Recovery Plan for shrubby reed-mustard *(Schoenocrambe suffrutescens)*
https://ecos.fws.gov/docs/recovery_plan/940914.pdf

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DRAFT AMENDMENT

We have identified information that indicates the need to amend the recovery criteria for the shrubby reed-mustard (*Schoenocrambe suffrutescens*). In this proposed modification, we synthesize the adequacy of the existing recovery criteria, provide amended delisting criteria and the rationale supporting the proposed recovery plan modification, and document the status of recovery actions outlined in the species' 1994 recovery plan. This amendment to the recovery plan supersedes only the delisting criteria in the Executive Summary and Recovery Objectives and Criteria sections (page 8) of the recovery plan (USFWS 1994).

BACKGROUND INFORMATION

Recovery plans should be consulted frequently, used to initiate recovery activities, and updated as needed. A review of a recovery plan and its implementation may show that the plan is out of date or its usefulness is limited, and therefore warrants modification. Keeping recovery plans current ensures that the species benefits through timely, partner-coordinated implementation based on the best available information. The need for, and extent of, plan modifications will vary considerably among plans. Maintaining a useful and current recovery plan depends on the scope and complexity of the initial plan, the structure of the document, and the involvement of stakeholders.

An amendment involves a substantial rewrite of a portion of a recovery plan that changes any of the plan's statutory elements. The need for an amendment may be triggered when, among other possibilities: (1) the current recovery plan is out of compliance with regard to statutory requirements; (2) new information has been identified, such as population-level threats to the species or previously unknown life history traits, that necessitates new or refined recovery actions and/or criteria; or (3) the current recovery plan is not achieving its objectives. The amendment replaces only that specific portion of the recovery plan, supplementing the existing recovery plan, but not completely replacing it. An amendment may be most appropriate if significant plan improvements are needed, but resources are too scarce to accomplish a full recovery plan revision in a short time.

Although it would be inappropriate for an amendment to include changes in the recovery program that contradict the approved recovery plan, it could incorporate study findings that enhance the scientific basis of the plan, or that reduce uncertainties as to the life history, threats, or species' response to management. An amendment could serve a critical function while awaiting a revised recovery plan by: (1) refining and/or prioritizing recovery actions that need to be emphasized, (2) refining recovery criteria, or (3) adding a species to a multispecies or

ecosystem plan. An amendment can, therefore, efficiently balance resources spent on modifying a plan against those spent on managing implementation of ongoing recovery actions.

REASON FOR AMENDMENT

The shrubby reed-mustard recovery plan was developed in 1994 (USFWS 1994). It identifies two downlisting criteria and two delisting criteria. In this document, we are amending the existing delisting criteria to factor in the most recent survey data and research on the species. While the recovery plan provided objective and measurable criteria, they were generalized to also cover two similar species (Barneby reed-mustard and clay reed-mustard), and were not specific to shrubby reed-mustard. Since that time, additional data for shrubby reed-mustard have become available and are incorporated into these amended delisting criteria.

METHODOLOGY USED TO COMPLETE THE RECOVERY PLAN AMENDMENT

This amendment was prepared by the Utah Ecological Services Field Office. We do not have an appointed recovery team for shrubby reed-mustard, and there is no critical habitat designated for the species. Preparation of this document included review of existing quantifiable recovery criteria for other narrow endemic species (Revised Recovery Plan for Hawaiian Forest Birds, https://ecos.fws.gov/docs/recovery_plan/060922a.pdf; Revised Recovery Plan for Alala/Hawaiian Crow, https://ecos.fws.gov/docs/recovery_plan/090417.pdf), recommendations for quantifiable demographic and threat-based recovery criteria (Doak *et al.* 2015), the 2010 five year review for shrubby reed-mustard, more recent information on the species (Lewis 2013; Boettinger et al 2014; BLM 2017), and recovery actions that have been taken since the development of the recovery plan (see synthesis section below). Additionally, we reviewed short-term monitoring data provided by the Bureau of Land Management (BLM) (BLM 2017), and survey data available from the State of Utah and researchers at the University of Utah (Boettinger and Baker 2012; Boettinger et al. 2014; UNHP 2010). The amended recovery criteria will be peer reviewed in accordance with the Office of Management and Budget (OMB) Peer Review Bulletin following the publication of the Notice of Availability.

ADEQUACY OF RECOVERY CRITERIA

Section 4(f)(1)(B)(ii) of the Endangered Species Act (ESA) requires that each recovery plan shall incorporate, to the maximum extent practicable, "objective, measurable criteria which, when met, would result in a determination…that the species be removed from the list." Legal challenges to recovery plans (see Fund for Animals v. Babbitt, 903 F. Supp. 96 (D.D.C. 1995)) and a Government Accountability Audit (GAO 2006) also have affirmed the need to frame recovery criteria in terms of threats assessed under the five delisting factors.

Current Recovery Criteria

The current recovery plan (USFWS 1994) lists the following recovery criteria for three reed-mustard species, including shrubby reed-mustard.

For downlisting:

1. Discover or establish a minimum of five separate populations with 2,000 or more individuals per population for each species. These populations must be demonstrated to be at or above minimum viable population levels.

2. Document the presence of or, if necessary, establish formal land management designations which would provide for long-term protection on undisturbed habitat for the above five populations of each species.

For delisting:

1. Discovery or establishment of a minimum of 10 separate populations with 2,000 or more individuals per population for each species. These populations must be demonstrated to be at or above minimum viable population levels.

2. Document the presence of or, if necessary, establish formal land management designations which would provide for long—term protection on undisturbed habitat for the above 10 populations of each species.

Synthesis

The recovery plan estimated there were approximately 5,000 individuals of shrubby reed mustard in three populations as of 1994 (USFWS 1994). In the five-year review, we estimated the species had approximately 3,000 individuals and revised our description of the distribution to consist of three areas and seven populations (NatureServe 2004, Service 2010). Since then, we have received data for only minor changes to population ranges and sizes, and retain the grouping of individuals into seven populations. Changes include extending the range of the Bad Land Cliffs population after the discovery of 232 new individuals in an area that was previously unsurveyed (Boettinger *et al*. 2014; BLM 2017). At this time and based on the best available data, we estimate that the total species population is roughly 3,161 individuals. However, range-wide surveys and population estimates have not been conducted since 1995 (Boettinger and Baker 2012; Boettinger *et al*. 2014).

The threats identified in the shrubby reed-mustard five-year review are oil and gas development, stone building or mining of stone building materials, and small population size. These threats continue to persist and are detailed and analyzed in the five-year review (USFWS 2010). Stressors resulting indirectly from oil and gas development, such as habitat fragmentation, increased dust from access roads and other surface disturbance, and increases in invasive plant species may also negatively impact shrubby reed-mustard (Lewis 2013). Large herbivore grazing (both domestic and wild) is also a stressor to at least one of the species' populations (BLM 2017). Finally, changes to the climate may also impact this species, although we have not formally analyzed the impact of this stressor on shrubby-reed mustard.

Recovery actions identified in the recovery plan include:

1. Inventory suitable habitat and determine with a reasonable degree of accuracy the population and distribution of shrubby reed-mustard.

2. Establish and conduct at least three minimum viable population studies on at least three different populations.

3. Document the presence of or, if necessary, establish formal land management designations which would provide for long-term protection on undisturbed habitat for shrubby reed-mustard.

4. Control activities which affect the habitat through sections 7 and 9 of the ESA and other relevant laws and regulations.

As described above, range-wide surveys for shrubby reed-mustard were last conducted in 1995. Since that time a habitat model was developed to better delineate suitable habitat for the species (Boettinger *et al*. 2014). A range-wide survey of shrubby reed-mustard suitable habitat, using the population model as a guide, should be conducted again to produce an updated distribution map and population estimate for the species. Additional items needed for future management of the species include a population viability study to determine long term sustainability levels for the species, and a conservation agreement to conserve shrubby reed-mustard populations and habitat.

Oil and gas leasing is permitted in the species' habitat by the Bureau of Indian Affairs, BLM, and Utah Division of Oil Gas and Mining. All projects with a federal nexus in shrubby reed-mustard habitat must undergo consultation with us under section 7 of the ESA. These consultations have resulted in the development and implementation of conservation measures, including a measure to avoid plants by 300 feet (an increase from the previous avoidance buffer of 100 feet. To the best of our knowledge there have been no ESA section 9 violations resulting in loss of the species.

AMENDED RECOVERY CRITERIA

Recovery criteria serve as objective, measurable guidelines to assist in determining when an endangered species has recovered to the point that it may be downlisted to threatened, or that the protections afforded by the Act are no longer necessary and shrubby reed-mustard may be delisted. Delisting is the removal of a species from the Federal Lists of Endangered and Threatened Wildlife and Plants. Downlisting is the reclassification of a species from endangered to threatened. The term "endangered species" means any species (species, sub-species, or DPS) which is in danger of extinction throughout all or a significant portion of its range. The term "threatened species" means any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

Revisions to the Lists, including delisting or downlisting 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 an endangered species or threatened species (or not) because of threats to the species. Section 4(b) of the Act requires that the determination be made "solely on the basis of the best scientific and commercial data available." Thus, while recovery plans provide important guidance to the Service, States, and other partners on methods of

minimizing threats to listed species and measurable objectives against which to measure progress towards recovery, they are guidance and not regulatory documents.

Recovery criteria should help indicate when we would anticipate that an analysis of the species' status under section 4(a)(1) would result in a determination that the species is no longer an endangered species or threatened species. A decision to revise the status of or remove a species from the Federal Lists of Endangered and Threatened Wildlife and Plants, however, is ultimately based on an analysis of the best scientific and commercial data then available, regardless of whether that information differs from the recovery plan, which triggers rulemaking. When changing the status of a species, we first propose the action in the *Federal Register* to seek public comment and peer review, followed by a final decision announced in the *Federal Register*.

We provide amended delisting criteria for shrubby reed-mustard, which will supersede those included in the recovery plan, as follows:

Delisting Recovery Criteria

Shrubby reed-mustard will be considered for delisting when the amended recovery criteria are met. We are replacing both delisting criteria, above, with the amended criteria. We are replacing them because it is unlikely that ten populations of shrubby reed-mustard exist to be discovered and we do not have data to indicate that establishment or maintenance of ten populations is necessary for recovery of the species. Instead we are focusing on restoring the species at least to population levels known to represent a generic minimum viable population size for plant taxa (Traill *et al.* 2007), and on maintaining the existing populations at stable or increasing levels. We also find that ensuring long term management protections for shrubby reed-mustard habitat and maintaining an *ex situ* seed bank representative of the genetic diversity of the species across its range to secure its continued existence even in the face of catastrophic stochastic events are vital for full recovery of shrubby reed-mustard.

<u>Amended Recovery Criteria</u>

1. Maintain the six largest existing populations at a level that demonstrates stable or increasing trend in plant abundance over a consecutive ten-year period. Plant abundance may fluctuate within individual populations from year to year, but the populations should have a stable or increasing growth rate (lambda equal to or greater than one) over a consecutive ten-year period.

2. Maintain an estimated range-wide total population size at or greater than 5,000 individuals for five years, which is the population size identified in the recovery plan. This population size is also similar to the standardized minimum viable population size value of 4,824 individuals for plant taxa (Traill *et al.* 2007) which we consider a surrogate value since species-specific information is not available to inform an evaluation of MVP size for shrubby reed mustard. If a population viability analysis is conducted for shrubby reed-mustard in the future, that study should be used as guidance for this criterion instead.

3. Long-term habitat protections are in place for all occupied habitat on Federal, State, or Tribal lands to protect shrubby reed-mustard and manage for surface disturbing activities related to oil and gas development, building stone collection, and livestock grazing. Protections could be enacted via long-term management agreements, conservation agreements, or memoranda of understanding (MOU).

4. Shrubby reed-mustard is represented in an *ex-situ* seed collection that is managed according to the Center for Plant Conservation guidelines (Guerrant *et al.* 2004). The *ex-situ* seed collection should contain existing levels of genetic diversity (or representation) across the range.

All classification decisions consider the following five factors: (1) is there a present or threatened destruction, modification, or curtailment of the species' habitat or range; (2) is the species subject to overutilization for commercial, recreational scientific or educational purposes; (3) is disease or predation a factor; (4) are there inadequate existing regulatory mechanisms in place outside the ESA (taking into account the efforts by states and other organizations to protect the species or habitat); and (5) are other natural or manmade factors affecting its continued existence. When delisting or downlisting a species, we first propose the action in the *Federal Register* and seek public comment and peer review. Our final decision is announced in the *Federal Register*.

Rationale for Amended Recovery Criteria

We have amended the recovery criteria for shrubby reed-mustard to include quantitative delisting criteria that incorporate the biodiversity principles of representation, resiliency, and redundancy (Shaffer and Stein 2000), threats addressed under the five factors in the latest five-year review (USFWS 2010), and other stressors that have become evident since that time. The amended recovery criteria are based on our understanding of the species' needs and requirements. This understanding includes information gathered since the recovery plan was published, such as more recent information about population status and trends, along with an updated understanding of the threats acting on the species. The amended criteria are based on increasing the population trend and abundance, reducing threats to the species, and include a temporal aspect to ensure the species is resilient to expected variation within a reasonable time frame.

ADDITIONAL SITE SPECIFIC RECOVERY ACTIONS

No additional site-specific recovery actions are necessary for this species; therefore, this is not applicable.

COSTS, TIMING, PRIORITY OF ADDITIONAL RECOVERY ACTIONS

No additional site-specific recovery actions are necessary for this species; therefore, this is not applicable.

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