Billing Code 4333–15

DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

[Docket No. FWS–R1–ES–2019–0013; FSES1130900000006-189-FF09E42000]

RIN 1018-BD59

Endangered and Threatened Wildlife and Plants; Removing Bradshaw's Lomatium (Bradshaw's lomatium) From the Federal List of Endangered and Threatened Plants

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Proposed rule

SUMMARY: We, the U.S. Fish and Wildlife Service (Service), propose to remove Bradshaw's lomatium (Bradshaw's lomatium, also known as Bradshaw's desert parsley), a plant found in western Oregon and southwestern Washington, from the Federal List of Endangered and Threatened Plants due to recovery. Our review of the best available scientific and commercial data indicates that the threats to Bradshaw's lomatium have been eliminated or reduced to the point that the species no longer meets the definition of an endangered or threatened species under the Endangered Species Act of 1973, as amended (Act). We request information and comments from the public regarding this proposed rule and the draft post-delisting monitoring plan for Bradshaw's lomatium.

DATES: We will accept comments received or postmarked on or before [INSERT DATE 60 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]. Comments submitted electronically using the Federal eRulemaking Portal (see

ADDRESSES, below) must be received by 11:59 p.m. Eastern Time on the closing date. We must receive requests for public hearings, in writing, at the address shown in **FOR FURTHER INFORMATION CONTACT** by [INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

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

(1) *Electronically*: Go to the Federal eRulemaking Portal: *http://www.regulations.gov*. In the Search box, enter FWS–R1–ES–2019–0013, which is the docket number for this rulemaking. Then, click on the Search button. On the resulting page, in the Search panel on the left side of the screen, under the Document Type heading, click on the Proposed Rule box to locate this document. You may submit a comment by clicking on "Comment Now!"

(2) *By hard copy*: Submit by U.S. mail or hand-delivery to: Public Comments Processing, Attn: Docket No. FWS–R1–ES–2019–0013; U.S. Fish and Wildlife Service, MS: BPHC, 5275 Leesburg Pike, Falls Church, VA 22041-3803.

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

Document availability: This proposed rule and the draft post-delisting monitoring plan are available on *http://www.regulations.gov* under Docket No. FWS–R1–ES–2019–0013. In addition, the supporting file for this proposed rule will be available for public inspection, by appointment, during normal business hours, at the Oregon Fish and

Wildlife Office, 2600 SE 98th Avenue, Suite 100, Portland, OR 97266; telephone: 503–231–6179.

FOR FURTHER INFORMATION CONTACT: Paul Henson, State Supervisor, U.S. Fish and Wildlife Service, Oregon Fish and Wildlife Office, 2600 SE 98th Avenue, Suite 100, Portland, OR 97266; telephone 503–231–6179. If you use a telecommunications device for the deaf (TDD), please call the Federal Relay Service at 800–877–8339.

SUPPLEMENTARY INFORMATION: This document consists of: (1) A summary of the most recent review of the status of Bradshaw's lomatium, resulting in a recommendation that the species be removed from the Federal List of Endangered and Threatened Plants (List); and (2) a proposal to remove Bradshaw's lomatium from the Federal List of Endangered and Threatened Plants.

Information Requested

Public Comments

Any final action resulting from this proposed rule will be based on the best scientific and commercial data available and be as accurate as possible. Therefore, we request comments or information from other concerned governmental agencies, Tribes, the scientific community, industry, or other interested parties concerning this proposed rule. The comments that will be most useful and likely to influence our decisions are those supported by data or peer-reviewed studies and those that include citations to, and analyses of, applicable laws and regulations. Please make your comments as specific as possible and explain the basis for them. In addition, please include sufficient information (such as scientific journal articles or other publications) with your comments to allow us

to authenticate any scientific or commercial data you reference or provide. In particular, we seek comments concerning the following:

(1) Reasons why we should or should not remove Bradshaw's lomatium from the Federal List of Endangered and Threatened Plants (*i.e.*, "delist" the species under the Act, 16 U.S.C. 1531 *et seq*.).

(2) New biological or other relevant data concerning any threat (or lack thereof) to Bradshaw's lomatium and any existing regulations that may be addressing these or any of the stressors to the species discussed here.

(3) New information concerning the population size or trends of Bradshaw's lomatium.

(4) New information on the current or planned activities within the range of Bradshaw's lomatium that may either adversely affect or benefit the plant.

(5) New information or data on the projected and reasonably likely impacts to Bradshaw's lomatium or its habitat associated with climate change or any other factors that may affect the species in the future.

(6) Information pertaining to the requirements for post-delisting monitoring of Bradshaw's lomatium.

Please note that submissions merely stating support for or opposition to the action under consideration without providing supporting information, although noted, will not be considered in making a determination. Section 4(b)(1)(A) of the Act directs that determinations as to whether any species is an endangered or threatened species must be made "solely on the basis of the best scientific and commercial data available."

Prior to issuing a final rule on this proposed action, we will take into consideration all comments and any additional information we receive. Such information may lead to a final rule that differs from this proposal. All comments and recommendations, including names and addresses, will become part of the administrative record.

You may submit your comments and materials concerning this proposed rule by one of the methods listed in **ADDRESSES**. We request that you send comments only by the methods described in **ADDRESSES**.

If you submit information via *http://www.regulations.gov*, your entire submission—including any personal identifying information—will be posted on the website. If your submission is made via a hardcopy that includes personal identifying information, you may request at the top of your document that we withhold this information from public review. However, we cannot guarantee that we will be able to do so. We will post all hardcopy submissions on *http://www.regulations.gov*.

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

Public Hearing

Section 4(b)(5) of the Act provides for a public hearing on this proposal, if requested. Requests must be received within 45 days after the date of publication of this proposed rule in the *Federal Register* (see **DATES**, above). Such requests must be sent to

the address shown in **FOR FURTHER INFORMATION CONTACT**. We will schedule a public hearing on this proposal, if requested, and announce the date, time, and place of the hearing, as well as how to obtain reasonable accommodations, in the *Federal Register* and local newspapers at least 15 days before the hearing.

Peer Review

In accordance with our joint policy on peer review published in the *Federal Register* on July 1, 1994 (59 FR 34270), we sought the expert opinions of four appropriate and independent specialists with knowledge of the biology and ecology of Bradshaw's lomatium regarding the species status assessment report (Service 2018; see *Status Assessment for Bradshaw's lomatium*, below) that forms the basis for our 5-year review and this proposed rule. The purpose of peer review is to ensure that our determination regarding the status of the species under the Act is based on scientifically sound data, assumptions, and analyses. We received feedback from three of the four peer reviewers contacted; their comments and corrections have been incorporated into the species status assessment report, as appropriate.

Background

Status Assessment for Bradshaw's lomatium

A thorough review of the taxonomy, life history, and ecology of Bradshaw's lomatium is presented in the document "Species Status Assessment Report for Bradshaw's lomatium (*Lomatium bradshawii* (Rose ex. Math.) Mathias & Constance) Version 1.0" (hereafter "species status report"; Service 2018), which is available at **http://www.regulations.gov** in Docket No. FWS–R1–ES–2019–0013, under Supporting Documents. The species status report documents the results of our comprehensive

biological status review for Bradshaw's lomatium, and has undergone peer review. The species status report does not represent any decision by the Service regarding the status of Bradshaw's lomatium under the Act. It does, however, provide the scientific basis that informed our most recent 5-year review, which resulted in a recommendation that the species should be removed from the List. The species status report also serves as one of the bases for this proposed rule and our regulatory decision, which involves the further application of standards within the Act and its implementing regulations and policies.

In this proposed rule, we present only a summary of the key results and conclusions from the species status report; the full report is available at *http://www.regulations.gov*, as referenced above.

Summary of the Biology of the Species

Bradshaw's lomatium is a perennial herb in the carrot or parsley family (Apiaceae) that is endemic to wet prairie habitats in western Oregon's Willamette Valley and adjacent southwestern Washington. These seasonally wet habitats may be flooded in the spring, or have soils saturated at or near the surface due to factors such as heavy precipitation in winter and spring, flooding, and poor drainage. A high light environment is important for Bradshaw's lomatium to complete its life cycle and reproduce, as reduced sunlight is associated with lower flower and seed production (Alverson 1993, unpublished data). This species is often associated with tufted hairgrass (*Deschampsia cespitosa*), and frequently occurs on and around the small mounds created by senescent tufted hairgrass plants. In wetter areas, Bradshaw's lomatium occurs on the edges of tufted hairgrass or sedges in patches of bare or open soil. In drier areas, it is found in low areas, such as small depressions, trails, or seasonal channels, with open, exposed soils.

Self-fertilization is rare in Bradshaw's lomatium (Kaye and Kirkland 1994, p. 8), indicating that pollinator-mediated outcrossing is required for reproduction. Over 30 species of solitary bees, flies, wasps, and beetles have been observed visiting the flowers (Kaye 1992, p. 3; Kaye and Kirkland 1994, p. 9; Jackson 1996, pp. 72-76). Bradshaw's lomatium does not reproduce asexually and depends exclusively on seeds for reproduction (Kaye 1992, p. 2), but does not maintain a persistent seed bank in the soil. Although some fruit survives in the soil for 1 year, the seeds are not viable (Kaye *et al*. 2001, p. 1376). Further information on the basic biology and ecology of Bradshaw's lomatium is summarized in the species status report (Service 2018, entire).

Previous Federal Actions

Section 12 of the Act directed the Secretary of the Smithsonian Institution to prepare a report on those plants considered to be endangered, threatened, or extinct. This report, designated as House Document No. 94–51, was presented to Congress on January 9, 1975. On July 1, 1975, the Service published a notice in the *Federal Register* (40 FR 27823) of its acceptance of the report of the Smithsonian Institution as a petition within the context of former section 4(c)(2) of the Act (petition acceptance is now governed by section 4(b)(3) of the Act), and of its intention to review the status of the plant taxa named within. On June 16, 1976, the Service published a proposed rule in the *Federal Register* (41 FR 24523) to determine approximately 1,700 vascular plant species to be endangered species pursuant to section 4 of the Act. This list of 1,700 plant taxa was assembled on the basis of comments and data received by the Smithsonian Institution and the Service in response to House Document No. 94–51 and the July 1, 1975, *Federal Register* publication. Bradshaw's lomatium was included in the July 1, 1975, notice of

review and in the June 16, 1976, proposal.

The Amendments of 1978 to the Act (Pub L. 95–632, November 10, 1978) required that all proposals over 2 years old be withdrawn. A 1-year grace period was established for proposals already over 2 years old. On December 10, 1979, the Service published a document in the *Federal Register* (44 FR 70796) withdrawing the still-pending portion of the June 16, 1976, proposal, along with four other proposals that had expired. The withdrawal of the proposal to list Bradshaw's lomatium was not based on biological considerations, but instead was the result of the administrative requirements of the Act prior to the 1982 Amendments.

An updated notice of review, published on December 15, 1980 (45 FR 82480), listed Bradshaw's lomatium in Category 1, which comprised taxa for which sufficient information was available to support the proposal of listing as endangered or threatened. On February 15, 1983, the Service published notice (48 FR 6752) of its finding that the petitioned listing of Bradshaw's lomatium may be warranted, in accordance with section 4(b)(3)(A) of the Act, as amended in 1982. On October 13, 1983, October 12, 1984, and again on October 11, 1985, the petition finding was made that listing of this taxon was warranted, but precluded by other pending listing actions, in accordance with section 4(b)(3)(B)(iii) of the Act (see 51 FR 42117; November 21, 1986). Such a finding requires that the petition be treated as a petition that is resubmitted, pursuant to section 4(b)(3)(C)(i) of the Act. Therefore, a new finding was made; the Service found that the petitioned action was warranted, and on November 21, 1986, published a proposal to list the species as endangered (51 FR 42116). Bradshaw's lomatium was added to the Federal List of Endangered and Threatened Plants (50 CFR 17.12) as an endangered species with

the publication of a final rule in the *Federal Register* on September 30, 1988 (53 FR 38448)

A recovery plan for Bradshaw's lomatium (Service 1993, entire) was first made available to the public on April 8, 1993 (58 FR 18139, pp. 18225-18226). Subsequently, a new recovery plan was developed for Bradshaw's lomatium in conjunction with several other plant and animal species found in prairie ecosystems of western Oregon and southwestern Washington. The Recovery Plan for the Prairie Species of Western Oregon and Southwest Washington, hereafter referred to as "the recovery plan," constitutes the revised recovery plan for Bradshaw's lomatium, and was made available to the public on June 29, 2010 (75 FR 37460).

On July 6, 2005, we published a notice (70 FR 38972) announcing that we were conducting a 5-year review of the status of Bradshaw's lomatium under section 4(c)(2)(A) of the Act. The 5-year review, completed on September 24, 2009 (Service 2009, entire), resulted in a recommendation that Bradshaw's lomatium remain listed as an endangered species.

On February 13, 2015, we published a notice (80 FR 8100) announcing that we were conducting a new 5-year review of the status of Bradshaw's lomatium, and requested that the public provide us any new information concerning this species. We developed the species status report for the purposes of conducting this 5-year review. This most recent assessment of the status of the species led us to recommend that Bradshaw's lomatium be removed from the List, because the species is considered to be recovered. Because it is our conclusion that Bradshaw's lomatium does not now meet the definition of either an endangered or a threatened species, as summarized here, we are

proposing to remove Bradshaw's lomatium from the Federal List of Endangered and Threatened Plants (50 CFR 17.12).

Recovery Planning and Recovery Criteria

Section 4(f) of the Act directs us to develop and implement recovery plans for the conservation and survival of endangered and threatened species unless we determine that such a plan will not promote the conservation of the species. Under section 4(f)(1)(B)(ii), recovery plans must, to the maximum extent practicable, include objective, measurable criteria which, when met, would result in a determination, in accordance with the provisions of section 4 of the Act, that the species be removed from the List. However, revisions to the List (adding, removing, or reclassifying a species) must reflect determinations made in accordance with sections 4(a)(1) and 4(b) of the Act. Section 4(a)(1) requires that the Secretary determine whether a species is endangered or threatened (or not) because of one or more of five threat factors. Section 4(b) of the Act requires that the determination be made "solely on the basis of the best scientific and commercial data available."

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

species, regardless of whether that information differs from the recovery plan.

Recovery plans may be revised to address continuing or new threats to the species as new substantive information becomes available. The recovery plan recommends site-specific management actions that will help recover the species, identifies measurable criteria that set a trigger for eventual review of the species' listing status (*e.g.*, under a 5-year review conducted by the Service), and methods for monitoring recovery progress. Recovery plans are intended to establish goals for long-term conservation of listed species and define criteria that are designed to indicate when the threats facing a species have been removed or reduced to such an extent that the species may no longer need the protections of the Act.

There are many paths to accomplishing recovery of a species, and recovery may be achieved without all criteria being fully met. For example, one or more criteria may be exceeded while other criteria may not yet be met. In that instance, we may determine that the threats are minimized sufficiently to delist. In other cases, recovery opportunities may be discovered that were not known when the recovery plan was finalized. These opportunities may be used instead of methods identified in the recovery plan. Likewise, information on the species may be learned that was not known at the time the recovery plan was finalized. The new information may change the extent that criteria need to be met for recognizing recovery of the species. Recovery of a species is a dynamic process requiring adaptive management that may, or may not, fully follow the guidance provided in a recovery plan.

In 2010, we finalized the revised recovery plan for Bradshaw’s lomatium (Service 2010). The recovery plan states that Bradshaw’s lomatium could be considered for

downlisting to threatened status when there are 12 populations and 60,000 plants distributed in such a way as to reflect the species' historical geographic distribution, when the number of individuals in the populations have been stable or increasing over a period of 10 years, when sites are managed to meet established habitat quality guidelines, when a substantial portion of the species' habitat is protected for conservation, and when populations are managed to ensure maintenance of habitat and to control threats. To achieve desired habitat quality, the recovery plan provides guidelines for a variety of prairie habitat metrics. These metrics include:

(1) Sites with populations of target species should have 50 percent or more relative cover of native vegetation;

(2) Woody vegetation should make up no more than 15 percent of the absolute vegetative cover, and woody species of concern should make up no more than 5 percent;

(3) Native prairie species richness should exceed 10 species, with at least 7 forbs and 1 bunchgrass; and

(4) No single nonnative should have more than 50 percent cover, and nonnative species of particular concern should have no greater than 5 percent cover.

The recovery plan states that Bradshaw's lomatium could be considered for delisting when there are 20 populations and 100,000 plants properly distributed, in addition to the criteria described above. To reflect the historical distribution of Bradshaw's lomatium, the species' range was divided into eight recovery zones (called Southwest Washington, Portland, Salem West, Salem East, Corvallis West, Corvallis East, Eugene West, and Eugene East), and targets for number of populations and number of plants for each zone were established based on historical presence (Service 2010, pp.

IV-1–IV-6, IV-31–IV-34).

Two of the recovery zones (Portland and Salem West) are within the range of Bradshaw's lomatium, but do not have population targets for the species based on a lack of historical occurrence data. These recovery zones were nonetheless retained because if any populations of Bradshaw's lomatium were to be discovered or introduced within these zones, they could be considered as contributing to the recovery criteria for the species (under the category "additional populations").

The expression of recovery criteria in terms of population abundance, numbers of populations, and distribution across recovery zones reflects a foundational principle of conservation biology: that there is a positive relationship between the relative viability of a species over time and the resiliency, redundancy, and representation of its constituent populations (Shaffer and Stein 2000, pp. 307–310; Wolf *et al*. 2015, entire). To look at it another way, extinction risk is generally reduced as a function of increased population abundance (resiliency), numbers of populations (redundancy), and distribution or geographic or genetic diversity (representation). The recovery criteria laid out in the recovery plan for Bradshaw's lomatium were, therefore, informative for our review of the status of the species, as that analysis leans upon these measures of viability to assess the current and future status of the species (Service 2018, pp. 1–2).

The downlisting criteria for number and distribution of populations and numbers of plants were intended to help identify the point at which imminent threats to the plant had been ameliorated so that the populations were no longer in immediate risk of extirpation; the delisting criteria for number and distribution of populations and numbers of plants were intended to identify the point at which the species was unlikely to become

in danger of extinction. The estimated abundance of individuals in all populations has increased over time, from approximately 25,000 to 30,000 individuals in 11 populations at listing in 1988, to an estimated 11,277,614 individuals in at least 24 known populations at present (Service 2018, p. 39, updated based on Wilderman 2018, entire). These 24 populations occur on 71 distinct sites that are owned by a mix of Federal, State, and local governments; nongovernmental organizations (NGOs); and private citizens. Multiple sites are considered to be part of the same population when those sites are within a defined pollinator flight distance of 3 kilometers (km) (2 miles (mi)) of each other. The current population estimate is the combined count data from all sites; for some sites the plant count was the result of a full census (54 sites), while for others it was derived by visual estimate or calculated from count subsamples that were then extrapolated over the total area of the site (17 sites). The increase in known populations and number of plants over time is due to a combination of population augmentation and introductions, improved habitat management, and increased survey effort across the range of the species. Bradshaw's lomatium has been the focus of concentrated recovery efforts since it was listed in 1988. We now believe there are likely more than the recent grand total count of an estimated 11,277,614 individuals across the range of Bradshaw's lomatium because not all areas of suitable habitat within the range of the species have been surveyed, and recent visits to previously unsurveyed areas have resulted in the identification of formerly unknown populations (*e.g.*, Service 2018, p. 10).

In our species status report, we evaluated and ranked the resiliency of each population of Bradshaw's lomatium using the following criteria: (1) Population size, (2) current habitat conditions, (3) protection of the site from development, and (4) site

management to restore and maintain appropriate habitat condition. Using these criteria, each population was given a rank of high, moderate, or low condition (Service 2018, pp. 26–30). The resiliency score for each population incorporates the degree to which the primary threats to the species have been addressed at each site as well as recovery criteria (population size and habitat quality), site protection (addressing habitat loss), and site management (addressing woody encroachment and invasive species). For details on evaluation and ranking of population condition, see the species status report (Service 2018, pp. 26-43).

The table below summarizes our current knowledge of the abundance and distribution of Bradshaw's lomatium relative to the downlisting and delisting criteria presented in the recovery plan for the species (from Service 2018, p. 39, updated based on Wilderman 2018, entire). Because the table below summarizes only the abundance and distribution data for the species, the information in in the table must be considered in conjunction with the five-factor analysis of threats to arrive at the status determination for Bradshaw's lomatium.

Summary of recovery goals and current condition of known Bradshaw's lomatium populations.

Distribution and Abundance of Bradshaw's lomatium						
Recovery Zone	**Downlisting Goals**		**Delisting Goals**		**Current Condition**	
	Minimum Number of Populations per Zone	**Target Number of Plants per Zone**	**Minimum Number of Populations per Zone**	**Target Number of Plants per Zone**	**Number of Populations Qualifying Toward Recovery Criteria***	**Number of Plants in Populations Qualifying Toward Recovery Criteria***
OREGON						
Portland	0	0	0	0	NA	NA
Salem East	1	5,000	2	10,000	3	62,604
Salem West	0	0	0	0	NA	NA
Corvallis East	2	10,000	3	15,000	3	179,462
Corvallis West	2	10,000	2	10,000	2	17,485
Eugene East	1	5,000	3	15,000	2	34,451
Eugene West	3	15,000	3	15,000	6	191,593
					Subtotal	485,595
WASHINGTON						
SW Washington	1	5,000	2	10,000	1	10,790,658
					Subtotal	10,790,658

+ Additional Populations (may occur in any Recovery Zone within range of Bradshaw's lomatium)	2	10,000	5	25,000		
Total	12	60,000	20	100,000	**17***	**11,276,253***

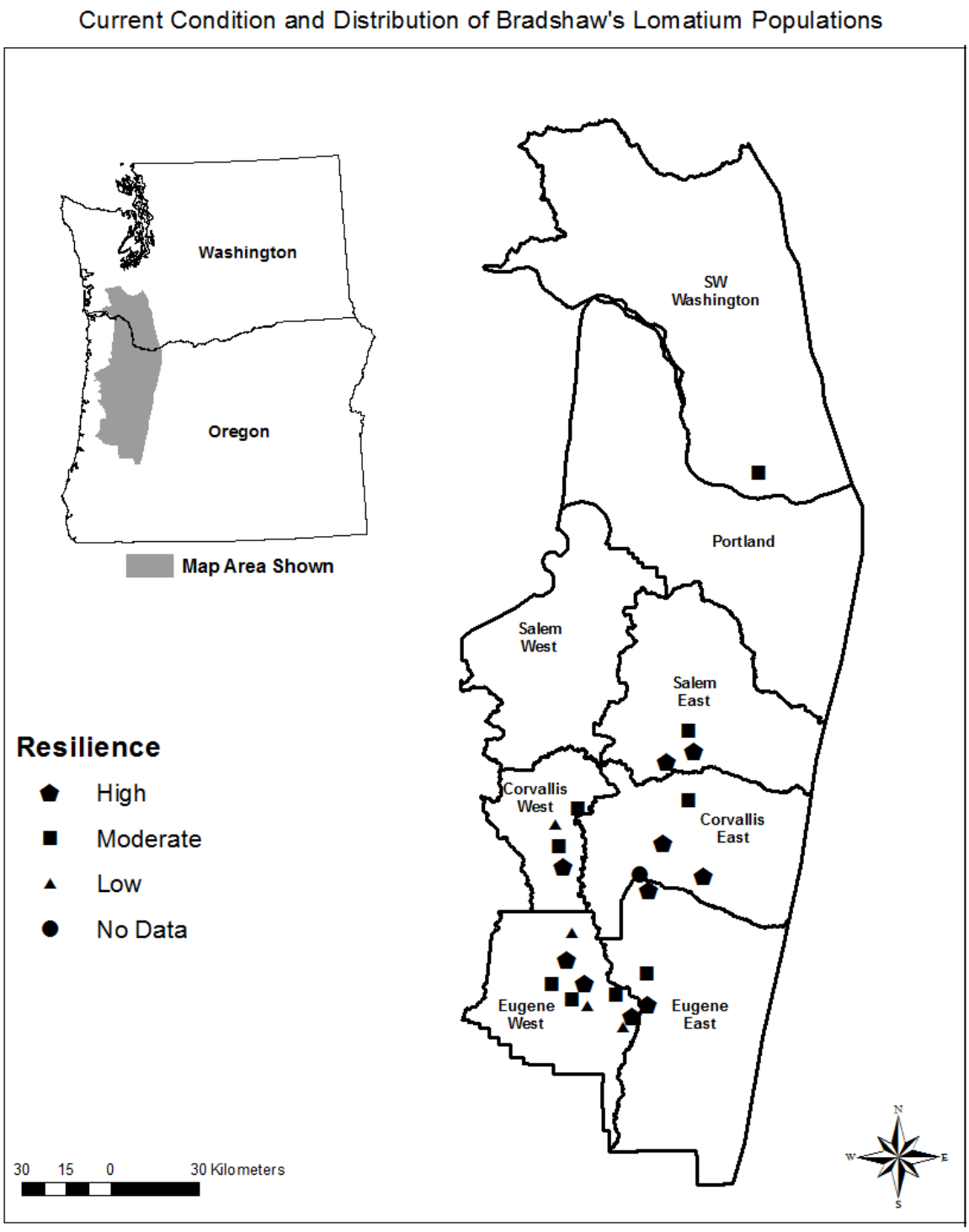
*Recovery zones highlighted in grey meet or exceed the recovery plan downlisting and delisting goals for the number of populations and target number of plants. The Eugene East and SW Washington recovery zones exceed delisting abundance targets, but are each one population short of the target number of populations. There are no recovery targets for Bradshaw's lomatium in the Portland and Salem West recovery zones. Only populations with moderate to high overall condition and with more than 200 plants were considered to have met the recovery criteria and so are included in this count, as populations with lower overall condition or number of plants were considered too high risk to contribute toward recovery. For this reason, the total number of populations and the total number of plants reported in this table (those considered to contribute toward recovery) is not equivalent to the grand total number of populations and plants known to occur throughout the range of the species.

Based on the most recent count, the grand total number of known plants is 11,277,614 (this total includes plants from populations with fewer than 200 individuals, which we did not count as contributing toward recovery). Of this total, an estimated 10,790,658 occur in a single population in southwestern Washington. The other approximately 486,956 plants are within 23 populations in Oregon. Considering only the populations in moderate or high condition, and with more than 200 plants (*i.e.*, those we are counting toward recovery and presented in the table above), we estimate there are 485,595 plants within the 23 populations in Oregon. These populations are distributed from southeast of Salem, Oregon south to Creswell, Oregon, both east and west of the Willamette River. The greatest density of populations occurs in the southern portion of the Willamette Valley near Eugene, Oregon.

Therefore, the most recent counts of Bradshaw's lomatium identify nearly 500,000 individuals in 23 known populations distributed across the historical range of the species in Oregon, and distributed among 69 known sites under various types of land ownership. We considered the abundance and distribution of Bradshaw's lomatium without the roughly 10.8 million individuals concentrated in a single population (made up of 2 sites) in southwestern Washington to ensure our evaluation considered the abundance and distribution of the species across its entire range and to ensure our evaluation was not unduly influenced by the single large population in southwestern Washington. Of the 71 known sites, 51 are in public ownership, are within a public right-of-way, or are owned by a conservation-oriented NGO. Of the 20 remaining sites, 9 are under conservation easement or are enrolled in the Service's Partners for Fish and

Wildlife Program (Service 2018, pp. 30–35, 36, 38, Appendix A). The remaining 11 sites are on private lands and are not currently under any formal protection agreements.

The figure below shows the results of this assessment across the range of the species. Of the 24 known populations, 4 are in low condition, 9 are in moderate condition, 10 are in high condition, and 1 is in unknown condition due to the lack of data (Service 2018, pp. 36–39). Populations occur in all recovery zones that have population goals. As noted above, the Portland and Salem West Recovery Zones contain no known current populations, were not assigned specific targets by the Recovery Team, and have no documented historical occurrences of the species within them.



Map of known populations of Bradshaw's lomatium and the eight recovery zones identified for the species in the recovery plan. Resiliency rankings of high, moderate, and low are based on the assessment in our species status report (Service 2019, pp. 30–35). Note: There are no recovery targets for Portland and Salem West recovery zones.

Based on this information, we conclude Bradshaw's lomatium is much more numerous than at the time of listing and is distributed throughout its known historical range. Across the 23 populations in Oregon, greater than 99 percent of known Bradshaw's lomatium plants are found on sites receiving some degree of protection from development such as public lands, conservancy lands, or private lands with conservation easements (Service 2018, Appendix A). The single largest population of the species occurs in southwestern Washington, and is composed of individuals from two sites. The vast majority of plants in the southwestern Washington population occur on private property that is not under some type of protection, but the site is consistently managed in a manner conducive to supporting Bradshaw's lomatium. The other portion of the population in southwestern Washington contains approximately 658 plants, and this site is owned by the Washington Department of Natural Resources (WDNR). The WDNR has been actively protecting, managing, and augmenting this smaller portion of the southwestern Washington population, and they are currently working to further expand protection at this site. Furthermore, WDNR is working to conserve the sizeable Bradshaw's lomatium site that is on private land.

Due to ongoing threats from woody encroachment and the spread of nonnative invasive plants, sites containing Bradshaw's lomatium require regular management to maintain the open prairie conditions that support robust populations. Management activities may include, but are not limited to, herbicide application, mowing, and prescribed fire. Although guarantee of management into perpetuity exceeds the requirements of the Act in evaluating whether a species meets the statutory definition of endangered or threatened, it is necessary to evaluate whether current and expected future

management is sufficient to maintain resilient populations of Bradshaw's lomatium into the foreseeable future. Across the range of Bradshaw's lomatium, 53 of 71 sites (75 percent) receive some form of management as described above, accounting for greater than 99 percent of known Bradshaw's lomatium plants. Of the sites with some form of management, 41 sites (58 percent of total sites) have a management plan with goals for the conservation of Bradshaw's lomatium, or with goals for maintenance of the wet prairie habitat upon which this species depends. Sites with management plans include those owned by the U.S. Army Corps of Engineers, Bureau of Land Management, U.S. Fish and Wildlife Service, The Nature Conservancy, and privately owned sites covered by the Natural Resources Conservation Service's Wetland Reserve Program (Service 2018, pp. 30–35, Appendix A).

These and other data that we analyzed indicate that most threats identified at listing and in the recovery plan are reduced in areas occupied by Bradshaw's lomatium. The status of the species has improved primarily due to: (1) Discovery of previously unknown populations; (2) reestablishment and augmentation of populations over the 30 years since the species was listed; (3) improvement in habitat management; and (4) an increase in protection from development.

Summary of Factors Affecting Bradshaw's lomatium

Section 4 of the Act and its implementing regulations (50 CFR part 424) set forth the procedures for listing species, reclassifying species, or removing species from listed status. The term "species" includes "any subspecies of fish or wildlife or plants, and any distinct population segment [DPS] of any species of vertebrate fish or wildlife which interbreeds when mature" (16 U.S.C. 1532(16)). As previously stated, a species may be

determined to be an endangered species or threatened species because of any one or a combination of the five factors described in section 4(a)(1) of the Act. We may consider listing a species due to one or more of the following: (A) The present or threatened destruction, modification, or curtailment of its habitat or range; (B) overutilization for commercial, recreational, scientific, or educational purposes; (C) disease or predation; (D) the inadequacy of existing regulatory mechanisms; or (E) other natural or manmade factors affecting its continued existence. We must consider these same five factors in delisting (removal from the Federal Lists of Endangered and Threatened Wildlife and Plants) or downlisting (reclassification from endangered to threatened) a species.

For species that are already listed as endangered or threatened, this analysis of threats is an evaluation of both the threats currently facing the species and the threats that are reasonably likely to affect the species in the foreseeable future following the delisting or downlisting and the removal of the Act's protections. A recovered species is one that no longer meets the Act's definition of endangered or threatened. A species is "endangered" for purposes of the Act if it is in danger of extinction throughout all or a "significant portion of its range" and is "threatened" if it is likely to become an endangered species within the foreseeable future throughout all or a "significant portion of its range." The word "range" in the "significant portion of its range" phrase refers to the range in which the species currently exists. For the purposes of this analysis, we first evaluate the status of Bradshaw's lomatium throughout all of its range, then consider whether this plant is in danger of extinction or likely to become so in any significant portion of its range within the foreseeable future.

The Act does not define the term "foreseeable future." Our implementing regulations at 50 CFR 424.11(d) set forth a framework within which we evaluate the foreseeable future on a case-by-case basis. The term foreseeable future extends only so far into the future as the Service can reasonably determine that both the future threats and the species' responses to those threats are likely. We consider 25 to 50 years to be a reasonable period of time within which reliable predictions can be made for potential stressors and responses for Bradshaw's lomatium. This period of time is sufficient to observe population trends for the species and captures the terms of many of the management plans that are in effect at Bradshaw's lomatium sites; it also provides a reasonable timeframe for the assessment of the effects of climate change. Although information exists regarding potential impacts from climate change beyond a 50-year timeframe, the projections depend on an increasing number of assumptions, and thus become more uncertain with increasingly long timeframes. We, therefore, use a maximum timeframe of 50 years to provide the best balance of scope of impacts considered versus the certainty of those impacts being realized.

In considering what factors might constitute threats, we must look beyond the exposure of the species to a particular factor to evaluate whether the species may respond to the factor in a way that causes actual impacts to the species. If there is exposure to a factor and the species responds negatively, the factor may be a threat, and during the status review, we attempt to determine the significance of a threat. The threat is significant if it drives or contributes to the risk of extinction of the species, such that the species warrants listing as endangered or threatened as those terms are defined by the Act. However, the identification of factors that could impact a species negatively may not

be sufficient to compel a finding that the species warrants listing. The information must include evidence sufficient to suggest that the potential threat is likely to materialize and that it has the capacity (*i.e.,* it should be of sufficient magnitude and extent) to affect the species' status such that it meets the definition of endangered or threatened under the Act.

At the time of listing, the primary threats to Bradshaw's lomatium were habitat loss due to land use conversion for agriculture or urbanization and the invasion of prairie vegetation by various woody plant species (Factor A) (53 FR 38449–38450; September 30, 1988). The listing rule did not find that overutilization for commercial, recreational, scientific, or educational purposes (Factor B) posed a threat to Bradshaw's lomatium. The listing rule did note that several parasitic organisms (a fungus, spittle bug, and two aphids) could potentially have negative effects on smaller, stressed populations of the plant (but not the species as a whole; Factor C) and questioned whether inbreeding depression might pose a threat to the species since the populations known at the time appeared to be small and isolated from one another (Factor E). The rule noted that further study was required to determine the significance of these putative threat factors. Finally, the listing rule noted that State and Federal regulations existing at the time did not adequately protect the plant from habitat loss or other potential threats (Factor D) (53 FR 38450; September 30, 1988). By the time the recovery plan was developed in 1993, these same threats were still considered relevant (Service 1993, p. 12). There are three potential threats that were not known or considered at the time of listing: (1) Competition from nonnative, invasive plant species (Factor A); (2) potential impacts resulting from the effects of climate change (Factor E); and (3) predation by voles (*Microtus* spp.) (Factor C), which has been observed within Bradshaw's lomatium sites. Subsequently, we have

conducted a 5-year status review based on the species status report for Bradshaw's lomatium that includes an analysis of all factors known to affect the viability of the species (Service 2018, entire).

As discussed in our 2018 species status report, the threat of habitat loss from land conversion for agriculture and urbanization (Factor A) has decreased since the time of listing due to land protection efforts. Although a few privately owned sites are still at risk, land use conversion is no longer considered a significant threat to the viability of Bradshaw's lomatium due to the number of sites now receiving some degree of protection from development (Service 2018, pp. 36–39, Appendix A). As described above, in Oregon, which supports 23 of the 24 known populations of the species, greater than 99 percent of known Bradshaw's lomatium plants occur on sites protected through public or NGO ownership, through designation as a right-of-way, or by conservation easements on private lands. In Washington, one of two sites that support Bradshaw's lomatium is owned by WDNR, and the State is actively working toward the conservation of the very large adjacent site that supports the majority of known individuals of the species. As the threat posed to Bradshaw's lomatium from habitat loss is no longer considered significant, we additionally no longer consider State or Federal protections to be inadequate to address this threat (Factor D).

The present threat to Bradshaw's lomatium from modification of habitat due to invasion of prairies by nonnative, invasive plants and by woody species (Factor A) has been reduced in many populations due to active habitat management using herbicides, mowing, and prescribed fire, but ongoing habitat management is required to maintain these improvements. As noted above, across the range of Bradshaw's lomatium, 75

percent of the known sites receive active management that benefits the species, and 58 percent of total sites have a management plan in place with goals for the conservation of Bradshaw's lomatium, or for maintenance of the wet prairie habitat upon which it depends (Service 2018, pp. 36–39, Appendix A). Based on the high proportion of sites protected or managed, the history of positive management observed to date, and ongoing efforts to further restore and protect wet prairie habitats, we have confidence that management of Bradshaw's lomatium sites will continue to provide adequate protection to the species in the long term. We found no evidence that negative impacts due to parasitic organisms (Factor C) constitute a threat to the viability of the Bradshaw's lomatium. Predation by voles (Factor C) appears to vary year to year, and can substantially reduce aboveground biomass and reproduction in years when vole abundance is high. However, the effect on populations is believed to be minimal over time as long as there is sufficient time for Bradshaw's lomatium to regenerate taproot reserves between vole outbreaks (Drew 2000, pp. 54–55), and no consistent long-term declines attributable to vole predation have been reported (Service 2018, p. 20).

Concerns over the possibility of inbreeding depression (Factor E) expressed at the time of listing are now reduced due to a subsequent study indicating that overall genetic diversity in Bradshaw's lomatium is relatively high for a rare species (Gitzendanner and Soltis 2001, pp. 352–353), and is greater than that found in other rare *Lomatium* species (Gitzendanner and Soltis 2000, p. 787), though the most disjunct population in southwestern Washington showed relatively lower genetic diversity than less geographically isolated populations (Gitzendanner and Soltis 2001, p. 353). The threat of inbreeding depression is further considered reduced since we now understand Bradshaw's

lomatium to be primarily an outcrossing species (which promotes increased genetic diversity), rather than an obligate self-pollinating species as was believed at the time of listing (Service 2018, pp. 7, 20).

The potential threat posed to Bradshaw's lomatium from the effects of climate change (Factor E) is difficult to predict. The primary threat to the species from the effects of climate change is likely reduced moisture availability due to warmer temperatures and alterations to precipitation patterns resulting in increased evapotranspiration. The vulnerability of Bradshaw's lomatium to the effects of climate change, assessed over a range of potential future emissions scenarios, has been ranked as anywhere from low to moderate (Steel *et al.* 2011, pp. 25, 89) to highly vulnerable (Kaye *et al.* 2013, p. 20). Possible effects of climate change on Bradshaw's lomatium include a shift toward life cycle completion earlier in the growing season in response to warmer temperatures and earlier drying, and reduced population sizes due to some portions of habitat drying too much to support Bradshaw's lomatium populations. We assessed the potential impacts of climate change on Bradshaw's lomatium projected out over a period up to 50 years in the future. Published assessments provide only qualitative appraisals of the potential response of Bradshaw's lomatium to the effects of climate change; therefore, to be conservative in our analysis, we evaluated a "worst case" future scenario in which all populations would be reduced in size by 50 percent. Even in the face of such a severe population reduction, the species is anticipated to remain viable as indicated by appreciable levels of resiliency, redundancy, and representation. We estimated that populations currently in low condition or with very low abundance may be extirpated due to the combined effects of climate change impacts and stochastic events; this translated to

an estimated loss of up to five small populations, with other populations reduced in size. However, even with a presumed 50 percent reduction in abundance, at least 14 to 16 populations of Bradshaw's lomatium in moderate or high condition are expected to persist on the landscape with ongoing management. We do not anticipate any significant effect on representation, that is, the ability of the species to adapt to changing environmental conditions over time (Service 2018, pp. 42–46).

Cumulative Impacts

When multiple stressors co-occur, one may exacerbate the effects of the other, leading to effects not accounted for when each stressor is analyzed individually. The full impact of these synergistic effects may be observed within a short period of time, or may take many years before they are noticeable. For example, high levels of predation on Bradshaw's lomatium during vole outbreaks can cause large temporary population declines, but are not generally considered a significant threat to long-term viability; populations that are relatively large and well distributed should be able to withstand such naturally occurring events. However, the relative impact of predation by voles may be intensified when outbreaks occur in conjunction with other factors that may lessen the resiliency of Bradshaw's lomatium populations, such as prolonged woody species encroachment; extensive nonnative, invasive plant infestations; or possible hydrological alterations resulting from the effects of climate change.

Although the types, magnitude, or extent of potential cumulative impacts are difficult to predict, we are not aware of any combination of factors that are likely to co-occur with significant negative consequences for the species. We anticipate that any negative consequence of co-occurring threats will be successfully addressed through the

same active management actions that have contributed to the ongoing recovery of Bradshaw's lomatium and that are expected to continue into the future. The best scientific and commercial data available indicate that Bradshaw's lomatium is composed of multiple populations, primarily in moderate to high condition, which are sufficiently resilient, well distributed, protected, and managed such that they will be robust to any potential cumulative effects to which they may be exposed.

Overall, we conclude that under current conditions, most populations of Bradshaw's lomatium are resilient, because they have abundant numbers of individuals. There are redundant populations of Bradshaw's lomatium, meaning that multiple populations occur in most recovery zones, indicating that the species has the ability to minimize potential loss from catastrophic events. The concern at the time of listing about a possible genetic bottleneck has been alleviated by genetic studies demonstrating that Bradshaw's lomatium has relatively high genetic diversity for a rare species. Also, with populations distributed across the known historical range of the species (Service 2018, p. 40), Bradshaw's lomatium has likely retained much of its adaptive capacity (*i.e.*, representation). We also considered the potential future conditions of Bradshaw's lomatium, taking into account the current condition and additional stressors not considered at the time of recovery plan development (*e.g.*, the effects of climate change). Projecting 25 to 50 years into the future, under a conservative estimate that conditions could potentially worsen such that all existing populations are reduced by half, the species would retain its resiliency and redundancy. With an estimated 14 to 16 populations in moderate or high condition expected to persist on the landscape with ongoing management; representation was not anticipated to be affected (Service 2018, p.

44). As noted earlier, the degree to which threats to the species have been successfully addressed is incorporated into the evaluation of population resiliency at each site (*i.e.*, site protection and management actions were considered in the scoring of each population's current condition; Service 2018, p. 28). The continuation of these conservation measures was an assumption of our projection.

See the species status report (Service 2018, entire) for a more detailed discussion of our evaluation of the biological status of the Bradshaw's lomatium and the influences that may affect its continued existence. Our conclusions are based upon the best available scientific and commercial data and the expert opinions of the species status assessment team members.

Determination of Bradshaw's lomatium Species Status

Section 4 of the Act (16 U.S.C. 1533) and its implementing regulations (50 CFR part 424) set forth the procedures for determining whether a species meets the definition of "endangered species" or "threatened species." The Act defines an "endangered species" as a species that is "in danger of extinction throughout all or a significant portion of its range," and a "threatened species" as a species that is "likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range." The Act requires that we determine whether a species meets the definition of "endangered species" or "threatened species" because of any of the following factors: (A) The present or threatened destruction, modification, or curtailment of its habitat or range; (B) overutilization for commercial, recreational, scientific, or educational purposes; (C) disease or predation; (D) the inadequacy of existing regulatory mechanisms; or (E) other natural or manmade factors affecting its continued existence.

Status Throughout All of Its Range

After evaluating threats to the species under the section 4(a)(1) factors, we found that the known range of Bradshaw's lomatium was considered dramatically reduced when we listed it as an endangered species in 1988, and we estimated that there were 11 small populations that included a total of roughly 25,000 to 30,000 individuals. In addition, the species faced threats from habitat loss due to land conversion for agriculture and urbanization, as well as natural succession to woody species dominance due to loss of historical disturbance regimes. As such, it was perceived to be upon the brink of extinction. Bradshaw's lomatium has been the subject of intensive recovery efforts since it was listed under the Act 30 years ago, and the discovery of new, previously unknown populations; success in augmentation and habitat restoration and management efforts; and the protection of Bradshaw's lomatium populations and habitats on public lands and on private lands through conservation easements and management agreements with NGOs and other parties have led to a significant reduction in threats and improvement in the status of the species since that time.

Recovery goals for delisting Bradshaw's lomatium were set at a minimum of 20 populations with a total of 100,000 individual plants distributed across its historical range. Under current conditions, there are 24 known populations of Bradshaw's lomatium distributed throughout the species' historical range; if we consider only those populations in high or moderate condition and containing at least 200 individuals as contributing to recovery, there are 17 such populations throughout the range of the species (see table above). Considering only those 17 populations in high or moderate condition and with greater than 200 plants, the most recent counts demonstrate there are an estimated

486,253 individuals known distributed throughout the historical range of the species (our evaluation does not include the southwestern Washington population to ensure our evaluation considered the abundance and distribution of the species across its entire range and that it was not unduly influenced by this single large population). Our analysis of current population condition on the basis of plant abundance, habitat quality, management, and protection from development resulted in rankings of 10 populations in high condition overall, 9 populations in moderate condition, and 4 populations in low condition. Therefore, we are significantly less concerned about small population sizes or limited distribution of the species than we were at the time of listing. The increase in known populations is due in large part to increased survey efforts and incidental discovery of more occupied habitat, leaving open the potential of finding even more populations of Bradshaw's lomatium in the future. Acquisition by conservation NGOs, or enrollment into conservation easement programs, of sites containing Bradshaw's lomatium populations has substantially reduced the risk of habitat and population losses due to land use conversion (Factor A). In addition, population augmentation or introduction, combined with ongoing active management of woody encroachment and of nonnative, invasive plant infestations, has ameliorated the threat posed by these processes (Factor A) and increased the resilience of many Bradshaw's lomatium populations on protected sites. Other potential threats identified at the time of listing have either never materialized (parasitism by other organisms (Factor C) or negative effects of inbreeding depression (Factor E)) or have been addressed through other means (*i.e.*, habitat protections and management, addressing Factor D).

Since listing, we have become aware of the potential for the effects of climate change (Factor E) to affect organisms and ecosystems, including potentially Bradshaw's lomatium. We considered the potential consequences of climate change and evaluated a future scenario with up to a 50 percent reduction in the size of all known populations across the range of the species. Even in the face of such a severe population reduction, the species retained appreciable levels of resiliency, redundancy, and representation such that we did not consider the effects of climate change to pose a significant threat (Service 2018, pp. 42–46). To be conservative, our analysis of future conditions did not consider that ongoing efforts to improve population sizes and habitat quality have the potential to further increase the number of resilient populations of Bradshaw's lomatium. Many stressors to the species are being addressed through habitat management and population augmentation, but ongoing management is necessary to maintain resilient populations throughout the species' range.

In sum, significant impacts at the time of listing such as habitat loss due to land use conversion and woody encroachment that could have resulted in the extirpation of all or parts of populations have been either eliminated or reduced since listing. An assessment of likely future conditions, including the status of known stressors, management trends, and possible impacts of climate change, finds that although populations may decline in abundance, at least 14 to 16 populations across the range of the species are expected to maintain high or moderate resiliency over a timeframe of 25 to 50 years into the future (Service 2018, pp. 42-46). We, therefore, conclude that the previously recognized impacts to Bradshaw's lomatium from present or threatened destruction, modification, or curtailment of its habitat or range (specifically, habitat

development for agriculture or urbanization and invasion of prairie vegetation by various woody plant species) (Factor A); disease or predation (specifically, parasitism by insects and predation by voles) (Factor C); the inadequacy of existing regulatory mechanisms (Factor D); and other natural or manmade factors affecting its continued existence (specifically, genetic isolation, inbreeding depression, and the effects of climate change) (Factor E) do not rise to a level of significance, either individually or in combination, such that the species is in danger of extinction now or likely to become so within the foreseeable future. Overutilization for commercial, recreational, scientific, or educational purposes (Factor B) was not a factor in listing and based on the best available information, we conclude that it does not constitute a threat to the Bradshaw's lomatium now or in the foreseeable future. The Service recognizes that woody encroachment and nonnative, invasive plant species are stressors with ongoing impacts to Bradshaw's lomatium, but finds that current and expected trends in site protection and habitat management are sufficient to prevent these stressors from constituting a threat to the continued existence of the species. Thus, after assessing the best available information, we conclude that Bradshaw's lomatium is not in danger of extinction or likely to become so within the foreseeable future throughout all of its range.

Status Throughout a Significant Portion of Its Range

Under the Act and our implementing regulations, a species may warrant listing if it is in danger of extinction or likely to become so in the foreseeable future throughout all or a significant portion of its range (SPR). Where the best available information allows the Services to determine a status for the species rangewide, that determination should be given conclusive weight because a rangewide determination of status more accurately

reflects the species' degree of imperilment and better promotes the purposes of the Act. Under this reading, we should first consider whether the species warrants listing "throughout all" of its range and proceed to conduct a "significant portion of its range" analysis if, and only if, a species does not qualify for listing as either an endangered or a threatened species according to the "throughout all" language.

Having determined that Bradshaw's lomatium is not in danger of extinction or likely to become so in the foreseeable future throughout all of its range, we now consider whether it may be in danger of extinction or likely to become so in the foreseeable future in an SPR. The range of a species can theoretically be divided into portions in an infinite number of ways, so we first screen the potential portions of the species' range to determine if there are any portions that warrant further consideration. To do the "screening" analysis, we ask whether there are portions of the species' range for which there is substantial information indicating that: (1) The portion may be significant; and, (2) the species may be, in that portion, either in danger of extinction or likely to become so in the foreseeable future. For a particular portion, if we cannot answer both questions in the affirmative, then that portion does not warrant further consideration and the species does not warrant listing because of its status in that portion of its range. We emphasize that answering both of these questions in the affirmative is not a determination that the species is in danger of extinction or likely to become so in the foreseeable future throughout a significant portion of its range—rather, it is a step in determining whether a more-detailed analysis of the issue is required.

If we answer these questions in the affirmative, we then conduct a more thorough analysis to determine whether the portion does indeed meet both of the SPR prongs: (1)

the portion is significant and (2) the species is, in that portion, either in danger of extinction or likely to become so in the foreseeable future. Confirmation that a portion does indeed meet one of these prongs does not create a presumption, prejudgment, or other determination as to whether the species is an endangered species or threatened species. Rather, we must then undertake a more detailed analysis of the other prong to make that determination. Only if the portion does indeed meet both SPR prongs would the species warrant listing because of its status in a significant portion of its range.

At both stages in this process—the stage of screening potential portions to identify any portions that warrant further consideration and the stage of undertaking the more detailed analysis of any portions that do warrant further consideration—it might be more efficient for us to address the "significance" question or the "status" question first. Our selection of which question to address first for a particular portion depends on the biology of the species, its range, and the threats it faces. Regardless of which question we address first, if we reach a negative answer with respect to the first question that we address, we do not need to evaluate the second question for that portion of the species' range.

The Service's most-recent definition of "significant" has been invalidated by the courts (for example, *Desert Survivors v. Dep't of the Interior*, No. 16-cv-01165-JCS (N.D. Cal. Aug. 24, 2018)). Therefore, we determined whether the populations in Oregon and Washington could be significant under any reasonable definition of "significant." To do this, we evaluated whether these populations taken together may be biologically important in terms of the resiliency, redundancy, or representation of the species.

We identified the population of Bradshaw's lomatium in southwestern Washington as a potential portion of the range warranting further detailed consideration due to its potential contributions to the resiliency, redundancy, and representation of the species. This population is the northernmost known population of the species (contributing to representation), and is separated from the majority of the range by the Columbia River and a large, historically unoccupied area in northern Oregon (contributing to redundancy). It is also the largest known population of Bradshaw's lomatium (contributing to resiliency).

The southwestern Washington population of Bradshaw's lomatium is composed of individuals occurring at two separate sites in close proximity to each other. The smaller of the two sites contained an estimated 658 Bradshaw's lomatium individuals in 2018 (Wilderman 2018, entire), and is owned and managed by the WDNR. The WDNR manages this site with an emphasis on habitat management, population augmentation, and monitoring to benefit Bradshaw's lomatium. The larger site occurs on the rough of a privately owned golf course, and contained approximately 10.8 million Bradshaw's lomatium plants at the most recent survey in 2010 (Service 2018, p. 57). Although a count was not done, a recent visit by Service biologists confirmed that expansive areas of suitable habitat remain occupied by Bradshaw's lomatium, and there was no sign of any obvious substantial stressors to the species (Brumbelow 2018, pers. obs.). Although not managed specifically for Bradshaw's lomatium, ongoing management to maintain open conditions in the rough area, primarily through mowing, appears to benefit the species, which is clearly robust. Managers of the golf course have demonstrated interest in the conservation of Bradshaw's lomatium by placing signs, which highlight the presence of a

listed species, along pathways. Although the southwestern Washington population of Bradshaw's lomatium is the largest known population of the species, genetic diversity at the smaller WDNR site is lower than other sampled sites for this species (Gitzendanner and Soltis, 2001 p. 353); genetic information is not available specific to the larger site.

Analysis of Status

Having identified the southwestern Washington population as a portion of the range of Bradshaw's lomatium that warrants further consideration, we now analyze whether the species is in danger of extinction or likely to become so within the foreseeable future in this portion.

We determine the status of the species in a portion of its range the same way we determine the status of a species throughout all of its range. We consider whether threats are reasonably likely to affect the species in that portion to such an extent that the species is in danger of extinction or likely to become so in the foreseeable future in that portion.

Of the two sites that comprise the sole population of Bradshaw's lomatium in southwestern Washington, one is on the Lacamas Prairie Natural Area, a preserve owned and managed by the WDNR. Due to this ownership, there is currently no risk of loss of habitat due to development, nor is there any reason to believe this area would be at risk of such a loss within the foreseeable future. Habitat quality at the site is considered high, and the site is managed specifically for prairie habitat conditions that support Bradshaw's lomatium (Service 2018, pp. 29, 57), using a combination of manual invasive species removal, herbicide treatments, mowing, and prescribed burning (Abbruzzese 2017, entire). The other site is located on a privately owned golf course, and has high-quality habitat. Current management at the site, as in past years, supports open wet prairie

conditions (Service 2018, pp. 29, 57), primarily through mowing. Although no formal protections are in place that would prevent future development, we have no information to indicate that it is likely the site would be developed or that habitat management will change in any way that would substantially impact Bradshaw's lomatium. In addition, the areas occupied by Bradshaw's lomatium are within wetlands, which may have protections from development under State or Federal law. Based on the current protections of the Lacamas Prairie Natural Area, the lack of any present threat of destruction or degradation at the privately owned golf course site, and ongoing appropriate management at both sites, we have confidence that habitat at these sites will continue to support Bradshaw's lomatium for the foreseeable future. Thus the present or threatened destruction, modification, or curtailment of habitat (Factor A) is not a concern for Bradshaw's lomatium in this portion of its range, now or within the foreseeable future.

We have no information to suggest that overutilization for commercial, recreational, scientific, or educational purposes poses a threat to Bradshaw's lomatium in any part of its range, including southwestern Washington, now or in the foreseeable future (Factor B).

We found no evidence that negative impacts due to parasitic organisms constitute a threat to the viability of Bradshaw's lomatium in any part of its range, including southwestern Washington, now or in the foreseeable future. Predation by voles appears to vary year to year, and can substantially reduce aboveground biomass and reproduction of Bradshaw's lomatium in years when vole abundance is high. However, the effect on populations is believed to be minimal over time, as long as there is sufficient time for

Bradshaw's lomatium to regenerate taproot reserves between vole outbreaks (Drew 2000, pp. 54–55), and no consistent long-term declines attributable to vole predation have been reported (Service 2018, p. 20). Predation by voles has not been previously reported in either site within the southwestern Washington population of Bradshaw's lomatium. We, therefore, have no information to indicate that predation is a threat to Bradshaw's lomatium in this portion of its range, now or within the foreseeable future (Factor C).

We do not consider State or Federal protections to be inadequate to address the loss of Bradshaw's lomatium habitat in southwestern Washington, now or within the foreseeable future (Factor D). As described above, we do not consider habitat loss to be a threat to the species in this portion of its range. Of the two known sites containing Bradshaw's lomatium in this portion of the range, one is protected through ownership by the WDNR. Although the second, larger site lacks formal protection, it faces no currently known threat of habitat loss or degradation, either now or within the foreseeable future. Additionally, the WDNR continues to make efforts to provide additional conservation at the site. Bradshaw's lomatium remains listed as endangered by the State of Washington.

Concerns over the possibility of inbreeding depression expressed at the time of listing are now reduced due to a subsequent study indicating that overall genetic diversity in Bradshaw's lomatium is relatively high for a rare species (Gitzendanner and Soltis 2001, pp. 352–353), and is greater than that found in other rare *Lomatium* species (Gitzendanner and Soltis 2000, p. 787). Although the most disjunct population in southwestern Washington showed relatively lower genetic diversity than less geographically isolated populations (Gitzendanner and Soltis 2001, p. 353), the threat of inbreeding depression is considered reduced, as we now understand Bradshaw's

lomatium to be primarily an outcrossing species (which promotes increased genetic diversity), rather than an obligate self-pollinating species as was believed at the time of listing (Service 2018, pp. 7, 20).

In our species status report, we assessed the potential impacts of climate change on Bradshaw's lomatium projected up to 50 years in the future, and conservatively evaluated a future scenario in which the potential negative effects of climate change were such that all populations were reduced in size by up to 50 percent. Such an impact would reduce population numbers at Lacamas Prairie Natural Area to approximately 329 individuals. Although substantial, such losses are not expected to cause extirpation of the species from this site, especially as beneficial management actions targeted specifically at the preservation of wetland prairie habitat are anticipated to continue at this preserve area. At the privately owned golf course site, a 50 percent reduction from the most recently estimated population size would result in approximately 5.4 million plants at this site, which would still represent by far the largest known population of the species. We, therefore, have no information to indicate that other natural or manmade factors pose a threat to the continued existence of Bradshaw's lomatium (Factor E), now or within the foreseeable future.

Although the types, magnitude, or extent of potential cumulative impacts are difficult to predict, we are not aware of any combination of factors that are likely to co-occur with significant negative consequences for the species within the southwestern Washington portion of its range. We anticipate that any negative consequence of co-occurring threats will be successfully addressed through the same active management

actions that have contributed to the ongoing recovery of Bradshaw's lomatium and that are expected to continue into the future.

Therefore, we have determined that Bradshaw's lomatium is not in danger of extinction, or likely to become so in the foreseeable future, within a significant portion of its range. Our approach to analyzing SPR in this determination is consistent with the court's holding in *Desert Survivors* v. *Department of the Interior*, No. 16-cv-01165-JCS, 2018 WL 4053447 (N.D. Cal. Aug. 24, 2018).

Determination of Status

Our review of the best available scientific and commercial information indicates that Bradshaw's lomatium is not in danger of extinction or likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. Therefore, we are removing Bradshaw's lomatium from the Federal List of Endangered and Threatened Plants at 50 CFR 17.12(h) due to recovery.

Effects of This Rule

This proposed rule, if made final, would revise 50 CFR 17.12(h) by removing Bradshaw's lomatium from the Federal List of Endangered and Threatened Plants. The prohibitions and conservation measures provided by the Act, particularly through sections 7 and 9, would no longer apply to this species. Federal agencies would no longer be required to consult with the Service under section 7 of the Act in the event that activities they authorize, fund, or carry out may affect Bradshaw's lomatium. There is no critical habitat designated for this species, so there would be no effect to 50 CFR 17.96.

Post-Delisting Monitoring

Section 4(g)(1) of the Act requires the Secretary of the Interior, through the Service and in cooperation with the States, to implement a monitoring program for not less than 5 years for all species that have been delisted due to recovery. The purpose of this requirement is to develop a program that detects the failure of any delisted species to sustain itself without the protections of the Act. If, at any time during the monitoring period, data indicate that the protective status under the Act should be reinstated, we can initiate listing procedures, including, if appropriate, emergency listing.

We propose to delist Bradshaw's lomatium based on new information that has become available as well as recovery actions taken. Because delisting would be due to recovery, we have prepared a draft post-delisting monitoring plan. The draft post-delisting monitoring plan discusses the current status of the species and describes the methods proposed for monitoring if the species is removed from the Federal List of Endangered and Threatened Plants. Monitoring would take place for a minimum of 5 years. It is our intent to work with our partners to maintain the recovered status of Bradshaw's lomatium. We seek public and peer review comments on the draft post-delisting monitoring plan, including its objectives and procedures (see *Public Comments*, above), with the publication of this proposed rule.

Required Determinations

Clarity of the Rule

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

(a) Be logically organized;

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

(c) Use clear language rather than jargon;

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

(e) Use lists and tables wherever possible.

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

National Environmental Policy Act

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

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, 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 Native American culture, and to make information available to Tribes.

We do not believe that any Tribes would be affected if we adopt this rule as proposed.

References Cited

A complete list of all references cited in this proposed rule is available on the Internet at *http://www.regulations.gov* under Docket No. FWS–R1–ES–2019–0013 or upon request from the State Supervisor, Oregon Fish and Wildlife Office (see **FOR FURTHER INFORMATION CONTACT**).

Authors

The primary authors of this proposed rule are the staff of the Oregon Fish and Wildlife Office (see **FOR FURTHER INFORMATION CONTACT**).

List of Subjects in 50 CFR Part 17

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

Proposed Regulation Promulgation

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

PART 17—ENDANGERED AND THREATENED WILDLIFE AND PLANTS

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

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

§ 17.12 [Amended]

2. Amend §17.12(h) by removing the entry for "*Lomatium bradshawii*" under FLOWERING PLANTS from the List of Endangered and Threatened Plants.

Dated: October 28, 2019

Signed

Margaret E. Everson,
Principal Deputy Director,
U.S. Fish and Wildlife Service,
Exercising the Authority of the Director,
U.S. Fish and Wildlife Service.

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