PART 180—TOLERANCES AND EXEMPTIONS FOR PESTICIDE CHEMICAL RESIDUES IN FOOD

■ 1. The authority citation for part 180 continues to read as follows:

Authority: 21 U.S.C. 321(q), 346a and 371.

■ 2. In § 180.960, amend table 1 by adding, in alphabetical order, the polymer ''2-Propenoic acid, polymer with ethene, ethenyl acetate and sodium ethenesulfonate, minimum number average molecular weight (in amu) 5,600'' to read as follows:

§ 180.960 Polymers; exemptions from the requirement of a tolerance.

* * * * *

TABLE 1 TO § 180.960

Polymer	CAS No.
* * * * * * *	
2-Propenoic acid, polymer with ethene, ethenyl acetate and sodium ethenesulfonate, minimum number average molecular weight (in amu) 5,600	429691–44–1
* * * * * * *	

[FR Doc. 2022–21580 Filed 10–4–22; 8:45 am]

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DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

[Docket No. FWS–R4–ES–2020–0152; FF09E22000 FXES11130900000 212]

RIN 1018–BE62

Endangered and Threatened Wildlife and Plants; Removing the Snail Darter From the List of Endangered and Threatened Wildlife

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Final rule.

SUMMARY: We, the U.S. Fish and Wildlife Service (Service), are removing the snail darter (*Percina tanasi*), a small freshwater fish native to the Tennessee River watershed, from the Federal List of Endangered and Threatened Wildlife (List). This final rule is based on a thorough review of the best available scientific and commercial information which indicates that the threats to the species have been reduced or eliminated to the point that it has recovered and is no longer in danger of extinction or likely to become in danger of extinction in the foreseeable future. Therefore, the species no longer meets the definition of an endangered or a threatened species under the Endangered Species Act of 1973, as amended (Act).

DATES: This rule is effective November 4, 2022.

ADDRESSES: This final rule, the post-delisting monitoring plan, and supporting documents (including the recovery plan and 5-year review summary) are available on the internet at *https://www.regulations.gov* under Docket No. FWS–R4–ES–2020–0152 or at *https://ecos.fws.gov.*

FOR FURTHER INFORMATION CONTACT: Daniel Elbert, Field Supervisor, U.S. Fish and Wildlife Service, Tennessee Ecological Services Field Office, 446 Neal Street, Cookeville, TN 38506; telephone 931–528–6481. Direct all questions or requests for additional information to ''SNAIL DARTER QUESTIONS'' at the address above. 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.

SUPPLEMENTARY INFORMATION:

Executive Summary

Why we need to publish a rule. Under the Act, a species may warrant removal from the Federal List of Endangered and Threatened Wildlife (*i.e.,* ''delisting'') if it no longer meets the definition of an endangered species or a threatened species. Delisting a species can only be completed by issuing a rule through the Administrative Procedure Act rulemaking process.

What this document does. We are delisting the snail darter (*Percina tanasi*) based on its recovery. The prohibitions and conservation measures provided by the Act, particularly through sections 7 and 9, will no longer apply to the snail darter.

The basis for our action. Under the Act, we may determine that a species is an endangered species or a threatened species because of any of 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; or (E) other natural or manmade factors affecting its continued existence. We have determined that the threats to the species have been reduced or eliminated so that the snail darter no longer meets the definition of an endangered or threatened species under the Act.

Under the Act, we must review the status of all listed species at least once every 5 years. We must delist a species if we determine, on the basis of the best available scientific and commercial data, that the species is neither a threatened species nor an endangered species. Our regulations at 50 CFR 424.11 identify three reasons why we might determine that a listed species is neither an endangered species nor a threatened species: (1) The species is extinct; (2) the species has recovered, or (3) the original data used at the time the species was classified were in error. Here, we have determined that the snail darter has recovered; therefore, we are delisting it.

Peer review and public comment. We evaluated the species' needs, current conditions, and future conditions to support our September 1, 2021, proposed rule to delist the snail darter (86 FR 48953). We sought comments from independent specialists to ensure that our determination is based on scientifically sound data, assumptions, and analyses. We invited these peer reviewers to comment on the proposed rule and draft post-delisting monitoring plan. We considered all comments and information we received during the public comment period on the proposed rule when developing this final rule.

Previous Federal Actions

On October 9, 1975, we published a final rule in the **Federal Register** (40 FR 47505) listing the snail darter as an endangered species due to the threat of

the impoundment of the only known location of the species by the completion of Tellico Dam. On April 1, 1976, the Service designated 16.5 miles (26.4 km) of the lower Little Tennessee River as critical habitat for the snail darter (41 FR 13926). In 1977, the critical habitat for the snail darter was amended to include a map (42 FR 47840). The Snail Darter Recovery Team prepared the initial recovery plan for the snail darter on April 4, 1979 (Hurst et al. 1979, entire). The plan was revised and finalized on May 5, 1983 (Service 1983, entire). Due to successful translocations into the Hiawassee and Holston Rivers and the discovery of additional populations, we reclassified the snail darter from endangered to threatened and rescinded critical habitat on July 5, 1984 (49 FR 27510). In 2013, we completed a 5-year review for the snail darter. No change in the species' listing classification was recommended as a result of that 5-year review. We initiated a second 5-year review for the species on April 11, 2019 (84 FR 14669), and on July 16, 2019, we were petitioned to delist the snail darter. We were already reviewing the status of the species as part of the 5-year review and, upon receiving the petition, determined that there was substantial scientific and commercial information indicating the delisting the snail darter may be warranted. On September 1, 2021, we published a proposed rule to remove the snail darter from the Federal List of Endangered and Threatened Wildlife (86 FR 48953) and announced the availability of a draft post-delisting monitoring plan. The September 1, 2021, proposed rule to delist the snail darter also serves as our 5-year review, and 90-day and 12-month findings on the petition.

Summary of Changes From the Proposed Rule

We considered all comments and information that we received during the comment period for the proposed rule to delist the snail darter (86 FR 48953; September 1, 2021). We made minor editorial changes and revised various sections of the rule based on public and partner comments. We also incorporated an additional study (Jones et al. 2015) into our evaluation of the effects of climate change on the species. The information from this study added to the evidence of variability in the weather but did not change our understanding of how climate change will affect the snail darter overall.

Background

Taxonomy

The snail darter is a small fish in the perch family, Percidae, and darter subfamily, Etheostomatinae. The species was first discovered in 1973 (Starnes 1977, p. 1). At that time, and when listed in 1975, the snail darter was recognized as a new, undescribed species in the genus *Percina* and subgenus *Imostoma.* The species was described in 1976 as *Percina tanasi,* named after the historic Cherokee town of Tanasi, near where the snail darter was first discovered (Etnier 1976, p. 485). The snail darter has been recognized as the sister species (closest relative) to the stargazing darter (*P. uranidea*) (Etnier 1976, p. 480; Near and McEachran 2002, p. 8).

Population Genetics

No studies have been completed to determine the level of gene flow between populations or the amount of potential inbreeding within populations. Because snail darters are often found in the lower portions of tributaries, it is likely that tributary populations are part of larger mainstem metapopulations (Service 2013, p. 13). It is not clear to what level the mainstem populations are isolated by the large Tennessee Valley Authority (TVA) dams and reservoirs.

Species Description

The following description is modified from Etnier (1976, pp. 480–485) and Etnier and Starnes (1993, pp. 587–590). The snail darter is a small benthic (bottom-dwelling) fish that grows to 3.55 inches (in) (90 millimeters (mm)). The base color is brown or brownish grey with some green. The back has four clear black or dark brown saddle markings. These markings extend down the sides toward the series of blotches along the lateral line. A dark suborbital bar or ''teardrop'' marking is present below the eye. Fin rays are usually speckled, but pelvic and anal fins are sometimes clear. Males gain a blue-green sheen on the sides and belly during the breeding season when golden flecks become more pronounced on the cheeks and pectoral fins. Females also develop some gold coloring but are less bright than the males. Breeding tubercles (small bony protrusions) form on the rays of the elongated anal fin of males as well as the lower surfaces of rays of the pelvic fins, caudal (tail) fin, and branchiostegal (soft gill cover under head) rays.

The snail darter may occur with two other *Imostoma* darters, the river darter (*Percina shumardi*) and the saddleback darter (*P. vigil*). The snail darter differs from the river darter by having four saddle markings along its back, while the latter lacks saddles altogether. Snail darters and river darters are often found together, but river darters tend to be associated with slightly larger substrate than snail darters (Matthews 2020, pers. comm.). While these species may share similar habitat, there is no evidence that they compete for resources.

Habitat

The snail darter occurs in flowing sections of medium to large rivers. In these streams, snail darters are predominantly found over clean gravel without significant silt or plant coverage (Ashton and Layzer 2010, p. 615). Initially thought to require shallow, unimpounded portions of river to survive (Starnes 1977, pp. 21–23), snail darters were later found in the impounded but flowing upper sections of mainstem Tennessee River reservoirs (Hickman and Fitz 1978, p. 80). Snail darters were found in shoals at a depth of 1 to 3 feet (ft) (0.3 to 1 meters (m)) (Starnes 1977, pp. 21–33; Ashton and Layzer 2010, entire). Snail darters have also been found on gravel and cobble patches in up to 25 ft (7.6 m) of water with regular captures at 10 to 15 ft (3 to 5 m) deep (Ripley 1976, entire; Hickman and Fitz 1978, pp. 80–83; Matthews 2017, pers. comm.; Matthews 2019, pers. comm.). In addition to large river habitats, snail darters also occupy the lower reaches of larger creeks, and during the breeding season, large numbers of darters congregate on the gravel shoals in these creeks to spawn (Starnes 1977, p. 64). Detailed descriptions of snail darter habitat can be found in Ashton and Layzer (2010, entire) and Starnes (1977, pp. 21–33).

Life History

The life history data presented here are modified from Etnier and Starnes (1993, p. 588), with additions from Hickman and Fitz (1978, pp. 10–38) and Starnes (1977, entire). The snail darter is well adapted to its habitat of clean gravel substrate in large creeks and rivers. The saddle markings on the back of the fish act as camouflage amongst gravel and small cobble, and are a pattern seen in other benthic species (Armbruster and Page 1996, pp. 250–252). Snail darters also can burrow into the substrate with just their eyes exposed to escape predation (Etnier and Starnes 1993, p. 588). The species spawns in the late winter and early spring, from about February to April. Adults gather on shoals during the breeding season. While spawning has not been directly observed, it is likely

that the eggs are buried shallowly in the sand and gravel similar to how other *Percina* species bury their eggs. Females produce about 600 eggs per season during multiple spawning events. Eggs hatch after 15–20 days and produce pelagic (in the water column) larvae that drift considerable distances downstream. The developing larvae and juveniles likely use relatively calm deeper areas of rivers and reservoirs. By the end of summer, juveniles are about 1.6 in (40 mm) in length and begin migrating upstream. Some fast-growing individuals may reach sexual maturity in their first year, but most mature in their second year (Etnier and Starnes 1993, p. 588). Snail darters are short-lived fish that rarely survive to their fourth year. As their name implies, snail darters mostly feed on freshwater snails, predominantly in the genera *Leptoxis* and *Lithasia,* as well as caddisfly and dipteran (true fly) larvae (Etnier and Starnes 1993, p. 588).

Distribution

When we listed the snail darter (40 FR 47505; October 9, 1975), the species was only known from about 13 miles (21 kilometers (km)) of the lower Little Tennessee River in Loudoun County, Tennessee. Shortly thereafter, the species was found in the Watts Bar Reservoir portion of the Tennessee River below the mouth of the Little Tennessee River, and efforts were made to conserve the species by translocating individuals into other suitable streams (Hickman and Fitz 1978, pp. 80–83). Snail darters were collected from the Little Tennessee River and stocked into the Hiwassee, Holston, Nolichucky, and Elk Rivers beginning in 1975 to achieve this objective. The introductions into the Nolichucky and Elk Rivers were halted when sharphead darters (*Etheostoma acuticeps*), a species once thought extinct, were rediscovered there, causing concern about competition between the two species. However, the introductions into the Holston and Hiwassee Rivers were successful, and it is thought that the populations in the French Broad and Ocoee Rivers were established by dispersal from these populations (Ashton and Layzer 2008, pp. 55–56). These locations are presented on a map in figure 1, below.

After the completion of Tellico Dam on the Little Tennessee River, snail darters were located in five additional tributaries and three reservoirs: Little River (1983), Big Sewee Creek (1981), Chickamauga Reservoir (1976), Nickajack Reservoir (1981), South Chickamauga Creek (Tennessee and Georgia portions) (1980), Guntersville Reservoir (Tennessee portion) (1981), Sequatchie River (1981), and Paint Rock River (Alabama portion) (1981) (Service 1983, pp. 12–19; Service 2013, p. 7). A survey in 2005 located the species in seven of the nine tributaries surveyed: French Broad River, Hiwassee River, Holston River, Little River, Sequatchie River, Big Sewee Creek, and South Chickamauga Creek (Ashton and Layzer 2008, p. 54). This survey appears to be the last known record of snail darters in Big Sewee Creek (Simmons 2019, unpublished data). In this survey, snail darters were not located in the Paint Rock River or Ocoee River, though they were discovered at both locations in later years (Kuhajda 2018, unpublished data). In 2007, a single snail darter was collected in Citico Creek, suggesting that snail darters may have persisted in the Little Tennessee River watershed after the dam was constructed; however, they were not found in follow-up surveys (Service 2013, p. 7).

More recent survey efforts have continued to document new snail darter locations, though with limited information on persistence. In 2012, two snail darters were collected in the Flint River in Alabama (Simmons 2019, p. 1), but they have not been found there since. In 2015, snail darters were collected in the Elk River in Alabama and in Bear Creek in Alabama and Mississippi, over 100 river miles (160 km) from the Flint River location. To verify these collections, TVA began an effort to survey the mainstem Tennessee River reservoirs for snail darters (Simmons 2019, p. 2), collecting snail darters from six reservoirs in Tennessee and Alabama: Chickamauga, Nickajack, Guntersville, Wheeler, Pickwick, and the French Broad River arm of Fort Loudoun Reservoir (Simmons 2019, p. 7; TVA unpublished data). Later surveys of the reservoirs located juvenile snail darters in Watts Bar Reservoir (Matthews 2020, pers. comm.), but trawling efforts did not locate individuals in Tellico, Wilson, and Kentucky Reservoirs (Simmons 2019, p. 6).

In 2017 and 2018, an environmental DNA survey was conducted for snail darters in the Alabama portion of the Tennessee River Basin (Shollenberger 2019, p. 6). Environmental DNA (eDNA) is a surveillance tool used to monitor for the genetic presence of an aquatic species. These surveys returned positive eDNA detections in the following streams and reservoirs where TVA surveys had physically collected snail darters during previous survey efforts: Guntersville Reservoir, Wheeler Reservoir, Paint Rock River, Elk River, Pickwick Reservoir, and Bear Creek. The eDNA surveys returned negative results at locations where snail darters had not been collected recently, such as Wilson Reservoir and the Flint River, although an eDNA detection was found and then validated in 2020 in Shoal Creek, a tributary to Wilson Reservoir (Johnson 2020, p. 2).

In summary, the snail darter's known range has greatly expanded since it was first discovered (see figure 1, below). At the time of listing in 1975, the species was only known from a small reach of the Little Tennessee River. By the early 1980s, new populations had been found or established in 10 widely dispersed locations, and in 1984, we reclassified the snail darter from an endangered to a threatened species (49 FR 27510; July 5, 1984), due largely to an increased number of populations and a considerable range expansion. Since 2010, populations in an additional two reservoirs and three tributaries have been discovered (Simmons 2019, pp. 1–2). As a result, snail darters are now considered extant in seven mainstem reservoirs of the Tennessee River (Fort Loudoun, Watts Bar, Chickamauga, Nickajack, Guntersville, Wheeler, and Pickwick) and 12 tributaries in the Tennessee River watershed (Holston River, French Broad River, Little River, Hiwassee River, Ocoee River, South Chickamauga Creek, Sequatchie River, Paint Rock River, Flint River (two individuals), Elk River, Shoal Creek (one individual), and Bear Creek). We consider the snail darter extirpated from the Little Tennessee River mainstem, Citico Creek, and Sewee Creek, and never established in the Nolichucky River.

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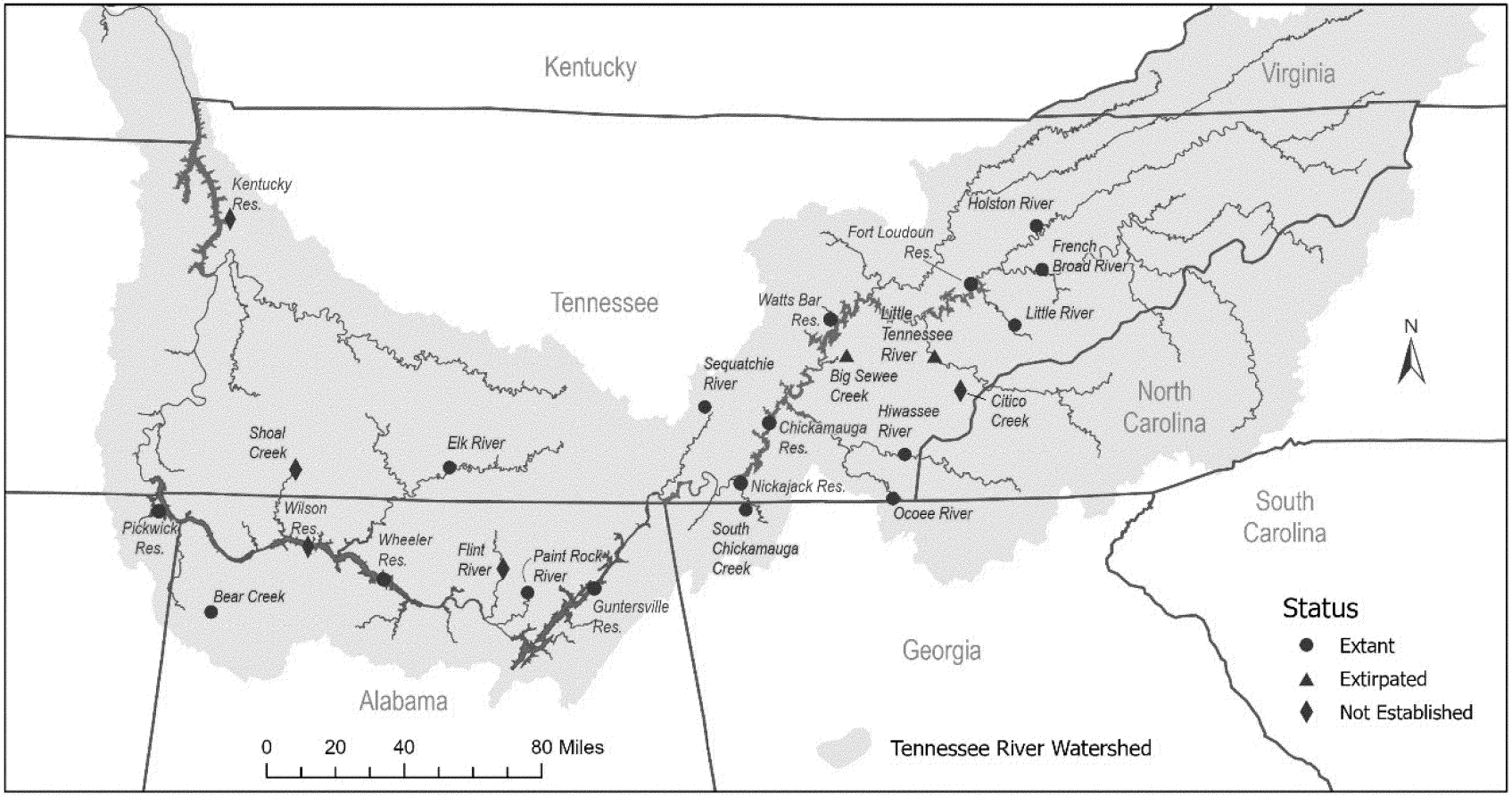

Figure 1. Current range and status of snail darter populations in the Tennessee River watershed. Points represent occupied tributaries and reservoirs, not exact collection locations.

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Evaluating Populations

The best available scientific information does not allow us to determine population size for the snail darter. Therefore, our assessment was based on monitoring of the stream community conducted by TVA throughout the Tennessee River Basin using an index of biotic integrity (IBI) approach. The IBI uses fish community metrics, such as percent insectivore, to develop a score of stream health. These surveys target a representative sample of the overall fish assemblage rather than individual species, so are not designed to provide population size information on rare species but are useful for determining species persistence at a site. Occasional encounters by IBI monitoring crews provide information in the intervening years, but many of these surveys took place in wadable portions of streams, missing the deeper water habitats often used by the species. Where snail darters are common near IBI sites, surveyors intentionally avoid their habitat to reduce the probability of injury, which can result in artificially reduced numbers of the species in samples. The wide variety of methods used during previous survey efforts also makes comparing populations difficult. Surveys targeted at other species only note incidental sightings of snail darters, not density, and the TVA trawls have mostly been carried out to determine the species' presence and range (Simmons 2019, p. 1). However, the best available science indicates that reproducing populations of the species likely exist in at least 16 locations (6 reservoirs and 10 tributaries) based on repeated collections that have been made at those locations, evidence of multiple age classes at those locations (*i.e.,* suggesting regular recruitment into the population), and multiple males and females captured at those locations (see tables 1 and 2 in Summary of Biological Status, below).

Recovery and Recovery Plan Implementation

Section 4(f) of the Act (16 U.S.C. 1531 *et seq.*) 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 List.

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 and consideration of the standards listed in 50 CFR 424.11(e) 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 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.

The snail darter recovery plan (Service 1983, entire) included recovery criteria to indicate when threats to the species have been adequately addressed and prescribed actions that were thought to be necessary for achieving those criteria. We summarize the criteria and then discuss progress toward meeting the recovery criteria in the following sections.

Recovery Criteria

The objective of the recovery plan is to protect and recover the snail darter to the point where it can be removed from the Federal List of Endangered and Threatened Wildlife. The recovery plan states that the species ''shall be considered recovered when one of the alternatives (A, B, or C) listed below is met and no present or foreseeable threats exist that could cause the species to become in danger of extinction'' (Service 1983, p. 27).

- *Alternative A:* Suitable habitat areas of the Tennessee River within the area from the backwaters of Wheeler Reservoir upstream to the headwaters of Watts Bar Reservoir are inhabited by snail darter populations that can survive and reproduce independently of tributary rivers as evidenced by documented reproduction in Watts Bar Reservoir or some other Tennessee River reservoir.
- *Alternative B:* More Tennessee River tributary populations of the species are discovered, and existing populations are not lost. The number of additional populations needed to meet this criteria would vary depending on the status of the new populations, but two populations similar to the Big Sewee Creek, South Chickamauga Creek, or Sequatchie River populations, or one comparable to the Hiwassee River population, would denote recovery.
- *Alternative C:* Through maintenance of existing populations and/or by expansion of these populations, there exist viable populations of snail darters in five separate streams such as Big Sewee Creek, Hiwassee River, South Chickamauga Creek, Sequatchie River and Paint Rock River. (For this alternative, ''viable populations'' means that population monitoring over a 10-year period (biannual sampling) indicates that the snail darter is reproducing (at least two year classes present each year sampled) and that the population is either stable or expanding. For some populations, existing data may be used to meet this requirement.)

Achievement of Recovery Criteria

Alternative A of the recovery criteria requires that snail darters be present in suitable habitats within reservoirs from Wheeler Reservoir upstream to Watts Bar Reservoir and evidence of reproduction within reservoirs independent of tributaries in at least one reservoir. We conclude that Alternative A has been met based on collection of seven permanent mainstem populations (Pickwick, Wheeler, Guntersville, Nickajack, Chickamauga, Watts Bar, and Fort Loudoun reservoirs) and evidence of reproduction independent of tributaries in Chickamauga, Nickajack, and Wheeler reservoirs (see tables 1 and 2 in Summary of Biological Status,

below, and figure 1 in Background, above). These populations represent multiple reservoirs, rivers and span at least three physiographic regions (Highland Rim, Cumberland Plateau, and Ridge and Valley) (Etnier and Starnes 1993, p. 3; Mettee et al. 1996, p. 5).

Our assessment of the tributary populations of snail darters supports the determination that Alternative B has also been met. Alternative B of the recovery criteria requires the discovery or establishment of at least two new tributary populations similar to the Big Sewee Creek, South Chickamauga Creek, or Sequatchie River populations or one comparable to the Hiwassee River population. In our analysis, we determined that 10 tributary populations are extant that have a moderate or high resilience (see table 1, below). Four of these (French Broad River, Ocoee River, Elk River, and Bear Creek) have been found or established since the recovery plan was finalized. The largest new population occurs in the lower French Broad River. The founders of this population were likely migrants or juveniles from the stocked population in the Holston (Service 2013, p. 14). Snail darters have been collected across at least 21.8 miles (35.1 km) of the French Broad River and across 19 miles (30.5 km) of the Hiwassee River (Ashton and Layzer 2008, pp. 54–55; Kuhajda 2018, supplementary data; TVA, unpublished data). Therefore, the requirement to discover or establish a population comparable to the Hiwassee River population has been met.

Additionally, Alternative B gives the option of two tributary populations comparable to Big Sewee Creek, South Chickamauga Creek, and Sequatchie River. The current populations in the Ocoee River and Bear Creek are comparable to the Big Sewee Creek, South Chickamauga Creek, and Sequatchie River populations that existed at the time the recovery plan was finalized based on captures and occupied stream length.

Since 2011, snail darters have been found consistently in the Ocoee River by TVA IBI crews, appearing in every biannual sample since 2015. Snail darters have been collected across 5.9 miles (9.5 km) of the Ocoee River, and collections of snail darters in the Hiwassee River near the mouth of the Ocoee suggest that they may occupy more of the river.

Snail darters have only been collected as individuals or pairs, but the lower portion of Bear Creek is in the Gulf Coastal Plain physiographic region, so preferred habitat is more limited than in other streams. Individuals have been collected across 5.8 miles (9.3 km) of Bear Creek, but trawling collections near the mouth of Bear Creek and eDNA detections in the lower parts of the Bear Creek system and at its mouth suggest that snail darters may occur in an additional 25 miles (40 km) of the creek (Simmons 2019, supplementary data; Shollenberger 2019, pp. 14–16).

Since 2015, snail darters have been collected in 1.4 miles (2.3 km) of the Elk River in Tennessee. Snail darters may also occur in the Alabama portion of the Elk River over more than 20 river miles of free-flowing stream down to the portion of the river inundated by Wheeler Reservoir (Simmons 2019, supplementary data; Shollenberger 2019, pp. 14–16).

Our assessment of the tributary populations of the snail darter supports the determination that Alternative B has been met based on the establishment of the French Broad River population that is comparable to the Hiwassee population. Additionally, the Ocoee River, Bear Creek, and Elk River populations are comparable to the Big Sewee Creek historical population, which was found across 4.2 miles of stream, exceeding the prescription in Alternative B for at least one additional large population or two additional small populations.

The intent of Alternative C has been fulfilled because the documented conditions are functionally equivalent to those prescribed. This alternative of the recovery criteria calls for the maintenance of viable populations in five separate streams. The definition for viable populations in the 1983 recovery plan requires biannual monitoring over a 10-year period with enough data to demonstrate a stable or increasing population size and evidence of reproduction indicated by the presence of at least two year classes present in each year sampled. The best available monitoring data do not allow us to determine whether populations meet this definition, because most of our collections come from TVA IBI surveys that are not species-specific. However, our analysis of the tributary populations found 10 populations that were considered at least moderately resilient (see table 1 in Summary of Biological Status, below), which we conclude is equivalent to a determination that the populations are viable. Of these, nine met the requirement of Alternative C that at least two year classes be present. The discovery of populations in Bear Creek, Elk River, Wheeler Reservoir, and Pickwick Reservoir since 2009 shows evidence of either species expansion or growth of existing populations to the level of detection (see table 2 in Summary of Biological Status, below). The presence of resilient populations in 10 tributaries and 7 mainstem reservoirs across four physiographic regions provides evidence of high redundancy and representation for the species (see further explanation of these terms in *Analytical Framework,* below).

In summary, alternative pathways to recovery A and B have been met or exceeded, and the intent of alternative C has been fulfilled. The recovery plan only required one of the three alternative pathways to be met. Therefore, we conclude that the recovery criteria established by the plan have been surpassed.

Regulatory and Analytical Framework

Regulatory Framework

Section 4 of the Act (16 U.S.C. 1533) and its 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 threatened and endangered species. In 2019, jointly with the National Marine Fisheries Service, the Service issued final rules that revised the regulations in 50 CFR parts 17 and 424 regarding how we add, remove, and reclassify threatened and endangered species and the criteria for designating listed species' critical habitat (84 FR 45020 and 84 FR 44752; August 27, 2019). At the same time the Service also issued final regulations that, for species listed as threatened species after September 26, 2019, eliminated the Service's general protective regulations automatically applying to threatened species the prohibitions that section 9 of the Act applies to endangered species (collectively, the 2019 regulations).

However, on July 5, 2022, the U.S. District Court for the Northern District of California vacated the 2019 regulations (*Center for Biological Diversity* v. *Haaland,* No. 4:19–cv–05206–JST, Doc. 168 (N.D. Cal. July 5, 2022) (*CBD* v. *Haaland*)), reinstating the regulations that were in effect before the effective date of the 2019 regulations as the law governing species classification and critical-habitat decisions. Accordingly, in developing the analysis contained in this final rule, we applied the pre-2019 regulations, which may be reviewed in the 2018 edition of the Code of Federal Regulations at 50 CFR 17.31, 17.71, 424.02, 424.11(d) and (e), and 424.12(a)(1) and (b)(2). Because of the ongoing litigation regarding the court's vacatur of the 2019 regulations,

and the resulting uncertainty surrounding the legal status of the regulations, we also undertook an analysis of whether the final rule would be different if we were to apply the 2019 regulations. That analysis, which we described in a separate memo in the decisional file and posted on *https://www.regulations.gov,* concluded that we would have reached the same decision if we had applied the 2019 regulations. This is because both before and after the 2019 regulations, the standard for whether a species warrants delisting has been, and will continue to be, whether the species meets the definition of an endangered species or a threatened species. Further, we concluded that our determination of the foreseeable future would be the same under the 2019 regulations as under the pre-2019 regulations.

On September 21, 2022, the U.S. Circuit Court of Appeals for the Ninth Circuit stayed the district court's July 5, 2022, order vacating the 2019 regulations until a pending motion for reconsideration before the district court is resolved (*In re: Cattlemen's Ass'n,* No. 22–70194). The effect of the stay is that the 2019 regulations are the governing law. Because of our desire to remove regulatory burdens in a timely manner whenever species no longer meet the definition of an endangered or threatened species, rather than revise the proposal in response to the Ninth Circuit's decision for submission of a final rule to the **Federal Register**, we hereby adopt the analysis in the separate memo that applied the 2019 regulations as our primary justification for the final rule. However, due to the continued uncertainty resulting from the ongoing litigation, we also retain the analysis in this preamble that applies the pre-2019 regulations and we conclude that, for the reasons stated in our separate memo analyzing the 2019 regulations, this final rule would have been the same if we had applied the 2019 regulations.

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.'' Because the decision in *CBD* v. *Haaland* vacated our 2019 regulations regarding the foreseeable future, we refer to a 2009 Department of the Interior Solicitor's opinion entitled ''The Meaning of 'Foreseeable Future' in Section 3(20) of the Endangered Species Act'' (M–37021). That Solicitor's opinion states that the foreseeable future ''must be rooted in the best available data that allow predictions into the future'' and extends as far as those predictions are ''sufficiently reliable to provide a reasonable degree of confidence in the prediction, in light of the conservation purposes of the Act.'' Id. at 13.

It is not always possible or necessary to define 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' 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

To assess species viability, we use the three conservation biology principles of resiliency, redundancy, and representation (Shaffer and Stein 2000, pp. 306–310). Briefly, resiliency supports the ability of the species to withstand environmental and demographic stochasticity (for example, wet or dry, warm or cold years), redundancy supports the ability of the species to withstand catastrophic events (for example, droughts, large pollution events), and representation supports the ability of the species to adapt over time to long-term changes in the environment (for example, climate change). In general, the more resilient and redundant a species is and the more representation it has, the more likely it is to sustain populations over time, even under changing environmental conditions. 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.

Summary of Biological Status

Resiliency Analysis

As explained above in *Evaluating Populations,* the existing data available do not allow us to estimate population sizes for snail darter. However,

collections over multiple years and the presence of multiple age classes provide evidence of persistence in tributaries throughout the snail darter's range. In the reservoirs, the capture of multiple individuals and evidence of multiple age classes typically represents a sustainable population. Where available, presence of snail darters in breeding condition is used as additional evidence of spawning, because snail darters move onto the spawning ground before spawning commences (Starnes 1977, p. 64). We used IBI scores from fixed monitoring stations to address stream health where possible for tributary populations. These scores are generated from fish assemblage surveys throughout the Tennessee River Valley that rank streams from 12 to 60 (poor to excellent) based on metrics such as total number of species, proportions of intolerant and tolerant species, and the numbers of species in various ecological guilds (TVA 2005, pp. 5–7). We use these measures to describe the resiliency of the snail darter populations and their contributions to the species' recovery.

Tributary Resiliency—We characterized snail darter population resiliency in 14 tributaries (11 extant populations, one extirpated, and two apparently not established with only one collection each and no evidence of reproduction) using data related to three factors: collections in multiple years since 2009, presence of multiple year classes in these samples, and TVA IBI scores for the tributary populations (see resiliency scores for these factors in table 1, below). Detection of the species in multiple years provides evidence of persistence within a tributary. Consistent collections also indicate population numbers that are high enough to be detected using non-depletion methods (not every fish in a sample reach is caught), which is relevant for species like the snail darter that are difficult to capture with standard fish sampling equipment. The presence of multiple age classes is evidence of successful reproduction in the population. Given that snail darters only live 4 years and likely do not mature until their second year, it would only take a few years of failed reproduction for a population to be extirpated (Etnier and Starnes 1993, p. 588). We reviewed the available data to determine population scores for each of the tributaries. The best available data are not sufficient to determine snail darter population size or trends due to the typically small numbers collected at any given site; however, we can address resiliency of the tributary populations by looking at persistence over time and evidence of reproduction. To do this, we used data from snail darter collections and observations from TVA and Conservation Fisheries, Inc., and data compiled by the Tennessee Aquarium Conservation Institute.

We used IBI scores to address stream community health where possible for tributary populations. Measuring the overall fish community is a way to investigate habitat quality, water quality, and ecosystem stability by proxy of the fish that live in the stream. The IBI incorporates 12 metrics to measure fish community health based on the number of species or proportion of individuals in different guilds (group of species with similar life history) compared to what is expected in a reference condition stream. These metrics are adjusted based on stream size and physiographic region in order to be relevant to the differences in natural conditions across the Tennessee River Basin. Each metric is assigned a value matching a ranking of good (5), fair (3), or poor (1). The 12 metrics are then summed for each, yielding an overall rating of the stream community health. An IBI score of 12 to 22 equates to a very poor rating, 28 to 34 to a poor rating, 40 to 44 to a fair rating, 48 to 52 to a good rating, and 58 to 60 to an excellent rating. Scores between these ranges received intermediate ratings (TVA 2005, entire). To determine potential IBI trends, we compared overall IBI scores for sites within the range of snail darters in each tributary from 2009 to 2019. Roughly half of the tributaries (French Broad River, Little River, Hiwassee River, Ocoee River, Elk River, and Flint River) showed some improvement during the 1999–2009 period, but during the 2009–2019 analysis period, the communities in all of the tributaries were mostly stable.

We combined the population metrics to give a population score (low, medium, or high), and the habitat metrics combined to form a composite habitat score (low, medium, or high). These scores are compiled in table 1, below. The population and habitat scores were averaged to provide the overall resilience score. Tributaries with multiple collections (of several fish each collection) and multiple age classes over the 12-year period were ranked high; conversely, those with only one collection and no evidence of reproduction were considered not established. Age classes were assigned by body length, based on life-history studies (Starnes 1977, pp. 47–63; Hickman and Fitz 1978, pp. 10–19). Sites with multiple collections but only one age class were ranked low. Tributaries with good or better IBI scores that were stable or improving were then ranked high, and tributaries with fair IBI scores with stable or improving conditions were ranked moderate. Overall resilience was calculated by averaging the column scores. Where snail darters had been extirpated or not established, IBI scores were not incorporated. While the habitat in Little River is very good, we found that the low numbers (three or fewer individuals in any single observation) of snail darters captured and the lack of multiple age classes did not warrant categorizing the Little River population as moderate or high. Our results of the tributary resiliency analysis are summarized in table 1.

TABLE 1—TRIBUTARY POPULATION RESILIENCY BASED ON COLLECTION DATA AND TVA IBI SCORES FROM 2009–2019

Tributary	Multiple detections	Multiple age classes	Population score	IBI score	IBI trend	Habitat score	Overall resiliency
Holston River	Yes	Yes	High	Fair	Stable	Moderate	Moderate/high.
French Broad River	Yes	Yes	High	Fair/good	Stable or improving	High	High.
Little River	Yes	No	Low	Good/excellent	Stable	High	Low.
Citico Creek	No	No	Not established	Good	Stable	High	Not established.
Big Sewee Creek	No	No	Extirpated	Poor/fair	Stable	Low	Extirpated.
Hiawassee River	Yes	Yes	High	Good/excellent	Stable	High	High.
Ocoee River	Yes	Yes	High	Fair	Stable	Moderate	Moderate/high.
South Chickamauga Creek.	Yes	Yes	High	Fair	Stable or declining	Moderate	Moderate/high.
Sequatchie River	Yes	Yes	High	Fair	Stable or declining	Moderate	Moderate/high.
Paint Rock River	Yes	Yes	High	Fair/good	Stable	High	High.
Flint River	No	No	Not established	Fair	Insufficient data	Moderate	Not established.
Elk River	Yes	Yes	High	Fair/good	Stable or improving	High	High.
Shoal Creek	No	No	Not established	Good	Stable or improving	High	Not established.

TABLE 1—TRIBUTARY POPULATION RESILIENCY BASED ON COLLECTION DATA AND TVA IBI SCORES FROM 2009–2019—Continued

Tributary	Multiple detections	Multiple age classes	Population score	IBI score	IBI trend	Habitat score	Overall resiliency
Bear Creek	Yes	Yes	High	Good	Stable or improving	High	High.

Reservoir Resiliency—Using the data available from the TVA snail darter trawl surveys (Simmons 2019, p. 3), we analyzed resiliency of the reservoir populations based first on the number of individuals captured and second, evidence of reproduction with evidence of reproduction established either through presence of multiple age classes, adults in spawning condition (gravid females and/or males flowing milt [sperm]), or juveniles. To categorize number of individuals, we classified collections of 0–4 individuals as low, 5–9 as moderate, and 10 or more as high. To classify reproduction, given the limited sampling effort to date, collection of more than one age class or other evidence of reproduction resulted in a high rating in the reproduction metrics. Collection of only one age class or no other evidence of reproduction resulted in a low rating. Similar to the stream population, overall resilience was calculated by averaging the scores of the number collected and reproduction metrics. Results are summarized below in table 2.

TABLE 2—RESERVOIR POPULATION COLLECTIONS BASED ON TVA BENTHIC TRAWLS, 2016–2019 *

Reservoir	Population score (number collected)	Age classes	Evidence of reproduction	Reproduction score	Overall resilience
Fort Loudoun	Low (2)	2	No	High	Moderate.
Watts Bar	Low (3)	1	Yes	High	Moderate.
Chickamauga	Low (4)	2	Yes	High	Moderate.
Nickajack	High (11)	2	Yes	High	High.
Guntersville	High (33)	2	No	High	High.
Wheeler	High (18)	2	Yes	High	High.
Wilson	Low (0)	0	No	N/A	Not established.
Pickwick	High (18)	3	No	High	High.
Kentucky	Low (0)	0	No	N/A	Not established.

* Age classes based on total length measurements from Hickman and Fritz (1978). Evidence of reproduction is based on capture of juvenile individuals, adults in spawning condition, or multiple age classes (Simmons 2019, p. 7).

For the purpose of evaluating the snail darter's status, we considered those tributaries that ranked moderate or high as contributing to resiliency. Because of the limited amount of reservoir sampling that has been completed, we considered those reservoir populations that had evidence of reproduction present as permanent, independent populations (Simmons 2019, p. 2) that contribute to resiliency. We, therefore, considered 7 reservoir populations (Fort Loudoun, Watts Bar, Chickamauga, Nickajack, Guntersville, Wheeler, and Pickwick) and 10 tributary populations (Holston, French Broad, Little, Hiwassee, Ocoee, Sequatchie, Paint Rock, and Elk Rivers, and South Chickamauga and Bear Creeks) as contributing to species resiliency. We did not count Wilson Reservoir or Kentucky Reservoir toward resiliency because snail darters had never been collected there despite trawling efforts. While Watts Bar is only represented by three juveniles, their collection far from any large tributaries is evidence of reproduction within the reservoir. We did not consider Citico Creek, Big Sewee Creek, Flint River, or Shoal Creek as contributing toward resiliency either because the species had not been collected there within the analysis period despite multiple efforts (Big Sewee Creek, Citico Creek) or because a single snail darter had been found on only one occasion (Shoal Creek, Flint River); therefore, we considered the populations to be not established in those locations (see table 1, above).

Analysis of Redundancy and Representation

With discoveries of new tributary and reservoir populations, the known redundancy and representation of the snail darter has expanded during the analysis period. When we listed the species (40 FR 47505; October 9, 1975), it had very low redundancy and representation because only one population was known from several miles of the Little Tennessee River, in the Ridge and Valley physiographic region. Currently, the species is known across more than 400 miles (640 km) of the Tennessee River Valley, with moderately to highly resilient populations in 9 tributaries and 7 reservoirs, providing a level of redundancy that helps shield the species from localized stochastic events.

While we do not have population genetic data for the snail darter, we can look at the species' ability to adapt to changes in the environment (representation) by looking at its distribution across a range of habitats and physiographic regions. Resilient populations are currently known from streams ranging in size from mid-sized creeks to the large Tennessee River itself, with collections in depths ranging from less than 3 ft (1 m) to 25 ft (7.6 m). These populations occur in reservoirs and tributaries with these conditions in four different physiographic regions (Ridge and Valley, Cumberland Plateau, Highland Rim, and Gulf Coastal Plain). This wide range of habitat use and geographic distribution helps to demonstrate the snail darter's adaptability to changing environmental pressures (representation).

Summary of Factors Affecting the Species

A recovered species is one that no longer meets the Act's definition of an endangered species or a threatened species. Determining whether the status of a species has improved to the point that it can be delisted or downlisted

requires consideration of the same five factors identified above for listing a species. When we initially listed the snail darter as endangered in 1975, the only identified threat influencing its status was the modification and loss of habitat and curtailment of range (Factor A) caused by the completion of Tellico Dam and the flooding of the entire known range of the species. When we reclassified the species as threatened in 1984, we evaluated a more complete list of factors based on improved knowledge of the snail darter's range and life history. These factors included threats to habitat such as shipping activities in the mainstem Tennessee River, impacts from development in some of the tributaries such as South Chickamauga Creek, threats from agricultural runoff and channelization in streams like the Elk River, impacts from coal mining in the Sequatchie River watershed, and chemical spills in the Hiwassee and Ocoee watersheds (Factor A); excessive collection associated with the notoriety of the species (Factor B); and protections afforded the species by State and Federal laws (Factor D). The following analysis evaluates these previously identified threats, any other threats currently facing the species that we have identified, as well as any other threats that are reasonably likely to affect the species in the foreseeable future.

To establish the foreseeable future for the purpose of evaluating trends in the threats and the species' responses, we analyzed trends from historical data on distribution and abundance, ongoing conservation efforts, factors currently affecting the species, and predictions of future climate change. When combined with our knowledge of factors affecting the species (see discussion below), available data allow us to reasonably predict future conditions, albeit with diminishing precision over time. Given our understanding of the best available data, for the purposes of this rule, we consider the foreseeable future for the snail darter to be approximately 30 years. We determined that we can reasonably predict the threats to the species and the species' response during this timeframe based on climate vulnerability assessments through 2050, the planning horizon of the reservoir release improvement program (RRIP), and enough time for the species to respond based on biology and lifespan.

As noted above, when the species was reclassified from endangered to threatened (49 FR 27510; July 5, 1984), the reclassification rule identified additional threats to habitat in the additional populations established or discovered since the original listing (40 FR 47505; October 9, 1975). These included threats from shipping activities in the mainstem Tennessee River, impacts from development in some of the tributaries such as South Chickamauga Creek, threats from agricultural runoff and channelization in streams like the Elk River, impacts from coal mining in the Sequatchie River watershed, and chemical spills in the Hiwassee and Ocoee watersheds.

One of the biggest factors still affecting the snail darter is the impoundment of large portions of the Tennessee River Valley. TVA operates 9 dams on the mainstem Tennessee River and 38 dams on tributaries to the Tennessee River. These impoundments create large areas of deep, still water that do not meet the habitat needs of the snail darter. Snail darters are limited in the depth they can occupy by the presence of food resources. Snails, the darter's preferred prey, live only in water shallow enough for light to penetrate and allow algae to grow on the substrate, about 15–20 ft (5–7 m) in much of the Tennessee mainstem. Impoundment also reduces stream flow and allows fine sediments to settle out, which can cover the clean gravel habitats needed by snail darters. Additionally, these dams were initially operated with a hydropeaking strategy, only releasing water when needed to generate electricity or maintain reservoir level or flood storage capacity. In addition, many of these releases came from the water levels within the reservoir that held cold, oxygen-deficient water. Collectively, these factors created conditions in the tailwaters that negatively affected water quality, food availability, and fish diversity.

Given the long operational lifespan of dams (more than 100 years), it is nearly certain that the TVA reservoirs will be in place for the foreseeable future. However, beginning in 1981, TVA began studies to improve conditions in the tailwaters of their dams. The cold, oxygen-deficient water released from the bottom of many of the dams created conditions that eliminated many fish and mussel species from these areas. Through the RRIP, TVA began implementing strategies to increase minimum flow, dissolved oxygen, and, in some cases, temperature, in the tailwaters of their dams beginning in 1991 (Bednarek and Hart 2005, p. 997). In 2002, TVA conducted a reservoir operation study to consider how to implement these changes across the basin to improve the health of the river (TVA 2004, p. ES–3). The result was to manage the river based on minimum flows instead of reservoir level and improve tailwater conditions. These changes have resulted in significant improvements in biological and abiotic variables and increases in fish and invertebrate diversity in many TVA dam tailwaters (Layzer and Scott 2006, entire; Bednarek and Hart 2005, entire; Scott et al. 1996, entire). These improvements have likely resulted in improved conditions for the snail darter and may have contributed to improvements to the species' status within tailwaters since the 1990s, across more than 400 miles (640 km) of the mainstem of the Tennessee River. Since the RRIP is based on ecologically meaningful parameters in the tailwaters, such as dissolved oxygen and temperature, this program may be able to provide some resiliency to a warming climate and precipitation variability in the future, especially if TVA adjusts the program to maintain the needed conditions in the tailwaters. The reservoir operation study is planned along an approximately 25-year timeline, extending to 2030 (TVA 2004, p. ES–4). However, given the presence of at least 10 other listed aquatic species in the tailwaters of the mainstem Tennessee River reservoirs and the complexities of changing the operations plan, it is highly likely that TVA will continue RRIP as part of its compliance with the Act for these other species beyond the timeline of the environmental impact statement (EIS) and biological opinion that were prepared under section 7 of the Act before alterations were made to dam release management. For these same reasons, TVA will likely incorporate RRIP to protect federally listed mussels when it revisits its EIS around 2030, and because the current EIS's term is 25 years, it is reasonable to assume TVA will issue another 25-year EIS. Therefore, we anticipate that the conditions benefiting the snail darter will continue through at least midcentury (Baxter 2020, pers. comm.). Overall, the persistence and expansion of snail darter populations in the mainstem since the 1970s indicate greater resiliency in these habitats than was considered at the time of listing, particularly now with the implementation of TVA's RRIP.

Anthropogenic changes to the land can also negatively impact the snail darter and its habitats. Sedimentation is one of the biggest threats to water quality in the Tennessee River Valley, including in streams occupied by snail darters. Big Sewee Creek has been impacted by sedimentation from persistent farming in the watershed, reducing the amount and quality of

gravel habitat in the stream. The predominant agricultural activities contributing to sedimentation in Big Sewee Creek (livestock pasture and row crops) are exempt from many State and Federal regulations designed to reduce sediment runoff, and these activities are likely to continue into the future. Therefore, we do not expect this population to reestablish unless habitat conditions improve in the future. Sedimentation from agriculture and development is also considered a concern in the lower Little Tennessee River, Sequatchie River, South Chickamauga Creek, and Paint Rock River watersheds. Watershed-level efforts have been conducted to address sedimentation issues in some of the tributaries where snail darters have been found. The South Chickamauga Creek Land Treatment Watershed Project, an effort of the Natural Resources Conservation Service of the U.S. Department of Agriculture (USDA), began in 2001, to reduce the runoff of sediment and nutrients in the watershed by installing animal waste management systems (see 65 FR 44519; July 18, 2000). Additionally, the Limestone Valley Resource Conservation and Development Council is working with a wide variety of partners to implement the South Chickamauga Creek Headwaters Management Plan, developed in 2012, to address water quality issues (Smith and Huser 2012, pp. i–3). In the Paint Rock River, The Nature Conservancy designated a ''landscape conservation area'' and worked to address sedimentation issues from agriculture throughout the watershed, resulting in improved conditions for aquatic fauna (Throneberry 2019, unpublished data). Many of these efforts include restoring natural stream channel characteristics where streams have been channelized. These efforts have been undertaken outside of species-specific recovery efforts for the snail darter, and they are likely to continue regardless of the delisting of the species. Other small-scale efforts have been undertaken to reduce sedimentation in many of the other tributaries inhabited by snail darters. It is likely that sedimentation has resulted in the extirpation of snail darters from Big Sewee Creek, but there is some potential for recolonization by individuals from Chickamauga Reservoir if habitat conditions improve.

Urban and suburban development may impact the snail darter as well. Increases in the amount of impervious surfaces associated with development increase runoff to streams, destabilize hydrology, and increase water temperature. Additionally, residential and commercial development are associated with increased runoff of lawn and automotive chemicals into the streams (Matthaei and Lang 2016, p. 180; Walsh et al. 2005, p. 707). The snail darter tributaries currently most impacted by development and the associated chemical and sediment runoff are South Chickamauga Creek in Chattanooga, Tennessee; Flint River in Huntsville, Alabama; and Little River in Maryville, Tennessee. Based on the SLEUTH (Slope, Land use, Excluded area, Urban area, Transportation, Hillside area) model, these areas are anticipated to have increased suburban and urban growth in the next 30 years, which might further impact South Chickamauga Creek, Flint River, and Little River; there is also the potential for increased urban impacts to the Sequatchie River and Paint Rock River watersheds associated with the growth of Chattanooga and suburban development from Huntsville, respectively (Terando et al. 2014, pp. 1–3). However, based on the moderate resilience of snail darters in South Chickamauga Creek (see table 1, above), some evidence supports a conclusion that the species is resilient to the impacts of urbanization.

Additionally, the Thrive Regional Partnership is a group working to promote responsible growth in a 16-county region in the Greater Chattanooga area. The partnership's goal is to improve communities while maintaining healthy ecosystems. Thrive has identified portions of streams and surrounding land that are key to preserving and enhancing water quality in the region of interest, with the goals of conserving 50 percent of unprotected forest and improving water quality in at least 50 percent of polluted streams by 2055. The area covered by this initiative includes portions of the Big Sewee Creek, South Chickamauga Creek, Sequatchie River, and Paint Rock River watersheds (Thrive Regional Partnership 2019, entire).

The threat of chemical and industrial spills was raised as a potential threat in the downlisting rule (49 FR 27510; July 5, 1984). The range of the snail darter is crossed by several major highways and railroad lines, making the possibility of a spill during transport an ongoing risk. Such spills have occurred as recently as 1991 in the Hiwassee River. While spills may have severe impacts locally, they are unlikely to affect the species as a whole given its wide range in the mainstem of the Tennessee River and several tributaries (Service 2013, p. 18). Furthermore, the Ocoee River has suffered from industrial and mine runoff from the historical copper extraction in the watershed. Within the Ocoee River watershed, concerted efforts have been made to clean up industrial and mine-related pollution, resulting in much improved water quality and a healthier ecosystem which may have contributed to the increased numbers of snail darters seen in that river since the Service's 2013 5-year review (Service 2013, p. 12; Simmons 2019, unpublished data).

The threat to snail darters from coal mining in the Sequatchie Valley has been greatly reduced since the recovery plan was completed. Mining for coal in the Sequatchie Valley ceased in the 1990s, and since that time, there have been efforts to remediate acid mine drainage in the area. Currently, there are no active coal mining permits in the Sequatchie Valley (Office of Surface Mining Reclamation and Enforcement (OSMRE) 2016, p. 34; Interstate Technology & Regulatory Council (ITRC) 2010, entire).

The Tennessee River is a major inland shipping corridor, and in the downlisting rule (49 FR 27510; July 5, 1984), activities associated with barge traffic were considered to potentially threaten snail darters through habitat alterations in the mainstem Tennessee River reservoirs. Barge and large boat wakes can result in significant bank erosion along the river. Within the mainstem reservoirs, bank stabilization efforts have occurred in some significantly impacted areas and reduced sedimentation at those locations, but there is no concerted plan to address this source of sediment across the Tennessee River Basin. However, there is some evidence that areas of consistent traffic, such as barge mooring cells, may provide areas of silt-free habitat swept clean by tug engines (Matthews 2017, pers. comm.; Walker and Alford 2016, p. 1101).

In summary, while effects to snail darter habitat (Factor A) associated with continued urbanization and agriculture are certain to persist into the foreseeable future, efforts are being made to reduce the impact to many of the tributaries inhabited by snail darters. Additionally, snail darters appear to be resilient to current levels of urbanization and agriculture, including practices such as channelization, in certain tributaries such as South Chickamauga Creek and Sequatchie River. In the Sequatchie River, the threat from coal mining is reduced with the cessation of mining in the valley and ongoing reclamation efforts. The mainstem populations are less susceptible to sedimentation and runoff associated with agriculture and urbanization due to the buffering

capacity of the larger river, but they still may be affected by bank erosion and industrial transport along the Tennessee River. However, population stability and apparent expansion in the mainstem since the 1970s demonstrate the resiliency of the snail darter within these habitats, especially with the implementation of TVA's RRIP.

At the time of the downlisting rule (49 FR 27510; July 5, 1984), the Service projected that the notoriety of the snail darter could result in an increase in illegal collection (Factor B); however, no such activities have been observed or documented since that rule was published. Snail darters receive some protection against collection from the States. The species is listed as threatened in Tennessee, endangered in Georgia, and protected as a non-game species in Alabama and Mississippi. These protections require State permits for the collection of the species.

The snail darter's habitat is also protected by State water quality laws that require the use of best management practices, such as leaving a riparian buffer, when clearing or building near a stream (Factor D). In Tennessee, any waterway with a State-listed species is designated an ''Exceptional Tennessee Waterway,'' and projects impacting these streams are required to undergo additional review before receiving the necessary State permits. While agriculture is typically exempt from many of the provisions in State laws, various efforts described above, such as those in the Paint Rock River and South Chickamauga Creek, are working to reduce the impact of sedimentation from agriculture on the snail darter. Additionally, the snail darter's range overlaps with the ranges of more than 10 federally endangered mussels. This provides some protection, as entities implementing projects with a Federal nexus, such as infrastructure repair and construction and dam operation, are required to consult with the Service to reduce the impacts to listed species and designated critical habitat. These consultations may result in changes to the project to reduce sedimentation or limit the time of year when construction can take place to reduce disruption to the life history of a species. The protection, restoration, conservation, and management of ecological resources within the snail darter's range have been broadly enhanced through Executive orders and Federal regulations since the species was listed. These include provisions emphasizing the protection and restoration of ecosystem function and quality in compliance with existing Federal environmental statutes and regulations (*e.g.,* National Environmental Policy Act (NEPA; 42 U.S.C. 4321 *et seq.*) and Clean Water Act (CWA; 33 U.S.C. 1251 *et seq.*)) and endorsing Federal efforts to advance environmental goals. Recent water resources authorizations have also enhanced opportunities for the involvement of the U.S. Army Corps of Engineers and other Federal agencies in studies and projects to specifically address objectives related to the restoration of ecological resources (*e.g.,* section 1135 of the Water Resources Development Act of 1986, as amended, 33 U.S.C. 2201 *et seq.*).

Protections associated with the CWA and State wildlife laws will continue to provide some protection to the snail darter. The fear that the species' notoriety would result in increased collection or other forms of take has not been realized since we reclassified the species to threatened, and collection is unlikely to have a major impact on species resilience in the foreseeable future. Additionally, even if range States were to cease protecting the snail darter, its wide range and current redundancy should minimize its risk of extinction for the foreseeable future.

In addition to the threats mentioned in the downlisting rule (49 FR 27510; July 5, 1984) that are addressed above, we now consider other threats or stressors that reasonably could affect the snail darter in the foreseeable future. One such potential threat is climate change. In the southeastern United States, clear trends in climate predictions are limited. However, annual temperatures are projected to increase; cold days will become less frequent; the freeze-free season will lengthen by up to a month; temperatures exceeding 95 degrees Fahrenheit (°F) (35 degrees Celsius (°C)) will increase; heat waves will become longer; and the number of category 5 hurricanes will increase (Ingram et al. 2013, p. 32). Variability in weather is predicted to increase, resulting in more frequent and more extreme dry years and wet years over the next century, with limited evidence of a directional precipitation trend anticipated in the Tennessee River Valley (Mulholland et al. 1997, pp. 951–955; Ingram et al. 2013, pp. 15, 35). One study (Jones et al. 2015, entire) did find a small, statistically significant negative trend indicating precipitation had decreased between 1950 and 2009 in a parts of the Upper Tennessee River Valley, but overall the trends during this time period were mixed.

There is some evidence that the increased variability may already be taking effect. The two wettest years on record for the Tennessee River Valley (Simmons 2020, unpublished data) are 2018 and 2019. During the late summer and early fall of 2019, the second wettest year overall, parts of the Valley temporarily experienced abnormally dry or drought conditions (USDA Drought Monitor for Tennessee River Valley, October 1, 2019).

Increased rainfall will result in increased runoff, higher river levels, and longer periods of spilling from the top of dams by TVA. During periods of spilling at dams, there is the chance for more oxygenation of tailwaters and temperature mixing that could benefit the snail darter. However, increased rainfall, especially extreme events, would increase runoff of sediment and pollutants into tributaries and eventually into the mainstem. These inputs could potentially degrade spawning and foraging habitat for the snail darter. Increased flows during the spawning season could also increase the distance that the pelagic larvae of snail darters drift before becoming benthic. If the larvae found suitable habitat, increased flow could expand the range of the species and contribute to genetic mixing; however, there is also the chance that larvae could be pushed into unsuitable habitat which would result in reduced survival. Drought would most likely impact the shallower habitats inhabited by snail darters in tributaries. The area of shoal habitat available during periods of low flow could be reduced during a drought. The flows could be further reduced by water extraction for irrigation. These reductions of spawning habitat could result in lower spawning success. If discharge is reduced enough, the clean-swept gravel habitats that the snail darter relies on in the mainstem could begin to retain silt, reducing habitat quality.

There is evidence that the habitat and life history of the snail darter will protect it from predicted changes in climate over the next 30 years. In a 2017 climate change vulnerability assessment of 700 species, the Appalachian Landscape Conservation Cooperative (LCC) ranked the snail darter as ''presumed stable'' through 2050 under predicted climate conditions (Appalachian LCC 2017, supplemental data). Being adapted to large river habitats, the snail darter is less susceptible to impacts from high-flow events. As much of its habitat in the mainstem is already impounded, the effects of high water are less meaningful, and TVA flood control efforts may offset some of the strong flow peaks associated with extreme rain events. The species' preference for deeper water habitats and late winter spawning period protects it from

drought. Deep water habitats are not impacted by droughts as drastically as shallow habitats. The RRIP in TVA tailwaters ensures availability of suitable water for the mainstem populations throughout the year despite the occurrence of drought. Drought is also unlikely to impact spawning events on shoals in tributaries because late winter and early spring are typically the wettest times of the year within the Tennessee River Valley. The snail darter is likely also protected from the projected temperature increases by adaptation to larger streams and the thermal buffering of the large reservoirs on the mainstem.

If we examine current projections beyond our 30-year foreseeable future, under plausible future greenhouse gas concentrations termed representative concentration pathways (RCP), warming temperatures and precipitation projections continue to suggest mixed effects to the species. Relative to 1981–2010, over 2050–2074, the 50th percentile (median) for the Tennessee Region, maximum air temperature warms by 4.4 °F (2.4 °C) in RCP 4.5, whereas the region warms by 6.4 °F (3.6 °C) in RCP 8.5 (Alder and Hostetler 2013, entire). Changes in precipitation are not as apparent. Relative to 1981–2010, over 2050–2074, the 50th percentile (median) for the Tennessee Region, precipitation increases by only 0.2 in (5.1 mm) per month in both RCP 4.5 and RCP 8.5 (Alder and Hostetler 2013, entire). We still consider 2050 as the foreseeable future timeline for this species because the time frame associated with the RRIP and other stressors have the greatest predictability between now and 2050, which allows us to draw stronger conclusions regarding the species response and condition. Additionally, we have greater certainty about the snail darters' response to changing climactic conditions between now and 2050 because we have both the projections and scientific sources that predict the species' response, such as the LCC report. Further, the climate projections are more reliable between now and 2050 as compared to beyond 2050 because the models diverge significantly after 2050, which results in substantial uncertainty regarding how changes in climate will manifest late-century. As a result, we do not consider the snail darter to be vulnerable to the effects of climate change in the foreseeable future.

The increases documented in the abundance and distribution of the snail darter since it was listed in 1975 have led to a better understanding of the current and future condition of the species' resiliency, redundancy, and representation across the range. The observed variations in population size, density, or distribution of the snail darter are typical of metapopulation dynamics. Surveys have shown that individual populations may decline based on localized stressors (*e.g.,* severe sedimentation, toxic spills, streamflow alteration) or their cumulative effects. When threats occur together, one may exacerbate the effects of another, causing effects not accounted for when threats are analyzed individually. However, the best available information does not demonstrate that cumulative effects are occurring at a level sufficient to negatively affect the species now nor do we anticipate that they will in the future.

Summary of Comments and Recommendations

In the proposed rule published in the **Federal Register** on September 1, 2021 (86 FR 48953), we requested that all interested parties submit written comments on our proposal to delist the snail darter by November 1, 2021. We also contacted appropriate Federal and State agencies, scientific experts and organizations, and other interested parties and invited them to comment on the proposal. We did not receive any requests for a public hearing. All substantive information provided during the comment period has either been incorporated directly into this final rule or is addressed below.

During the comment period, we received comments from 31 individuals addressing the proposed rule, representing 30 public commenters and 1 partner review. Public comments are posted at *https://www.regulations.gov* under Docket No. FWS–R4–ES–2020–0152. Nine public commenters supported the proposed rule with no additional analysis or revision requested. These comments are not further addressed. Public comments that did not provide substantive information that could be evaluated or incorporated are also not addressed further. Several public commenters provided substantive information that is addressed below.

Public Comments

(1) *Comment:* Several commenters expressed concern that the RRIP, which has been important in improving conditions in the TVA tailwaters, will not be continued if the snail darter is delisted. A few commenters also raised the concern of maintaining tailwater conditions in the event of TVA privatization.

Our Response: Much of the snail darter's recovery in the mainstem Tennessee River can likely be tied to the implementation of the RRIP, which is a suite of dam management practices that results in increased oxygen and more stable temperatures and flow rates in the tailwaters of TVA dams. However, as noted above in Summary of Factors Affecting the Species, the tailwaters inhabited by snail darters are also home to between 8 and 20 Federally listed mussel species that also require consistent flows and oxygen below TVA dams. The presence of these listed species requires that TVA continue to provide suitable conditions for them in the operation of their dams under the existing EIS and Operations and Management biological opinion. It is also very likely that their presence will necessitate continuation of the RRIP into the future if the biological opinion is revisited. Therefore, we do not expect the management practices at the dams to change based on the delisting of the snail darter; we expect that conditions maintained for other listed species will continue to be suitable for survival of snail darters. If management conditions are determined to endanger or threaten the long-term viability of the snail darter such that it meets the Act's definition of an endangered or threatened species, we can use our authorities under section 4 the Act, including the emergency listing authorities at section 4(b)(7), to relist the species as appropriate.

TVA is a public corporation within the Federal Government, but there have been considerations to convert it to a nongovernmental corporation. If TVA is privatized, the operation of the dams in the Tennessee Valley would no longer be directly managed by a Federal agency subject to the requirements of section 7 of the Act; however, the new corporation would still be regulated by the Federal Energy Regulatory Commission (FERC), which is also required to consult with the Service under section 7 of the Act to determine if their actions may affect any listed species. With the presence of federally listed mussels in the tailwaters, these consultations are unlikely to result in changes to operations that would negatively affect the tailwater conditions for the snail darter.

(2) *Comment:* Some commenters expressed concern that 5 years of post-delisting monitoring was not enough to ensure continued viability of the snail darter and recommended that resources for genetic monitoring are needed to ensure maintenance of genetic diversity.

Our Response: Following delisting, the Act requires the Service to work with States and other partners to prepare and implement a monitoring plan for the snail darter for at least 5

years following the delisting. We have developed a draft post-delisting monitoring plan for the snail darter in coordination with State and Federal agencies. The draft post-delisting monitoring plan is based on TVA's stream IBI monitoring and continuation of the reservoir trawl surveys for the snail darter. This plan will provide data on the continued resilience of the species or highlight unexpected declines and additional threats, should they arise. Five years of post-delisting monitoring of snail darters is sufficient because it will add to survey data collected over the past 10 years, which will allow us to look at the progress of the species over a longer time. Following 5 years of post-delisting monitoring, TVA will continue to monitor the health of the watersheds where snail darter is found by conducting IBI surveys. These surveys are expected to detect future declines of the species, should they occur. The draft post-delisting monitoring plan can be found at *https://www.regulations.gov* under Docket No. FWS–R4–ES–2020–0152.

We acknowledge that sustaining post-delisting monitoring efforts can be challenging and subject to competing priorities for available resources given that the Service cannot directly fund monitoring after a species has been delisted. Nonetheless, we designed a draft post-delisting monitoring plan that is realistic given limited resources. While maintaining genetic diversity is important for species conservation, we were able to make the decision that the snail darter no longer meets the Act's definition of an endangered or threatened species without available genetic information. Similarly, we will be able to assess the viability of the snail darter in the future without genetic monitoring to determine if the species should be relisted.

(3) *Comment:* A few commenters expressed concern that delisting the snail darter without complete population genetics for the species and without knowing the status of the newly discovered populations as distinct or descended from the translocated populations is premature.

Our Response: We are required to make our determinations based on the best available scientific and commercial data at the time the determination is made. A need for further research on a species is not necessarily relevant to the question of whether the species meets the Act's definition of an endangered or threatened species. The presence of resilient populations in 10 tributaries and 7 mainstem reservoirs across four physiographic regions provides sufficient evidence of high redundancy and representation for the species. This abundance and distribution of self-sustaining snail darter populations in both tributaries and mainstem reservoirs led us to conclude that the snail darter does not meet the Act's definition of an endangered or threatened species. Furthermore, delisting does not prevent continued research on the species.

While much of the success of the snail darter has come from the transplantation efforts into the Hiwassee and Holston Rivers, at the same time as those efforts, populations were found in Sewee Creek, South Chickamauga Creek, and in Nickajack Reservoir below Chickamauga Dam and near the mouth of the Sequatchie River. These discoveries indicate that the snail darter is wider spread than just the lower Little Tennessee River and that the recently discovered populations could have been established from multiple sources.

(4) *Comment:* Several commenters raised concerns with the long-term impacts of climate change on the snail darter, and one commenter cited a climate study of the upper Tennessee River Basin that we had not considered in the proposed rule (Jones et al. 2015).

Our Response: In the proposed rule (86 FR 48953; September 1, 2021), we considered multiple climate models for the Tennessee Valley, including the RCP 4.5 and RCP 8.5 models (Alder and Hostetler 2013, entire), interior Southeast models (Mulholland et al. 1997, entire; Ingram et al. 2013, entire), as well as a meta-analysis potential climate vulnerability of 700 species of rare and imperiled Appalachian flora and fauna (Appalachian LCC, 2017). While there was some variability in the exact predictions, these studies provided evidence for limited changes from the mean in both temperature and precipitation before 2050, but that there would be more extreme events, such as floods and droughts. However, due to the snail darter's larger stream habitats, it is more resilient to these changes than would be a headwater or shallow habitat species. We also concluded that the RRIP would likely further buffer the effects of climate change in the tailwaters.

The climate study from Jones et al. (2015) used past precipitation data for the upper Tennessee Valley to investigate trends between 1950 and 2009, with a more complete TVA dataset for 1990–2010. These data suggested a small but statistically significant decrease in annual precipitation for most of the subwatersheds investigated, seasonal variation with increased precipitation in the drier months and a decrease in the wetter months. However, using the same TVA dataset, 3 of the wettest years on record for the Tennessee Valley were in the last 5 years. While we anticipate the changes to precipitation from climate change to be noticeable in the foreseeable future, as mentioned above, the available evidence suggests that the snail darter will be resilient to these changes. We have incorporated information from Jones et al. (2015) and our analysis provided under Summary of Factors Affecting the Species, above.

Determination of the Snail Darter'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. For a more detailed discussion on the factors considered when determining whether a species meets the definition of an endangered species or a threatened species and our analysis on how we determine the foreseeable future in making these decisions, see Regulatory and Analytical Framework, above.

Status Throughout All of Its Range

After evaluating threats to the species and assessing the cumulative effect of the threats under the Act's section 4(a)(1) factors, we have found that snail darter representation and redundancy has increased, with extant populations in 7 mainstem reservoirs of the Tennessee River and 10 tributaries in the Tennessee River watershed. Of the mainstem reservoirs, six populations showed multiple age classes, and for these six, we have observed direct evidence of reproduction in three populations, indicating moderate or high resilience. Collection efforts in two mainstem reservoirs, Wilson and Kentucky reservoirs, failed to find snail darters during our analysis period. Of the tributaries, nine populations demonstrated moderate to high resilience; one population is considered to have low resilience with no evidence of reproduction; three tributary populations (Citico Creek, Flint River, and Shoal Creek) lacked sufficient collections during our analysis period to consider them established. Additionally, the species is now known to be present in four physiographic

regions indicating increased representation, and the multiple resilient populations indicate an increase in redundancy since the species was reclassified to threatened in 1984. Because the snail darter has increased in representation and redundancy generally, and in particular with respect to numbers of resilient, self-sustaining populations, we expect this species to be able to sustain populations into the foreseeable future.

We have carefully assessed the best scientific and commercial information regarding the threats faced by the snail darter in developing this rule. Threats related to habitat loss and curtailment of range (Factor A) reported at the time of listing in 1975 (40 FR 47505; October 9, 1975) and when we downlisted the species to threatened status in 1984 (49 FR 27510; July 5, 1984) have been reduced in many locations. Available data indicate the species possesses greater resilience to the negative effects of dams than was determined at the time of listing. Further, beneficial dam operations (*i.e.,* RRIP) are expected to continue into the foreseeable future.

At the time of the downlisting rule (49 FR 27510; July 5, 1984), it was thought that the notoriety of the snail darter would result in an increase in illegal collection (Factor B); however, no such activities have been seen, and we do not consider this a threat to the current or future viability of the species. State water quality and wildlife laws provide some protections to the snail darter and its habitat, and its range overlaps with other federally protected aquatic animals (Factor D). In addition, we have evaluated potential effects of climate change (Factor E) and the evidence indicates that the species is resilient to the predicted levels of climate change. Thus, after assessing the best available information, we conclude that the snail darter is not in danger of extinction or likely to become so throughout all of its range within the foreseeable future.

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 in the foreseeable future throughout all or a significant portion of its range. Having determined that the snail darter is not in danger of extinction or likely to become so throughout all of its range in the foreseeable future, we now consider whether it may be in danger of extinction or likely to become so in the foreseeable future in a significant portion of its range—that is, whether there is any portion of the species' range for which it is true that both (1) the portion is significant; and (2) the species is in danger of extinction now or likely to become so in 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.

In undertaking this analysis for the snail darter, we choose to address the status question first—we consider information pertaining to the geographic distribution of both the species and the threats that the species faces to identify any portions of the range where the species may be endangered or threatened. For the snail darter, we considered whether the threats are geographically concentrated in any portion of the species' range on a biologically meaningful scale. We examined the following threats: habitat modification, curtailment of range, climate change, and illegal collection, including cumulative effects.

Threats related to habitat modification or curtailment of range affect snail darters throughout their range. With the implementation of TVA's RRIP, conditions around the large dams on the mainstem of the Tennessee River have improved. Our analysis of the species' resiliency (see *Analytical Framework,* above), which integrated information on demographics and threats, determined that six of the nine reservoir populations showed multiple age classes and direct evidence of reproduction in three of the reservoirs. These reservoirs with resilient populations are distributed across the snail darter's range and multiple geographic provinces. Of the 10 resilient tributary populations, 9 populations demonstrated moderate to high resiliency. In tributary watersheds such as the Ocoee and Sequatchie where water quality was impacted by localized mining threats, conditions have improved due in part to the cessation of mining and efforts to clean up the mine sites. In watersheds with higher levels of agriculture and urbanization such as the South Chickamauga Creek and Paint Rock River watersheds, conservation programs are in place to reduce the impact of these activities on the instream habitat used by the snail darter. Based on the distribution of resilient populations and the conservation efforts put in place, we have determined that there are not any portions of the range where the species may be endangered or threatened due to habitat modification or curtailment of the range.

We have reviewed other potential threats, including climate change, illegal collection, and cumulative effects, and concluded that there are not any portions of the range where the species is endangered or threatened due to these threats. Therefore, no portion of the species' range provides a basis for determining that the species is in danger of extinction now or likely to become so in the foreseeable future in a significant portion of its range. This does not conflict with the courts' holdings in *Desert Survivors* v. *U.S. 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 need to consider whether any portions are significant; and, therefore, we did not apply the aspects of the definition of ''significant'' in 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) that court decisions held were invalid.

Determination of Status

Our review of the best scientific and commercial data available indicates that the snail darter does not meet the definition of an endangered species or a threatened species in accordance with sections 3(6) and 3(20) of the Act. In accordance with our regulations at 50 CFR 424.11(d)(2), the snail darter has recovered. With this rule, we remove the snail darter from the List of Endangered and Threatened Wildlife.

Effects of This Rule

This final rule revises 50 CFR 17.11(h) by removing the snail darter from the Federal List of Endangered and Threatened Wildlife. On the effective date of this rule (see **DATES**, above), the prohibitions and conservation measures provided by the Act will no longer apply to the snail darter. Federal agencies will 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 snail darter. There is no critical habitat designated for this species, so there will be no effect to 50 CFR 17.95.

Post-Delisting Monitoring

Section 4(g)(1) of the Act requires us to implement a monitoring program for not less than 5 years for all species that have been delisted due to recovery.

Post-delisting monitoring 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 post-delisting monitoring is to ensure that the species' status does not deteriorate and that if a decline is detected, measures are taken to halt the decline so as to avoid the need to propose listing of the species again. 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 under section 4(b)(7) of the Act. Section 4(g) of the Act explicitly requires us to cooperate with the States in development and implementation of post-delisting monitoring programs, but we remain responsible for compliance with section 4(g) and, therefore, must remain actively engaged in all phases of post-delisting monitoring. We also seek active participation of other entities that are expected to assume responsibilities for the species' conservation post-delisting.

Post-Delisting Monitoring Overview

A post-delisting monitoring plan was developed in partnership with State and Federal agencies. The post-delisting monitoring has been designed to verify that the snail darter remains secure from risk of extinction after its removal from the Federal List of Endangered and Threatened Wildlife by detecting changes in population trends. The Act has a minimum post-delisting monitoring requirement of 5 years; however, if populations decline in abundance past the defined threshold in the post-delisting monitoring plan or a substantial new threat arises, post-delisting monitoring may be extended or modified, and the status of the species will be reevaluated.

Post-delisting monitoring will occur for 5 years with the first year of monitoring beginning after the publication of the final delisting rule. Post-delisting monitoring will be accomplished by using TVA's stream IBI monitoring to assess the resilience of tributary populations. Sites will be surveyed at least once within the 5-year period, though most will be surveyed two or three times. Reservoir trawl surveys will also be conducted, and all reservoirs will be surveyed at least three times during the post-delisting monitoring period to ensure the continued resilience and recruitment in the mainstem populations. A draft post-delisting monitoring plan for the species can be found at *https://www.regulations.gov* under Docket No. FWS–R4–ES–2020–0152. We will work closely with our partners to maintain the recovered status of the snail darter and ensure post-delisting monitoring is conducted and future management strategies are implemented (as necessary) to benefit the species.

Required Determinations

National Environmental Policy Act (42 U.S.C. 4321 et seq.)

We have determined that environmental assessments and environmental impact statements, as defined under the authority of the National Environmental Policy Act (NEPA; 42 U.S.C. 4321 *et seq.*), need not be prepared in connection with determining a species' listing status under the Endangered Species Act. We published a notice outlining our reasons for this determination in the **Federal Register** on October 25, 1983 (48 FR 49244).

Government-to-Government Relationship With Tribes

In accordance with the President's memorandum of April 29, 1994 (Government-to-Government Relations with Native American Tribal Governments; 59 FR 22951), Executive Order 13175 (Consultation and Coordination with Indian Tribal Governments), and the Department of the Interior's manual at 512 DM 2, we readily acknowledge our responsibility to communicate meaningfully with recognized Federal Tribes on a government-to-government basis. In accordance with Secretarial Order 3206 of June 5, 1997 (American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, and the Endangered Species Act), we readily acknowledge our responsibilities to work directly with Tribes in developing programs for healthy ecosystems, to acknowledge that Tribal lands are not subject to the same controls as Federal public lands, to remain sensitive to Indian culture, and to make information available to Tribes. There are no Tribal lands associated with this final rule, and we did not receive any comments from any Tribes or Tribal members on the proposed rule (86 FR 48953; September 1, 2021).

References Cited

A complete list of all references cited in this final rule is available on the internet at *https://www.regulations.gov* under Docket No. FWS–R4–ES–2020–0152, or upon request from the Tennessee Ecological Services Field Office (see **FOR FURTHER INFORMATION CONTACT**).

Authors

The primary authors of this final rule are the staff members of the Fish and Wildlife Service's Species Assessment Team and the Tennessee 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.

Regulation Promulgation

Accordingly, we hereby 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; and 4201–4245, unless otherwise noted.

§ 17.11 [Amended]

■ 2. In § 17.11, at paragraph (h), amend the List of Endangered and Threatened Wildlife by removing the entry for ''Darter, snail'' under FISHES.

Martha Williams

Director, U.S. Fish and Wildlife Service.

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