

RECOVERY PLAN AMENDMENTS FOR NINE SOUTHWEST SPECIES

The U.S. Fish and Wildlife Service identified best available information indicating the need to amend the below species' recovery criteria. Each amendment is recognized as an addendum that supplements the existing recovery plan.

Arizona Cliffrose (<i>Purshia subintegra</i>) Recovery Plan Original Recovery Plan Approved: June 16, 1995 Page(s) Superseded: 52-73
Davis' Green Pitaya Cactus (<i>Echinocereus viridiflorus</i> var. <i>davisii</i>) Recovery Plan Original Recovery Plan Approved: September 20, 1984 Page(s) Superseded: 11
Desert Pupfish (<i>Cyprinodon macularius</i>) Recovery Plan Original Recovery Plan Approved: December 8, 1993 Page(s) Superseded: 13-14
Fishes of the Rio Yaqui Recovery Plan Original Recovery Plan Approved: March 29, 1995 Page(s) Superseded: 21-22 Species Included: Yaqui chub
Little Aguja Pondweed (<i>Potamogeton clystocarpus</i>) Recovery Plan Original Recovery Plan Approved: June 20, 1994 Page(s) Superseded: 21
Navasota ladies'-tresses (<i>Spiranthes parksii</i>) Recovery Plan Original Recovery Plan Approved: September 21, 1984 Page(s) Superseded: 21-22
Nellie Cory Cactus (<i>Coryphantha minima</i>) Recovery Plan Original Recovery Plan Approved: September 20, 1984 Page(s) Superseded: 11
Texas Trailing Phlox (<i>Phlox nivalis</i> ssp. <i>texensis</i>) Recovery Plan Original Recovery Plan Approved: March 28, 1995 Page(s) Superseded: 13-14
Walker's Manioc (<i>Manihot walkerae</i>) Recovery Plan Original Recovery Plan Approved: December 12, 1993 Page(s) Superseded: 16-17

For

U.S. Fish and Wildlife Service
Southwest Region
Albuquerque, New Mexico

September 2019

Approved:


Regional Director, U.S. Fish and Wildlife Service

Date:

Sept. 26, 2019

Recovery Plan for *Purshia subintegra* (Arizona cliffrose)

https://ecos.fws.gov/docs/recovery_plan/950616.pdf

Original Approved: June 16, 1995

Original Prepared by: Susan Rutman, U.S. Fish and Wildlife Service, Phoenix, Arizona
Barbara G. Phillips, Coconino National Forest, Flagstaff, Arizona
Arthur M. Phillips, III, Flagstaff, Arizona

AMENDMENT 1

We have identified information that indicates the need to amend the recovery criteria for this species. In this proposed modification, we synthesize the adequacy of the existing recovery criteria, show amended recovery criteria and the rationale supporting the proposed recovery plan modification, and document the completion of recovery actions that have met the delisting criteria. We present the proposed modification as an appendix that supplements the original Arizona Cliffrose (*Purshia subintegra*) Recovery Plan (Recovery Plan), superseding relevant parts found on pages 52-73 (U.S. Fish and Wildlife Service (USFWS) 1995).

**For
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BACKGROUND INFORMATION

Recovery plans should be consulted frequently, used to initiate recovery activities, and updated as needed. A review of the 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 statutory elements. We may amend a recovery plan when, among other possibilities: (1) the current recovery plan is out of compliance with regard to statutory requirements; (2) new information has been identified 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 the recovery plan needs significant plan improvements 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) emphasizing refined and/or prioritized recovery actions; (2) refining recovery criteria; or (3) adding a species to a multispecies or ecosystem plan. Therefore, we can use the amendment process to balance resources spent on modifying a recovery plan against those spent on managing implementation of ongoing recovery actions.

METHODOLOGY USED TO COMPLETE THE RECOVERY PLAN AMENDMENT

To help develop these recovery criteria, we looked at existing quantifiable recovery criteria for other listed plant species. We also reviewed what recovery actions our partners have taken since the development of the original Recovery Plan. In addition to the Recovery Plan, our other primary information source was the Arizona cliffrose five-year status review (USFWS 2013).

We knew of two Arizona cliffrose populations at the time of listing in 1984 (49 FR 22326). Surveyors subsequently found two additional populations in 1984 and 1985. Each population of Arizona cliffrose has unique biological and ecological characteristics and threats, and the Recovery Plan treats each population as an individual recovery unit necessary for recovery of the species. The Service addressed all four populations in the Recovery Plan (USFWS 1995).

ADEQUACY OF RECOVERY CRITERIA

Endangered Species Act (Act) section 4(f)(1)(B)(ii) requires each recovery plan to include, 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.

Recovery Criteria

We did not incorporate delisting criteria into the original Recovery Plan due to the number and significance of threats, and the unknown nature of the species' life history and habitat requirements at that time. See previous version of criteria (USFWS 1995, pp 52-54).

Synthesis

Our partners have implemented or continue to implement a number of the actions described in the outline of recovery actions on pages 54-73 of the 1995 Recovery Plan.

The Arboretum at Flagstaff conducted a 22-year demography study of Arizona cliffrose in the Cottonwood Recovery Unit. Their findings suggest a declining population due to low recruitment, and models predicted "quasi-extinction" (fewer than five individuals) in 200 years (Haskins *et al.*, 2018). The report includes recommendations that may form the basis for developing a systematic, long-term demographic monitoring program for all of the recovery units. The Coconino National Forest (CNF) established the 489-hectare (ha) (1209-acre [ac]) Verde Valley Botanical Area, which includes 50 to 60 percent of the Cottonwood population, to protect the species and unique associated plant communities (U.S. Forest Service [USFS] 1987,

2019). The CNF closed vehicle access to the Botanical Area (USFS 2011). Fifteen years of monitoring use along two trails in the Botanical Area documented no adverse effects on cliffrose plants. The CNF permanently removed the South Gyberg pasture, where 75% of the Cottonwood population occurs, from livestock grazing (USFS 2014). The CNF adjusted grazing rotation in the North Gyberg Pasture to conform to the Recovery Plan, and they implemented monitoring to measure browsing on Arizona cliffrose.

The Bureau of Land Management (BLM) has monitored the effects of livestock browsing in the Burro Creek Recovery Unit since 1987; long-term trend analysis is pending. For this population, about 98 percent of known Arizona cliffrose individuals are contained within an Area of Critical Environmental Concern (ACEC). In 1998, the BLM withdrew the 453-ha (1,119.25-ac) ACEC from surface entry and mining for 50 years to protect Arizona cliffrose and its habitat (BLM 1993, 1998). The BLM has also excluded livestock grazing, prohibited off-road vehicle use, and rehabilitated unauthorized “vehicle ways” within the ACEC (Peck 2009). The goal of the ACEC, designated in the BLM’s Resource Management Plan (1995), is to maintain a viable population of Arizona cliffrose (BLM 1993).

In the Horseshoe Lake Recovery Unit, on the Tonto National Forest, the Forest Service has prohibited all off-road motor vehicle use (USFS 2002) and the Lime Creek subpopulation is located within a congressionally designated roadless area (USFS 2001).

In the Bylas Recovery Unit, the San Carlos Apache Tribe has not implemented measures specifically to conserve Arizona cliffrose, per se, because the Tribe does not consider ongoing land-use practices a threat; however, the population receives protection from the Tribe’s project review process and traditional cultural perspective on conservation (Pilsk, pers. comm., 2008). The Bylas population is considered the most genetically distinct of the four (Travis *et al.*, 2008).

AMENDED RECOVERY CRITERIA

Recovery criteria serve as objective, measurable standards to determine when an endangered species has recovered to the point that it no longer meets the definition of endangered or threatened, indicating the species may be downlisted or 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 distinct population segment) that 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 because of threats to the species. Section 4(b) of the Act requires that we make the determination “solely on the basis of the best scientific and commercial data available.” Thus, while recovery plans provide important guidance to the Service, states, tribes 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 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 endangered or threatened. A decision to revise the status of a species on the Lists, 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 and tribal comment, and peer review, followed by a final decision announced in the *Federal Register*.

We provide updated downlisting criteria and establish delisting criteria for Arizona cliffrose, which will supersede those included in the 1995 Recovery Plan, as follows:

Downlisting Recovery Criteria

We will consider Arizona cliffrose for downlisting when:

1. A single, long-term monitoring plan for all Arizona cliffrose populations and habitat is developed and implemented.

Justification: Populations of Arizona cliffrose are located on lands owned and managed by Federal, state, tribal, county and private entities. A cohesive monitoring plan with standardized monitoring protocols is necessary to collect robust information on plant abundance, population trends, limiting factors (e.g., related to recruitment) and habitat conditions for this species. We will use this information to understand whether each population is stable or increasing.

2. Land managers conserve existing habitat, in each recovery unit, in perpetuity to prevent further habitat loss and/or degradation.

Justification: The primary threat to Arizona cliffrose is habitat degradation and loss, mostly associated with urbanization, road development, off-road activities and mining activities; predation (livestock grazing); and possibly drought exacerbated by climate change. To ameliorate these threats and ensure long-term survival of Arizona cliffrose, land managers should maintain all occupied habitat in high quality and unfragmented condition. High quality means habitat that supports or could support relatively high densities of Arizona cliffrose plants, is relatively undisturbed, supports other rare species, is protected by a management agreement, and/or has active recruitment. The following are measures, as identified in the Recovery Plan, needed for habitat conservation:

- Livestock grazing within the four recovery units meets standards set in recovery task 3b of the Recovery Plan, protecting Arizona cliffrose from adverse effects of livestock grazing. Recovery task 3b includes:
 - Developing, or revising and implementing allotment management plans;
 - Continually reviewing utilization, condition and trend information;
 - Complying with section 7 of the Act;
 - Maintaining the enclosure fence surrounding the Burro Creek population to continue excluding burro and livestock browsing; and
 - Providing educational opportunities to livestock operators.

- Recovery task 3a (manage mineral exploration and development) is met for all four recovery units as described in the Recovery Plan;
- Written commitments in place to retain all Federal lands containing Arizona cliffrose.
- Private and state lands containing Arizona cliffrose are protected from further habitat loss or degradation; and
- Off-road vehicle traffic is prohibited in Arizona cliffrose habitat.

3. Each of the four recovery units contains a population of Arizona cliffrose that is stable or increasing over a period of at least 10 years.

Justification: Arizona cliffrose is a long-lived, xerophytic perennial that occurs in Sonoran desertscrub, where winters are mild and summers hot. Annual rainfall for the four Arizona cliffrose areas ranges from 9 to 14 inches, evenly distributed between summer and winter rainfall periods, separated by dry seasons. The mean annual temperature ranges from 61 to 71 degrees Fahrenheit (°F), with extremes ranging from freezing to over 100 °F. At least two, consecutive years of adequate moisture and temperature are necessary for seed set and seedling establishment, followed by additional time to ensure recruitment into the population. Given the variation in precipitation and temperature the desertscrub community experiences from year to year, it may take as many as 10 years for two consecutive years of favorable weather conditions to occur. Therefore, a period of 10 consecutive years is the minimum amount of time needed to track population trends.

Delisting Recovery Criteria

In addition to meeting downlisting criteria 1 and 2, we will consider Arizona cliffrose for delisting when:

1. Each of the four recovery units contains a population of Arizona cliffrose that is stable or increasing over a period of at least 20 years.

Justification: Populations of Arizona cliffrose that have remained stable or increasing over a period of 20 years is demonstrative of species viability (long-term persistence in the wild). We have limited information about Arizona cliffrose life history; however, a review of the best available information on the species' life history indicates that a time frame of 10 years is suitable for tracking population trends and therefore we based the Delisting criterion on maintenance of downlisting criteria for an additional 10 years. This would involve the conservation of habitat in all four populations and the indication that the populations are viable, or are on a significant upward trend toward viability, demonstrated through monitoring.

Rationale for Amended Recovery Criteria

Quantifiable recovery criteria are necessary to determine when we have met the recovery goals for Arizona cliffrose, and can consider proposing the species for downlisting and delisting. These amended criteria ensure that the underlying causes of the species' decline will be addressed and mitigated in all four of the Arizona cliffrose recovery units, so that all populations may be sustained in their natural habitat. The Service bases assessments of species viability,

defined as the likelihood of persistence over the long term, on analyses of the species' resilience, redundancy, and representation. Resilience refers to the population size necessary to endure stochastic environmental variation (Shaffer and Stein 2000, pp. 308-310). Redundancy refers to the number and geographic distribution of populations or sites necessary to endure catastrophic events (Shaffer and Stein 2000, pp. 308-310). Representation refers to the extent of genetic and ecological diversity, both within and among populations, necessary to conserve long-term adaptive capability (Shaffer and Stein 2000, pp. 307-308). These criteria are defined by trends in population size, the number and distribution of populations, and the abatement of threats through the conservation and protection of populations and habitats.

ADDITIONAL SITE SPECIFIC RECOVERY ACTIONS

No additional site-specific recovery actions are necessary for this species.

COSTS, TIMING, PRIORITY OF ADDITIONAL RECOVERY ACTIONS

No additional site-specific recovery actions are necessary for this species.

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APPENDIX A – SUMMARY OF PUBLIC, PARTNER, AND PEER REVIEW COMMENTS RECEIVED

Summary of Public Comments

We published a notice of availability in the *Federal Register* on June 27, 2019 (84 FR 30764-30768) to announce the draft amendment for the Arizona cliffrose (*Purshia subintegra*) Recovery Plan (Recovery Plan) was available for public review, and to solicit comments by the scientific community, State and Federal agencies, Tribal governments, and other interested parties on the general information base, assumptions, and conclusions presented in the draft amendment. An electronic version of the draft recovery plan amendment was also posted on the Service's Species Profile website:

<https://ecos.fws.gov/ecp0/profile/speciesProfile?sId=866#recovery>

The Service received three responses to the request for public comments. These included comments from an interested citizen, the Coconino National Forest, and the Western Watershed Project.

Public comments ranged from editorial suggestions to specific recommendations on the amendment content. We have considered all substantive comments; we thank the reviewers for these comments. In general, these comments did not lead to significant changes in the draft amendment. Below, we provide a summary of public comments received. Please note, that some of the comments we incorporated as changes into the revised recovery plan did not warrant an explicit response and, thus, are not presented here.

Comment (1): The commenter suggested revisiting the recovery plan amendment and the terms of delisting and downlisting with more solid information about the impacts of livestock grazing on this species and the long-term trend of grazed populations.

Response: We added updates to the final amendment about agency efforts to address the effects of grazing. The purpose of this amendment is to identify criteria for downlisting and delisting. Monitoring, which is part of one of the downlisting criteria, will indicate whether populations of Arizona cliffrose are stable or increasing and, in addition, may provide information specifically about effects of grazing.

Summary of Peer and Partner Review Comments

In accordance with the Act, we solicited independent peer review of the draft amendment from qualified representatives from academic and scientific groups. Peer review was conducted concurrent with the *Federal Register* publication. Criteria used for selecting peer reviewers included their demonstrated expertise and specialized knowledge related to Arizona cliffrose conservation biology, ecology, demography, genetics, land use or management and threats facing this species, and propagation/reintroduction methods. The qualifications of the peer reviewers are in the decision file and the administrative record for this Recovery Plan amendment.

In total, we solicited review and comment from five peer reviewers. We received comments from three peer reviewers. Peer reviewers that responded included representatives from academic and scientific groups (Center for Plant Conservation, University of Arizona, and The

Arboretum at Flagstaff). In general, the draft amendment was well-received by the peer and partner reviewers and garnered positive comments. Several reviewers provided additional specific information, including documents or citations; we thank the reviewers for these data and we have added the information where appropriate.

We considered all substantive comments, and to the extent appropriate, we incorporated the applicable information or suggested changes into the final Recovery Plan amendment. Below, we provide a summary of specific comments received from peer and partner reviewers with our responses; however, we addressed many of the reviewers' specific critiques and incorporated their suggestions as changes to the final amendment. Such comments did not warrant an explicit response, and as such, are not addressed here. We appreciate the input from all commenters, which helped us to consider and incorporate the best available scientific and commercial information during development and approval of the final Recovery Plan amendment.

Peer Review Comment (1): Reintroduced populations of Arizona cliffrose should be included as a way to measure population stability.

Response: Transplantation and *ex situ* propagation with transplantation are discussed in the existing Recovery Plan as mitigation measures to offset adverse effects of projects. Transplantation has been used for this purpose. However, the Recovery Plan states that restoration through transplantation will not be considered as contributing to recovery because, at the time the existing Recovery Plan was completed, this technology was untested and, therefore, its role is conservation biology unknown. The purpose of this amendment is specifically to identify criteria for downlisting and delisting. New recovery actions will be pursued through the recovery planning process when the need for a full revision to the existing Recovery Plan is identified.

Peer Review Comment (2): The BLM's Area of Critical Environmental Concern (ACEC) and the Forest Service's Verde Valley Botanical Area do not have a firm basis in law and therefore do not provide sufficient, long-term protection for Arizona cliffrose.

Response: The ACEC and Botanical Area have been in place for over 20 and 30 years, respectively, and both agencies have long-term management plans conferring substantial protection during that time. In addition, the ACEC was withdrawn from surface entry and mining for a period of 50 years pursuant to a public land order.

Peer Review Comment (3): Ten years for monitoring, per the third downlisting criterion, may not be enough time to establish a trend. What if a decline is detected in those 10 years?

Response: The amendment acknowledges that 10 years is a minimum, particularly because favorable weather conditions necessary for seed set and seedling establishment, followed by recruitment, may not occur in that period. With respect to detecting a decline, this amendment only addresses criteria for down and delisting. Existing recovery actions identified in the Recovery Plan should be employed to address any decline. New recovery actions will also be pursued through the recovery planning process when the need for a full revision to the existing Recovery Plan is identified.