requirements for the applicable criteria pollutants include the following:

1. ''State Implementation Plans; General Preamble for the Implementation of Title I of the Clean Air Act Amendments of 1990,'' 57 FR 13498 (April 16, 1992); 57 FR 18070 (April 28, 1992).

2. ''Issues Relating to VOC Regulation Cutpoints, Deficiencies, and Deviations,'' EPA, May 25, 1988 (the Bluebook, revised January 11, 1990).

3. ''Guidance Document for Correcting Common VOC & Other Rule Deficiencies,'' EPA Region 9, August 21, 2001 (the Little Bluebook).

B. Does the rule meet the evaluation criteria?

This rule meets CAA requirements and is consistent with relevant guidance regarding enforceability and SIP revisions. The EPA's technical support document (TSD) has more information on our evaluation.

C. The EPA's Recommendations To Further Improve the Rule

The TSD includes recommendations for the next time the local agency modifies the rule.

D. Proposed Action and Public Comment

As authorized in section 110(k)(3) of the Act, the EPA proposes to approve submitted Rule 45 because it fulfills all relevant requirements. We will accept comments from the public on this proposal until May 2, 2024. If the EPA takes final action to approve the submitted rule, our final action will incorporate this rule into the federally enforceable SIP.

III. Incorporation by Reference

In this rule, the EPA is proposing to include in a final EPA rule regulatory text that includes incorporation by reference. In accordance with requirements of 1 CFR 51.5, the EPA is proposing to incorporate by reference SDCAPCD Rule 45, ''Federally Mandated Ozone Nonattainment Fees,'' adopted on June 9, 2022, which addresses the CAA section 185 fee program requirements. The EPA has made, and will continue to make, these materials available through *https://www.regulations.gov* and at the EPA Region IX Office (please contact the person identified in the **FOR FURTHER INFORMATION CONTACT** section of this preamble for more information).

IV. Statutory and Executive Order Reviews

Under the Clean Air Act, the Administrator is required to approve a SIP submission that complies with the provisions of the Act and applicable federal regulations. 42 U.S.C. 7410(k); 40 CFR 52.02(a). Thus, in reviewing SIP submissions, the EPA's role is to approve state choices, provided that they meet the criteria of the CAA. Accordingly, this proposed action merely proposes to approve state law as meeting federal requirements and does not impose additional requirements beyond those imposed by state law. For that reason, this proposed action:

- Is not a significant regulatory action subject to review by the Office of Management and Budget under Executive Orders 12866 (58 FR 51735, October 4, 1993) and 14094 (88 FR 21879, April 11, 2023);
- Does not impose an information collection burden under the provisions of the Paperwork Reduction Act (44 U.S.C. 3501 *et seq.*);
- Is certified as not having a significant economic impact on a substantial number of small entities under the Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*);
- Does not contain any unfunded mandate or significantly or uniquely affect small governments, as described in the Unfunded Mandates Reform Act of 1995 (Public Law 104–4);
- Does not have federalism implications as specified in Executive Order 13132 (64 FR 43255, August 10, 1999);
- Is not subject to Executive Order 13045 (62 FR 19885, April 23, 1997) because it proposes to approve a state program;
- Is not a significant regulatory action subject to Executive Order 13211 (66 FR 28355, May 22, 2001); and
- Is not subject to requirements of Section 12(d) of the National Technology Transfer and Advancement Act of 1995 (15 U.S.C. 272 note) because application of those requirements would be inconsistent with the Clean Air Act.

In addition, the SIP is not approved to apply on any Indian reservation land or in any other area where the EPA or an Indian tribe has demonstrated that a tribe has jurisdiction. In those areas of Indian country, the rule does not have tribal implications and will not impose substantial direct costs on tribal governments or preempt tribal law as specified by Executive Order 13175 (65 FR 67249, November 9, 2000).

Executive Order 12898 (Federal Actions To Address Environmental Justice in Minority Populations and Low-Income Populations, 59 FR 7629, February 16, 1994) directs Federal agencies to identify and address ''disproportionately high and adverse human health or environmental effects'' of their actions on minority populations and low-income populations to the greatest extent practicable and permitted by law. The EPA defines environmental justice (EJ) as ''the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.'' The EPA further defines the term fair treatment to mean that ''no group of people should bear a disproportionate burden of environmental harms and risks, including those resulting from the negative environmental consequences of industrial, governmental, and commercial operations or programs and policies.''

The State did not evaluate EJ considerations as part of its SIP submittal; the CAA and applicable implementing regulations neither prohibit nor require such an evaluation. The EPA did not perform an EJ analysis and did not consider EJ in this action. Consideration of EJ is not required as part of this action, and there is no information in the record inconsistent with the stated goal of E.O. 12898 of achieving environmental justice for people of color, low-income populations, and Indigenous peoples.

List of Subjects in 40 CFR Part 52

Environmental protection, Air pollution control, Incorporation by reference, Intergovernmental relations, Nitrogen oxides, Ozone, Reporting and recordkeeping requirements, Volatile organic compounds.

Dated: March 27, 2024.

Martha Guzman Aceves,

Regional Administrator, Region IX.

[FR Doc. 2024–06880 Filed 4–1–24; 8:45 am]

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DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

[Docket No. FWS–R5–ES–2023–0181; FF09E22000 FXES1113090FEDR 245]

RIN 1018–BH61

Endangered and Threatened Wildlife and Plants; Removal of Roanoke Logperch From the List of Endangered and Threatened Wildlife

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Proposed rule.

SUMMARY: We, the U.S. Fish and Wildlife Service (Service), propose to remove the Roanoke logperch (*Percina rex*) from the Federal List of Endangered and Threatened Wildlife due to recovery. The species is currently listed as endangered. Our review of the best available scientific and commercial data indicates that the threats to the Roanoke logperch have been eliminated or reduced to the point that the species no longer meets the definition of an endangered or a threatened species under the Endangered Species Act of 1973, as amended (Act). Populations of Roanoke logperch are shown to be stable or expanding and reproducing (as evidenced by sustained recruitment) since the time of listing in each of the following river systems: Upper Roanoke River, Pigg River, Smith River, and Nottoway River. The number of streams where the Roanoke logperch has been observed has increased from 14 streams from the time of listing in 1989 to 31 streams in 2019. Accordingly, we propose to delist the Roanoke logperch throughout all of its range, which is in Virginia and North Carolina. If we finalize this rule as proposed, the prohibitions and conservation measures provided by the Act, particularly through sections 7 and 9, would no longer apply to the Roanoke logperch.

DATES: We will accept comments received or postmarked on or before June 3, 2024. Comments submitted electronically using the Federal eRulemaking Portal (see **ADDRESSES**, below) must be received by 11:59 p.m. eastern time on the closing date. We must receive requests for public hearings, in writing, at the address shown in **FOR FURTHER INFORMATION CONTACT** by May 17, 2024.

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

(1) *Electronically:* Go to the Federal eRulemaking Portal: *https://www.regulations.gov.* In the Search box, enter FWS–R5–ES–2023–0181, which is the docket number for this rulemaking. Then, click on the Search button. On the resulting page, in the Search panel on the left side of the screen, under the Document Type heading, check the Proposed Rule box to locate this document. You may submit a comment by clicking on ''Comment.''

(2) *By hard copy:* Submit by U.S. mail to: Public Comments Processing, Attn: FWS–R5–ES–2023–0181, U.S. Fish and Wildlife Service, MS: PRB/3W, 5275 Leesburg Pike, Falls Church, VA 22041–3803.

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

Availability of supporting materials: This proposed rule and supporting documents, including the 5-year review, the recovery plan, and the species status assessment (SSA) report, are available at *https://www.regulations.gov* under Docket No. FWS–R5–ES–2023–0181.

FOR FURTHER INFORMATION CONTACT: Cindy Schulz, Field Supervisor, U.S. Fish and Wildlife Service, Virginia Ecological Services Field Office, 6669 Short Lane, Gloucester, VA 23061; telephone 804–654–1842. Individuals in the United States who are deaf, deafblind, hard of hearing, or have a speech disability may dial 711 (TTY, TDD, or TeleBraille) to access telecommunications relay services. Individuals outside the United States should use the relay services offered within their country to make international calls to the point-of-contact in the United States. Please see Docket No. FWS–R5–ES–2023–0181 on *https://www.regulations.gov* for a document that summarizes this proposed rule.

SUPPLEMENTARY INFORMATION

Information Requested

We intend that any final action resulting from this proposed rule will be based on the best scientific and commercial data available and be as accurate and as effective as possible. Therefore, we request comments or information from other concerned governmental agencies, Native American Tribes, the scientific community, industry, or any other interested parties concerning this proposed rule.

We particularly seek comments concerning:

(1) Reasons we should or should not remove the Roanoke logperch from the List of Endangered and Threatened Wildlife.

(2) Relevant data concerning any threats (or lack thereof) to the Roanoke logperch, particularly any data on the possible effects of climate change as it relates to habitat, as well as the extent of State protection and management that would be provided to this fish as a delisted species.

(3) Current or planned activities within the geographic range of the Roanoke logperch that may have either a negative or positive impact on the species.

(4) Considerations for post-delisting monitoring, including monitoring protocols and length of time monitoring is needed, as well as triggers for reevaluation.

Please include sufficient information with your submission (such as scientific journal articles or other publications) to allow us to verify any scientific or commercial information you include.

Please note that submissions merely stating support for, or opposition to, the action under consideration without providing supporting information, although noted, do not provide substantial information necessary to support a determination. Section 4(b)(1)(A) of the Act (16 U.S.C. 1531 *et seq.*) directs that determinations as to whether any species is an endangered species or a threatened species must be made solely on the basis of the best scientific and commercial data available.

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

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

Comments and materials we receive, as well as supporting documentation we used in preparing this proposed rule, will be available for public inspection on *https://www.regulations.gov.*

Our final determination may differ from this proposal because we will consider all comments we receive during the comment period as well as any information that may become available after this proposal. For example, based on the new information we receive (and if relevant, any comments on that new information), we may conclude that the species should remain listed as endangered, or we may conclude that the species should be reclassified from endangered to threatened. We will clearly explain our rationale and the basis for our final decision, including why we made changes, if any, that differ from this proposal.

Public Hearing

Section 4(b)(5) of the Act provides for a public hearing on this proposal, if requested. Requests must be received by

the date specified in **DATES**. Such requests must be sent to the address shown in **FOR FURTHER INFORMATION CONTACT**. We will schedule a public hearing on this proposal, if requested, and announce the date, time, and place of the hearing, as well as how to obtain reasonable accommodations, in the **Federal Register** and local newspapers at least 15 days before the hearing. We may hold the public hearing in person or virtually via webinar. We will announce any public hearing on our website, in addition to the **Federal Register**. The use of these virtual public hearings is consistent with our regulation at 50 CFR 424.16(c)(3).

Peer Review

A species status assessment (SSA) team prepared an SSA report for the Roanoke logperch. The SSA team was composed of Service biologists, in consultation with other species experts. The SSA report represents a compilation of the best scientific and commercial data available concerning the status of the species, including the impacts of past, present, and future factors (both negative and beneficial) affecting the species.

In accordance with our joint policy on peer review published in the **Federal Register** on July 1, 1994 (59 FR 34270), and our August 22, 2016, memorandum updating and clarifying the role of peer review of listing actions under the Act, we solicited independent scientific review of the information contained in the Roanoke logperch SSA report. We sent the SSA report to nine independent peer reviewers and received three responses. Results of this structured peer review process can be found at *https://www.regulations.gov.* In preparing this proposed rule, we incorporated the results of these reviews, as appropriate, into the final SSA report, which is the foundation for this proposed rule.

Summary of Peer Reviewer Comments

As discussed in Peer Review above, we received comments from three peer reviewers on the draft SSA report. We reviewed all comments we received from the peer reviewers for substantive issues and new information regarding the information contained in the SSA report. The peer reviewers generally concurred with our methods and conclusions, and provided additional information, clarifications, and suggestions, including clarifications in terminology. Peer reviewers also suggested supplementing the content to more explicitly address key assumptions, uncertainties, and knowledge gaps, and they made other editorial suggestions. One peer reviewer emphasized the need for research to address key unknowns that remain in the ecology of early-life stages, logperch movement ecology (including dam effects), and empirical relationships between stressors such as instream sedimentation measures (*e.g.,* embeddedness) and Roanoke logperch fitness measures (*e.g.,* growth, survival, reproduction). These data gaps are mentioned or implied in summaries of the species' life history and in a detailed discussion of caveats and uncertainties in the SSA report (Service 2022a, pp. 46–47). Otherwise, no substantive changes to our analysis and conclusions in the SSA report were deemed necessary. All peer reviewer comments are addressed in version 1.1 of the SSA report (Service 2022a, entire).

Previous Federal Actions

On March 18, 1975, the Service published in the **Federal Register** (40 FR 12297) a notice of review for the Roanoke logperch and 28 other freshwater fishes. Five years later, on May 13, 1980, the Service published in the **Federal Register** (45 FR 31447) another notice of review for the Roanoke logperch.

On December 30, 1982, we published in the **Federal Register** (47 FR 58454) our candidate notice of review (CNOR) classifying the Roanoke logperch as a Category 2 candidate species. Category 2 status included those taxa for which information in our possession at that time indicated the possible appropriateness of listing as endangered or threatened but sufficient information was not available to biologically support a proposed rule.

On October 6, 1983, we received a petition from Mr. Noel M. Burkhead to list the Roanoke logperch as a threatened species. On January 16, 1984, we published in the **Federal Register** (49 FR 1919) a 90-day finding that the petition presented substantial information that the petitioned action may be warranted. On October 12, 1984, we made a 12-month finding that the petitioned action was warranted but precluded from immediate proposal because of other pending proposals to list, delist, or reclassify species (hereafter, a ''warranted-but-precluded finding''). The announcement of the warranted-but-precluded finding was published in the **Federal Register** on July 18, 1985 (50 FR 29238).

Between 1986 and 1988, we published three notices of findings on pending petitions and descriptions of progress on listing actions in the **Federal Register** (51 FR 996, January 9, 1986; 52 FR 24312, June 30, 1987; 53 FR 25511, July 7, 1988). Each of these notices retained the warranted-but-precluded finding on the October 6, 1983, petition.

On September 7, 1988, we published in the **Federal Register** (53 FR 34561) a proposed rule to list the Roanoke logperch as an endangered species under the Act, and on August 18, 1989, we published in the **Federal Register** (54 FR 34468) a final rule to list the Roanoke logperch as an endangered species under the Act. This final rule was effective on September 18, 1989, and included a determination that the designation of critical habitat for the species was not prudent at that time.

In 1992, we released a recovery plan for the species (Service 1992, entire). A draft update to the recovery plan was prepared in January 2007 (Service 2007a, entire), but this plan was not finalized.

On April 21, 2006, we published in the **Federal Register** (71 FR 20717) a notice announcing the initiation of a 5-year review for the Roanoke logperch. The resulting recommendation from this 5-year review (Service 2007b, entire) was no change in listing status. We announced the initiation of subsequent 5-year reviews for the Roanoke logperch in 2011, 2018, and 2021 (76 FR 33334, June 8, 2011; 83 FR 39113, August 8, 2018; 86 FR 61778, November 8, 2021). However, reviews were not completed in 2011 and 2018 because they were precluded by higher priorities. The resulting recommendation from the 5-year review completed in 2022 (Service 2022b, entire) is to delist the Roanoke logperch due to recovery.

Background

A thorough review of the biological information on the Roanoke logperch including taxonomy, life history, ecology, and conservation activities, as well as threats facing the species or its habitat is presented in our SSA report (Service 2022a, entire), which is available at *https://www.regulations.gov* under Docket No. FWS–R5–ES–2023–0181. Please refer to the SSA report for additional discussion and background information.

The Roanoke logperch is a large-bodied member of the darters (Etheostomatinae), a diverse subfamily of freshwater fishes in the perch family (Percidae) endemic to the Roanoke, Dan, and Chowan River basins in Virginia and North Carolina. The Roanoke logperch occupies medium to large warm-water streams and rivers of moderate gradient and silt-free substrates (Service 1992, p. 3). Every major riverine habitat with unembedded stream substrates with low silt cover is

exploited by the Roanoke logperch during different phases of life history and season (Jenkins and Burkhead 1994, p. 786).

The overwhelming majority of our knowledge on the Roanoke logperch's biology and habitat needs is based on research conducted in the upper Roanoke River (see Burkhead 1983, entire; Roberts and Angermeier 2006, entire) and comparative studies of Roanoke logperch in the Nottaway River (see Rosenberger and Angermeier 2003, entire). Roanoke logperch feed and spawn over clean gravel, pebble, and cobble substrates in large creeks to medium rivers. They spawn in spring, depositing eggs on the substrate with no subsequent parental care. Newly hatched larvae drift downstream on river currents until they settle out in calm backwaters and pool margins. By their first fall, juveniles begin shifting into the deeper, main-channel habitats occupied by older juveniles and adults. The species matures by age 2–3 and lives up to 6.5 years. Adults appear to undertake extensive upstream spawning migrations, followed by cumulatively downstream migration over ontogeny, or the rest of the fish's lifespan.

All age classes of Roanoke logperch are intolerant of heavy silt cover and embeddedness, both because silt smothers eggs and because the species feeds primarily by flipping over unembedded substrate particles with its snout. The species is more often found in habitats with silt-free substrate, forested watersheds, and large enough stream size to complete its life history. It avoids heavily silted runs and pools, very small creeks, hydrologically unstable tailwaters below dams, and lentic lakes and reservoirs.

As detailed in the 2022 5-year review (Service 2022b, entire), the known geographic distribution of the Roanoke logperch has expanded since the species was listed in 1989. The Roanoke logperch was first collected in the 1880s. State databases contain data collected only since 1940, resulting in an information gap from 1890 to 1940. However, since 1940, the number of streams where the Roanoke logperch has been observed has increased from 4 streams in the 1940s, to 14 streams at the time of listing in 1989, to 31 streams in 2019. In terms of river basins, the Roanoke logperch was known in Virginia from the Roanoke basin in the 1880s and the Chowan basin in the 1940s. The first Roanoke logperch location (Town Creek) in the Dan basin was in the 1970s in Virginia, then the upper Smith River in the 1980s. In the 1990s and 2000s, observations in the Dan basin expanded, including into North Carolina. The first observation of Roanoke logperch in North Carolina was in the Dan River in 2007. No population extirpations are known. The number of 12-digit hydrologic unit codes (HUCs, also known as watersheds) in which the Roanoke logperch has been observed has increased from a total of 27 HUCs in 1989 to 55 HUCs in 2019. A detailed description of the Roanoke logperch's geographic distribution is presented in section 2.3 of the SSA report (Service 2022a, pp. 14–19).

Methodologies for identifying what constitutes a population have varied; therefore, our analysis uses management units (MUs) to assess the current condition and potential future conditions of the species. The definition of an MU is as follows: ''at the smallest spatial grain, we define an MU as a group of individuals occupying a discrete, local geographic area in which demographic exchange is common and habitat conditions are relatively homogeneous. At a larger grain, we define a metapopulation as a group of MUs located in an evolutionarily similar setting and in close-enough proximity that some dispersal and gene flow among MUs within that metapopulation likely has occurred in recent ecological time, at least prior to anthropogenic habitat alteration. The species as a whole is the sum of all metapopulations'' (Service 2022a, p. 20). There are four identified Roanoke logperch metapopulations: Roanoke Mountain, Roanoke Piedmont, Dan, and Chowan. A total of 18 MUs were delineated from these metapopulations. Eleven of these MUs are currently occupied (Upper Roanoke, Pigg, Goose, Otter, Middle Roanoke, Upper Smith, Middle Smith, Lower Smith, Lower Mayo, Middle Dan, Nottoway) and 7 are currently unoccupied (Blackwater, Falling, Upper Mayo, Upper Dan, Lower Dan, Banister, Meherrin) (see table 1 below; Service 2022a, p. 23). For potential new introductions, currently unoccupied MUs were delineated in waterways deemed good candidates for future populations based on suitable habitat conditions. Currently unoccupied ''potential'' MUs were not used in assessing current condition. However, the possibility for these potential MUs to become occupied was considered for analysis of future condition. Additional details on past delineation of populations and spatial associations of the MUs are presented in section 3.2 of the SSA report (Service 2022a, pp. 20–25). We provide a summary of the species' current and future conditions under Summary of Biological Status and Threats, below.

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Table 1. Geographic grouping of waterbodies into MUs and metapopulations.

Metapopulation	MU*	Basin	Primary ecoregion(s)	Presumed status	Constituent waterbodies where Roanoke logperch have been observed
Roanoke Mountain	Upper Roanoke	Roanoke basin	Ridge and Valley/Blue Ridge ecoregions	Occupied	Roanoke River, South Fork Roanoke River, North Fork Roanoke River, Elliott Creek, Mason Creek, Tinker Creek, Glade Creek, Smith Mountain Lake
Roanoke Piedmont	*Blackwater*	Roanoke basin	Piedmont	Unoccupied	None (never observed)
	Pigg		Piedmont	Occupied	Pigg River, Big Chestnut Creek, Snow Creek, Leesville Lake
	Goose		Piedmont	Occupied	Goose Creek
	Otter		Piedmont	Occupied	Big Otter River, Little Otter River
	Middle Roanoke		Piedmont	Occupied	Roanoke (Staunton) River
	Falling		Piedmont	Unoccupied	None (never observed)
Dan	Upper Smith	Dan basin	Piedmont/Blue Ridge ecoregions	Occupied	Smith River, Rock Castle Creek, Otter Creek, Runnett Bag Creek
	Middle Smith		Piedmont/Blue Ridge ecoregions	Occupied	Smith River, Town Creek
	Lower Smith		Piedmont/Blue Ridge ecoregions	Occupied	Smith River
	Upper Mayo		Piedmont/Blue Ridge ecoregions	Unoccupied	None (never observed)
	Lower Mayo		Piedmont/Blue Ridge ecoregions	Occupied	Mayo River
	Upper Dan		Piedmont/Blue Ridge ecoregions	Unoccupied	None (never observed)
	Middle Dan		Piedmont/Blue Ridge ecoregions	Occupied	Dan River, Cascade Creek, Wolf Island Creek, Big Beaver Island Creek
	Lower Dan		Piedmont/Blue Ridge ecoregions	Unoccupied	None (never observed)
	Banister		Piedmont/Blue Ridge ecoregions	Unoccupied	None (never observed)
Chowan	*Meherrin*	Chowan basin	Piedmont/ Southeastern Plains	Unoccupied	None (never observed)
	Nottoway		Piedmont/ Southeastern Plains	Occupied	Nottoway River, Stony Creek, Sappony Creek, Waqua Creek, Butterwood Creek

* MU names presented in italics in this column indicate unoccupied MUs.

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Recovery Criteria

Section 4(f) of the Act directs us to develop and implement recovery plans for the conservation and survival of endangered and threatened species unless we determine that such a plan will not promote the conservation of the species. Under section 4(f)(1)(B)(ii), recovery plans must, to the maximum extent practicable, include objective, measurable criteria which, when met, would result in a determination, in accordance with the provisions of section 4 of the Act, that the species be removed from the Lists of Endangered and Threatened Wildlife and Plants.

Recovery plans provide a roadmap for us and our partners on methods of enhancing conservation and minimizing threats to listed species, as well as measurable criteria against which to evaluate progress towards recovery and assess the species' likely future condition. However, they are not regulatory documents and do not substitute for the determinations and promulgation of regulations required under section 4(a)(1) of the Act. A decision to revise the status of a species, or to delist a species, is ultimately based on an analysis of the best scientific and commercial data available to determine whether a species is no longer an endangered species or a threatened species, regardless of whether that information differs from the recovery plan.

There are many paths to accomplishing recovery of a species, and recovery may be achieved without all of the criteria in a recovery plan being fully met. For example, one or more criteria may be exceeded while other criteria may not yet be accomplished. In that instance, we may determine that the threats are minimized sufficiently, and that the species is robust enough that it no longer meets the Act's definition of an endangered species or a threatened species. In other cases, we may discover new recovery opportunities after having finalized the recovery plan. Parties seeking to conserve the species may use these opportunities instead of methods identified in the recovery plan. Likewise, we may learn new information about the species after we finalize the recovery plan. The new information may change the extent to which existing criteria are appropriate for identifying recovery of the species. The recovery of a species is a dynamic process requiring adaptive management that may, or may not, follow all of the guidance provided in a recovery plan.

In 1992, the objectives of the Roanoke logperch recovery plan were to first reclassify the species from endangered to threatened, then to delist the species (Service 1992, pp. 12–13). The recovery plan states that reclassification to threatened would be initiated when:

(1) Populations of Roanoke logperch are shown to be stable or expanding and reproducing (as evidenced by sustained recruitment) in each of the following river systems: Upper Roanoke River, Pigg River, Smith River, and Nottoway River. Achievement of this criterion will be determined by population monitoring over at least a 10-year period; and

(2) Each of the known populations is protected from present and foreseeable threats that may interfere with the species' survival.

Additionally, the 1992 Roanoke logperch recovery plan states that delisting would be considered when, in addition to meeting the two criteria above, habitat improvement measures have been developed and successfully implemented, as evidenced by a sustained increase in Roanoke logperch population size and/or length of river reach inhabited within the upper Roanoke River drainage and a similar increase in at least two of the other three Roanoke logperch populations (Pigg River, Smith River, or Nottoway River).

As indicated in the most recent 5-year review (Service 2022b, entire), the current recovery plan for the species is 30 years old, thus requiring a reexamination of the adequacy of recovery criteria. The reclassification and delisting criteria in the 1992 plan do not mention North Carolina populations because Roanoke logperch was not known to occur in that State at that time. Additionally, benchmarks in the Plan criteria focus on the health and protection of Roanoke logperch populations however, identifying what constitutes a population is unclear. For example, the Plan, 2007 5-year status review, and associated literature used different methods to identify Roanoke logperch populations. Due to the outdated nature of this recovery plan, we rely on the information on the current and future conditions presented in the SSA report (Service 2022a, entire) to inform the status determination for the species. See Summary of Biological Status and Threats, below, for a discussion of the status of and threats to this species.

Regulatory and Analytical Framework

Regulatory Framework

Section 4 of the Act (16 U.S.C. 1533) and the implementing regulations in title 50 of the Code of Federal Regulations set forth the procedures for determining whether a species is an endangered species or a threatened species, issuing protective regulations for threatened species, and designating critical habitat for endangered and threatened species. In 2019, jointly with the National Marine Fisheries Service, the Service issued a final rule that revised the regulations in 50 CFR 424 regarding how we add, remove, and reclassify endangered and threatened species and the criteria for designating listed species' critical habitat (84 FR 45020; August 27, 2019). On the same day, we issued a finalrule that revised 50 CFR 17.31 and 17.71(84 FR 44753) and ended the ''blanket rule'' option for application of section 9prohibitions to species newly listed as threatened after the effective date ofthose regulatory revisions (September 26, 2019).

Our analysis for this decision applied the regulations that are currently in effect, which include the 2019 revisions. However, we proposed further revisions to these regulations on June 22, 2023 (88 FR 40764). In case those revisions are finalized before we make a final status determination for this species, we have also undertaken an analysis of whether the decision would be different if we were to apply those proposed revisions. We concluded that the decision would have been the same if we had applied the proposed 2023 regulations. The analyses under both the regulations currently in effect and the regulations after incorporating the June 22, 2023, proposed revisions are included in our decision file.

The Act defines an ''endangered species'' as a species that is in danger of extinction throughout all or a significant portion of its range, and a ''threatened species'' as a species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. The Act requires that we determine whether any species is an endangered species or a threatened species because of any of the following factors:

(A) The present or threatened destruction, modification, or curtailment of its habitat or range;

(B) Overutilization for commercial, recreational, scientific, or educational purposes;

(C) Disease or predation;

(D) The inadequacy of existing regulatory mechanisms; or

(E) Other natural or manmade factors affecting its continued existence.

These factors represent broad categories of natural or human-caused actions or conditions that could have an effect on a species' continued existence.

In evaluating these actions and conditions, we look for those that may have a negative effect on individuals of the species, as well as other actions or conditions that may ameliorate any negative effects or may have positive effects. The determination to delist a species must be based on an analysis of the same five factors.

We use the term ''threat'' to refer in general to actions or conditions that are known to or are reasonably likely to negatively affect individuals of a species. The term ''threat'' includes actions or conditions that have a direct impact on individuals (direct impacts), as well as those that affect individuals through alteration of their habitat or required resources (stressors). The term ''threat'' may encompass—either together or separately—the source of the action or condition or the action or condition itself.

However, the mere identification of any threat(s) does not necessarily mean that the species meets the statutory definition of an ''endangered species'' or a ''threatened species.'' In determining whether a species meets either definition, we must evaluate all identified threats by considering the species' expected response and the effects of the threats—in light of those actions and conditions that will ameliorate the threats—on an individual, population, and species level. We evaluate each threat and its expected effects on the species, then analyze the cumulative effect of all of the threats on the species as a whole. We also consider the cumulative effect of the threats in light of those actions and conditions that will have positive effects on the species—such as any existing regulatory mechanisms or conservation efforts. The Secretary determines whether the species meets the definition of an ''endangered species'' or a ''threatened species'' only after conducting this cumulative analysis and describing the expected effect on the species now and in the foreseeable future.

The Act does not define the term ''foreseeable future,'' which appears in the statutory definition of ''threatened species.'' Our implementing regulations at 50 CFR 424.11(d) set forth a framework for evaluating the foreseeable future on a case-by-case basis. The term ''foreseeable future'' extends only so far into the future as we can reasonably determine that both the future threats and the species' responses to those threats are likely. In other words, the foreseeable future is the period of time in which we can make reliable predictions. ''Reliable'' does not mean ''certain;'' it means sufficient to provide a reasonable degree of confidence in the prediction. Thus, a prediction is reliable if it is reasonable to depend on it when making decisions.

It is not always possible or necessary to define the foreseeable future as a particular number of years. Analysis of the foreseeable future uses the best scientific and commercial data available and should consider the timeframes applicable to the relevant threats and to the species' likely responses to those threats in view of its life-history characteristics. Data that are typically relevant to assessing the species' biological response include species-specific factors such as lifespan, reproductive rates or productivity, certain behaviors, and other demographic factors.

Analytical Framework

The SSA report documents the results of our comprehensive biological review of the best scientific and commercial data regarding the status of the species, including an assessment of the potential threats to the species. The SSA report does not represent our decision on whether the species should be proposed for delisting. However, it does provide the scientific basis that informs our regulatory decisions, which involve the further application of standards within the Act and its implementing regulations and policies.

To assess Roanoke logperch viability, we used the three conservation biology principles of resiliency, redundancy, and representation (Shaffer and Stein 2000, pp. 306–310). Briefly, resiliency is the ability of the species to withstand environmental and demographic stochasticity (for example, wet or dry, warm or cold years); redundancy is the ability of the species to withstand catastrophic events (for example, droughts, large pollution events); and representation is the ability of the species to adapt to both near-term and long-term changes in its physical and biological environment (for example, climate conditions, pathogens). In general, species viability will increase with increases in resiliency, redundancy, and representation (Smith et al. 2018, p. 306). Using these principles, we identified the species' ecological requirements for survival and reproduction at the individual, population, and species levels, and described the beneficial and risk factors influencing the species' viability.

The SSA process can be categorized into three sequential stages. During the first stage, we evaluated the species' life-history needs. The next stage involved an assessment of the historical and current condition of the species' demographics and habitat characteristics, including an explanation of how the species arrived at its current condition. The final stage of the SSA involved making predictions about the species' responses to positive and negative environmental and anthropogenic influences. Throughout all of these stages, we used the best available information to characterize viability as the ability of a species to sustain populations in the wild over time which we then used to inform our regulatory decision.

The following is a summary of the key results and conclusions from the SSA report; the full SSA report can be found at Docket FWS–R5–ES–2023–0181 on *https://www.regulations.gov.*

Summary of Biological Status and Threats

In this discussion, we review the biological condition of the Roanoke logperch and its resources, and the threats that influence the species' current and future conditions, in order to assess the species' overall viability and the risks to that viability. In addition, the SSA report (Service 2022a, entire) and 5-year review (Service 2022b, entire) document our comprehensive biological status review for the species, including an assessment of the potential threats and beneficial activities to the species.

We identified six factors that may influence Roanoke logperch viability: fine sediment deposition (Factor A), chronic chemical pollution (Factor A), dams and other barriers (Factor A), climate change (Factor E), management/restoration activities aimed at improving habitat quality (Factor A), and existing legal and regulatory mechanisms (Factor D). These factors align with many of the threats discussed in the 2007 5-year review: large dams and reservoirs, small dams/barriers, channelization that will lead to increased sedimentation, agricultural and silvicultural activities (non-point source pollution in the form of fine sediment), and toxic spills (Service 2007b, entire). An additional threat to the Roanoke logperch identified since the 2007 5-year review is changing climate. Climate change is anticipated to affect precipitation, runoff patterns, and stream hydrology, and introduce fine sediment into Roanoke logperch habitat (Service 2022a, p. 29). The complex relationship between the numerous environmental and anthropogenic factors and their influence on the habitat conditions and ultimately on the condition of the Roanoke logperch is presented in more detail in the SSA report (see figure 7 in Service 2022a, p. 33). The Service is not

aware of any evidence that overutilization, competition, predation, disease, or other manmade factors are significant threats to the Roanoke logperch.

Fine Sediment Deposition

Fine sediment is produced through erosion and enters streams and rivers through runoff, especially during storm events (Waters 1995, entire). A variety of human activities accelerate erosion and thereby increase sediment inputs to streams, but urbanization and agriculture are the two most prominent of these activities in the Roanoke logperch's range.

Fine sediments originating from the watershed or channel of a stream remain suspended until they reach a low-velocity area and deposit on the stream substrate. Although suspended sediment can reduce feeding efficiency for a sight feeder like the Roanoke logperch, it likely has a greater negative impact once it deposits on the stream bottom. Deposition of fine sediments like silt and clay on stream substrate likely reduces the fitness and survival of Roanoke logperch adults and the survival and recruitment of age-0 juveniles. Roanoke logperch are invertivores that feed almost exclusively on the stream bottom; they require substrate particles (for example, pebbles, leaves, sticks, etc.) to be mostly unembedded by fine sediment so that they can flip over these particles and access food underneath. Heavily embedded substrates contain lower benthic macroinvertebrate densities and fewer benthic invertivorous fishes (Berkman and Rabeni 1987, entire).

Although uninvestigated to date, we assume that as deposition and embeddedness increase, Roanoke logperch food intake at all life stages will decrease and individual growth and survival rates will decrease. Moreover, silt coverage could smother eggs and reduce their hatching rate, particularly for a gravel spawner like the Roanoke logperch (Berkman and Rabeni 1987, entire). Reduced egg-to-larva survival, along with reduced benthic feeding efficiency for age-0 juveniles, could translate to overall lower recruitment rates for Roanoke logperch populations. Thus, the effects of fine sediments can impact Roanoke logperch population resiliency by reducing population densities and impacting habitat quality.

Chemical Pollution

By definition, water pollution is anthropogenic in origin and alters the chemical composition of a receiving waterbody (U.S. Environmental Protection Agency (USEPA) 2022, entire). Pollutants include organic nutrients such as fertilizer, livestock manure, and human sewage effluent, along with myriad natural and synthetic chemicals including heavy metals, pesticides, cleaners, solvents, pharmaceuticals, and petroleum products, among others.

The population dynamics of the Roanoke logperch were found to be particularly sensitive to acute pollution events that cause substantial one-time reductions in population size (Roberts et al. 2016a, entire). The same study found that, in the upper Roanoke River watershed, seven pollution events resulting in Roanoke logperch mortality occurred over a 35-year period, an average of once every 5 years. The most recent spill event with a known mortality occurred in 2007. These events involved a variety of different pollutants and affected anywhere from 2 to 19 kilometers (km) (1.2 to 11.8 miles (mi)) of river. Such catastrophic events presumably act by temporarily reducing survival of all age classes until the chemical has dissipated, which may take up to a year (Ensign et al. 1997, entire). However, if fish kills occur frequently enough, affect a large enough area, or happen to an already small population, they could threaten the viability of an entire population.

Like fine sediment, water pollution emanates from a variety of sources, including urban, mining, or agricultural runoff, and transportation of chemicals by road, rail, or pipeline. Notably, some fish-kill events impacting the Roanoke logperch stemmed from nonurban causes, such as a liquid manure spill in 1991, and a golf course fungicide spill in 2007 (Roberts et al. 2016a, entire) (Table 2).

Table 2: Summary of all known fish kills reported in the upper Roanoke River watershed (Virginia) occupied by Roanoke logperch *Percina rex* during two periods (1970-1982 and 1991-2013 (from Roberts et al. 2016a, p. 56).

Date of fish kill	Water body	Substance	Stream length affected (km)	Source
October 1970	Roanoke River near Salem	Ethyl benzene-creosote	11.3	Burkhead (1983)
June 1975	Roanoke River near Salem	Unidentified	12.1	Burkhead (1983)
July 1975	Roanoke River near Roanoke	Toluene	Unknown	Burkhead (1983)
June 1976	Roanoke River near Roanoke	Sodium cyanide	12.1	Burkhead (1983)
October 1991	Elliott Creek and South Fork Roanoke River near Shawsville	Liquid manure	19.0	Ensign et al. (1997)
August 2003	Roanoke River near Salem	Various chlorine derivatives	3.8	Kimberly Smith, USFWS
July 2007	North Fork Roanoke River near Blacksburg	Fungicide	2.3	Michael Pinder, VDGIF

In general, however, we expect the risk of a pollution event to be higher in a watershed with greater urbanization, because with urbanization we expect a greater concentration of manufacturing chemicals, industrial and municipal chemical effluents, and chemical transportation via roads, rails, and pipelines. Thus, we expect urbanization to be a primary driver of pollution events affecting the Roanoke logperch.

Dams and Other Barriers

European settlers began constructing milldams and other low-head dams on rivers upon arrival to the Atlantic States (Walter and Merritts 2008, entire). These barriers may have affected connectivity and habitat conditions for the Roanoke logperch historically, but we lack distribution and abundance data for the Roanoke logperch before 1940. Between the 1920s and 1960s, large hydroelectric dams were installed on several large rivers in the Roanoke logperch's range. Although none of these dams were equipped with fish passage technologies, some are short enough and have a modest-enough spillway drop that they may allow for one-way fish

movement (from upstream to downstream) over the spillway. For example, one study found that Martinsville Dam on the middle Smith River does not form a genetic population boundary between Roanoke logperch upstream and downstream of the dam, so the study's authors hypothesized that the dam allows one-way gene flow (Roberts et al. 2013, entire).

However, many of the dams are much larger than the Martinsville Dam, forming an extensive impoundment that would not be suitable habitat for the species, and each of these dams probably constitutes a complete two-way barrier to Roanoke logperch movement. Roanoke logperch have a migratory life history that, in the absence of movement barriers, utilizes multiple sections of a watershed over a lifetime. Although genetic data indicate that Roanoke logperch populations currently have sharp, discrete boundaries (Roberts et al. 2013, entire), these boundaries mostly coincide with dams. Before construction of these dams, population structure might have been more continuous, with more frequent dispersal occurring among now-disconnected streams (Burkhead 1983, entire). Thus, the barrier effect created by dams has potentially fragmented a once more-continuous range into a series of geographically smaller, more isolated populations. This fragmentation reduces resiliency because a declining population cannot be naturally demographically or genetically ''rescued'' by another population.

In addition to a movement barrier, dams can create habitat degradation and loss for Roanoke logperch. Impoundments upstream of dams convert formerly riverine, potentially suitable habitat to lacustrine habitat (relating to or associated with lakes) that is not suitable for Roanoke logperch. Although the species has been observed occasionally in Smith Mountain Lake and Leesville Reservoir, these have been interpreted as waifs attempting dispersal through the reservoirs, rather than resident fish (Jenkins and Burkhead 1994, p. 787). Although completely unstudied, reservoirs upstream of dams may directly increase mortality for Roanoke logperch larvae if the larvae drift into the reservoir from upstream spawning sites and settle in unsuitable lacustrine microhabitats.

Habitat conditions downstream of hydroelectric dams may be unsuitable for Roanoke logperch as well. Hydropeaking discharges (*i.e.,* the practice of releasing pulses of water to increase power production) from Leesville Dam have rendered habitat conditions immediately downstream in the middle Roanoke River unstable and relatively poor for Roanoke logperch. Population density there is relatively low (Smith 2011, pers. comm.). Hydropeaking, combined with a cold hypolimnetic release (*i.e.,* release of water that lies below the thermocline and is perpetually cold), has likewise rendered the middle Smith River immediately downstream from Philpott Dam unsuitable for Roanoke logperch. Not only are Roanoke logperch apparently absent from this reach (Krause et al. 2005, entire), based on genetic results, the cold unsuitable tailwater acts as a movement barrier between Town Creek, an occupied tributary that flows into the unoccupied reach, and the occupied section of middle Smith River, located 4 km (2.5 mi) downstream (Roberts et al. 2013, p. 2060). These habitat losses effectively shrink the adjoining populations to a smaller geographic area, which reduces their potential for resiliency.

Climate Change

Changes to the climate of the Roanoke logperch's geographic range can affect precipitation, runoff patterns, and stream hydrology in ways that negatively affect the species' vital rates and resiliency. In the coming decades, the Roanoke logperch's range is expected to average 5 to 8 degrees Fahrenheit (2.8 to 4.4 degrees Celsius) warmer with around 1 more inch (2.5 centimeters) of rain per year (see section 4.2.1 of SSA report (Service 2022a, pp. 50–53)). Although a modest increase in total rainfall, this rain is expected to come in less predictable, less frequent, more intense storm events (Ingram et al. 2013, entire; Burt et al. 2016, entire). Increased air temperature has the potential to increase evapotranspiration rates, decrease groundwater recharge into streams, and reduce the magnitude of summer baseflows (Ingram et al. 2013, entire; Lynch et al. 2016, pp. 349–350). Increased storm intensity may likewise reduce summer baseflows by raising the runoff to infiltration ratio. More irregular but intense rainfall means ''flashier'' stream flows overall, with higher high flows, lower low flows, and steeper rising and falling limbs of the hydrograph, a situation exacerbated by urbanization and watershed imperviousness (Roy et al. 2010, entire). Stronger storm events also increase the probability that fine sediment will be mobilized in runoff and carried into streams.

Relationships between hydrology and the Roanoke logperch's habitat suitability or vital rates have not been thoroughly investigated. However, in the upper Roanoke River, one study found that age-0 logperch abundance in the fall of their first year was negatively related to the standard deviation of stream flows during the spring (April–June) of that year (Roberts and Angermeier 2007, p. 43). Highly variable flows may directly increase mortality of vulnerable larvae and small juveniles. They also may reduce habitat quality and availability. Age-0 Roanoke logperch have very specific habitat needs during their first summer, requiring unembedded, shallow, and very low-velocity microhabitats, often in the margins of pools (Roberts and Angermeier 2006, p. 4). These microhabitat conditions change rapidly with stream flows; the drying of shallow areas forces Roanoke logperch into deeper areas where they are more vulnerable to aquatic predators, while elevated flows increase velocity beyond the swimming abilities of small fish. Given that storm intensity and stream flashiness are predicted to increase, we predict that it will be more difficult for age-0 Roanoke logperch to locate and track suitable microhabitat configurations, resulting in reduced survival and recruitment. Further, reduced baseflow magnitude may crowd adult Roanoke logperch into smaller areas of suitable habitat within riffle-runs, resulting in increased competition for resources, and potentially reduced fitness and survival of adults. We anticipate that the higher erosion and sediment transport rates likely to result from predicted greater storm intensity would negatively affect growth, recruitment, and survival of Roanoke logperch.

Conservation Efforts: Management and Restoration

Three types of restoration activities have positively benefited Roanoke logperch habitat and population conditions to date: (1) habitat restoration, (2) habitat connectivity restoration, and (3) population restoration. Habitat restoration activities for the Roanoke logperch primarily seek to reduce erosion potential and fine sediment inputs to streams. Projects include reestablishing the riparian zone, fencing livestock out of streams, and placing lands in conservation easements to prevent deforestation. The end goal of all these projects is to reduce new inputs of fine sediment into Roanoke logperch habitats. These activities have occurred, and as discussed below, we expect them to continue in watersheds harboring Roanoke logperch, regardless of the Federal listing status of the species.

Unfortunately, there is no efficient or cost-effective way to remove existing deposited sediment, which has accumulated in some cases over the course of centuries and can be removed only very gradually through downstream transport during flushing flow events (Walter and Merritts 2008, entire). Since it can take decades to see the positive effects of Roanoke logperch habitat restoration, the near-term resiliency of Roanoke logperch populations is not as strongly affected by these management activities as by connectivity and population restoration activities.

Habitat connectivity restoration involves the removal of, or passage over, barriers to Roanoke logperch movement in stream reaches, most notably dams. Multiple dams have been removed within the species' range in recent decades, including Wasena Dam on the upper Roanoke River near Roanoke, Virginia, in 2009; Veteran's Park Dam on the Pigg River near Rocky Mount, Virginia, in 2013; and Rocky Mount Power Dam on the Pigg River near Rocky Mount, Virginia, in 2016. Additionally, fish passages were designed and installed for Roanoke logperch past the Lindsey Bridge Dam on the Dan River near Madison, North Carolina, in 2020. Removal of additional dams is plausible, given the current trend toward dam removal in the eastern United States (Bellmore et al. 2017, entire). Barrier removal and passage increase the effective area of adjacent populations and allow increased dispersal among populations, both of which increase population resiliency (Gido et al. 2016, entire).

Population restoration involves the intentional anthropogenic movement of fish across movement barriers they otherwise would be unable to cross. The individual fish being stocked could be translocated wild fish or propagules produced in a hatchery. Fish can be stocked into currently occupied habitat to augment the demography or genetic diversity of that population, reintroduced into a previously occupied habitat that is no longer occupied, or introduced into a habitat that has never been occupied by the species. Augmentation is intended to bolster resiliency by increasing vital rates, total population size, and genetic diversity, whereas introduction and reintroduction are intended to bolster redundancy by increasing the number of populations on the landscape. Collectively, propagation, augmentation, reintroduction, translocation, and introduction (hereafter ''PARTI'') form a suite of interrelated population restoration tactics that have been successfully used in the recovery of a variety of imperiled fish species (Minckley et al. 2003, entire; Vrijenhoek 1996, entire; Yamamoto et al. 2006, entire). As of 2023, PARTI activities conducted by State, Federal, and non-profit agencies are beginning for the Roanoke logperch; propagation procedures have been established (Ruble et al. 2009, entire; Ruble et al. 2010, entire), a decision document is in place to provide a scientific basis to PARTI decisions for the Roanoke logperch (Roberts 2018, entire), an online decision-support tool has been developed based on input from the Structured Decision-making Team to guide hatchery and PARTI activities (Gibson 2022, entire), and a Statewide aquatic species safe harbor program in North Carolina will enable the use of PARTI for the Roanoke logperch (see 87 FR 51698; August 23, 2022). As such, there is strong momentum to incorporate PARTI into recovery actions for the Roanoke logperch in the future. As discussed further below, regardless of the Federal listing status of the Roanoke logperch, we expect the States of Virginia and North Carolina to continue to prioritize Roanoke logperch population restoration in the future, as they do with other State-listed fishes and freshwater mussels.

Regulatory Mechanisms

Over time, the Roanoke logperch has benefited from the protections and resources provided by State and Federal laws and regulations. The species has been listed as an endangered species under the Act since 1989. Federal listing status has affected the course of large proposed and completed projects within the geographic range of the species. For example, construction plans for the Roanoke River Flood Reduction Project were adjusted to reduce instream construction traffic, minimize silt runoff, and closely monitor water quality and Roanoke logperch population levels, to minimize incidental take of the species (Roberts et al. 2016c, entire). Coordination for this project spanned multiple years, and a final Biological Opinion was issued by the Service in 2017. Time-of-year restrictions on construction projects during the species' spawning window (March 15–June 30), recommended by both State and Federal agencies, have reduced streambed and floodplain disturbance and sediment loading during this key time in the species' lifecycle. Federal status also has allowed access to funding mechanisms available only for use on federally listed species, including the funds provided under section 6 of the Act. These funds have been used to restore riparian habitats to reduce sediment inputs, remove barriers to Roanoke logperch movement, and fund a range of university research studies that have advanced understanding of the species' basic biology (*e.g.,* Rosenberger and Angermeier 2003, entire), distribution and abundance (*e.g.,* Roberts 2012b, entire), and genetics and evolution (*e.g.,* Roberts et al. 2013, entire).

In our SSA analysis, we did not consider protections, funding, or other benefits of listed status, including any other Federal, State, or local protections or benefits arising solely as a result of the species being listed under the Act when assessing risks to the Roanoke logperch. Rather, we consider only non-Act-related regulatory mechanisms and restoration activities that are existing or that we are reasonably confident will occur in the future regardless of the species' Federal listing status, such as State-level protection and population management, habitat restoration, and dam removal and passage.

The Roanoke logperch has been listed as endangered by Virginia since 1989, and by North Carolina since its discovery in that State in 2007. The species is given high priority in both States' wildlife action plans, allowing access to funding mechanisms such as State wildlife grants. As with the Act's section 6 funds, State wildlife grants have been used to restore riparian habitats, remove barriers, and fund research studies. These State listings are independent of the species' Federal status. There is no reason to expect a change in Federal status would be followed by the States, both of which are currently increasing Roanoke logperch propagation and translocation capacity. Thus, we expect State-level emphasis on protections and population restoration to carry into the future, regardless of the species' Federal status. Furthermore, there is considerable interest in dam removal in the eastern United States for human safety, fish passage restoration, and river channel restoration. We, therefore, expect removal of dams and other barriers to continue within the range of the Roanoke logperch, regardless of the species' Federal listing status.

In addition to benefiting from the Act and State-level listings, the Roanoke logperch and other stream fishes benefit from the provisions of the Clean Water Act (CWA; 33 U.S.C. 1251 *et seq.*). The CWA's National Pollutant Discharge Elimination System permitting system regulates point sources of water pollution and has reduced some of the most chronic chemical pollution impacts of the early to mid-20th

century. Although controlling non-point source pollution—in particular, runoff of fine sediment, nutrients, and other contaminants—has been more difficult, CWA provisions such as total maximum daily load standards, which States are required to develop and achieve, have helped spur watershed-level management plans aimed at stemming pollutants potentially harmful to the Roanoke logperch, such as nutrients and sediment.

No previous research has directly quantified relationships between the threats to the species and the Roanoke logperch's vital rates, so in assessing current and future conditions, we based our assumptions about the nature of these relationships on a combination of ecological theory, expert judgment, and simulation models (Service 2022a, p. 26). Effects from specific threats such as fine sediment deposition, chemical pollution, dams and other barriers, and climate change are represented in the models but are not explicitly attributed to each threat.

Current Condition

Considering the biology of the species and key factors influencing condition, we assessed the current resiliency of occupied Roanoke logperch MUs (see table 1, above, for a list of MUs) based on indices of population density, genetically effective population size, habitat quality, and geographic range complexity. An overall index of current MU resiliency that combines this information is available in the SSA report (see section 3.4 of SSA report (Service 2022a, pp. 34–37)). In summary:

- Higher population density is indicative of a more highly productive habitat, and therefore reflects a population with higher resiliency since the habitat is able to support the needs of the species at a more concentrated scale.
- An important component of resiliency is being able to resist the influence of inbreeding depression on individual fitness, and ultimately, being able to adapt to changing future conditions. A larger value for genetically effective population size is needed over the long term (dozens to hundreds of generations) to maintain adaptive variation in the face of genetic drift; therefore, a higher value is indicative of higher resiliency in a population.
- Current habitat quality was qualitatively assigned as an aggregate assessment of that habitat's ability to support Roanoke logperch population growth, and we considered MUs with high habitat quality to have highest resiliency. Additionally, populations are less likely to go extinct when they are widely distributed across complex and diverse habitats. Accordingly, having more stream segments is indicative of more refugia and protection from impacts from negative events, and therefore indicative of higher resiliency.

MUs were given scores of low, intermediate, or high for each of the above indices and then an overall index was calculated. The overall index was the sum of the high scores (max of 4) minus the sum of the low scores (max of 4), plus 3 (to scale the final index to have a minimum of one). Any MU with an overall score ≥ 5 exhibited at least three ''high'' indices, so we considered these MUs to have highest resiliency. In contrast, any MU with an overall score of 1 exhibited at least two ''low'' indices and no ''high'' indices, so we considered these MUs to have the lowest resiliency. MUs with scores of 2–4 were considered intermediately resilient. The overall resiliency index for current condition is highest in the Upper Roanoke, Pigg, Upper Smith, Middle Dan, and Nottoway MUs, and is either high or intermediate in 9 of the 11 currently occupied MUs (Service 2022a, p. 40).

We used MU resiliency to further assess redundancy and representation at the metapopulation and species levels. For each metapopulation, a redundancy index was calculated, with the assumption that each MU's contribution to redundancy is a function of both the resiliency and the geographic complexity of that MU (Service 2022a, pp. 36–37). The overall current redundancy score is highest in the Dan metapopulation, followed by the Roanoke Mountain and Chowan metapopulations, and is intermediate in the Roanoke Piedmont metapopulation; therefore, overall redundancy is considered intermediate to high across all four metapopulations.

Representation describes the ability of a species to adapt to changing environmental conditions over time. By maximizing representation, a species' adaptive capacity to face unpredictable future changes to its environment are also maximized. Given that all four metapopulations, which are combinations of ecoregion and basin, within the known range of the Roanoke logperch have multiple (redundant) MUs with intermediate or high effective populations, we deemed that species-level adaptive capacity, or representation, is high for the species. The high estimated resiliency and redundancy of the Chowan metapopulation is particularly important for species-level representation, given that it is the most genetically distinctive metapopulation (Roberts et al. 2013, entire). The Chowan metapopulation occurs in the most ecologically distinct environment (Jenkins and Burkhead 1994, pp. 786–787; Rosenberger and Angermeier 2003, entire) and, therefore, potentially contributes disproportionately to the evolutionary diversity of the species.

Future Conditions

We assessed future conditions for the Roanoke logperch using a population viability model that forecasts population size and species' viability 50 years into the future. We assumed a current date of 2020, thus forecasting population size to year 2070. We chose a 50-year timeframe because we had information to reasonably assess urbanization, climate change, and risks to the species over this timeframe. Assuming a 4.5-year generation time for the Roanoke logperch (Roberts 2012a, p. 89), 50 years represents just over 10 generations for the species to respond to changing future conditions. As with current condition, future conditions were assessed using the three conservation biology principles of resiliency, redundancy, and representation, with resiliency gauged by assessing MU persistence probability over the 50-year timeframe and metapopulation redundancy and species representation gauged by counts of MUs with intermediate to high resilience.

We forecasted future conditions for the Roanoke logperch under 12 scenarios, featuring three management categories contrasted with four different assumptions about future environmental conditions including different watershed urbanization levels, climate change scenarios, and conservation management (*i.e.,* Roanoke logperch population restoration efforts and habitat connectivity restoration via barrier removals) (see chapter 4 of SSA report (Service 2022a, pp. 41–57)). The forecasted future conditions showed 8 of 11 MUs with 99 or 100 percent probability of persistence under all 12 scenarios until 2070. Even under the worst plausible future scenario (increased risk of watershed urbanization, decreased habitat suitability, no population augmentation, and no barrier removal), at least one MU is projected to persist in each of three metapopulations (Roanoke Mountain, Roanoke Piedmont, Chowan), and all of the MUs in the fourth metapopulation, Dan, are projected to maintain resiliency. Redundancy is projected to be consistently high in the Roanoke Mountain, Dan, and Chowan metapopulations. In contrast,

redundancy of the Roanoke Piedmont metapopulation depends strongly on future environmental and management conditions. Under declining habitat conditions, the Roanoke Piedmont metapopulation maintains only one MU, whereas with conservation management (*i.e.,* PARTI and barrier removal), it maintains three MUs. Species-level representation is relatively high under scenarios where multiple Roanoke Piedmont MUs maintain resiliency, but only partially achieved in situations where the Roanoke Piedmont metapopulation decreases to one remaining MU.

In summary, owing to a large geographic range that includes at least some numerically large populations in good-quality habitat, we estimate that species-level representation and redundancy for Roanoke logperch currently is relatively high. All four metapopulations exhibit at least some redundancy of MUs in intermediate to high resiliency condition. In the future, under the worst-case scenario of worsening habitat quality, increased risk, and no management, 8 of 11 MUs are projected to remain highly resilient by year 2070. The Roanoke Piedmont metapopulation and its constituent MUs show the lowest resiliency and redundancy, particularly under scenarios involving worsening habitat quality. However, these declines could potentially be offset through restoration measures like PARTI (augmenting weak populations and establishing new ones) and/or barrier removal and passage (allowing natural augmentation and colonization).

We note that, by using the SSA framework to guide our analysis of the scientific information documented in the SSA report, we have analyzed the cumulative effects of identified threats and conservation actions on the species. To assess the current and future condition of the species, we evaluate the effects of all the relevant factors that may be influencing the species, including threats and conservation efforts. Because the SSA framework considers not just the presence of the factors, but to what degree they collectively influence risk to the entire species, our assessment integrates the cumulative effects of the factors and replaces a standalone cumulative effects analysis.

Determination of the Roanoke Logperch's Status

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

Status Throughout All of Its Range

When the Roanoke logperch was listed as endangered in 1989, it was thought to be endemic to Virginia and to inhabit only the upper Roanoke, Pigg, Nottoway, and Smith rivers. Since then, the species' known range has expanded to 31 streams spanning 55 watersheds (HUCs) in both Virginia and North Carolina, and restoration work (such as barrier removal, construction of fish passages, and riparian habitat improvement) has occurred throughout the species' range. Furthermore, no population extirpations are known.

After evaluating threats to the species and assessing the cumulative effect of the threats under the Act's section 4(a)(1) factors, we deemed that six factors influence Roanoke logperch viability. First, fine-sediment deposition emanating from urbanization, agriculture, and other sources smothers eggs and reduces feeding efficiency, potentially resulting in reduced growth, survival, and recruitment. Second, chronic chemical pollution reduces habitat suitability for the Roanoke logperch, and acute pollution events reduce survival and population size. Third, dams and other barriers inhibit fish movement, fragmenting populations into smaller areas and reducing demographic rescue and gene flow among populations. Fourth, climate change has the potential to alter hydrology and sediment delivery by increasing flood magnitudes and flow variability in general, reducing flow predictability, decreasing summer/fall base flows, and increasing erosion and runoff of sediment, potentially reducing habitat suitability for all age-classes of Roanoke logperch and increasing direct mortality of vulnerable juveniles during spring floods. Fifth, existing legal and regulatory mechanisms such as protections of the Act, the CWA, and State-level equivalents have benefitted the species through prohibitions on activities that may cause take and by facilitating funding opportunities used for Roanoke logperch research and conservation (note, however, that our assessment of status does not take into account the protections and benefits of the species being listed under the Act). Sixth, management activities aimed at improving habitat quality (*e.g.,* riparian revegetation to reduce silt loading), restoring habitat connectivity (*e.g.,* removing dams and constructing fish passages over barriers), and directly manipulating populations through propagation, augmentation, reintroduction, translocation, and introduction of fish (*i.e.,* PARTI) have increased the resiliency and redundancy of populations.

Based on the species' expanded geographic distribution since the time of listing, the lack of empirical records of watersheds that have become unoccupied or populations that have become extirpated, and our analysis of threats, we conclude that the Roanoke logperch has a very low risk of extinction in the near term. The current number and distribution of intermediate to high resilience MUs is high across all four metapopulations, species-level adaptive capacity is relatively high, and threats in the near term are low. Thus, the Roanoke logperch does not meet the Act's definition of an endangered species.

Twelve future scenarios were modeled 50 years into the future. Regardless of projected increases in urbanization or climate change, and even in the absence of augmentation or barrier removal, all occupied MUs in the Roanoke Mountain, Dan, and Chowan metapopulations had high persistence probabilities. Only the Roanoke Piedmont differed, with two high and two low probabilities of persistence among its four MUs. Also, under all scenarios, all four metapopulations have MUs with high probabilities of persistence to 2070; thus, species-level representation is projected to remain high into the future. Even under the worst plausible case of worsening habitat quality, increased risk, and no conservation management, 8 of 11 MUs are projected to persist to 2070. Therefore, the Roanoke logperch is not likely to become in danger of extinction within the foreseeable future, and it does not meet the Act's definition of a threatened species.

Thus, after assessing the best available information, we conclude that the

Roanoke logperch is not in danger of extinction now or likely to become so within the foreseeable future throughout all of its range.

Status Throughout a Significant Portion of Its Range

Under the Act and our implementing regulations, a species may warrant listing if it is in danger of extinction or likely to become so within the foreseeable future throughout all or a significant portion of its range. Having determined that the Roanoke logperch is not in danger of extinction or likely to become so within the foreseeable future throughout all of its range, we now consider whether it may be in danger of extinction (*i.e.,* endangered) or likely to become so within the foreseeable future (*i.e.,* threatened) in a significant portion of its range—that is, whether there is any portion of the species' range for which both (1) the portion is significant; and (2) the species is in danger of extinction or likely to become so within the foreseeable future in that portion. Depending on the case, it might be more efficient for us to address the ''significance'' question or the ''status'' question first. We can choose to address either question first. Regardless of which question we address first, if we reach a negative answer with respect to the first question that we address, we do not need to evaluate the other question for that portion of the species' range.

We identified two portions of the range to consider: (1) the Roanoke Piedmont metapopulation, because it was variable in terms of resiliency and had the lowest redundancy score; and (2) the Chowan metapopulation, because it houses the most genetically unique population of the species. The remaining two portions of the range (Roanoke Mountain and Dan metapopulations) were not considered due to their consistently high resiliency and redundancy, indicating the species is not in danger of extinction or likely to become so within the foreseeable future in those portions. In undertaking this analysis for the Roanoke logperch, we choose to address the significance question first. In the absence of a legal definition of significance in the Act, we determined significance on a case-by-case basis for the Roanoke logperch using a reasonable interpretation of significance and providing a rational basis for our determination. In doing so, we considered what is currently observed about the contributions made by each geographic portion in terms of biological factors, focusing on the importance of each in supporting the continued viability of the species. We also evaluated whether the area occupies relatively large or particularly high-quality or unique habitat.

The Roanoke Piedmont represents one of the four metapopulations in our analysis. It was defined by combining river basin (*i.e.,* Roanoke River Basin) and ecoregion (*i.e.,* upper Piedmont). This metapopulation represents 25 percent of the species' range, which is a small proportion of the Roanoke logperch's range and encompasses a small proportion of the species' overall population. Further, it is not unique in that it shares similar geology, topography, water chemistry, habitat, and climate with another upper Piedmont part of the range, the Dan metapopulation. We conclude that the Roanoke Piedmont is not a significant portion of the range.

In our representation analysis, we note the special nature of the Chowan metapopulation. Intraspecific genetic studies of Roanoke logperch indicate that the Chowan basin houses the most genetically unique population of the species; however, overall levels of intraspecific genetic divergence are relatively minor, such that no major subspecific phylogeographic distinctions (*e.g.,* evolutionarily significant units) are evident. The high estimated resiliency and redundancy of the Chowan metapopulation is particularly important for species-level representation. This evolutionary unit is the most genetically distinctive metapopulation, occurs in the most ecologically distinct environment, and therefore potentially contributes disproportionately to the evolutionary diversity of the species.

Having identified the Chowan as a significant portion of the Roanoke logperch's range, we then focused our analysis on whether this portion of the species' range may meet the Act's definition of an endangered species or a threatened species. We considered whether the threats to, or their effects on, the species are greater in this portion of the species' range than in other portions such that the species is in danger of extinction now or likely to become so within the foreseeable future in that portion. We examined the following threats: fine-sediment deposition, pollution, dams/barriers, and climate change, including their cumulative effects.

Our analysis indicates that the primary threats are not acting on the Roanoke logperch in the Chowan Basin such that the Chowan metapopulation would have a different status than the species as a whole. The current condition of Roanoke logperch in the Chowan metapopulation consists of a high resiliency MU, indicating that the species has robust population densities, high genetic diversity, plenty of available suitable habitat, and security from risks like pollution events. We project that, in the foreseeable future, Roanoke logperch in the Chowan metapopulation would have a 100 percent probability of persistence regardless of future scenario. Therefore, we conclude that the species is not in danger of extinction or likely to become so within the foreseeable future in the Chowan portion of the range.

We found no biologically meaningful portion of the Roanoke logperch's range where the condition of the species differs from its condition elsewhere in its range such that the status of the species in that portion differs from its status in any other portion of the species' range.

Therefore, we find that the species is not in danger of extinction now or likely to become so within the foreseeable future in any significant portion of its range. This does not conflict with the courts' holdings in *Desert Survivors* v. *Department of the Interior,* 321 F. Supp. 3d 1011, 1070–74 (N.D. Cal. 2018), and *Center for Biological Diversity* v. *Jewell,* 248 F. Supp. 3d. 946, 959 (D. Ariz. 2017) because, in reaching this conclusion, we did not apply the aspects of the Final Policy on Interpretation of the Phrase ''Significant Portion of Its Range'' in the Endangered Species Act's Definitions of ''Endangered Species'' and ''Threatened Species'' (79 FR 37578; July 1, 2014), including the definition of ''significant'' that those court decisions held to be invalid.

Determination of Status

Our review of the best scientific and commercial data available indicates that the Roanoke logperch does not meet the Act's definition of an endangered species or a threatened species in accordance with sections 3(6), 3(20), and 4(a)(1) of the Act. Therefore, in accordance with our regulations at 50 CFR 424.11(e)(2), we propose to remove the Roanoke logperch from the Federal List of Endangered and Threatened Wildlife.

Effects of This Rule

This proposed rule, if made final, would revise 50 CFR 17.11(h) by removing the Roanoke logperch from the Federal List of Endangered and Threatened Wildlife. The prohibitions and conservation measures provided by the Act, particularly through sections 7 and 9, would no longer apply to this species. Federal agencies would no longer be required to consult with the Service under section 7 of the Act in the

event that activities they authorize, fund, or carry out may affect the Roanoke logperch.

There is no critical habitat designated for this species, so there would be no effect to 50 CFR 17.95.

Post-Delisting Monitoring

Section 4(g)(1) of the Act requires us, in cooperation with the States, to implement a monitoring program for not less than 5 years for all species that have been recovered. Post-delisting monitoring (PDM) refers to activities undertaken to verify that a species delisted due to recovery remains secure from the risk of extinction after the protections of the Act no longer apply. The primary goal of PDM is to monitor the species to ensure that its status does not deteriorate, and if a decline is detected, to take measures to halt the decline so that proposing it as endangered or threatened is not again needed. If at any time during the monitoring period data indicate that protective status under the Act should be reinstated, we can initiate listing procedures, including, if appropriate, emergency listing.

We will coordinate with other Federal agencies, State resource agencies, interested scientific organizations, and others as appropriate to develop and implement an effective PDM plan for the Roanoke logperch. The PDM plan will build upon current research and effective management practices that have improved the status of the species since listing. Ensuring continued implementation of proven management strategies that have been developed to sustain the species will be a fundamental goal for the PDM plan. The PDM plan will identify measurable management thresholds and responses for detecting and reacting to significant changes in Roanoke logperch numbers, distribution, and persistence. If declines are detected equaling or exceeding these thresholds, the Service, in combination with other PDM participants, will investigate causes of these declines. The investigation will be to determine if the Roanoke logperch warrants expanded monitoring, additional research, additional habitat protection, or resumption of Federal protection under the Act.

We appreciate any information on what should be included in post-delisting monitoring strategies for this species (see Information Requested, above).

Required Determinations

Clarity of the Rule

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

(1) Be logically organized;

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

(3) Use clear language rather than jargon;

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

(5) Use lists and tables wherever possible.

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

References Cited

A complete list of references cited in this rulemaking is available on the internet at *https://www.regulations.gov* and upon request from the Virginia Ecological Services Field Office (see **FOR FURTHER INFORMATION CONTACT**).

Authors

The primary authors of this proposed rule are the staff members of the Fish and Wildlife Service's Species Assessment Team and the Virginia Ecological Services Field Office.

List of Subjects in 50 CFR Part 17

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

Proposed Regulation Promulgation

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

PART 17—ENDANGERED AND THREATENED WILDLIFE AND PLANTS

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

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

§ 17.11 [Amended]

■ 2. In 17.11, in paragraph (h), amend the List of Endangered and Threatened Wildlife by removing the entry for ''Logperch, Roanoke'' under FISHES.

Martha Williams,

Director, U.S. Fish and Wildlife Service.

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