DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

[Docket No. FWS–R2–ES–2014–0042]

[4500030113]

Endangered and Threatened Wildlife and Plants; 12-Month Finding on a Petition to List Rio Grande Cutthroat Trout as an Endangered or Threatened Species

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Notice of 12-month petition finding.

SUMMARY: We, the U.S. Fish and Wildlife Service (Service), announce a 12-month finding on a petition to list the Rio Grande cutthroat trout (*Oncorhynchus clarkii virginalis*) as an endangered or threatened species under the Endangered Species Act of 1973, as amended (Act). After review of the best available scientific and commercial information, we find that listing the Rio Grande cutthroat trout is not warranted at this time, and, therefore, we are removing this species from our candidate list. However, we

ask the public to submit to us any new information that becomes available concerning the status of the Rio Grande cutthroat trout at any time.

DATES: The finding announced in this document was made on [INSERT DATE OF FEDERAL REGISTER PUBLICATION].

ADDRESSES: This finding is available on the Internet at *http://www.regulations.gov* at Docket Number FWS–R2–ES–2014–0042. Supporting documentation we used in preparing this finding is available for public inspection, by appointment, during normal business hours at the U.S. Fish and Wildlife Service, New Mexico Ecological Services Field Office, 2105 Osuna Rd NE, Albuquerque, NM 87113. Please submit any new information, materials, comments, or questions concerning this finding to the above street address.

FOR FURTHER INFORMATION CONTACT: Wally "J" Murphy, Field Supervisor, New Mexico Ecological Services Field Office (see **ADDRESSES**); telephone 505–346–2525; or facsimile 505–346–2542. If you use a telecommunications device for the deaf (TDD), please call the Federal Information Relay Service (FIRS) at 800–877–8339.

SUPPLEMENTARY INFORMATION:

Background

Section 4(b)(3)(B) of the Act (16 U.S.C. 1531 *et seq.*) requires that, for any petition to revise the Federal Lists of Endangered and Threatened Wildlife and Plants that contains substantial scientific or commercial information that listing the species may be warranted, we make a finding within 12 months of the date of receipt of the petition. In this finding, we will determine that the petitioned action is: (1) Not warranted, (2) warranted, or (3) warranted, but the immediate proposal of a regulation implementing the petitioned action is precluded by other pending proposals to determine whether species are endangered or threatened, and expeditious progress is being made to add or remove qualified species from the Federal Lists of Endangered and Threatened Wildlife and Plants. Section 4(b)(3)(C) of the Act requires that we treat a petition for which the requested action is found to be warranted but precluded as though resubmitted on the date of such finding, that is, requiring a subsequent finding to be made within 12 months. We must publish these 12-month findings in the **Federal Register**.

Previous Federal Actions

On February 25, 1998, we received a petition from the Southwest Center for Biological Diversity requesting that the Rio Grande cutthroat trout be listed as an endangered or threatened species. We subsequently published a notice of a 90-day petition finding in the **Federal Register** (63 FR 49062) on September 14, 1998, concluding that the petition did not present substantial information indicating that listing of the Rio Grande cutthroat trout may be warranted.

On June 9, 1999, the Southwest Center for Biological Diversity sued the Service in regard to our September 14, 1998, 90-day petition finding. While this litigation was pending, we received information (particularly related to the presence of whirling disease in hatchery fish in the wild) that led us to believe that further review of the status of the subspecies was warranted. On November 8, 2001, the Service and the Southwest Center for Biological Diversity entered into a settlement agreement stipulating that the Service would initiate a status review for the Rio Grande cutthroat trout; make a determination on or before June 3, 2002; and shortly thereafter, publish our determination in the **Federal Register**. On June 11, 2002, after reviewing the best available scientific and commercial data, including data related to the presence of whirling disease, we published a determination that listing of Rio Grande cutthroat trout was not warranted (67 FR 39936).

Subsequently, on February 25, 2003, the Center for Biological Diversity (formerly Southwest Center for Biological Diversity), along with several other organizations, sued the Service for the 2002 decision that the subspecies did not warrant listing under the Act. On June 7, 2005, the district court ruled that our finding was not arbitrary and capricious, but also required that we explain in more detail our analysis of "significant portion of the range." The court ordered the Service to provide supplemental briefing discussing in more detail our analysis of "significant portion of the range." Following submission of this briefing, on December 22, 2005, the Court ruled in favor of the Service and upheld our interpretation of "significant portion of the range" and determined that our evaluation of the Rio Grande cutthroat trout's status under the listing criteria was not arbitrary and capricious. Plaintiffs appealed this decision.

The appeal was pending with the Tenth Circuit Court of Appeals, when other courts issued opinions in regard to decisions for other species that required the Service to reexamine our legal position on "significant portion of the range." On March 16, 2007, the Solicitor of the Department of the Interior issued a formal legal opinion titled "The Meaning of In Danger of Extinction Throughout All or a Significant Portion of Its Range" (M-37013, U.S. DOI 2007). Because of this new formal legal opinion and because of our knowledge of changes in status of some populations that we had previously defined as secure in our 2002 review, the Service initiated a new status review. We subsequently published notices seeking new information concerning the status of Rio Grande cutthroat trout on May 22, 2007 (72 FR 28664) and August 16, 2007 (72 FR 46030). On May 14, 2008 (73 FR 27900), we found that the Rio Grande cutthroat trout warranted listing as an endangered or threatened species under the Act based on threats to the subspecies related to population fragmentation and isolation, small population size, nonnative trout, drought, and fire. However, the Service determined that developing a proposed rule to list the Rio Grande cutthroat trout as endangered or threatened at that time was precluded by other, higher priority listing actions. The subspecies became a candidate for listing at that time.

On September 9, 2011, the Service entered into a settlement agreement regarding species on the candidate list in multi-district litigation (MDL settlement agreement; Endangered Species Act Section 4 Deadline Litigation, No. 10–377 (EGS), MDL Docket No. 2165 (D.D.C. May 10, 2011)). Per the MDL settlement agreement, the Service is

required to submit a proposed rule or a not warranted 12-month finding to the **Federal Register** for Rio Grande cutthroat trout in Fiscal Year 2014, which ends September 30, 2014. This 12-month finding fulfills that requirement of the MDL settlement agreement.

Summary of Biological Status

We completed the Species Status Assessment Report for the Rio Grande Cutthroat Trout (SSA Report; Service 2014a, entire), which is available online at *http://www.regulations.gov*, Docket No. FWS–R2–ES–2014–0042. The SSA Report documents the results of the comprehensive biological status review for the Rio Grande cutthroat trout (*Oncorhynchus clarkii virginalis*) and provides an account of the subspecies' overall viability and thus extinction risk through a forecasting of the number and distribution of surving populations in the future (Service 2014a, entire). In the SSA Report we summarized the relevant biological data and a description of past, present, and likely future risk factors (causes and effects) and conducted a new analysis of the viability of the subspecies. The SSA Report provides the scientific basis that informs our regulatory decision regarding whether this subspecies should be listed as endangered or threatened under the Act. This decision involves the application of standards within the Act, its implementing regulations, and Service policies (see **Finding**). The SSA Report contains the risk analysis on which this finding is based, and the following discussion is a summary of the results and conclusions from the SSA Report.

Rio Grande cutthroat trout (a subspecies of cutthroat trout) inhabit high-elevation

streams in New Mexico and southern Colorado, where they need clear, cold, highly oxygenated water; clean gravel substrates; a network of pools and runs; and an abundance of food (typically aquatic and terrestrial invertebrates) to complete their life history. The subspecies needs multiple resilient populations widely distributed across its range to maintain its persistence into the future and to avoid extinction. Resilient populations require long, continuous, suitable stream habitats to support large numbers of individuals and to withstand stochastic events; the populations should be free from the impacts of nonnative trout. The resilient populations (the term resiliency is defined below) should be distributed in each of the four geographic management units (GMUs) where the subspecies currently occurs. This distributional pattern will provide redundancy and representation (these terms are defined below) to increase the probability that the subspecies will withstand future catastrophic events and maintain future adaptive capacity in terms of genetic and ecological diversity (Service 2014a, Table ES-1). The likelihood of the Rio Grande cutthroat trout's persistence depends upon the number of populations, its resilience to threats, and its distribution. As we consider the future viability of the subspecies, more populations with greater resiliency and wider geographic distributions are associated with higher overall subspecies viability.

The Rio Grande cutthroat trout historically occurred in New Mexico and southern Colorado. Its distribution has been divided into five GMUs reflecting major hydrologic divisions. The subspecies no longer occurs in one GMU, the Caballo GMU, where only one population was historically known. The remaining four GMUs are managed by the States of Colorado and New Mexico and other agencies as separate units to maintain

genetic and ecological diversity within the subspecies where it exists and to ensure representation of the subspecies across its historical range. GMUs were not created to necessarily reflect important differences in genetic variability, although fish in the Pecos and Canadian GMUs do exhibit some genetic differentiation from those in the Rio Grande basin GMUs. From a rangewide perspective, multiple Rio Grande cutthroat trout populations should be dispersed throughout the various GMUs to maintain subspecies viability and to reduce the likelihood of extinction.

Currently the subspecies is distributed in 122 populations across the four GMUs (ranging from 10 to 59 populations per GMU), and most of the populations are isolated from other populations. The total amount of currently occupied stream habitat is estimated to be about 11 percent of the historically occupied range. This large decline in distribution and abundance is primarily due to the impacts of the introduction of nonnative trout. Nonnative rainbow trout (*O. mykiss*) and other nonnative subspecies of cutthroat trout invaded most of the historical range of the Rio Grande cutthroat trout and resulted in their extirpation because the nonnative trout readily hybridize with Rio Grande cutthroat trout. In addition, brown trout (*Salmo trutta*) and brook trout (*Salvelinus fontinalis*) have also displaced Rio Grande cutthroat trout in some historical habitats through competition and predation pressures. We evaluated the current condition of the 122 populations and categorized the condition of each population based on the absence of nonnative trout, the effective population size, and the occupied stream length. Fifty-five populations were in either the “best” or “good” condition in this categorization. Table ES-2 in the SSA Report identifies the number of populations placed in each

category by GMU (see Service 2014a, Chapter 3 for a description of the categories).

We next reviewed the past, current, and future factors that could affect the persistence of Rio Grande cutthroat trout populations. Seven risk factors were evaluated in detail to estimate their individual and cumulative contributions to the overall risk to the subspecies' viability. We focused on these seven factors because they were found to potentially have population-level effects on the subspecies (Service 2014a, Chapter 4, Appendix B, and Appendix C). The seven factors were:

(1) Demographic Risk: Small population sizes are at greater risk from inbreeding, demographic fluctuations, and reduced genetic diversity, and they are more vulnerable to extirpation from other risk factors.

(2) Hybridizing Nonnative Trout: Nonnative rainbow and other cutthroat trout subspecies have historically been introduced throughout the range of Rio Grande cutthroat trout for recreational angling, and they are known to readily hybridize with Rio Grande cutthroat trout. Climate change may exacerbate this risk factor as warmer waters may make high-elevation habitats more susceptible to invasion by rainbow trout.

(3) Competing Nonnative Trout: Brook and brown trout compete with Rio Grande cutthroat trout for food and space, and larger adults will prey upon young Rio Grande cutthroat trout.

(4) Wildfire: Ash and debris flows that occur after a wildfire can eliminate populations of fish from a stream, and wildfires within the range of Rio Grande cutthroat trout have depressed or eliminated fish populations. As drought frequency increases due

to climate change, dry forests are more likely to burn and burn hotter than they have in the past.

(5) Stream Drying: Drying of streams occupied by Rio Grande cutthroat trout populations may occur as a result of drought or, in a few cases, water withdrawals. Drought frequency is expected to increase as a result of climate change due to a combination of increased summer temperatures and decreased precipitation.

(6) Disease: Whirling disease damages cartilage, killing young fish or causing infected fish to swim in an uncontrolled whirling motion, making it impossible to avoid predation or feed.

(7) Water Temperature Changes: Changes in air temperature and precipitation patterns expected from climate change could result in elevated stream temperatures that make habitat unsuitable for Rio Grande cutthroat trout to complete their life history.

We considered other potential factors as well, including hydrologic changes related to future climate change, effects to habitat related to land management, and angling. Our review of the best available information did not demonstrate a relationship between hydrologic changes and the potential negative effects on the subspecies to allow for reasonably reliable conclusions; therefore, we did not consider that factor further. We found that land management activities are not likely to have a measurable population-level effect on the subspecies, and angling was also not found to be a substantial factor affecting the subspecies. Therefore, these factors were not evaluated further in our analysis (Service 2014a, Chapter 4).

We included future management actions as an important part of our overall assessment. The Rio Grande Cutthroat Trout Conservation Team (Conservation Team) is composed of biologists from Colorado Parks and Wildlife (CPW), New Mexico Department of Game and Fish (NMDGF), U.S. Bureau of Land Management (BLM), U.S. Forest Service (USFS), National Park Service (NPS), Mescalero Apache Nation, Jicarilla Apache Nation, Taos Pueblo, and the Service. The Conservation Team developed the Conservation Agreement and Strategy in 2013 (revised from the previous Conservation Agreements in 2003 and 2009), which formalized many ongoing management actions. The Conservation Agreement and Strategy includes activities such as stream restorations, barrier construction and maintenance, nonnative species removals, habitat improvements, public outreach, and database management. Over the 10-year life of the Conservation Agreement and Strategy, the Conservation Team has committed to restoration of between 11 and 20 new Rio Grande cutthroat trout populations to historical habitat. We included these activities in our analysis of the future status of the subspecies over the next 10 years (see *PECE Analysis*, below) and projected various scenarios of active management beyond that.

We developed a species status assessment model to quantitatively incorporate the risks of extirpation from the seven risk factors listed above (including cumulative effects) in order to estimate the future probability of persistence of each extant population of Rio Grande cutthroat trout. We used this model to forecast the future status of the Rio Grande cutthroat trout in a way that addresses viability in terms of the subspecies' resiliency, redundancy, and representation. As a result, we developed two distinct

modules. Module 1 estimates the probability of persistence for each Rio Grande trout population by GMU for three future time periods (2023, 2040, and 2080) under a range of conditions, and Module 2 estimates the number of surviving populations by GMU for the three future time periods under several scenarios related to future management actions and the effects of climate change. A detailed explanation of the methodology used to develop the model is provided in Appendix C of the SSA Report (Service 2014a, Appendix C), and the results are summarized in Chapter 5 (Service 2014a, Chapter 5).

We used the results of this analysis to describe the viability of the Rio Grande cutthroat trout (viability is the ability of a species to persist over time and thus avoid extinction; "persist" means that the species is expected to sustain populations in the wild beyond the end of a specified time period) by characterizing the status of the subspecies in terms of its resiliency, redundancy, and representation.

Resiliency is having sufficiently large populations for the subspecies to withstand stochastic events. We measured resiliency at the population scale for the Rio Grande cutthroat trout by quantifying the persistence probability of each extant population under a range of assumed conditions. As expected because of the way the status assessment model was developed to forecast linearly increasing risks over time, all of the population persistence probabilities decrease in our three time periods. Our results do not necessarily mean that any one population will, in fact, be extirpated by 2080; they simply reflect the risks that we believe the populations face due to their current conditions and the risk factors influencing their resiliency.

Rangewide, the resiliency of the subspecies has declined substantially due to the large decrease in overall distribution in the last 50 years. In addition, the remnant Rio Grande cutthroat trout populations are now mostly isolated to headwater streams due to the fragmentation that has resulted from the historical, widespread introduction of nonnative trout across the range of Rio Grande cutthroat trout. Therefore, if an extant population is extirpated due to a localized event, such as a wildfire and subsequent debris flow, there is little to no opportunity for natural recolonization of that population. This reduction in resiliency results in a lower probability of persistence for the subspecies as a whole. To describe the remaining resiliency of the subspecies, we evaluated the individual populations in detail to understand the subspecies' overall capacity to withstand stochastic events.

Redundancy is having a sufficient number of populations for the subspecies to withstand catastrophic events. For the Rio Grande cutthroat trout, we measured redundancy based our forecasting of the number of populations persisting across the subspecies' range. The results suggest that, depending on the particular scenario related to risk factors and restoration efforts, the overall number of populations may decline to some extent by 2080 (Service 2014a, Table ES-1, Column 4). We are focusing on the estimates for 2080, because if the subspecies has sufficient redundancy by 2080, it will also have sufficient redundancy in the more recent time periods. Rangewide there are currently 122 populations, and we forecast between 50 and 132 populations surviving in 2080 (with an intermediate forecast of 68 populations). The wide range in the estimated

number of surviving populations is due to the various projections of management and climate change intensity. Some GMUs may decline more than others; for example, our forecasts suggest the Lower Rio Grande GMU may have the largest decline. We estimate the current 59 populations in this GMU could be between 21 and 47 populations by 2080 (with an intermediate forecast of 28 populations). The GMU with the least populations, the Canadian GMU, is forecasted to change from 10 current populations to between 3 and 14 populations by 2080 (with an intermediate forecast of 6 populations).

Representation is having the breadth of genetic and ecological diversity of the subspecies to adapt to changing environmental conditions. For the Rio Grande cutthroat trout, we evaluated representation based on the extent of the geographical range expected to be maintained in the future as indicated by the populations occurring within each GMU for a measure of ecological diversity. For genetic diversity, there are important genetic differences between the Rio Grande basin populations and the populations in the Canadian and Pecos GMUs (though the Pecos and Canadian GMUs are not genetically different from each other). The variation in persistence probabilities is distributed across the GMU so that none of the risk is particularly associated with any particular geographic area within the GMU. Combined, the Canadian and Pecos GMUs are forecasted to have 8 to 30 populations surviving in 2080 (with an intermediate forecast of 14 populations).

We used the best available information to forecast the likely future condition of the Rio Grande cutthroat trout. Our goal was to describe the viability of the subspecies quantitatively in a way that characterizes the needs of the subspecies in terms of

resiliency, redundancy, and representation. We considered the possible future condition of the subspecies out to about 65 years from the present (see discussion regarding foreseeable future, below, in the *Threatened Species Throughout Range* section). We considered nine different scenarios that spanned a range of potential conditions that we believe are important influences on the status of the subspecies. Our results describe a range of possible conditions in terms of the probability of persistence of individual populations across the GMUs and a forecast of the number of populations surviving in each GMU.

Although we evaluated nine different scenarios in our assessment, for this finding we report the foreseeable worse case and best case results that show the full range of outcomes. In each of the relevant conclusions, we focus on the foreseeable worse case results. Logically, if the subspecies does not warrant listing under our worst-case scenario, the eight remaining scenarios will also not warrant listing the subspecies. We also provide in this finding the best case results of each scenario for each of the relevant conclusions. This provides a context for the range of possible outcomes for the future populations of the subspecies.

Considering the worst case scenario allowed us to view the viability of the subspecies under conditions of low management and severe climate change, which are aspects of the model with high uncertainty. None of our "worst case scenario" forecasts results in a predicted loss of all of the populations within any of the GMUs. Therefore, at a minimum, our results suggest the subspecies will have persisting populations in 2080

across its range. Most of the scenarios generally show a declining number of populations over time. However, the rate of this decline, or whether it occurs at all, depends largely on the likelihood of future management actions occurring, the most important of which are the future restoration and reintroduction of populations within the historical range and the control of nonnative trout. While other factors are important to each population, the future management efforts will probably determine the future viability of the Rio Grande cutthroat trout. These conservation efforts were an important consideration in the SSA analysis.

PECE Analysis

The Service's 2003 Policy for Evaluation of Conservation Efforts When Making Listing Decisions (PECE) provides guidance on how to evaluate conservation efforts that have not yet been fully implemented or have not yet demonstrated effectiveness (68 FR 15100, March 28, 2003). The purpose of PECE is to ensure consistent and adequate evaluation of recently formalized conservation efforts when making listing decisions. The policy presents criteria for evaluating the certainty of implementation and the certainty of effectiveness for such conservation efforts. We evaluated two formalized conservation efforts and their specific conservation measures under PECE (see PECE Evaluation, Service 2014b, entire): the Conservation Agreement and Strategy and the Vermejo Park Ranch Candidate Conservation Agreement with Assurances (Vermejo CCAA). We found the specific conservation measures in each of the formalized conservation efforts to have high levels of certainty of implementation and effectiveness

and both were considered as part of the basis for our listing determination for the Rio Grande cutthroat trout. Below is a brief summary of each effort, and more detail is provided in our separate PECE analysis (Service 2014b, entire).

Conservation Agreement and Strategy

The Conservation Agreement and Strategy for the Conservation of Rio Grande Cutthroat Trout was signed in 2013 by NMDGF, CPW, USFS, NPS, BLM, Mescalero Apache Nation, Jicarilla Apache Nation, Taos Pueblo, and the Service. The 2013 Conservation Agreement and Strategy was a revision to the Conservation Agreement that was originally signed in 2003. The measures in the Conservation Agreement and Strategy are made up of cooperative efforts by the parties to develop and implement the necessary conservation measures for the Rio Grande cutthroat trout to have sufficient resiliency, representation, and redundancy to provide for long-term viability. Conservation measures include:

(1) Identify and characterize all Rio Grande cutthroat trout conservation populations and occupied habitat. Characterization includes gathering data on Rio Grande cutthroat trout density, length of occupied habitat, genetic status, and habitat quality.

(2) Secure and enhance conservation populations.

(3) Restore populations.

(4) Secure and enhance watershed conditions.

(5) Public outreach.

(6) Data sharing.

(7) Coordination.

Throughout the 10-year life of the Conservation Agreement and Strategy, the parties have committed to restoring 11 to 20 new populations of Rio Grande cutthroat trout rangewide. In our PECE analysis, we found that the conservation efforts in the Rio Grande Cutthroat Trout Conservation Agreement and Strategy have a high level of certainty of implementation and effectiveness because of the demonstrated ability of the participants in carrying out an effective conservation program for this subspecies. Therefore, we considered these efforts as part of the basis for our listing determination for the Rio Grande cutthroat trout under the Act.

Vermejo CCAA

The goal of the Vermejo CCAA, signed in 2013, is to facilitate and promote the conservation and restoration of the Rio Grande cutthroat trout on certain non-Federal lands owned by Vermejo Park Ranch, LLC. Vermejo Park Ranch consists of 590,823 acres (2,391 square kilometers) in Costilla County, Colorado, and Taos County, New Mexico, managed for conservation, hunting, and fishing. Vermejo Park Ranch is implementing the conservation measures specified in the Vermejo CCAA and has received assurances from the Service that if the Rio Grande cutthroat trout is listed under the Act, no further conservation measures will be required. Conservation measures being

implemented by Vermejo Park Ranch include nonnative trout removal, Rio Grande cutthroat trout reintroductions, and increasing existing populations so they are capable of migrating among tributaries. Overall, the project encompasses the restoration of approximately 190 kilometers (118 miles) of stream habitat, and to date nearly 100 kilometers (62 miles) of restoration have been completed and are being monitored. In our PECE analysis, we found that the conservation efforts in the Vermejo CCAA have a high level of certainty of implementation and effectiveness because of the demonstrated ability of the Vermejo Park Ranch for carrying out effective conservation actions for the subspecies. Therefore, we considered these conservation efforts as part of the basis for our listing determination for the Rio Grande cutthroat trout.

Finding

Standard for Review

Section 4 of the Act, and its implementing regulations at 50 CFR part 424, set forth the procedures for adding species to the Federal Lists of Endangered and Threatened Wildlife and Plants. Under section 4(b)(1)(a), the Secretary is to make endangered or threatened determinations required by subsection 4(a)(1) solely on the basis of the best scientific and commercial data available to her after conducting a review of the status of the subspecies and after taking into account conservation efforts by States or foreign nations. The standards for determining whether a species is endangered or threatened are provided in section 3 of the Act. An endangered species is any species

that is “in danger of extinction throughout all or a significant portion of its range.” A threatened species is any species that is “likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.” Per section 4(a)(1) of the Act, in reviewing the status of the species to determine if it meets the definition of endangered or of threatened, we determine whether any species is an endangered species or a threatened species because of any of the following five 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; and (E) other natural or manmade factors affecting its continued existence.

Until recently the Service has presented its evaluation of information under the five listing factors in an outline format, discussing all of the information relevant to any given factor and providing a factor-specific conclusion before moving to the next factor. However, the Act does not require findings under each of the factors, only an overall determination as to the species’ status (for example, endangered species, threatened species, or not warranted). Ongoing efforts to improve the efficiency and efficacy of the Service’s implementation of the Act have led us to present this information in a different format that we find leads to greater clarity in our understanding of the science, its uncertainties, and our application of our statutory framework to that science. Therefore, while the presentation of information in this document differs from past practice, it differs in format only. We have evaluated the same body of information that, in the past, we have discussed under an outline of the five listing factors. In this analysis, we are

applying the same information standard, and we are applying the same statutory framework in reaching our conclusions and ultimate determination of the status of the subspecies under the Act.

Summary of Analysis

The biological information we reviewed and analyzed as the basis for our findings is documented in the Rio Grande Cutthroat Trout Species Status Assessment Report (Service 2014a, entire), a summary of which is provided in the background of this finding. The projections for the number of future persisting populations are based on the Species Status Assessment Model (SSA Model; Service 2014a, Chapter 5 and Appendix C), which incorporates the potential risk factors (in other words, threats) that were found to have possible population-level effects. The risk factors we evaluated in detail are demographic risk (Factor E from the Act), nonnative trout (Factors C and E), wildfire (Factor A), stream drying (Factor A), disease (Factor C), and water temperature changes (Factor A). For four of the factors (hybridizing nonnative trout, wildfire, stream drying, and water temperature changes), we also considered the exacerbating effects of climate change. We reviewed, but did not evaluate in further detail because of a lack of population-level effects, the effects of land management activities and hydrologic changes (Factor A), and recreational angling (Factor B).

The overall results of the status assessment found that the best available information indicates that large declines (approximately 89 percent loss) in the

distribution and abundance of Rio Grande cutthroat trout have occurred in the past 50 years or so due mainly to the impacts from introduced nonnative trout. This declining trend has been abated in recent years to a large extent due to management efforts to control nonnative trout and limit new introductions and the spread of nonnative trout. However, the results of the past impacts have left the Rio Grande cutthroat trout in a remnant of its former habitat, which is now primarily high-elevation headwater streams. The purpose of the status assessment was to characterize the future viabity of the subspecies in the face of this reduced distribution and the ongoing factors that put populations at risk of extirpation.

In the SSA Report, we described the viability of the Rio Grande cutthroat trout in terms of redundancy, representation, and resiliency (Service 2014a, Chapter 5). These characteristics have all been reduced in the subspecies because of the historical declines in its distribution and abundance. In addition, the reduction in population sizes and the isolated nature of most remaining populations makes many of the potential stressors to the Rio Grande cutthroat trout more significant than they would have been historically. This is because small populations are more susceptible to extirpation from negative events, whether those events are natural or human-caused. In addition, in the event of a local extirpation due to a negative stochastic event, isolated populations are unable to be recolonized by natural dispersal from nearby populations. Therefore, the Rio Grande cutthroat trout has an overall reduced viability compared to historical conditions.

Our forecasts take into consideration a range of the likely number of populations

that could be restored in the future through work of the agencies under the multi-agency Conservation Agreement and Strategy. Numerous conservation efforts are ongoing for Rio Grande cutthroat trout. The conservation measures for the Conservation Agreement and Strategy and the Vermejo CCAA are evaluated in the PECE analysis (Service 2014b) discussed above. The formal agreements extend for 10 years, but in the case of the Conservation Agreement and Strategy, in particular, we expect efforts to continue further into the future. We cannot predict the number and type of efforts that will be performed in the future with as much accuracy as the Conservation Agreement and Strategy specifies for the next 10 years. However, given the history of the Conservation Team and the motivation of the States in the conservation of this subspecies (Service 2014b), we expect management efforts to continue past the life of the Conservation Agreement and Strategy, either formally (through renewal of the Conservation Agreement and Strategy) or informally. As such, we have included varying levels of conservation efforts in the different scenarios of our model forecasting.

Application of Analysis to Determinations

Our status assesment characterized Rio Grande cutthroat trout viability (future persistence) in terms of number and distribution of populations expected to persist through 2080. These outputs form the basis for our determinations under the Act. Because of uncertainty, mainly related to climate change and the level of future conservation efforts, our forecasts include a variety of scenarios. For these findings, we refer to our results under the best and worst case scenarios over two time horizons: 2023

and 2080. The fundamental question before the Service is whether the projections of extinction risk, described in terms of the number of future populations and their distribution (taking into account the risk factors and their effects on those populations), indicate that the subspecies warrants protection as endangered or threatened under the Act. The lower the number and smaller the distribution of the persisting populations, the higher the extinction risk and lower the overall viability. In making our determinations, we focused on the worst case scenario because, if the worst case scenario does not rise to a level for which the subspecies meets the definition of an endangered or a threatened species, then the more optimistic forecasts are considerably better and likewise would not warrant an endangered or threatened conclusion. We also included the best case scenario outcome in order to provide context of the likely range of the number of persisting populations of the subspecies.

As described in the determinations below, we first evaluated whether the Rio Grande cutthroat trout is in danger of extinction throughout its range now (an endangered species). We then evaluated whether the subspecies is likely to become in danger of extinction throughout its range in the foreseeable future (a threatened species). We considered future voluntary conservation efforts in the information used in these determinations, consistent with PECE. We finally considered whether the Rio Grande cutthroat trout is an endangered or threatened species in a significant portion of its range (SPR).

Endangered Species Throughout Range

Standard

Under the Act, an endangered species is any species that is "in danger of extinction throughout all or a significant portion of its range." Because of the fact-specific nature of listing determinations, there is no single metric for determining if a species is currently in danger of extinction. We used the best available scientific and commercial information to evaluate the viability (and thus risk of extinction) for the Rio Grande cutthroat trout to determine if it meets the definition of an endangered species. In this finding, we used a projection of the number and distribution of populations to measure the the Rio Grande cutthroat trout's viability and then determine the subspecies' status under the Act.

Evaluation and Finding

Our review found that there are currently 122 existing populations of the Rio Grande cutthroat trout in four GMUs. We consider each of these populations genetically pure enough to be Rio Grande cutthroat trout; that is, each population has 90 percent or more of the native Rio Grande cutthroat trout genes. To assess the current status of these populations, we sorted each of them into four categories to consider their current status, which was based on effective population size, occupied stream length, presence of competing nonnative trout, and presence of hybridizing nonnative trout. We categorized 55 of the populations (45 percent) as currently in the best or good condition of having no

nonative trout, relatively large effective population sizes, and relatively long occupied stream lengths (Service 2014a, pp. 14–15). This current number of populations in the best or good condition existing across the subspecies' range provides resiliency (45 percent of populations considered sufficiently large to withstand stochastic events), redundancy (55 populations spread across all four extant GMUs to withstand catastrophic events), and representation (multiple populations are persisting across the range of the subspecies to maintain ecological and genetic diversity).

The Rio Grande cutthroat trout also historically occurred in a fifth GMU—the Caballo GMU. We only know of one historical population in this GMU, which was extirpated more than 30 years ago. With only one population, this area would not have significantly contributed to the resiliency and redundancy of the subspecies. However, it could have had some important genetic or ecological diversity that would have contributed to the adaptive capacity of the subspecies. Losing this population likely lowered the overall viability of the subspecies but would not be a substantial enough impact rangewide to meaningfully increase the overall risk of extinction of the Rio Grande cutthroat trout.

To further consider the status of the Rio Grande cutthroat trout, we analyzed the condition of the subspecies over the next 10 years to evaluate its viability. In 2023, we projected an estimated range of between 104 and 131 populations will persist under worst case and best case scenarios, respectively. According to our forecasts, these populations would be distributed throughout the subspecies' range, with multiple populations

persisting in all four of the currently extant GMUs (see Service 2014a, pp. 44–45 for complete results). Therefore, because this worst case estimate of the number and distribution of populations provides resiliency, representation, and redundancy for the subspecies, we conclude the subspecies does not meet the definition of an endangered species under the Act. Although the subspecies has experienced substantial reduction from its historical distribution, the number of Rio Grande cutthroat trout populations currently persisting and expected to persist in the next 10 years across its range does not put the subspecies in danger of extinction.

Threatened Species Throughout Range

Having found that the Rio Grande cutthroat trout is not an endangered species throughout its range, we next evaluated whether the subspecies is a threatened species throughout its range.

Standard

Under the Act, a threatened species is any species that is "likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range." The foreseeable future refers to the extent to which the Secretary can reasonably rely on predictions about the future in making determinations about the future conservation status of the species (U.S. Department of Interior, Solictor's Memorandum, M-37021, January 16, 2009). A key statutory difference between a threatened species

and an endangered species is the timing of when a species may be in danger of extinction, either now (endangered species) or in the foreseeable future (threatened species).

Evaluation and Finding

In considering the foreseeable future, our analysis used two timeframes to forecast the status of the Rio Grande cutthroat trout as measured by the number of possible surviving populations based on the risk factors and conservation efforts the subspecies is facing. We forecasted out to the years 2040 (about 25 years from present) and 2080 (about 65 years from present). We based these timeframes on the outputs of downscaled climate forecasting models that often project climate scenarios to the year 2080. Since potential effects of climate change were important considerations in our status assessment, it was necessary to consider a long enough timeframe to adequately evaluate those potential effects. The 2080 timeframe represents about 13 to 21 Rio Grande cutthroat trout generations and is a reasonably long time to consider for potential future effects of stressors on populations of the subspecies. This timeframe also represents our outermost estimate for forecasting, where our confidence decreases in our ability to forecast future environmental conditions related to the risk factors evaluated and to the responses of Rio Grande cutthroat trout populations.

To assist us in evaluating the status of the subspecies in the foreseeable future, we considered the risk factors that we found to have potential population-level effects over time. These future risk levels were incorporated into our status assessment model to

forecast the number of surviving populations into the foreseeable future. We increased the risk levels linearly over time to account for the cumulative increase in the risks of chance events occurring in the future. In addition, for four risk factors (hybridizing nonnative trout, wildlife, stream drying, and water temperature) we provided a further increase in risks over time to account for the potential effects of climate change. We used our best professional judgment to estimate the effects of increasing risks due to climate change. In addition, because of the high uncertainty associated with climate change we considered a "moderate" and a "severe" effect of climate change. For the moderate climate change effect, we increased the risk function over time by 5 percent for the 2040 forecast and 10 percent for the 2080 forecast. For the severe climate change effect, we increased the risk function over time by 20 percent for the 2040 forecast and 40 percent for the 2080 forecast, as explained in greater detail in our SSA Report. We also included management activities in our analysis of the future status of the subspecies over the next 10 years (see *PECE Analysis*, above), and projected various scenarios of active management beyond that.

In 2080, our model forecasted 50 to 132 populations will persist rangewide under our worst and best case scenarios, respectively, with multiple populations in all four of the currently extant GMUs (Service 2014a, pp. 44–48). Therefore, because this worst-case forecast of the number and distribution of populations provides resiliency, redundancy, and representation for the subspecies, we conclude the subspecies is not likely to become in danger of extinction in the foreseeable future. Therefore, we find that the subspecies does not meet the definition of a threatened species under the Act.

Endangered or Threatened in a Significant Portion of the Range

Having found that the Rio Grande cutthroat trout is not an endangered or threatened species throughout its range, we next evaluated whether the subspecies warrants listing based on any significant portion of the subspecies' range.

Standard

Under the Act and our implementing regulations, a species may warrant listing if it is an endangered or a threatened species throughout all or a significant portion of its range. The Act defines "endangered species" as any species which is "in danger of extinction throughout all or a significant portion of its range," and "threatened species" as any species which is "likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range." The term "species" includes "any subspecies of fish or wildlife or plants, and any distinct population segment of any species of vertebrate fish or wildlife which interbreeds when mature." We published a final policy interpretating the phrase "significant portion of its range" (79 FR 37578, July 1, 2014). The final policy states that (1) if a species is found to be an endangered or a threatened species throughout a significant portion of its range, the entire species is listed as an endangered or a threatened species, respectively, and the Act's protections apply to all individuals of the species wherever found; (2) a portion of the range of a species is "significant" if the species is not currently an endangered or a threatened species

throughout all of its range, but the portion's contribution to the viability of the species is so important that, without the members in that portion, the species would be in danger of extinction, or likely to become so in the foreseeable future, throughout all of its range; (3) the range of a species is considered to be the general geographical area within which that species can be found at the time the Service or NMFS makes any particular status determination; and (4) if a vertebrate species is an endangered or a threatened species throughout an SPR, and the population in that significant portion is a valid distinct population segment (DPS), we will list the DPS rather than the entire taxonomic species or subspecies.

The SPR policy is applied to all status determinations, including analyses for the purposes of making listing, delisting, and reclassification determinations. The procedure for analyzing whether any portion is an SPR is similar, regardless of the type of status determination we are making. The first step in our analysis of the status of a species is to determine its status throughout all of its range. If we determine that the species is in danger of extinction, or likely to become so in the foreseeable future, throughout all of its range, we list the species as an endangered (or threatened) species and no SPR analysis will be required. If the species is neither an endangered nor a threatened species throughout all of its range, we determine whether the species is an endangered or a threatened species throughout a significant portion of its range. If it is, we list the species as an endangered or a threatened species, respectively; if it is not, we conclude that listing the species is not warranted.

When we conduct an SPR analysis, we first identify any portions of the species' range that warrant further consideration. The range of a species can theoretically be divided into portions in an infinite number of ways. However, there is no purpose to analyzing portions of the range that are not reasonably likely to be significant and either an endangered or a threatened species. To identify only those portions that warrant further consideration, we determine whether there is substantial information indicating that (1) the portions may be significant and (2) the species may be in danger of extinction in those portions or likely to become so within the foreseeable future. Answering these questions in the affirmative is not a determination that the species is an endangered or a threatened species throughout a significant portion of its range—rather, it is a step in determining whether a more detailed analysis of the issue is required. In practice, a key part of this analysis is whether the threats are geographically concentrated in some way. If the threats to the species are affecting it uniformly throughout its range, no portion is likely to warrant further consideration. Moreover, if any concentration of threats apply only to portions of the range that clearly do not meet the biologically based definition of "significant" (i.e., the loss of that portion clearly would not be expected to increase the vulnerability to extinction of the entire species), those portions will not warrant further consideration.

If we identify any portions that may be both (1) significant and (2) endangered or threatened, we engage in a more detailed analysis to determine whether these standards are indeed met. The identification of an SPR does not create a presumption, prejudgment, or other determination as to whether the species in that identified SPR is an

endangered or a threatened species. We must go through a separate analysis to determine whether the species is an endangered or a threatened species in the SPR. To determine whether a species is an endangered or a threatened species throughout an SPR, we will use the same standards and methodology that we use to determine if a species is an endangered or a threatened species throughout its range.

Depending on the biology of the species, its range, and the threats it faces, it may be more efficient to address the "significant" question first, or the status question first. Thus, if we determine that a portion of the range is not "significant," we do not need to determine whether the species is an endangered or a threatened species there; if we determine that the species is not an endangered or a threatened species in a portion of its range, we do not need to determine if that portion is "significant."

Evaluation

Our SSA Report and supporting model (Service 2014a, Appendix C) evaluated population persistence (i.e., resiliency), incorporating the threats to the populations, within the four extant GMUs. Additionally, our description of the viability of the subspecies considered resiliency, representation, and redundancy in terms of the expected persistence of future populations at the GMU spatial scale. Therefore, our existing analysis quantitatively forecasts the future condition of Rio Grande cutthroat trout in a way that addresses viability in terms of the subspecies' resiliency, redundancy, and representation. Because the analysis was conducted by GMU, we are able to use the

model's output to analyze whether there is a significant portion of the range that is more vulnerable to extirpation than other parts of the range.

Therefore, the following evaluation first considers whether each of the four extant GMUs may be significant under our definition of SPR. In other words, we evaluated whether that GMU's contribution to the viability of the Rio Grande cutthroat trout is so important that, without the members in that GMU, the subspecies would be in danger of extinction, or likely to become so in the foreseeable future, throughout all of its range. For the GMUs that we determined could meet this standard of significance, we then considered whether the forecasted future condition of that GMU, based on our species status assessment, would be an endangered or a threatened species.

Rio Grande Headwaters GMU—The Rio Grande Headwaters GMU contains 34 percent (41 of 122) of the extant Rio Grande cutthroat trout rangewide populations. If the populations in this GMU were all extirpated, the subspecies in the remainder of the range could be an endangered or threatened species because of the effects to the subspecies' viability due to a substantial reduction in redundancy (loss of large number of populations from a large portion of the range). Therefore, the Rio Grande Headwaters GMU could be significant according to our definition of SPR under the Act.

We next evaluated whether the Rio Grande Headwaters GMU is endangered or threatened. Our review found that there are currently 41 existing populations of the Rio Grande cutthroat trout in the Rio Grande Headwaters GMU. To assess the current status

of these populations, we sorted each of them into four categories to consider their current status, which was based on effective population size, occupied stream length, presence of competing nonnative trout, and presence of hybridizing nonnative trout. We categorized 19 of the 41 populations (46 percent) as currently in the best or good condition (Service 2014a, pp. 14–15). This number of reasonably resilient populations within this GMU provides resiliency (46 percent of populations considered sufficiently large to withstand stochastic events), redundancy (19 populations in the GMU to withstand catastrophic events), and representation (multiple populations are persisting within the GMU to maintain ecological and genetic diversity).

To consider the current risk of extinction of the Rio Grande cutthroat trout, we analyzed the condition of this potential SPR over the next 10 years to evaluate its viability (and thus its risk of extinction) and considered all threats with possible population-level effects. In 2023, we projected 41 to 49 populations will persist in the Rio Grande Headwaters GMU under our worst and best case scenarios, respectively (Service 2014a, p. 46). Therefore, because the worst case scenario forecast of the number and distribution of populations provides resiliency, representation, and redundancy for the subspecies in the Rio Grande Headwaters GMU, we conclude the subspecies does not meet the definition of an endangered species under the Act.

Having found that the Rio Grande cutthroat trout is not endangered in the Rio Grande Headwaters GMU, we next evaluated whether the subspecies is threatened in this potential SPR. As with the subspecies rangewide (and for the same reasons), we used

about 65 years from present, the year 2080, as the foreseeable future to consider whether the potential SPR is likely to become an endangered species. We also used the same rationale for future forecasting of persisting populations. In 2080, we forecasted 21 to 55 populations will persist in the Rio Grande Headwaters GMU under our worst and best case scenarios, respectively (Service 2014a, p. 46). Therefore, because the worst case scenario forecast of the number and distribution of populations provides resiliency, representation, and redundancy for the subspecies in the Rio Grande Headwaters GMU, we conclude the subspecies does not meet the definition of a threatened species under the Act.

Lower Rio Grande GMU—The Lower Rio Grande GMU contains 48 percent (59 of 122) of the extant Rio Grande cutthroat trout rangewide populations. If the populations in this GMU were all extirpated, the subspecies in the remainder of the range could be an endangered or threatened species because of the effects to the subspecies' viability due to a substantial reduction in redundancy (loss of large number of populations from a large portion of the range). Therefore, the Lower Rio Grande GMU could be significant according to our definition of SPR under the Act.

We next evaluated whether the Lower Rio Grande GMU is endangered or threatened. Our review found that there are currently 59 existing populations of the Rio Grande cutthroat trout in the Rio Grande Headwaters GMU. To assess the current status of these populations, we sorted each of them into four categories to consider their current status, which was based on effective population size, occupied stream length, presence of

competing nonnative trout, and presence of hybridizing nonnative trout. We categorized 28 of the populations (47 percent) as currently in the best or good condition (Service 2014a, pp. 14–15). This number of populations in the best or good condition within this GMU provides resiliency (47 percent of populations considered sufficiently large to withstand stochastic events), redundancy (28 populations in the GMU to withstand catastrophic events), and representation (multiple populations are persisting within the GMU to maintain ecological and genetic diversity).

To consider the current risk of extinction of the Rio Grande cutthroat trout, we analyzed the condition of this potential SPR over the next 10 years to evaluate its viability (and thus its risk of extinction) and considered all threats with possible population-level effects. In 2023, we projected 43 to 51 populations will persist in the Lower Rio Grande GMU under our worst and best case scenarios, respectively (Service 2014a, p. 46). Therefore, because the worst case scenario forecast of the number and distribution of populations provides resiliency, representation, and redundancy for the subspecies in the Lower Rio Grande Headwaters GMU, we conclude that the subspecies does not meet the definition of an endangered species under the Act.

Having found that the Rio Grande cutthroat trout is not an endangered species in the Lower Rio Grande GMU, we next evaluated whether the subspecies is a threatened species in this potential SPR. As with the subspecies rangewide (and for the same reasons), we used about 65 years from present, the year 2080, as the foreseeable future to consider whether the potential SPR is likely to become an endangered species. We also

used the same rationale for future forecasting of persisting populations . In 2080, we projected 21 to 47 populations will persist in the Lower Rio Grande GMU, respectively (Service 2014a, p. 46). Therefore, because the worst case scenario forecast of the number and distribution of populations provides resiliency, representation, and redundancy for the subspecies in the Lower Rio Grande GMU, we conclude that the subspecies does not meet the definition of a threatened species under the Act.

Canadian GMU—The Canadian GMU contains a small percentage of the existing populations: currently 8 percent (10 of 122) of current Rio Grande cutthroat trout populations occur in this GMU. If this GMU were extirpated, there would be a decrease in overall viability of the subspecies, as there would be if any proportion of the populations were extirpated. However, 112 populations would remain in the rest of the range, and the subspecies would still have levels of redundancy, resiliency, and representation for sufficient viability to persist into the future. Although one GMU would no longer be contributing to the representation of the subspecies based on ecological diversity, we are not aware of any particular adaptive capacity of the subspecies represented in that GMU. While there is unique genetic diversity within the combined Canadian and Pecos GMUs, the Canadian GMU independently has not been found to contain unique diversity. Therefore, the lower overall viability resulting from the potential loss of only the Canadian GMU would not lead the remaining portion of the subspecies' range to meet the definition of an endangered or threatened species under the Act. As such, the Canadian GMU is not found to be significant as we define SPR under the Act. Therefore, the subspecies is not an endangered or threatened species in the

potential Canadian GMU SPR.

Pecos GMU—The Pecos GMU also contains a small percentage of the existing populations: 10 percent (12 of 122) of current Rio Grande cutthroat trout populations occur in this GMU. If the Pecos GMU were extirpated, there would be a decrease in overall viability of the subspecies, as there would be if any proportion of the populations were extirpated. However, 110 populations would remain in the rest of the range, and the subspecies would still have levels of redundancy, resiliency, and representation for sufficient viability to persist into the future. Although one GMU would no longer be contributing to the representation of the subspecies based on ecological diversity, we are not aware of any particular adaptive capacity of the subspecies represented in that GMU. While there is unique genetic diversity within the combined Canadian and Pecos GMUs, the Pecos GMU independently has not been found to contain unique diversity. Therefore, the lower overall viability resulting from the potential loss of only the Pecos GMU would not lead the remaining portion of the subspecies' range to meet the definition of an endangered or threatened species under the Act. As such, the Pecos GMU is not significant as we define SPR under the Act. Therefore, the subspecies is not an endangered or threatened species in the potential Pecos GMU SPR.

Pecos and Canadian GMUs Combined—The combined Pecos and Canadian GMUs contain a moderate percentage of the existing populations: currently 18 percent (22 of 122 populations) occur in these GMUs. If the populations in these GMUs were to be extirpated, the loss of the unique genetic diversity contained collectively in these two

GMUs and the loss of a sizable portion of the range could cause the subspecies in the remainder of the range to be endangered or threatened. Consequently, the Pecos and Canadian GMUs combined could meet the definition of "significant" under the SPR policy. Therefore, we evaluated whether the Rio Grande cutthroat trout is an endangered or a threatened species in the potential SPR of the combined Pecos and Canadian GMUs.

Our review found that there are currently 22 existing populations of the Rio Grande cutthroat trout in the potential Pecos-Canadian SPR. To assess the current status of these populations, we sorted each of them into four categories to consider their current status, which was based on effective population size, occupied stream length, presence of competing nonnative trout, and presence of hybridizing nonnative trout. We categorized eight of the populations (36 percent) as currently in the best or good condition (Service 2014a, pp. 14–15). This number of populations in the best or good condition within this potential SPR provides resiliency (36 percent of populations considered sufficiently large to withstand stochastic events), redundancy (eight populations spread across the potential SPR to withstand catastrophic events), and representation (multiple populations are persisting across the potential SPR to maintain ecological and genetic diversity).

To consider the current risk of extinction of the Rio Grande cutthroat trout, we analyzed the condition of this potential Pecos-Canadian SPR over the next 10 years to evaluate its viability, considering all threats with possible population-level effects. In 2023, we projected an estimated 19 to 30 populations will persist in the potential Pecos-Canadian SPR under our worst and best case scenarios, respectively (Service 2014a, p.

46). Therefore, because this worst case estimate of the number and distribution of populations provides resiliency, representation, and redundancy for the subspecies, we conclude the potential Pecos-Canadian SPR is not in danger of extinction and does not meet the definition of an endangered species under the Act.

Having found that the Rio Grande cutthroat trout is not an endangered species in the potential Pecos-Canadian SPR, we next evaluated whether the subspecies is a threatened species in this potential SPR. As with the subspecies rangewide (and for the same reasons), we used about 65 years from present, the year 2080, as the foreseeable future to consider whether the potential SPR is likely to become an endangered species. We also used the same rationale for future forecasting of persisting populations as discussed above under the rangewide determinations. In 2080, we forecast 8 to 29 populations will persist in the potential Pecos-Canadian SPR under worst and best case scenarios, respectively (Service 2014a, p. 46). Therefore, because the worst case estimate of the number and distribution of populations provides resiliency, representation, and redundancy for the subspecies, we conclude the potential Pecos-Canadian SPR is not likely to be in danger of extinction in the foreseeable future and does not meet the definition of a threatened species under the Act.

Rio Grande Headwaters and Lower Rio Grande GMUs Combined—The combined Rio Grande Headwaters and Lower Rio Grande GMUs contain a large proportion of the range: currently 82 percent (100 of 122 populations) occur in these GMUs. If the populations in these GMUs were to be extirpated, the loss of the unique

genetic diversity contained collectively in these two GMUs and the loss of a large portion of the range could cause the subspecies in the remainder of the range to be endangered or threatened. Consequently, this potential SPR could meet the definition of "significant" under the SPR policy. Therefore, we evaluated whether the Rio Grande cutthroat trout is an endangered or a threatened species in the potential SPR of the combined Rio Grande Headwaters and Lower Rio Grande GMUs.

Our review found that there are currently 100 existing populations of the Rio Grande cutthroat trout in the potential Rio Grande Headwaters-Lower Rio Grande SPR. To assess the current status of these populations, we sorted each of them into four categories to consider their current status, which was based on effective population size, occupied stream length, presence of competing nonnative trout, and presence of hybridizing nonnative trout. We categorized 47 of the populations (47 percent) as currently in the best or good condition (Service 2014a, p. 14–15). This number of populations in the best or good condition within this potential Rio Grande Headwaters-Lower Rio Grande SPR provides resiliency (47 percent of populations considered sufficiently large to withstand stochastic events), redundancy (47 populations spread across the potential SPR to withstand catastrophic events), and representation (multiple populations are persisting across the potential SPR to maintain ecological and genetic diversity).

To consider the current risk of extinction of the Rio Grande cutthroat trout, we analyzed the condition of this potential Rio Grande Headwaters-Lower Rio Grande SPR

over the next 10 years to evaluate its viability, considering all threats with possible population-level effects. In 2023, we forecasted 84 to 101 populations will persist in the potential Rio Grande Headwaters-Lower Rio Grande SPR under our worst and best case scenarios, respectively (Service 2014a, p. 46). Therefore, because the worst case scenario for the number and distribution of populations provides resiliency, representation, and redundancy for the subspecies, we conclude the potential Rio Grande Headwaters-Lower Rio Grande SPR is not in danger of extinction and does not meet the definition of an endangered species under the Act.

Having found that the Rio Grande cutthroat trout is not an endangered species in the potential Rio Grande Headwaters-Lower Rio Grande SPR, we next evaluated whether the subspecies is a threatened species in this potential SPR. As with the subspecies rangewide (and for the same reasons), we used about 65 years from present, the year 2080, as the foreseeable future to consider whether the potential SPR is likely to become endangered. We also used the same rationale for future forecasting of persisting populations as discussed above under the rangewide determinations. In 2080, we forecasted 42 to 102 populations would persist in this potential SPR under our worst and best case scenarios, respectively, with multiple populations in each GMU (Service 2014a, p. 46). Therefore, because the worst case scenario for the number and distribution of populations provides resiliency, representation, and redundancy for the subspecies, we conclude the potential Rio Grande Headwaters-Lower Rio Grande SPR is not likely to be in danger of extinction in the foreseeable future and does not meet the definition of a threatened species under the Act.

Finding: Not an Endangered or a Threatened Species Based on a SPR

We found two GMUs (Canadian and Pecos GMUs) did not meet our definition of significant in the SPR policy. We found four portions of the range that could meet our definition of significant under the SPR policy: Rio Grande Headwaters GMU, Lower Rio Grande GMU, Pecos and Canadian GMUs Combined, and Rio Grande Headwaters and Lower Rio Grande GMUs Combined. However, none of these portions of the range was found to meet the definition of an endangered or a threatened species under the Act. As a result, none of the potential SPR categorizations result in the subspecies meeting the definition of endangered or threatened under the Act.

Summary

In conclusion, we find that the Rio Grande cutthroat trout is not in danger of extinction throughout its range, nor is it likely to become so in the foreseeable future. We also considered a number of areas concerning the potential for the subspecies to be an endangered or threatened species in a significant portion of its range. We found that four areas could meet our definition of significant; however, none of the potential SPRs was found to be in danger of extinction now or in the foreseeable future. Therefore, we determine that the Rio Grande cutthroat trout is not warranted for listing as an endangered or a threatened species under the Act throughout its rangewide or in any significant portion of its range.

We request that you submit any new information concerning the status of, or threats to, the Rio Grande cutthroat trout to our New Mexico Ecological Services Field Office (see **ADDRESSES**) whenever it becomes available. New information will help us monitor the Rio Grande cutthroat trout and encourage its conservation. If an emergency situation develops for Rio Grande cutthroat trout, we will consider an appropriate response under the Act.

References Cited

A complete list of references cited is available in Appendix D of the SSA Report (Service 2014a, Appendix D), available online at *http://www.regulations.gov*, under Docket Number FWS–R2–ES–2014–0042. The Service's PECE Evaluation (Service 2014b) is also available online at *http://www.regulations.gov*, under Docket Number FWS–R2–ES–2014–0042.

Authors

The primary authors of this notice are the staff members of the Service's New Mexico Ecological Services Field Office and Southwest Regional Office.

Authority

The authority for this section is section 4 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq*.).

Dated: September 23, 2014

David Cottingham

Acting Director, Fish and Wildlife Service

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