100 percent of the range burns at regular intervals and actual populations of *L. papilliferum* are unknown.

*Our Response:* The Act requires that we make listing decisions based on the best scientific and commercial data available. As discussed elsewhere in this document (see our response to Comment 6, above), past population trend data were not used in making the listing decision for *Lepidium papilliferum*, nor did we attempt to project population trends into the future, as “it would be inappropriate to rely on this model to predict any future population trajectory for *L. papilliferum*” (see pp. 52022–52025 of the October 8, 2009, listing rule, 74 FR 52014). Systematic rangewide surveys for *L. papilliferum* have not occurred. However, occupied slickspot sites and EOs discovered since the 2009 listing have not added substantially to our knowledge of where the species exists; these new sites all occur within the known range of the species. Furthermore, we must make our determination on the basis of the information available at this time, and the Act does not allow for delay of our decision until more information about the species and its habitat are available. While some uncertainty will always exist, the existing information used in this final rule represents the best available scientific information upon which to make a foreseeable future determination for this species. We continue to encourage future survey and monitoring work for this species and its habitat.

With regard to our estimate of when *Lepidium papilliferum* would become an endangered species (in danger of extinction), we disagree with the commenter's characterization of our evaluation as a "hypothesis." Our estimated timeframe for determining when *L. papilliferum* will reach the point when 80 to 90 percent of its remaining unburned habitat will have been affected by fire is based on empirical data collected over a period of 59 years, which allowed us to project forward based on the average annual rate at which previously unburned *L. papilliferum* habitat has been affected by wildfire. We consider this to represent the best scientific data available with regard to the likely rate at which the primary threat of wildfire, and, by association, the rate at which invasive nonnative plants, will affect the status of the species over time.

(18) *Comment:* One commenter questioned what we meant by "complete count" of plants, and asked why we are attempting to list a species when much land remains to be surveyed for *Lepidium papilliferum*. The commenter cited the following statement in the proposed reconsideration of the final rule (79 FR 8416, February 12, 2014): "The discovery of some new occupied sites is not unexpected given not all potential *L. papilliferum* habitats in southwest Idaho have been surveyed." The commenter added that there has never been a survey of proper sample size to draw any conclusions regarding the dynamics of the *L. papilliferum* population and suggested that, from what little has been surveyed, the average number of plants per transect has increased over the last several years compared to the early survey years.

*Our Response:* As described in the 2009 final listing rule (74 FR 52014, October 8, 2009), "complete count" refers to making a complete count of all aboveground plants (each individual) observed on HIP transects during annual monitoring from 2005 to the present (as opposed to recording plant abundance as a range of values, which was done during HII transect monitoring from 1998–2002). Comparison of the average number of plants observed during HIP transect monitoring (2005–present) with plant numbers collected during HII monitoring (1998–2002) is problematic, as the two monitoring strategies used differing methodologies. For example, for HII monitoring, the same slickspots were not monitored each year within transects, and a range of plant numbers, rather than recording complete counts as was done for the HIP monitoring, was reported. In response to the comment

that much of the land remains to be surveyed for *Lepidium papilliferum*, please see our response to Comment 17.

(19) *Comment:* One commenter questioned the biological reason for the 80–90 percent threshold of habitat loss at which the species will be in danger of extinction. They asked if the Service will automatically declare *Lepidium papilliferum* in danger of extinction when the 80–90 percent loss of unburned habitat is reached without regard to the actual population size.

*Our Response:* Any change in status under the Act always requires a public rulemaking and is never automatic. In accordance with section 4(a)(1)(b) of the Act, the Secretary determines whether any species is an endangered species or threatened species because of any of the five factors, which are described above under *The Basis for Our Action*. The Secretary makes this determination based on the best scientific and commercial data available at the time of the status review. In response to the commenter's question regarding the biological reason for the 80–90 percent threshold of habitat loss, we based this estimate on our conclusion that at that point *Lepidium papilliferum* would most likely become in danger of extinction, because in our best professional judgment under these conditions the species would most likely persist only in a small number of isolated EOs, most likely with small populations that would be fragmented from other extant populations, such that the remaining populations would be incapable of interchange sufficient to maintain the long-term existence of the species. We acknowledge that this is a qualitative assessment of the threshold, based on fundamental principles of conservation biology, and that it relies upon our best estimate of when these conditions would be met in the future using the best available scientific data regarding the action of the primary threats on the species and its habitat. There is no precise mathematical formula available specific to *L. papilliferum* (nor is there for any species) that provides for a definitive quantitative assessment capable of pinpointing the exact moment in time when the status of the species would transition to "in danger of extinction." We did not receive an alternative suggestion of what might be more reasonable, nor did we receive any evidence that our approach is incorrect.

(20) *Comment:* One commenter stated that the Service's statement that "[b]ecause we still do not see strong evidence of a steep negative population trend for the species . . . we believe that *Lepidium papilliferum* is not in

immediate danger of extinction" raises the question of how "immediate" the danger of extinction must be in order to qualify a species for listing as "endangered" rather than "threatened." The commenter suggested that the Service's description of threats to the species indicates that *L. papilliferum* is not merely "likely to become an endangered species within the foreseeable future," but is in fact "in danger of extinction." Another commenter agreed, stating the Service's foreseeable future estimate of 50 years is overly optimistic. The commenter argued that *L. papilliferum* is crossing the threshold to becoming an endangered species right now. The commenter added that the Service may arrive at this conclusion if we used the current wildfire return intervals for Wyoming big sagebrush communities, and fully and fairly incorporated the broad spectrum of livestock degradation effects to the sagebrush matrix and slickspots.

*Our Response:* In considering potential threatened species status for *Lepidium papilliferum*, we described what endangered species status (in danger of extinction throughout all or a significant portion of its range) for *L. papilliferum* would be. As described in our proposed reconsideration of the final rule (79 FR 8416, February 12, 2014), we believe *L. papilliferum* will be in danger of extinction (an endangered species) when the anticipated and continued synergistic effects of increased wildfire, invasive nonnative plants, development, and other known threats affect the remaining extant *L. papilliferum* habitats at a level where the species would persist in only a small number of isolated EOs, most likely with small populations that would be fragmented from other extant populations. In order to estimate when this might occur, we chose a threshold of 80 to 90 percent loss of or damage to the currently remaining unburned habitat. At present, we estimate there are approximately 7,477 ac (3,025 ha) of *L. papilliferum* habitat remaining that have not yet been negatively impacted by fire. Based on the observed rates of habitat impact due to wildfire, we can reliably predict that approximately 80 to 90 percent of the remaining *L. papilliferum* habitat not yet impacted by wildfire will be negatively affected by wildfire within an estimated 43 to 48 years. Therefore, while we conclude the species is not at immediate risk of extinction, our analysis has led us to conclude that *L. papilliferum* is likely to become an endangered species within the foreseeable future, based on our

assessment of that period of time over which we can reasonably rely on predictions regarding the threats to the species. Based on our analysis of the best scientific and commercial data available, we have no information to suggest that the status of *L. papilliferum* is such that it is currently in danger of extinction, and we conclude that threatened status is appropriate for this species.

For the purpose of this document, we limited our discussion of foreseeable future to the threats we consider significant in terms of contributing to the present or threatened destruction, modification, or curtailment of *Lepidium papilliferum*'s habitat or range. These include the two primary threat factors: Altered wildfire regime (increasing frequency, size, and duration of wildfires), and invasive, nonnative plant species (e.g., *Bromus tectorum*); as well as contributing threat factors of planned or proposed development, habitat fragmentation and isolation, and the emerging threat from seed predation by Owyhee harvester ants. We fully considered and evaluated livestock use as a potential threat in the 2009 final listing rule (74 FR 52014, October 8, 2009); because we did not conclude that this activity poses a primary threat to the species, we did not include it in our foreseeable future discussion. As described in the section Factors Affecting the Species of this document, we additionally considered any new information that has become available regarding stressors to the species since our 2009 final listing rule. As this new information was largely congruent with our original determination, it did not lead us to alter our conclusions with regard to those stressors that pose a significant threat to the species at this time.

(21) *Comment:* One commenter stated that once the species is diminished to the point that the Service deems it "in danger of extinction," the remaining 10 to 20 percent of its present habitat would be so highly fragmented that it would detrimentally affect successful insect pollination and genetic exchange, leading to a reduction in genetic fitness and genetic diversity, and a reduced ability to adapt to a changing environment. The commenter added that there would be little probability of recolonization of formerly occupied sites at this point, and remaining small, isolated populations would be highly vulnerable to local extirpation from a variety of threats. The commenter was concerned that it will not be possible to recover the species at that point.

*Our Response:* We acknowledge the commenter's concern, and note that this

very concept underlies the rationale for the "threatened species" classification under the ESA—it provides for the conservation of species before they are in danger of extinction, when recovery is more difficult. The goal of the ESA is the recovery of listed species to levels where protection under the ESA is no longer necessary. As the commenter indicated, it is, in some cases, more challenging to recover a species that meets the definition of endangered than one that meets the definition of threatened. Section 3 of the Act defines an endangered species as "any species which is in danger of extinction throughout all or a significant portion of its range" and a threatened species as "any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range." In other words, the primary statutory difference between a threatened species and an endangered species is the timing of when a species may be in danger of extinction, either presently (endangered) or in the foreseeable future (threatened). Our analysis indicates that, although *Lepidium papilliferum* is likely to become in danger of extinction in the foreseeable future, it is not currently on the brink of extinction and does not meet the definition of endangered. By listing this species as threatened, we seek to prevent it from becoming endangered. Furthermore, we will continue to review new information and monitor the status of this species in order to evaluate whether changes to the species' classification are appropriate in the future.

(22) *Comment:* One commenter inquired how EO ranks have changed since 2006. The commenter stated that we did not provide current mapping of sagebrush habitats or the criteria and vegetation mapping methodology, based on current vegetation data, that we used to establish a baseline. The commenter felt this was important, because the Service requested comment on our choice of the 80 to 90 percent threshold. The commenter requested the baseline status of all EOs in 2014.

*Our Response:* We did not provide mapping of sagebrush habitats because our geospatial data analysis was specific to *Lepidium papilliferum* EO area affected by wildfire over 50 years (from 1957 to 2007), not sagebrush habitats in general. "Habitat" in the referenced sentence refers specifically to *L. papilliferum* habitat. In addition, in our determination of the 80 to 90 percent threshold, we utilized recent fire-history data, not Idaho Natural Heritage Program (INHP) EO rankings. Our best scientific data available at this time are

the 2005 INHP EO ranks. INHP is currently in the process of re-evaluating the EO ranks; however, the updated ranks are not yet available. Please refer to the Factors Affecting the Species section of our proposed reconsideration of the final rule (79 FR 8416, February 12, 2014) for more details on our rationale supporting our conclusion of the 80–90 percent threshold; see also our response to Comment 20, above.

(23) *Comment:* One commenter requested clarification on how we estimated the approximately 7,567 ac (3,064 ha) of *Lepidium papilliferum* habitat not yet negatively impacted by wildfire, and asked if this estimate includes 2013 wildfires. The commenter also inquired what vegetation mapping and site-specific information was used, when and how it was collected, and what the boundary was of the total habitat area being considered. The commenter also requested the mapping information.

*Our Response:* We have updated our evaluation to reflect new fire data that has become available since the publication of the proposed reconsideration of the final rule, including data from 2013 to 2015. This new information indicates that over a period of 59 years (1957 to 2015), the perimeters of 149 wildfires occurring within the known range of *Lepidium papilliferum* have burned approximately 8,348 ac (3,378 ha) (Hardy 2016, *in litt.*). We determined, using GIS, that there are approximately 7,477 ac (3,025 ha) of *L. papilliferum* habitat remaining that have not yet been negatively impacted by wildfire, by subtracting the total area of *L. papilliferum* habitat that has burned (8,348 ac (3,378 ha)) from the total *L. papilliferum* EO area of 15,825 ac (6,404 ha), which was calculated using the new fire information that has become available since 2009, and considering only impacts to new, previously unburned areas over the past 59 years (1957–2015). For a more detailed explanation of how this was calculated, please refer to the *Summary of Factors Affecting the Species*, Altered Wildfire Regime section of this document (above).

In reference to the commenter's questions regarding the data and mapping used in our analysis, we used *L. papilliferum* EOs from the January 2015 IFWIS data export and wildfire data from the BLM up to and including 2015. This information is located in our decision record, which can be accessed by contacting the Idaho Fish and Wildlife Office (see ADDRESSES, above).

(24) *Comment:* One commenter stated that we did not estimate the acres of

occupied *Lepidium papilliferum* habitat that was burned before any surveys had been conducted and EOs applied, with much of *L. papilliferum* long ago wiped out by the combination of the fire effects, BLM seeding of crested wheatgrass, *Bassia prostrata* or other exotic species, and continued grazing disturbance with minimal post-fire rest. The commenter inquired about how much of the land area of potential habitat has burned, or has burned and then been aggressively seeded and grazed. Furthermore, the commenter wanted to know how much of the potential habitat experienced an increase in invasive nonnative species as a consequence.

*Our Response:* We acknowledge that having more historical information on the distribution and abundance of *Lepidium papilliferum* before surveys were conducted and EOs identified would be helpful; however, that information does not exist. We have based our determinations on the best available scientific information; therefore, we used current EO data only.

(25) *Comment:* One commenter stated that to base the foreseeable future model solely on the burned acreage and not on the actual or reliably estimated population parameters is unsupported. The commenter explained that the only way for a foreseeable future model to be valid for a declining species is to first show that the population is actually declining, and then have a significant rate of decline over a scientifically determined large enough population sample size to be able to draw valid conclusions.

*Our Response:* Projecting when a population reaches a certain level requires accurate population numbers. As stated in our 2009 final listing rule (74 FR 52014, October 8, 2009), past population trend data were not used in making the listing decision for *Lepidium papilliferum* as “it would be inappropriate to rely on this model to predict any future population trajectory for *L. papilliferum*” (see pp. 52022–52025 of the 2009 final listing rule). In that rule we described that there are many uncertainties associated with both the data and the model used that preclude our ability to make such a projection, including the great annual variability in aboveground numbers of *L. papilliferum* and the confounding influence of the long-lived seedbank. Therefore, our analysis of the foreseeable future for the purposes of assessing the status of *L. papilliferum* relies on the foreseeability of the relevant threats to the species over time. The primary threats of wildfire and nonnative invasive plants, especially

*Bromus tectorum*, are currently affecting the species throughout its limited range, and we find that using accurate, site-specific historical fire data is a more reliable measure for predicting the conservation status of this species into the foreseeable future.

In response to the comment regarding population declines, as stated in our 2009 final listing rule (74 FR 52014, October 8, 2009), we have information indicating a statistically significant negative association between *L. papilliferum* abundance and wildfire, and between *L. papilliferum* abundance and cover of *B. tectorum* in the surrounding plant community. It is this significant correlation between these threat factors and the population response of the species that obviates the need for statistically significant population trend data and enables us to rely on the reasonably foreseeable effects of these threat factors acting on *L. papilliferum* to predict that it is likely to become in danger of extinction within the foreseeable future.

(26) *Comment:* One commenter expressed that it is not firmly established scientifically that the threats of wildfire and invasive nonnative plants are currently affecting *Lepidium papilliferum* throughout its range. The commenter stated that it is unknown whether the “hypothetical” threats described in both the 2009 final listing rule (74 FR 52014, October 8, 2009) and our proposed reconsideration of the final rule (79 FR 8416, February 12, 2014), including development, habitat fragmentation, and climate change, will increase into the foreseeable future. The commenter added that populations will continue to cycle. Low numbers have been attributed to unusually cold and wet springs, while high population counts occur during extremely favorable climactic elements that resupply the *L. papilliferum* seed bank and populations. The populations will also cycle due to weather variables that are not currently apparent. The commenter reiterated that there is not strong evidence of a steep negative population trend for this species, and noted that although the total number of *L. papilliferum* plants counted in HIP monitoring in 2011 and 2012 were the lowest since 2005, these numbers can, according to Kinter (2012 *in litt.*), fluctuate widely from one year to the next and are probably not great cause for concern.

*Our Response:* As discussed in our response to Comment 25, above, we agree that the extreme variability in plant numbers from year to year precludes our ability to rely strictly on population trend data to inform us as to the likely future status of the species.

Section 4 of the Act and its implementing regulations (50 CFR part 424) set forth the procedures for adding species to the Federal Lists of Endangered and Threatened Wildlife and Plants. A species may be determined to be an endangered or threatened species due to one or more of the five factors described in section 4(a)(1) 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 manmade factors affecting its continued existence. Listing actions may be warranted based on any of the above threat factors, singly or in combination.

Relatively limited new data regarding population abundance or trends have become available since our 2009 final listing rule (74 FR 52014, October 8, 2009). As discussed in the section Factors Affecting the Species of this final rule, the new information generally supports our 2009 conclusions on the present distribution of *Lepidium papilliferum*, its status and population trends, and how the various threat factors are affecting the species. We acknowledge that, similar to our findings in our 2009 final listing rule, we do not see strong evidence of a steep negative population trend for the species. However, as stated in our 2009 final listing rule, we have information indicating a statistically significant negative association between *L. papilliferum* abundance and wildfire, and between *L. papilliferum* abundance and cover of *Bromus tectorum* in the surrounding plant community. Our analysis of the foreseeable future for the purposes of assessing the status of *L. papilliferum* relies on the foreseeability of the relevant threats to the species over time. We anticipate the continuation or increase of all of the significant threats to *L. papilliferum* into the foreseeable future, even after accounting for ongoing and planned conservation efforts, and we find that the best available scientific data indicate that the negative consequences of these threats on the species will likewise continue at their current rate or increase. These data indicate that population declines and habitat degradation will likely continue in the foreseeable future to the point at which *L. papilliferum* will become in danger of extinction.

We have analyzed and assessed known threats impacting *L. papilliferum*, and used the best available information to carefully

consider what effects these known threats will have on this species in the future, and over what timeframe, in order to determine what constitutes the foreseeable future for each of these known threats. Based on an assessment of the best scientific and commercial data available regarding the present and future threats to the species, we conclude that threatened status should be reinstated for *L. papilliferum*. Please refer to the Factors Affecting the Species section of our proposed reconsideration of the final rule (79 FR 8416, February 12, 2014) for an analysis of the available data used in our determination. Also refer to our response to Comment 25 for a discussion of our decision to use wildfire data, as opposed to trend data, to analyze the foreseeable future.

In regard to the commenter's statement concerning the 2011 and 2012 population counts, we acknowledge that aboveground numbers of *L. papilliferum* individuals can fluctuate widely from one year to the next. Demonstrating this fact, since the proposed reconsideration of the final rule was published (79 FR 8416, February 12, 2014), we have received 2 additional years of HIP monitoring data (2013 and 2014). The 2013 HIP monitoring resulted in the lowest *L. papilliferum* plant numbers (6,351 plants) observed in the 10 years of the HIP monitoring data available to date; however, the 2014 HIP monitoring resulted in 45,569 total plants observed on HIP transects, the third highest number of plants observed over the 10 years of HIP monitoring (Kinter 2015, *in litt.*). In our proposed reconsideration of the final rule, we had stated that low counts of plants observed in 2011 and 2012 were potentially a cause for concern. We do maintain that habitat conditions for *L. papilliferum* continue to decline across the range of the species; however, we agree with the commenter that such a statement [that low numbers in any particular year may be a cause of concern] is not appropriate, given that numbers of above-ground individuals of *L. papilliferum* can vary so widely from one year to the next; therefore, we have removed this statement from the final rule.

(27) *Comment:* One commenter suggested that wildfire damage to biological soil crust and nonnative plants invading slickspots have a potential connection that needs further analysis. The commenter explained that volatile oils have been extracted from wild mustards in the genus *Lepidium*, and mustard oil extracts can suppress growth of other plant species due to the release of toxic substances. Garlic mustard (*Alliaria petiolata*), another

member of the mustard family (Brassicaceae), to which *Lepidium* species belong, can phytochemically suppress soil fungi and, thus, the release of mustard oil can, therefore, impact the formation and maintenance of the soil crust. The commenter suggested that *Lepidium* species can thus negatively impact the soil crust, as opposed to the reverse scenario—soil crusts (or lack thereof) having a negative impact on *Lepidium* species. In addition, the commenter stated that *Bromus tectorum* is considered a facultative host of arbuscular mycorrhizal fungi (AMF); however, specific information about interactions between *B. tectorum* and AMF remains unknown. For example, an invasive garlic mustard inhibits ectomycorrhizal fungi, and is able to outcompete native plants. Therefore, the commenter asked that the relationship between *Lepidium papilliferum*, mustard oil, and *L. papilliferum* and *B. tectorum* competition be researched before the Service concludes that *B. tectorum* is outcompeting *L. papilliferum*.

*Our Response:* Evidence that *Bromus tectorum* is likely displacing *Lepidium papilliferum* is provided by Sullivan and Nations' (2009, p. 135) statistical analyses of *L. papilliferum* abundance and nonnative invasive plant species cover within slickspots. Working with 5 years of HIP data collected from 2004 through 2008, Sullivan and Nations found that the presence of other plants in slickspots, particularly invasive exotics, such as *Bassia prostrata*, a seeded nonnative plant species, and *B. tectorum*, was associated with the almost complete exclusion of *L. papilliferum* from those microsites (Sullivan and Nations 2009, pp. 111–112). According to their analysis, the presence of *B. tectorum* in the surrounding plant community shows a consistently significant negative relationship with the abundance of *L. papilliferum* across all physiographic regions (Sullivan and Nations 2009, pp. 131, 137), and a significant negative relationship with *L. papilliferum* abundance within slickspots in the Snake River Plain and Boise Foothills regions (Sullivan and Nations 2009, p. 112). The Act directs the Service to make determinations based on the best available data at the time the decision is being made.

(28) *Comment:* Regarding the statement in our proposed reconsideration of the final rule (79 FR 8416, February 12, 2014): "In other words, we consider a prediction to be reliable if it is reasonable to depend upon it in making decisions, and if that prediction does not extend past the

support of scientific data or reason so as to venture into the realm of speculation," a commenter felt this statement conflicts with what the Service proposed to do. The commenter suggested that to extend past the bounds of our scientific data is to venture into the realm of speculation, but the only data the Service has shown in table 2, and that data is based on too small a sample size to say anything definitive about *Lepidium papilliferum* population growth or decline. The commenter added that, even with the poor survey size, there is nothing that will allow one to extrapolate out 1 year, much less to 50 years.

*Our Response:* The proposed reconsideration of the final rule (79 FR 8416, February 12, 2014) did not contain a table 2. We also referred to the October 8, 2009, final listing rule (74 FR 52014) to see whether the commenter may have been referring to a table in that document; however, table 2 in the 2009 rule shows a list of extant EO ranks across the range of the species. Therefore, we are unclear to which data the commenter is referring regarding this specific comment. However, in response to the assertion that our decision is speculative, we disagree. We have analyzed and assessed the known threats impacting the species, and used the best available information to assess what effects these threats will have on the species into the future, and over what timeframe, in order to determine what constitutes the foreseeable future as it relates to these threats. We believe our analysis is reasonable and supported by the best available information.

(29) *Comment:* Two commenters stated that the Service did not accurately consider the breadth of the economic impact that a listing would have on local communities and ranchers. The commenters argued that, despite the fact that the Service acknowledges that grazing is not a significant threat to *Lepidium papilliferum*, the practical result of a listing will be that grazing schemes will be altered, to the detriment of the landscape and the economy.

*Our Response:* We acknowledge that some economic impacts are a possible consequence of listing a species under the Act. However, the statute does not provide for the consideration of such impacts when making a listing decision. Section 4(b)(1)(A) of the Act specifies that listing determinations be made "solely on the basis of the best scientific and commercial data available." Such costs are, therefore, precluded from consideration in association with a listing determination. The Act provides

for the consideration of potential economic impacts only in association with the designation of critical habitat.

(30) *Comment*: The Idaho Power Company (IPC) commented that actions the Service implements to protect *Lepidium papilliferum* could affect their ability to meet future electrical energy needs, as IPC is mandated to do, and affect ongoing operation and maintenance activities that ensure the continued delivery of electrical energy in a safe and reliable manner. In addition, IPC recommended that the Service consider a number of proposed avoidance and minimization measures when evaluating the potential effect of the Gateway West project on *L. papilliferum*.

*Our Response*: The IPC was not specific as to what activities will be directly impacted by the listing of *Lepidium papilliferum*, so we are unable to address these concerns; however, we are committed to working with IPC to design and manage their energy projects in ways that are compatible with the needs of the species. Listed plant and animal species receive protection under section 7 of the Act through the requirements of sections 7(a)(1) and 7(a)(2). In cases where a landowner (applicant) requests Federal agency funding or authorization for an action that may affect a listed species, as will be the case with multiple aspects of IPC's Gateway West project, the consultation requirements of section 7(a)(2) of the Act apply. Under section 7(a)(2), Federal agencies must ensure, in consultation with the Service, that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of the species.

Also, under section 7(a)(1), all Federal agencies must utilize their authorities in furtherance of the purposes of the Act by carrying out programs for the conservation of listed species. If the outcome of that consultation is a no jeopardy determination, the action can proceed as proposed. If incidental take of a listed animal species is anticipated as a result of that action, the action agency and the applicant may also have to implement specific minimization measures and reporting requirements pursuant to an Incidental Take Statement provided with the consultation. Generally, the Service also provides action agencies and applicants with conservation recommendations to minimize or avoid adverse effects of the action on a listed species. However, those recommendations are discretionary. If the outcome of the consultation is a jeopardy determination, the Service works with the action agency and applicant to

revise the action in a manner that is compatible with the survival and recovery needs of the listed species and meets specific regulatory criteria that define the sideboards for those revisions. Such revisions are referred to as "reasonable and prudent alternatives," and they are provided with the intention of allowing the project to proceed, as stated above, in a manner that is compatible with the survival and recovery needs of the listed species.

The Service appreciates the efforts of Federal Action agencies and groups, such as the BLM Boise District Resource Advisory Council, in identifying additional alternatives that avoid or minimize potential impacts of proposed projects, such as the Gateway West Transmission Line Project, on *L. papilliferum*. The Service has previously completed a Conference Opinion regarding the potential effects of the proposed Gateway West Transmission Line Project on *L. papilliferum*. We will continue to work with BLM to determine if an additional section 7 conference is necessary for the updated Segments 8 and 9 routes currently being considered for the Project. Both of the updated Project segment routes continue to bisect habitat categories for *L. papilliferum*. We are also available to provide technical assistance for future renditions of the draft Mitigation and Enhancement Portfolio associated with the updated Segment 8 and 9 route locations to ensure that benefits for our trust resources, including species proposed or listed under the Endangered Species Act, are maximized.

(31) *Comment*: The IPC went on to state that environmental monitors will survey for and mark slickspots and aboveground populations of *Lepidium papilliferum* within 50 feet of the construction area prior to ground disturbance (including roads) in potential or occupied *L. papilliferum* habitat. No construction shall occur within 50 feet of any *L. papilliferum* plants or slickspots found by the environmental monitor. Also, construction shall not occur within 50 feet of previously known occupied *L. papilliferum* areas, based on Idaho Centers for Diseases Control data, even if aboveground plants are not observed by the environmental monitor. Within proposed critical habitat, impacts to primary constituent elements, such as native sagebrush/forb vegetation, will be avoided to the extent practicable. Seeding during reclamation in areas of suitable habitat will use methods that minimize soil disturbance such as no-

till drills or rangeland drills with depth bands. Reclamation will use certified weed-free native seed. Excess soils will not be stored or spread on slickspots.

*Our Response*: As previously stated in our response to comment 30, the Service encourages the implementation of conservation measures that avoid or minimize adverse effects to species proposed or listed under the ESA. On September 12, 2013, the Service completed section 7 conference on the effects of the proposed Gateway West Transmission Line Project on *Lepidium papilliferum*, inclusive of the conservation measures listed by the commenter. The Gateway West Transmission Line Project Conference Opinion states that "Factors that may affect *L. papilliferum* and its habitat in the Project action area related to Project construction, operations, maintenance, and decommissioning activities include occasional damage to or loss of individual *L. papilliferum* plants (including seeds) that cannot be avoided, damage to or loss of some individual slickspot microsites that cannot be avoided, unintentional fire ignition, Project-generated dust and soil movement, removal of some remnant native vegetation, and the potential introduction or spread of invasive nonnative plants." While conservation measures incorporated into the Project design are expected to avoid or minimize some adverse effects to the species, adverse effects, including loss of habitat, are still expected to occur associated with this Project. It is uncertain to what extent the final update of Segments 8 and 9 for the Project will avoid or further minimize adverse effects to *L. papilliferum* and its proposed critical habitat.

#### Determination

We have carefully assessed the best scientific and commercial data available regarding the present and future threats to the species, and conclude that threatened status should be reinstated for *Lepidium papilliferum*. The plant is endemic to southwest Idaho and is limited in occurrence to an area that totals approximately 16,000 ac (6,500 ha). The species' unique slickspot habitats it requires for survival are finite and are continuing to degrade in quality due to a variety of threats. The species' limited area of occurrence makes it particularly vulnerable to the various threats affecting its specialized microsite habitats, and more than 50 percent of *L. papilliferum* EOs are already known to have been negatively affected by wildfire. The primary threats to the species are the effects of wildfire and invasive nonnative plants,

especially *Bromus tectorum*. As stated in our October 8, 2009, final listing rule (74 FR 52014), we have information indicating a statistically significant negative association between *L. papilliferum* abundance and wildfire, and between *L. papilliferum* abundance and cover of *B. tectorum* in the surrounding plant community. These negative associations are consistent throughout the range of the species. Wildfire continues to affect *L. papilliferum* habitat throughout its range, and we expect this trend to continue and possibly further increase due to the projected effects of climate change. Furthermore, *B. tectorum* and other nonnative species continue to spread and degrade the sagebrush-steppe ecosystem where *L. papilliferum* persists, and we anticipate increased wildfire frequency and effects in those areas where nonnative plant species, especially *B. tectorum*, are dominant.

The best available scientific information indicates that all the significant threats described in the October 8, 2009, final listing rule (74 FR 52014) and in this new analysis, including wildfire, nonnative invasive plants, development, and habitat fragmentation, will continue and likely increase into the foreseeable future. The projected future effects of climate change will further magnify the primary threats from wildfire and *B. tectorum*, and, by association, the further expansion of Owyhee harvester ants that are positively correlated to the resulting increase in grass cover. Although conservation measures to address some of these threat factors have been thoroughly considered by the Service, effective controls to address the increased frequency of wildfire and to eradicate the expansive infestation of nonnative plants throughout the range of *Lepidium papilliferum* are not currently available, and either are not likely to be available within the foreseeable future or have not yet been shown to be sufficiently effective to offset the threats to the species to the point that it is not likely to become an endangered species within the foreseeable future.

As found in our October 8, 2009, final listing rule (74 FR 52052), we anticipate the continuation or increase of all of the significant threats to *Lepidium papilliferum* into the foreseeable future, even after accounting for ongoing and planned conservation efforts, and we find that the best available scientific data indicate that the negative consequences of these threats on the species will likewise continue or increase. Population declines and habitat degradation will likely continue

in the foreseeable future to the point at which *L. papilliferum* will become in danger of extinction.

Section 3 of the Act defines an endangered species as “any species which is in danger of extinction throughout all or a significant portion of its range” and a threatened species as “any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.” Because we have not yet observed the extirpation of local *Lepidium papilliferum* populations or steep declines in trends of abundance, we do not believe the species is presently in danger of extinction, and, therefore, does not meet the definition of an endangered species. However, as noted earlier, we do anticipate that *L. papilliferum* will become in danger of extinction when it reaches the point that its habitat has been so diminished that the species persists only in a small number of isolated EOs, with small populations that are fragmented from other extant populations. We conservatively estimate this point will be reached in approximately 43 to 48 years, when 80 to 90 percent of its remaining habitat will have been affected, based on the observed rates of *L. papilliferum* habitat impacted by fire, and the close association between fire and invasion by *Bromus tectorum* and other nonnative invasive plants. We can also reasonably and reliably predict that this rate will continue into the future at least until the point when no unburned habitat for the species remains, which is currently estimated at approximately 50 years.

Therefore, we conclude that 50 years represents a minimum estimate of the foreseeable future for the primary threat of wildfire. We can reasonably assume that without the unanticipated development of future effective conservation measures, the magnitude of the threats affecting *L. papilliferum* and its habitats will become progressively more severe, and that those threats, acting synergistically, are likely to result in the species becoming in danger of extinction within the next 43 to 48 years, which is within the foreseeable future as we have defined it for the species. Therefore, we conclude that, under the Act, threatened status should be reinstated for *L. papilliferum* throughout all of its range, and reaffirm its inclusion in the Federal List of Endangered and Threatened Plants.

## Required Determinations

*National Environmental Policy Act (42 U.S.C. 4321 et seq.)*

We have determined that environmental assessments and environmental impact statements, as defined under the authority of the National Environmental Policy Act (NEPA; 42 U.S.C. 4321 *et seq.*), need not be prepared in connection with listing a species as an endangered or threatened species under the Endangered Species Act. We published a notice outlining our reasons for this determination in the **Federal Register** on October 25, 1983 (48 FR 49244).

*Government-to-Government Relationship With Tribes*

In accordance with the President's memorandum of April 29, 1994 (Government-to-Government Relations with Native American Tribal Governments; 59 FR 22951), Executive Order 13175 (Consultation and Coordination With Indian Tribal Governments), and the Department of the Interior's manual at 512 DM 2, we readily acknowledge our responsibility to communicate meaningfully with recognized Federal Tribes on a government-to-government basis. In accordance with Secretarial Order 3206 of June 5, 1997 (American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, and the Endangered Species Act), we readily acknowledge our responsibilities to work directly with tribes in developing programs for healthy ecosystems, to acknowledge that tribal lands are not subject to the same controls as Federal public lands, to remain sensitive to Indian culture, and to make information available to tribes.

## References Cited

A complete list of all references cited in this rule is available on the Internet at <http://www.regulations.gov>. In addition, a complete list of all references cited herein, as well as others, is available upon request from the Idaho Fish and Wildlife Office, Boise, Idaho, (see **ADDRESSES**).

## Authors

The primary authors of this document are the staff members of the Idaho Fish and Wildlife Office, U.S. Fish and Wildlife Service (see **ADDRESSES**).

## Authority

The authority for this action is the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*).

**List of Subjects in 50 CFR Part 17**

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

**Regulation Promulgation**

Accordingly, we amend part 17, subchapter B of chapter I, title 50 of the Code of Federal Regulations, as follows:

**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.

■ 2. Amend § 17.12(h) by adding the following entry to the List of Endangered and Threatened Plants in

alphabetical order under Flowering Plants:

**§ 17.12 Endangered and threatened plants.**

\* \* \* \* \*

(h) \* \* \*

Scientific name	Common name	Where listed	Status	Listing citations and applicable rules
Flowering Plants				
* * * * *	* * * * *	* * * * *	* * * * *	* * * * *
<i>Lepidium papilliferum</i> .....	Slickspot peppergrass .....	Wherever found .....	T .....	74 FR 52013; 10/8/2009 81 FR [Insert <b>Federal Register</b> page where the document begins]; 8/17/2016
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Dated: May 31, 2016.  
**Stephen Guertin,**  
*Acting Director, U.S. Fish and Wildlife Service.*  
 [FR Doc. 2016–19528 Filed 8–16–16; 8:45 am]  
**BILLING CODE 4333–15–P**