

Amendment to the Recovery Plan for the Columbia Basin Distinct Population Segment of the Pygmy Rabbit (*Brachylagus idahoensis*)

Original Recovery Plan Approved: December 11, 2012

Original Recovery Plan Prepared by: Pacific Region, U.S. Fish and Wildlife Service

Recovery Plan Amendment Approved:



Acting **Regional Director, Pacific Region**
U.S. Fish and Wildlife Service

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Species addressed in Amendment: Columbia Basin Distinct Population Segment (DPS) of the Pygmy Rabbit (*Brachylagus idahoensis*)

We have analyzed all of the best available information and find that there is a need to amend the recovery criteria for the Columbia Basin DPS of the pygmy rabbit (*Brachylagus idahoensis*) that have been in place since the recovery plan was completed in 2012. In this amendment, we discuss the adequacy of the existing recovery criteria, identify amended recovery criteria, and present the rationale supporting the recovery plan modification. The modification is to be shown as an appendix that supplements the recovery plan, superseding only section III.C.2 “Removal from the List of Endangered and Threatened Wildlife and Plants” (USFWS 2012, p. 47).

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 A review of the recovery plan and its implementation may show that the plan is out of date or its usefulness is limited, and therefore warrants modification.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. 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 appropriate in cases where 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 more comprehensive 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.

METHODOLOGY USED TO COMPLETE THE RECOVERY PLAN AMENDMENT

This amendment refines the U.S. Fish and Wildlife Service's (Service) 2012 recovery criteria (which contained only downlisting criteria) by adopting delisting criteria from the Washington State Recovery Plan for the Pygmy Rabbit (Washington Department of Fish and Wildlife (WDFW) Recovery Plan; WDFW 1995). The criteria for reclassification from endangered to threatened status (downlisting) remain unchanged (see USFWS 2012 p. 45-47).

Per the WDFW Recovery Plan (WDFW 1995, p. i) their draft recovery plan was reviewed by pygmy rabbit researchers and State and Federal agencies prior to being made available for a 90-day public review. All comments received were considered in preparation of the final recovery plan (WDFW 1995, p. 56-73).

A draft of this Service recovery plan amendment was published for public review on January 31, 2019 (84 FR 790). In addition, we sought peer review. Please see the Appendix for a summary of the comments received and our responses.

ADEQUACY OF RECOVERY CRITERIA

Section 4(f)(1)(B)(ii) of the Endangered Species Act (Act) 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 listing factors.

Recovery Criteria

See previous version of criteria in recovery plan (USFWS 2012, p. 45-47).

Synthesis

The Columbia Basin DPS of pygmy rabbit (Columbia Basin pygmy rabbit) was emergency-listed as endangered in 2001 and received final endangered status in 2003. A 5-year review was conducted in 2010 and a final recovery plan was completed in 2012. The WDFW completed a periodic status review in 2018 (Hayes 2018). While the numbers, distribution, and on-the-ground management of the Columbia Basin pygmy rabbit has changed over time, the threats remain the same.

Captive breeding of the last remaining wild Columbia Basin pygmy rabbits began in 2002 at Washington State University and the Oregon Zoo and later at Northwest Trek Wildlife Park (Becker *et al.* 2011; USFWS 2012). The breeding program was implemented to retain the different genetic characteristics of the purebred Columbia Basin population; however, these

rabbits likely suffered from severe inbreeding depression, and had a significantly diminished reproduction potential and were unable to produce enough offspring for anticipated reintroduction efforts. In 2003, purebred Columbia Basin pygmy rabbits were intercrossed with pygmy rabbits from Idaho, resulting in increased genetic diversity and improved reproduction of captive rabbits; however, mortality of young remained high and high rates of infection and mortality of both adults and juveniles due to disease was observed (Becker *et al.* 2011; USFWS 2010; USFWS 2012). In 2011, the off-site captive breeding program was deemphasized and transitioned to semi-wild breeding within large enclosures and subsequent capture and release of suitable numbers of kits for release into the wild (USFWS 2012). From fall 2011 through spring 2013, 109 pygmy rabbits were translocated from Nevada, Utah, Oregon, and Wyoming and placed in 1 of the 4 breeding enclosures with the remaining captive-bred adults and kits (Hayes 2018). Animals in the enclosures have produced over 2,200 kits since the 2011 breeding season, most of which have been released to the wild at the Sagebrush Flats Wildlife Area (SFWA) and to a lesser degree, the Beezely Hills Recovery Emphasis Area (WDFW 2018). A third release site has been identified at the Dormier/Burton Draw Unit of the SFWA.

In June 2017, the Sutherland Canyon wildfire burned 30,000 acres of shrub-steppe habitat within the Beezely Hills Recovery Emphasis Area and swept through the 10-acre breeding enclosure and three release pens. Fire-related mortality claimed 80 rabbits, including all 26 kits released in the net pens, 48 rabbits (15 adults, 22 kits, 11 unknown) recovered dead within the 10-acre breeding enclosure, and an additional 6 rabbits that were recovered alive but subsequently died. Thirty-two rabbits (4 adults, 28 kits) survived and were transferred to the other 3 enclosures. Releases were suspended for 2017 (Hayes, 2018).

In 2018, kit releases resumed with 10 released in the Beezely Hills Recovery Emphasis Area and 17 in the Dormier/Burton Draw Unit of the SFWA. Surveys conducted in the winter of 2018 to 2019 detected a total of nine surviving kits from those releases (WDFW 2019).

Many rabbits released on the SFWA have migrated to adjacent shrub-steppe habitat enrolled in the Conservation Reserve Program (CRP). These properties will likely be important for recovery of the species. Annual survival of the released animals varies, but has been as high as 30 percent and reproduction of fully wild animals has been documented. There are 250 animals estimated in the population adjacent to the SFWA (WDFW 2018). Monitoring of the wild Columbia Basin pygmy rabbits at the SFWA and Beezely Hills is ongoing. While the population status and management strategies have changed over time, the threats to the species have remained consistent (Hayes 2018; WDFW 1995; WDFW 2018; USFWS 2010; USFWS 2012).

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 the Columbia Basin pygmy rabbit 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, subspecies, or DPS) which is in danger of extinction throughout all or a significant portion of its range. The term “threatened species” means any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

Downlisting Recovery Criteria

The criteria for downlisting Columbia Basin pygmy rabbit remain the same as those described in the recovery plan (USFWS 2012, p. 45-46). For ease of reference, those downlisting criteria are as follows: we will consider reclassification of the Columbia Basin pygmy rabbit from endangered to threatened status pursuant to the measures prescribed by the Act if any one of the following criteria is met.

- 1 – Subpopulations at 2 recovery emphasis areas each have a 5-year average N_e [effective population size] of at least 375 individuals, and a third recovery emphasis area has been formally established through completion of 1 or more appropriate conservation agreements and is available for initial reintroduction efforts; or
- 2 – A subpopulation at 1 recovery emphasis area has a 5-year average N_e of at least 250 individuals, and subpopulations at 2 other recovery emphasis areas each have a 5-year average N_e of at least 125 individuals; or
- 3 – A single subpopulation with a 5-year average N_e of at least 750 individuals has been reestablished through dispersal and range expansion from 1 or more recovery emphasis areas, and appropriate conservation agreements have been reached to include the newly occupied habitats within the recovery emphasis area(s) involved and management measures to maintain identified dispersal corridors have been agreed to and implemented.

Delisting Recovery Criteria

We provide new delisting criteria for the Columbia Basin pygmy rabbit, which supersede those included in the Recovery Plan for the Columbia Basin Distinct Population Segment of the Pygmy Rabbit (USFWS 2012). The amended delisting criteria are adopted from the Washington State Recovery Plan for the Pygmy Rabbit (Becker *et al.* 2011, Hayes 2018; WDFW 1995). The Columbia Basin pygmy rabbit may be considered for delisting given:

1. A minimum 5-year average of at least 2,800 adult Columbia Basin pygmy rabbits in at least 12 populations. Of these, at least 4 populations have 500 or more adults each and at least 8 populations have 100 or more adults each.
2. Habitat security for the 12 populations has been established (WDFW 1995, p. 25).

In addition to the downlisting and delisting criteria, all classification decisions consider an analysis of 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 limiting factor; (4) are there inadequate existing regulatory mechanisms in place outside the Act (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 of our analysis. Our final decision is announced in the *Federal Register*.

Rationale for Recovery Criteria

The WDFW addressed the threats to the Columbia Basin pygmy rabbit at the time of development of their recovery plan, and the threats are consistent with those addressed in the Service's recovery plan (USFWS 2012). Threats to the Columbia Basin pygmy rabbit were classified according to five factors identified in section 4(a)(1) of the Act for consideration in listing, reclassification, and delisting decisions. The available information addressing each of the five factors, and how these threats were considered in development of recovery actions, is summarized in the Service's recovery plan (USFWS 2012, pp. 13-23). The current downlisting criteria, and new delisting criteria, contribute to addressing the threats.

Large-scale loss and fragmentation of native shrub-steppe habitats, primarily for agricultural development, likely played a role in the long-term decline of the Columbia Basin pygmy rabbit (USFWS 2012, p. 13). However, it is unlikely that these factors alone directly influenced the eventual extirpation from the wild. Once a population declines below a certain threshold, it is at risk of extirpation from a number of influences including chance environmental events, catastrophic habitat loss or resource failure, predation, disease, demographic limitations, loss of genetic diversity, and inbreeding depression (USFWS 2012, p. 22-23). While we currently have higher populations and more successful management methods (breeding enclosures, etc.) the population remains small, its distribution in the wild is limited, and current threats to Columbia Basin pygmy rabbit remain the same as those previously considered (Hayes 2018; USFWS 2010; WDFW 1995).

Columbia Basin pygmy rabbits in Washington are geographically isolated. Viability for this isolated population, barring human intervention, will be dependent upon maintaining adequate numbers and interaction between subpopulations within Washington (WDFW 1995, p. 25). As stated in the WDFW recovery plan (WDFW 1995, p. 26) the delisting criteria, which call for a minimum of 2,800 adult pygmy rabbits, are consistent with current theory concerning minimum population size needed to maintain genetic variability to allow for adaptation to long-term environmental change. The criteria, which call for geographically separated habitat areas, provide greater security from devastating effects of epidemics, fire, and other disasters. Relatively small subpopulations of 100 or more adult rabbits are considered large enough to be resilient over the short term (decades). Resilience refers to the short-term ability of a population to survive in the face of normal, random birth and death events (demographic stochasticity). Populations of this size should also be able to retain sufficient genetic variation to maintain normal fecundity and viability. Including these smaller populations in the recovery criteria provides additional security against extirpation and facilitates a realistic strategy for establishing pygmy rabbits over much of their former range in the State. These smaller populations will take advantage of opportunities to establish pygmy rabbits in smaller habitat areas. These populations will be relatively secure in the short term (decades) and provide additional source populations should disease, fire, or other factors eliminate other Washington populations.

LITERATURE CITED

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- [USFWS] U.S. Fish and Wildlife Service. 2010. Columbia Basin distinct population segment of the pygmy rabbit (*Brachylagus idahoensis*) 5-year review: summary and evaluation. Eastern Washington Field Office, U.S. Fish and Wildlife Service, Spokane, Washington. 25 pp.
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- [WDFW] Washington Department of Fish and Wildlife. 1995. Washington state recovery plan for the pygmy rabbit. Wildlife Management Program, Washington Department of Fish and Wildlife, Olympia. 73 pp.
- [WDFW] Washington Department of Fish and Wildlife. 2018. Handout from Columbia Basin pygmy rabbit Partner Field Tour and Policy Discussion. 2 pp.
- [WDFW] Washington Department of Fish and Wildlife. 2019. Supplemental Handout from Pygmy Rabbit Science Team Meeting. April 23, 2019. 8 pp.

Appendix. Summary of Peer Review, Agency, and Public Comments on the Draft Amendment to the Recovery Plan for Columbia Basin Distinct Population Segment of the Pygmy Rabbit (*Brachylagus idahoensis*)

On January 31, 2019, we released the Draft Amendment to the Recovery Plan for Columbia Basin Distinct Population Segment of the Pygmy Rabbit (*Brachylagus idahoensis*) for a 60-day comment period. The notice of availability, published in the Federal Register (84 FR 790-795), solicited written comments on the draft recovery plan amendment. This comment period ended on April 1, 2019.

This section provides a summary of general information about the comments we received. All comment letters are kept on file in the Central Washington Field Office of the U.S. Fish and Wildlife Service, 215 Melody Lane, Wenatchee, Washington 98801.

All comments received were considered. The majority of the comments were to point out minor corrections or suggest areas in need of further explanation or clarification; these have been incorporated directly into the final recovery plan amendment, where appropriate. Significant comments regarding the substance of the recovery plan amendment are summarized below, along with our responses to those comments. We thank those who took the time to read the draft recovery plan amendment and provide us with their suggestions for improvement.

Summary of Comments and Our Responses

Comment (1): Concern that, “criteria are being added in the absence of any scientific peer review and that this will lead to a failure on the Service’s part to follow the best-available science.”

Response: Peer review was conducted following the publication of the Notice of Availability, and in accordance with the requirements of the Endangered Species Act (Act). Below we provide a detailed summary of peer review comments and our responses, where appropriate.

Comment (2): Concern that, “the decision to update recovery criteria for these 42 species as a group is indicative of the Service moving away from utilizing recovery teams and outside scientific expertise.”

Response: Section 4 of the Act provides the Service with the authority and discretion to appoint recovery teams for the purpose of developing and implementing recovery plans. The current effort to update recovery plans with quantitative recovery criteria for what constitutes a recovered species is not indicative of the future need for, and does not preclude the future utilization of, recovery teams to complete recovery planning needs for listed species.

Comment (3): New and significant information has been developed in the years since the existing recovery plan was adopted. Updating this plan can serve to better inform the Service, the regulated community, and Federal, State, and local resource agencies.

Response: A recovery plan should be a living document, reflecting meaningful change when new

substantive information becomes available. Keeping a recovery plan current increases its usefulness in recovering a species by ensuring that the species benefits through timely, partner-coordinated implementation based on the best available information.

Comment (4): The Service should consider whether the updated recovery criteria would be less burdensome on Federal agencies and the regulated community than the existing criteria.

Response: Recovery plans are guidance documents that outline how best to help listed species achieve recovery, but they are not regulatory documents. 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.

Recovery criteria are achieved through the funding and implementation of recovery actions by both the Service and our partners. In addition to the existing recovery actions included in each of these recovery plans, the amendments address the need for any new, site-specific recovery actions triggered by the modification of recovery criteria, along with the costs, timing, and priority of any such additional actions. Because recovery plans are not regulatory documents, identification of an action to be implemented by any public or private party does not create a legal obligation beyond existing legal requirements. Nothing in a recovery plan should be construed as a commitment or requirement that any Federal agency obligate or provide funds.

Comment (5): The Service should consider whether the recovery criteria are achievable, because including unattainable recovery criteria could render such plans meaningless, or impede other processes under the Act.

Response: The National Marine Fisheries Service and U.S. Fish and Wildlife Service Interim Endangered and Threatened Species Recovery Plan Guidance (2010) emphasizes the development of recovery criteria that are specific, measurable, achievable, realistic, and time-referenced (SMART). The achievable component of SMART criteria implies that the authority, funding, and staffing needed to meet recovery criteria are feasible, even if not always likely.

In developing recovery criteria specifically, we attempt to establish criteria that are both scientifically defensible and achievable to the greatest extent possible. At times, however, the feasibility of achieving certain criteria can be, or appear to be, constrained by the particular, difficult circumstances that face a species. Even in such cases, criteria serve to guide recovery actions and priorities for the species. Furthermore, as recovery progresses, periodic reevaluation of the species status through the 5-year review process may reveal that the barriers to achieving certain criteria have been removed or that circumstances or our understanding of the species have evolved. In that event, the Service can revise recovery criteria to ensure that they reflect the strategy most likely to succeed in the goal of recovery.

Comment (6): The Service should consider conservation efforts that have been put into place for the listed species since the previous iteration of the recovery plan, especially where the Service has supported conservation efforts, in formulating recovery criteria that will be established or amended by the revised draft plan.

Response: While section 4 of the Act directs the Service to specifically develop and implement

recovery plans, several other sections of the Act and associated programs and activities also provide important opportunities to promote recovery. Information from these programs and activities about the biological needs of the species can inform recovery planning (including the formulation or revision of recovery criteria) and implementation. These conservation efforts have been considered during the development of this and other recovery plans.

Comment (7): The Service should determine whether ongoing species conservation efforts beneficially address one or more of the listing factors set forth in the Act implementing regulations addressing species listings and designation of critical habitat.

Response: All Service decisions that affect the listed status or critical habitat designation of a particular species, including our 5-year review of each listed species, are made by analyzing the five factors described in section 4 of the Act. Such an analysis necessarily includes an assessment of any conservation efforts or other actions that may mitigate or reduce impacts on the species. While our objective with this particular effort was to establish objective, measurable criteria for delisting, conservation actions play a crucial role in determining if and when those criteria have been satisfied.

Comment (8): The Service should be mindful of the impacts that recovery plan criteria can have on the section 7 process of the Act for the regulated community, because the Service and other Federal resource agencies sometimes request that recovery criteria be addressed in biological assessments and other planning processes under the Act addressing listed species.

Response: Recovery plans can both inform, and be informed by section 7 processes of the Act. When revising a recovery plan, existing section 7 consultations may provide helpful information on: recent threats and mechanisms to avoid, minimize, or compensate for impacts associated with those threats; a summarized status of the species; and indication of who important partners may be. Section 7 consultations can inform the need for revised recovery actions, recovery implementation schedule activities, recovery criteria, or species status assessments to provide more comprehensive recovery planning while the species remains listed.

Comment (9): The Service should include the full panoply of current information available for the species in all revised draft recovery plans.

Response: Our recovery planning guidance recommends that recovery planning be supported by compilation of available information that supports the best possible scientific understanding of the species. Although it is not necessary to exhaustively include all current information within the text of the recovery plan, to the extent that this information is specifically relevant and useful to recovery, the recovery plan may summarize such material or incorporate it by reference. Supporting biological information may also be included within a species status assessment or biological report separate from the recovery plan document itself.

Comment (10): The Service should consider whether the existing recovery plan should be revised or replaced in its entirety rather than amended in part.

Response: Under guidance established in 2010, partial revisions allow the Service to efficiently and effectively update recovery plans with the latest science and information when a recovery plan may not warrant the time or resources required to undertake a full revision of the plan. To further

gauge whether we had assembled, considered, and incorporated the best available scientific and commercial information into this recovery plan revision, we solicited submission of any information, during the public comment period, that would enhance the necessary understanding of the species' biology and threats, and recovery needs and related implementation issues or concerns. We believe the recovery plan amendment, which targets updating recovery criteria, is appropriate for the species. However, we will also continue to evaluate the accuracy and usefulness of the existing recovery plan with respect to current information and status of conservation actions, and may pursue a full revision of the plan in the future, if appropriate.

Comment (11): One commenter stated that the proposed delisting criteria for Columbia Basin pygmy rabbit should be subject to extensive peer review.

Response: In order to ensure the quality and credibility of the scientific information the proposed criteria were based on, requests for peer review were sent to four individuals with knowledge and expertise in one or more of the following areas: pygmy rabbit biology, shrub steppe ecology, genetics and molecular biology, conservation biology, population dynamics and extinction risk analyses, environmental pressures and potential threats to the species, and evaluation of biological plausibility. Responses were received from two of the four requested peer reviewers; those comments were addressed.

Comment (12): Peer review comments questioned the reason for the difference between the proposed delisting criteria where total adult population (N) is used as the objective metric, and the downlisting criteria that utilize effective population size (N_e).

Response: Our goal in this effort was to establish objective, measurable criteria for delisting, and to more closely align the Federal recovery plan with the Washington State Recovery Plan for the Pygmy Rabbit (WDFW 1995). The Columbia Basin distinct population segment of the pygmy rabbit is entirely contained within the State of Washington and consistent use of total adult population size (N) as the delisting criteria metric in both the Federal and State recovery plans will contribute to efficiencies in monitoring and future management.

Comment (13): Public and peer reviewers questioned how populations would be delineated and whether connectivity between populations would occur. One peer reviewer recommended creating clusters of connected populations that act as metapopulations and are isolated from other metapopulations to provide benefits of connectivity for persistence of smaller populations and security against catastrophic events. Commenters also questioned the viability of the 8 smaller populations of at least 100 adults called for in the delisting criteria since small populations are vulnerable to loss of genetic diversity and inbreeding depression.

Response: Populations are delineated as individually identifiable clusters of adult pygmy rabbits located during annual burrow surveys. Past management has focused on establishing initial populations within three Recovery Emphasis Areas (REAs). To achieve the delisting criteria, additional populations will need to be established through natural dispersal from founding populations within the REAs. During the early stages of this process, each of the areas in the immediate vicinity of the REAs will function as an individual metapopulation with connectivity and opportunities for genetic exchange. The proximity of REAs to one another, along with efforts to secure habitat availability in intervening areas, will facilitate establishment of a larger network of connected populations as pygmy rabbits disperse and occupy available habitat. Since the 8

populations of at least 100 adults are not expected to exist as isolated entities, we do not anticipate loss of genetic diversity or inbreeding depression to impact their viability.

Comment (14): One peer reviewer asked how the number of 2,800 adults compared to that of historical population levels and if there was a goal to restore the population to a certain portion of their historical range. The reviewer also stated that monitoring geographic range expansion of the population would be much easier than monitoring the number of adults.

Response: Comparison to historical population numbers is not possible as there is little comprehensive information available regarding Columbia Basin pygmy rabbit historical abundance (WDFW 1995). Museum specimens and reliable sighting records indicate that the Columbia Basin pygmy rabbit probably occurred in portions of Douglas, Grant, Lincoln, Adams, Franklin, and Benton Counties, Washington during the first half of the 20th century. While there are no downlisting or delisting criteria for occupancy of a certain portion of historic range, both State and Federal agencies continue to explore opportunities for range expansion and population establishment in areas of suitable habitat. Pygmy rabbits are not currently distributed continuously across their range, nor were they in the past. Rather, they are found in areas within their broader distribution where suitable habitats occur. The local distribution of suitable habitat patches, and thus pygmy rabbits, likely shifts across the landscape in response to various sources of disturbance (e.g., fire, flooding, grazing, crop production) combined with long- and short-term weather patterns. For these reasons, we do not believe that monitoring range expansion in lieu of adult numbers would be sufficient to ensure persistence of the species for the foreseeable future.

Comment (15): One peer reviewer questioned whether current monitoring methods could provide the necessary metrics for the delisting criteria.

Response: Winter surveys for active burrows are currently the most effective method for detecting and counting adult pygmy rabbits. This method is limited by the availability of time and personnel and the ability to access all areas of potentially occupied habitat. Because of these limitations, any counts will likely be a conservative representation of the total adult population. Cooperators are investigating aerial burrow detection methods to assist in focusing agency monitoring efforts and will continue to investigate innovative survey options.

Comment (16): One peer reviewer recommended conducting a population viability analysis (PVA) to better understand demographic and genetic vulnerabilities, and to contribute data from simulations to inform decisions about population sizes, numbers of populations, and options for mitigating potential population declines.

Response: Current monitoring efforts are gathering data that may contribute to the development of a PVA and future population modeling exercises.

Comment (17): One peer reviewer recommended an evaluation of methods for estimating population sizes and associated uncertainty in population estimates to quantify census population sizes, and fluctuations in population sizes across years and among populations.

Response: The downlisting and delisting criteria rely on 5-year average adult population levels to help account for year-to-year variability in environmental conditions and the corresponding impacts to population. Estimates of population sizes in conjunction with adult population numbers

from existing survey efforts would be helpful in determining population status as recovery progresses.

Comment (18): One commenter stated that there should be criteria included that relate to the development, funding, and implementation of a post-delisting monitoring plan.

Response: Section 4(g), added to the Act in the 1988 reauthorization, requires the Service to implement a system in cooperation with the states to monitor for not less than 5 years the status of all species that have recovered and been removed from the list of threatened and endangered plants and animals (list; 50 CFR 17.11, 17.12, 224.101, and 227.4). The Act does not require the development of a formal post-delisting monitoring plan. However, the Service acknowledges that written planning documentation will substantially contribute to the effective implementation of section 4(g) by guiding collection and evaluation of pertinent information over the monitoring period and articulating the associated funding needs. Development of specific criteria for such an effort is not prudent at this time as knowledge of species biology and monitoring needs are likely to evolve prior to delisting.

Comment (19): One commenter stated that habitat should be secured beyond the locations of the 12 populations to provide the opportunity for establishment of additional future populations in order to maintain the minimum number of 12 populations on the landscape over time.

Response: Pygmy rabbits are not distributed continuously across their range, and are found in areas within their broader distribution where suitable habitats occur. The distribution of suitable habitat patches, and thus pygmy rabbits, likely shifts across the landscape in response to various sources of disturbance and long- and short-term weather patterns. Because of these dynamics, ensuring habitat security that will provide for the long-term persistence of the species will require assurances in areas beyond the footprint of the 12 populations. To date there are approximately 152,700 acres enrolled in the Template Pygmy Rabbit Safe Harbor Agreement and we continue to work with landowners in Douglas County, Washington to apply for incidental take permits under the Douglas County Multiple Species General Conservation Plan. We expect to work with Federal and State agencies and others in the future to ensure habitat is available for pygmy rabbits and other species.