amendment proposed, or specify the rule, regulation, or standard that the petitioner seeks to have repealed.

(b) Explain the interest of the petitioner, and the need for the action requested.

(c) Contain sufficient information to support the action sought including an evaluation of anticipated impacts of the action sought; each evaluation must include an estimate of resulting costs to the private sector, to consumers, and to Federal, State, and local governments as well as an evaluation of resulting benefits, quantified to the extent practicable.

■ 6. Revise § 211.11 to read as follows:

§ 211.11 Processing of petitions for rulemaking.

(a) *General.* Each petition for rulemaking filed as prescribed in §§ 211.7 and 211.10 is referred to the head of the office responsible for the subject matter of the petition to review and recommend appropriate action to the Administrator. No public hearing or oral argument is held before the Administrator decides whether the petition should be granted. However, a notice may be published in the **Federal Register** inviting written comments concerning the petition. Each petition shall be granted or denied not later than six months after its receipt by the Docket Clerk.

(b) *Grants.* If the Administrator determines that a rulemaking petition complies with the requirements of § 211.10 and that rulemaking is justified, the Administrator initiates a rulemaking proceeding by publishing an advance notice or notice of proposed rulemaking in the **Federal Register**.

(c) *Denials.* If the Administrator determines that a rulemaking petition does not comply with the requirements of § 211.10 or that rulemaking is not justified, the Administrator denies the petition. If the petition pertains to railroad safety, the Administrator may also initiate an informal safety inquiry under § 211.61.

(d) *Notification; closing of docket.* Whenever the Administrator grants or denies a rulemaking petition, a notice of the grant or denial is sent to the petitioner. If the petition is denied, the proceeding is terminated and the docket for that petition is closed.

■ 7. Revise § 211.13 to read as follows:

§ 211.13 Initiation and completion of rulemaking proceedings.

The Administrator initiates all rulemaking proceedings on the Administrator's own motion by publishing an advance notice of proposed rulemaking or a notice of proposed rulemaking in the **Federal Register**. However, the Administrator may consider the recommendations of interested persons or other agencies of the United States. A separate docket is established and maintained for each rulemaking proceeding. Each rulemaking proceeding shall be completed not later than 12 months after the initial notice in that proceeding is published in the **Federal Register**. However, if it was initiated as the result of the granting of a rulemaking petition, the rulemaking proceeding shall be completed not later than 12 months after the petition was filed as prescribed in §§ 211.7 and 211.10.

■ 8. Amend § 211.41 by revising paragraph (b) to read as follows:

§ 211.41 Processing of petitions for waiver of safety rules.

* * * * *

(b) *Notice and hearing.* A notice is published in the **Federal Register**, an opportunity for public comment is provided (with a standard comment period of 60 days), and a hearing is held in accordance with § 211.25, before the petition is granted or denied. Any comment period shorter than 60 days must be authorized by the Administrator.

* * * * *

■ 9. Amend § 211.43 by revising paragraph (b) to read as follows:

§ 211.43 Processing of other waiver petitions.

* * * * *

(b) *Notice and hearing.* A notice is published in the **Federal Register**, an opportunity for public comment is provided (with a standard comment period of 60 days), and a hearing is held in accordance with § 211.25, before the petition is granted or denied. Any comment period shorter than 60 days must be authorized by the Administrator.

* * * * *

Issued in Washington, DC.

Amitabha Bose,

Administrator.

[FR Doc. 2024–24586 Filed 10–28–24; 8:45 am]

BILLING CODE 4910–06–P

DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

[Docket No. FWS–R4–ES–2024–0051; FXES1113090FEDR–245–FF09E22000]

RIN 1018–BF55

Endangered and Threatened Wildlife and Plants; Removing Chipola Slabshell and Fat Threeridge From the Federal List of Endangered and Threatened Wildlife

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Proposed rule.

SUMMARY: We, the U.S. Fish and Wildlife Service (Service), propose to remove the Chipola slabshell (*Elliptio chipolaensis*) and fat threeridge (*Amblema neislerii*), both freshwater mussels, from the Federal List of Endangered and Threatened Wildlife due to recovery. These species occur in the Apalachicola-Chattahoochee-Flint River Basin of Alabama, Georgia, and Florida. Our review of the best available scientific and commercial data indicates that the threats to the Chipola slabshell and fat threeridge have been eliminated or reduced to the point that both species have recovered and no longer meet the definition of an endangered or threatened species under the Endangered Species Act of 1973, as amended (Act). Accordingly, we propose to delist the Chipola slabshell and the fat threeridge. If we finalize this rule as proposed, the prohibitions and conservation measures provided by the Act, particularly through sections 4 and 7 for the Chipola slabshell and sections 7 and 9 for the fat threeridge, would no longer apply to these species. This proposed rule also serves as the completed status review initiated under section 4(c)(2) of the Act.

DATES: We will accept comments received or postmarked on or before December 30, 2024. We must receive requests for public hearings, in writing, at the address shown in **FOR FURTHER INFORMATION CONTACT** by December 13, 2024.

ADDRESSES:

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

(1) *Electronically:* Go to the Federal eRulemaking Portal: *https://www.regulations.gov.* In the Search box, enter FWS–R4–ES–2024–0051, which is the docket number for this rulemaking. Then, click on the Search button. On the resulting page, in the Search panel on

the left side of the screen, under the Document Type heading, check the Proposed Rule box to locate this document. You may submit a comment by clicking on ''Comment.'' Comments must be received by 11:59 p.m. Eastern Time on the closing date listed in the **DATES** section.

(2) *By hard copy:* Submit by U.S. mail to: Public Comments Processing, Attn: FWS–R4–ES–2024–0051, U.S. Fish and Wildlife Service, MS: PRB/3W, 5275 Leesburg Pike, Falls Church, VA 22041–3803.

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

Availability of supporting materials: This proposed rule and supporting documents, including the recovery plans, 5-year review, and species status assessment (SSA) reports, are available at *https://ecos.fws.gov/ecp/* and at *https://www.regulations.gov* under Docket No. FWS–R4–ES–2024–0051.

FOR FURTHER INFORMATION CONTACT: Gian Basili, Deputy State Supervisor, Florida Ecological Services Office, 7915 Baymeadows Way, Suite 200, Jacksonville, FL 32256–7517; telephone 904–731–3079; email *gianfranco_basili@fws.gov.* Individuals in the United States who are deaf, deafblind, hard of hearing, or have a speech disability may dial 711 (TTY, TDD, or TeleBraille) to access telecommunications relay services. Individuals outside the United States should use the relay services offered within their country to make international calls to the point-of-contact in the United States. Please see Docket No. FWS–R4–ES–2024–0051 on *https://www.regulations.gov* for a document that summarizes this proposed rule.

SUPPLEMENTARY INFORMATION:

Executive Summary

Why we need to publish a rule. Under the Act, a species warrants delisting if it no longer meets the definition of an endangered species (in danger of extinction throughout all or a significant portion of its range) or a threatened species (likely to become an endangered species in the foreseeable future throughout all or a significant portion of its range). The Chipola slabshell is listed as a threatened species and the fat threeridge is listed as an endangered species, and we are proposing to delist them. We have determined the Chipola slabshell and fat threeridge do not meet the Act's definition of an endangered or threatened species. Delisting a species can be completed only by issuing a rule through the Administrative Procedure Act rulemaking process (5 U.S.C. 551 *et seq.*).

What this document does. This rule proposes the removal of the Chipola slabshell and fat threeridge from the List of Endangered and Threatened Wildlife based on their recovery; if we finalize this rule as proposed, the prohibitions and conservation measures provided by the Act, particularly through sections 4 and 7 for the Chipola slabshell and sections 7 and 9 for the fat threeridge, would no longer apply to these species.

The basis for our action. Under the Act, we may determine that a species is an endangered or 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. The determination to delist a species must be based on an analysis of the same factors.

Under the Act, we must review the status of all listed species at least once every five 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 four reasons why we might determine a species shall be delisted: (1) The species is extinct; (2) the species has recovered to the point at which it no longer meets the definition of an endangered species or a threatened species; (3) new information that has become available since the original listing decision shows the listed entity does not meet the definition of an endangered species or a threatened species; or (4) new information that has become available since the original listing decision shows the listed entity does not meet the definition of a species. Here, we have determined that the Chipola slabshell and fat threeridge have recovered to the point at which they no longer meet the definition of an endangered species or a threatened species; therefore, we are proposing to delist them.

Information Requested

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

We particularly seek comments concerning:

(1) Reasons we should or should not remove Chipola slabshell or fat threeridge from the List of Endangered and Threatened Wildlife.

(2) Relevant data concerning any threats (or lack thereof) to the Chipola slabshell or fat threeridge, particularly any data on the possible effects of climate change as it relates to habitat, as well as the extent of State protection and management that would be provided to these mussels as delisted species;

(3) Current or planned activities within the geographic range of Chipola slabshell and fat threeridge that may have adverse or beneficial impacts on these species; and

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

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

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

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

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

We will post all hardcopy submissions on *https://www.regulations.gov.*

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

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

Public Hearing

Section 4(b)(5) of the Act provides for a public hearing on this proposal, if requested. Requests must be received by the date specified in **DATES**. Such requests must be sent to the address shown in **FOR FURTHER INFORMATION CONTACT**. We will schedule a public hearing on this proposal, if requested, and announce the date, time, and place of the hearing, as well as how to obtain reasonable accommodations, in the **Federal Register** and local newspapers at least 15 days before the hearing. We may hold the public hearing in person or virtually via webinar. We will announce any public hearing on our website, in addition to the **Federal Register**. The use of these virtual public hearings is consistent with our regulations at 50 CFR 424.16(c)(3).

Peer Review

Species status assessment (SSA) teams prepared separate SSA reports for the Chipola slabshell and fat threeridge. The SSA teams were composed of Service biologists and staff from Texas A&M Natural Resource Institute, who consulted with subject area experts for both species. Each SSA report represents a compilation of the best scientific and commercial data available concerning the status of these species, including the impacts of past, present, and future factors (both negative and beneficial) affecting the species.

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

Summary of Peer Reviewer Comments

As discussed in Peer Review above, we received comments from two peer reviewers on each of the draft SSA reports. We reviewed all comments we received from the peer reviewers for substantive issues and new information regarding the information contained in the SSA reports. The peer reviewers generally concurred with our methods and conclusions, and provided additional information, clarifications, and suggestions, including clarifications in terminology and discussions of survey information related to detection versus no detection, and other editorial suggestions. Otherwise, no substantive changes to our analysis and conclusions within either of the SSA reports were deemed necessary, and peer reviewer comments are addressed in versions 1.0 of each SSA report (Service 2020, entire; Service 2021, entire).

Previous Federal Actions

On March 16, 1998, the Chipola slabshell was listed as a threatened species (63 FR 12664) and the fat threeridge as an endangered species (63 FR 12664) under the Act. On October 1, 2003, we completed a recovery plan for both species (68 FR 56647). A 5-year review of 37 Southeastern species, including Chipola slabshell and fat threeridge, was completed on September 27, 2006 (71 FR 56545). Critical habitat was designated for the Chipola slabshell in the Chipola River main stem and seven tributaries comprising a stream length of approximately 228 km (142 mi) (72 FR 64286; November 15, 2007). Critical habitat was designated for the fat threeridge in the lower Flint River system (397 km (247 mi)), the Apalachicola River system (161 km (100 mi)), and the Chipola River system (228 km (142 mi)) (72 FR 64286; November 15, 2007). We published notices of initiation of periodic status reviews for both species as required under section 4(c)(2) of the Act in 2018 (83 FR 38320, August 6, 2018); this proposed rule serves as completion of those status reviews. Recovery plan revisions were completed for both species on August 6, 2019 (84 FR 38284). The referenced documents and additional details can be found using our Environmental Conservation Online System (ECOS): *https://ecos.fws.gov/.*

Background

Species Information

Both the Chipola slabshell and fat threeridge are members of the family Unionidae, a large group of freshwater mussels represented by 298 species in North America. Both species are endemic to the Apalachicola-Chattahoochee-Flint River (ACF) River Basin of Alabama, Georgia, and Florida. The ACF River Basin extends approximately 620 kilometers (km) (385 miles (mi)) and spans 50 counties in Georgia, 8 in Florida, and 10 in Alabama (see figure 1, below). For more details about the ACF River Basin, refer to the SSA reports (Service 2020, pp. 12–15; Service 2021, pp. 26–50).

The Chipola slabshell occurs in the mainstem of the Chipola River and several large tributaries. The fat threeridge occurs in the mainstems of the Flint River, Chipola River, and Apalachicola River. Neither species has known occurrences within the Chattahoochee River basin.

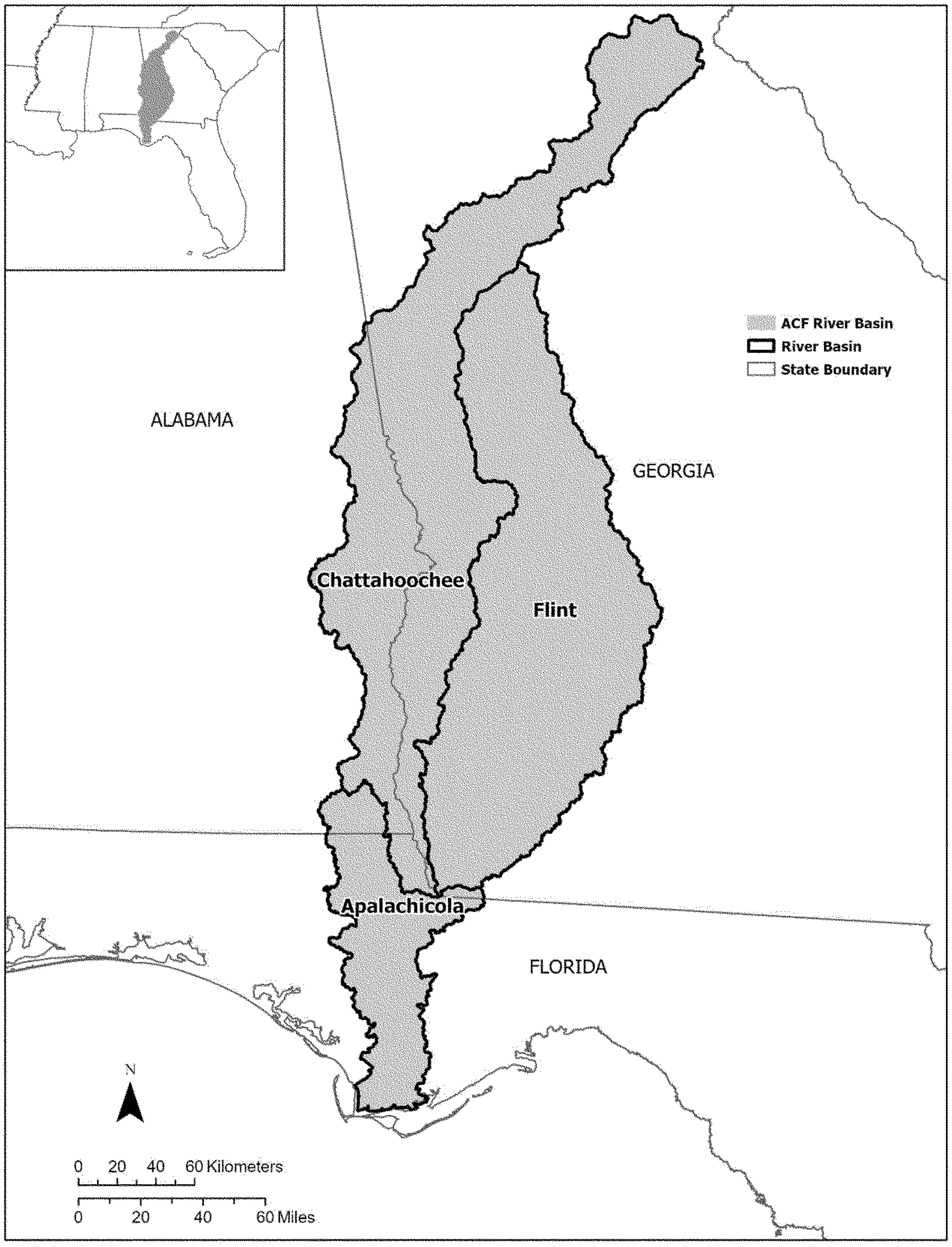


Figure 1. Large river basins within the Apalachicola Drainage of Alabama, Georgia, and Florida. The Apalachicola Basin is commonly referred to by the names of the three largest rivers, the Apalachicola, Chattahoochee, and Flint (ACF River Basin) (Service 2021, p. 27).

General Mussel Biology

Freshwater mussels, including Chipola slabshell and fat threeridge, have a complex reproduction process involving parasitic larvae, called glochidia, that are wholly dependent on host fish. Mussels release sperm into the water column, which is taken in by the female, wherein fertilization and development of glochidia occurs in a restricted portion of the gills, called the brood pouch or marsupium. When mature, the glochidia are released to the water column to attach on the gills, head, or fins of fishes. Glochidia die if they fail to attach to a host fish, attach to an incompatible fish species, or attach to the wrong location on a host fish (Neves 1991, p. 254; Bogan 1993, p. 599). Once attached to the host, glochidia draw nutrients from the fish's tissue as they develop (Arey 1932, pp. 214–215). Time to development, from attachment of glochidia to maturation, ranges from just over 1 week to 6 weeks or more (Parmalee and Bogan 1998, p. 8).

Depending on the species, mussels are either short-term or long-term brooders. In short-term brooders, such as Chipola slabshell and fat threeridge, fertilization occurs in the spring or summer and glochidia are released shortly after they are fully developed. In long-term brooders, fertilization occurs in late summer or fall, and developed glochidia are held over winter and released in the following spring or summer (Haag 2012, pp. 39–40). Mature glochidia drop off their hosts and, if they settle in suitable habitat on the stream bottom, continue the remainder of their existence as free-living mussels. Newly released glochidia are juveniles that are reproductively immature but otherwise resemble adults, with both halves (valves) of the shell developed and poised for growth.

Freshwater mussels are relatively sedentary and, under their own power, capable of moving only short horizontal distances, typically up to a few yards or less in a year (Haag 2012, pp. 34–35). Given mussels' limited mobility, host fish are their primary mode of dispersal, and the hosts are essential for maintaining population connectivity. Host specificity varies, with some mussel species being compatible with a few fish species while others can transform from glochidia to juveniles on several fish species.

Chipola Slabshell

A thorough review of the taxonomy, life history, and ecology of the Chipola slabshell is presented in chapter 1 of the SSA report (Service 2020, pp. 3–24).

The Chipola slabshell is a freshwater mussel that does not exhibit sexual dimorphism in shell characters (Service 2020, p. 4). The species can attain a length of 85 millimeters (mm) (3.35 inches (in)), but typical length is between 47 to 76 mm (1.85 to 2.99 in). The Chipola slabshell has a chestnut colored periostracum (outer shell) with 1 to 4 dark annuli (growth) bands (Service 2020, p. 4). Within its range, Chipola slabshell is the only species with light and dark bands on periostracum and with salmon-colored nacre (inner layer of shell) inside the shell. The umbos (shell protrusions near the hinge) are prominent, well above the hingeline, thus inside the umbo cavity is deep.

Based on the size, shell characteristics, and traits from similar species in the genus *Elliptio,* the Chipola slabshell is thought to reach sexual maturity within 3–5 years and has an average lifespan of 15–20 years (Service 2020, p. 8). The Chipola slabshell is a short-term brooder (tachytictic), meaning immature mussels (*i.e.,* glochidia) are carried in the female's gills for a short time following spawning and released that same season. Females are gravid from early June to early July. The Chipola slabshell is a host-fish specialist, requiring a Centrarchid (*i.e.,* sunfish) host.

Currently, the Chipola slabshell is widespread within its range and common at some localities. A lack of consistent survey methods across observers and through time limits the discussion of abundance trends for Chipola slabshell, however historical data indicate approximately 32 records whereas current records (from 2005 onward) indicate approximately 138 (Service 2020, p. 62). The species' distribution is primarily continuous in one river system, including the Chipola River and its tributaries. The species inhabits silty sand substrates of large creeks and the main channel of the Chipola River, in slow to moderate current. Chipola slabshell appears to be more tolerant of soft sediments than other mussel species in the ACF River Basin. It co-occurs with more silt-tolerant species in stream bank habitats with slower currents, thus it has more available habitat than mid-channel-dwelling species (Service 2020, p. 15).

Fat Threeridge

A thorough review of the taxonomy, life history, and ecology of the fat threeridge mussel is presented in chapter 2 of the SSA report (Service 2021, pp. 14–25).

The fat threeridge is an almost square, inflated, solid, and heavy shelled freshwater mussel that typically reaches up to 102 mm (4 in) in length. Older, larger individuals are quite inflated, where their width approximates their height. The dark brown to black shell is strongly sculptured with seven to eight prominent horizontal parallel ridges. The prominent, parallel ridges and inflated shell (older specimens, especially) distinguish this species from other mussels within its range (Service 2021, p. 15).

The glochidia of fat threeridge, like most freshwater mussels, are obligate parasites on fish, and must attach to a host to transform into juvenile mussels; this parasitism serves as the primary dispersal mechanism for this relatively immobile group of organisms. To facilitate attachment, fat threeridge hookless glochidia are broadcast in a web-like mass that expands and wraps around a host. This method often is seen in host generalists because passive entanglement is nonselective. Reproductive studies confirm that fat threeridge is a host generalist, completing transformation on 23 species of fishes (Service 2021, p. 17). The fat threeridge is a short-term summer brooder. Females appear to be gravid when water temperatures reach 23.9 degrees Celsius (°C) (75 degrees Fahrenheit (°F)), usually in late May and June.

Because freshwater mussels are relatively long-lived and have limited mobility, habitat stability is a requirement shared by all unionids. Fat threeridge appears to be sensitive to the effects of sediment instability and completely reliant on stable fine sediment habitat patches. Excessive amounts of sediment and particulate matter can interfere with key aspects of mussel biology. The availability of stable sediment patches may help explain the restricted distribution in mainstem versus tributary environments, as the fat threeridge has never been found in a tributary stream. By their nature, tributaries are smaller in size than mainstems and have more dynamic flows and sediment transport (Fritz et al. 2018, p. 6). Thus, the fat threeridge is ecologically restricted/isolated to large river systems in low gradient areas with stable, very fine sediment patches (Service 2021, pp. 22–23).

Within its range in the ACF River Basin, fat threeridge is found in mainstem habitats in the Flint, Apalachicola, and Chipola rivers; there are no known collections from the Chattahoochee River (Service 2021, p. 26). At the time the fat threeridge was listed in 1998, there were very few existing records of the species, with the most seen at a site being 6 individuals (63 FR 12666). Current estimates in the middle Appalachicola alone are upwards of 7.7 million individuals (Service 2021, p. 47).

Regulatory and Analytical Framework

Regulatory Framework

Section 4 of the Act (16 U.S.C. 1533) and the implementing regulations in title 50 of the Code of Federal Regulations set forth the procedures for determining whether a species is an endangered species or a threatened species, issuing protective regulations for threatened species, and designating critical habitat for endangered and threatened species. On April 5, 2024, jointly with the National Marine Fisheries Service, the Service issued a final rule that revised the regulations in 50 CFR part 424 regarding how we add, remove, and reclassify endangered and threatened species and what criteria we apply when designating listed species' critical habitat (89 FR 24300). This final rule is now in effect. The Act defines an ''endangered species'' as a species that is in danger of extinction throughout all or a significant portion of its range, and a ''threatened species'' as a species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. The Act requires that we determine whether any species is an endangered species or a threatened species because of any of the following factors:

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

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

(C) Disease or predation;

(D) The inadequacy of existing regulatory mechanisms; or

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

These factors represent broad categories of natural or human-caused actions or conditions that could have an effect on a species' continued existence. In evaluating these actions and conditions, we look for those that may have a negative effect on individuals of the species, as well as other actions or conditions that may ameliorate any negative effects or may have positive effects. The determination to delist a species must be based on an analysis of the same five factors.

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

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

The Act does not define the term ''foreseeable future,'' which appears in the statutory definition of ''threatened species.'' Our implementing regulations at 50 CFR 424.11(d) set forth a framework for evaluating the foreseeable future on a case-by-case basis which is further described in the 2009 Memorandum Opinion on the foreseeable future from the Department of the Interior, Office of the Solicitor (M–37021, January 16, 2009; ''M-Opinion,'' available online at *https://www.doi.gov/sites/doi.opengov.ibmcloud.com/files/uploads/M-37021.pdf*). The foreseeable future extends as far into the future as the U.S. Fish and Wildlife Service and National Marine Fisheries Service (hereafter, the Services) can make reasonably reliable predictions about the threats to the species and the species' responses to those threats. We need not identify the foreseeable future in terms of a specific period of time. We will describe the foreseeable future on a case-by-case basis, using the best available data and taking into account considerations such as the species' life-history characteristics, threat-projection timeframes, and environmental variability. In other words, the foreseeable future is the period of time over which we can make reasonably reliable predictions. ''Reliable'' does not mean ''certain''; it means sufficient to provide a reasonable degree of confidence in the prediction, in light of the conservation purposes of the Act.

Analytical Framework

The SSA reports document the results of our comprehensive biological review of the best scientific and commercial data regarding the status of the Chipola slabshell and fat threeridge, including assessments of the potential threats to these species. The SSA reports do not represent our decisions on whether these species should be proposed for delisting. However, they do provide the scientific basis that informs our regulatory decisions, which involve the further application of standards within the Act and its implementing regulations and policies.

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

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

The following is a summary of the key results and conclusions from the SSA reports; the full SSA reports can be found at Docket No. FWS–R4–ES–2024–0051 on *https://www.regulations.gov.*

Summary of Biological Status and Threats

In this discussion, we review the biological condition of each species and their resources, and the threats that influence these species' current and future conditions, in order to assess both species' overall viability and the risks to that viability. In addition, the SSA reports (Service 2020, entire; Service 2021, entire) document our comprehensive biological status review for each species, including an assessment of the potential threats to each species. The following is a summary of these status reviews and the best available information gathered since that time that have informed these decisions.

Species Needs

Both Chipola slabshell and fat threeridge share similar habitat needs, including stable stream channels; permanently flowing water to adequately deliver oxygen, enable passive reproduction, support host fish, deliver food items to the sedentary juvenile and adult life stages, and remove wastes; and good water quality (*i.e.,* free from harmful toxicants (such as chlorine, unionized ammonia, heavy metals, salts, pesticides), or at low enough concentrations to avoid adverse effects). The Chipola slabshell prefers predominantly sand, gravel, and/or cobble stream substrate with low to moderate amounts of silt and clay (Service 2020, pp. 15–16), whereas the fat threeridge prefers stable fine sediment habitat patches (Service 2021, p. 22).

Analysis Units

The Chipola slabshell consists of a single, panmictic population within the Chipola River basin; we delineated three subpopulations (*i.e.,* management units, MUs) to account for the two natural breaks in connectivity (Service 2020, pp. 64–65). Although these breaks do not prevent dispersal of infected host fish between subpopulations of the Chipola slabshell, we delineated the MUs based on the potential barriers to dispersal and genetic exchange. Since our knowledge of the level of genetic diversity is limited, it is possible MUs exhibit some natural variation in genetic diversity. Each subpopulation was broken into U.S. Geological Survey (USGS) 10-digit hydrologic unit codes (HUC–10s) as MUs (see table 1, below). These units reflect a spatial scale for which mussel survey data were available.

TABLE 1—HUC–10S FOR EACH CHIPOLA SLABSHELL MANAGEMENT UNIT (MU)

MU	HUC–10s
1	River Styx & Douglas Slough.
2	Merritts Mill Pond–South.
	Mill Creek.
	Tenmile Creek.
	Dead Lake.
3	Marshall Creek.
	Cowarts Creek.
	Merritts Mill Pond–North.

The fat threeridge also consists of a single population; we delineated six analysis units (HUC–10s) within the Flint, Chipola, and Apalachicola Rivers, based on potential reproductive isolation and/or unique geomorphology, available current occurrence records, and expert input (Service 2021, pp. 51–52).

Threats

The primary threats affecting viability of both mussel species are predominantly related to historical land use practices resulting in the destruction, modification, or curtailment of these species' habitat or range (Factor A), ultimately affecting water quality and flow regime (*i.e.,* water quantity). They are: (1) sedimentation; (2) impoundments; (3) agriculture; and (4) urbanization. Existing regulatory mechanisms (Factor D) and conservation actions have benefited the species, thus ameliorating many threats. Other threats such as invasive species (Factor C) likely have had some negative effects on the two mussel species, as described in the SSA reports, but were not considered primary threats that affect the species' overall viability (Service 2020, pp. 40–41; Service 2021, p. 76). Our analyses also considered the effects of climate change (Factor E), but sea level rise (SLR) was only examined for fat threeridge based upon the potential of SLR to affect the lower portion of its range.

Sedimentation

The primary listing factor for both the Chipola slabshell and fat threeridge was related to habitat modification, specifically the issue of increased sedimentation which causes turbidity from erosion (Service 2020, p. 27; Service 2021, p. 76). Sedimentation is one of the most significant pollution sources for aquatic organisms and is a major factor in overall mussel declines (Service 2020, p. 31), as excessive amounts of sediment and particulate matter can interfere with key aspects of mussel biology (Service 2021, p. 24).

Canopy, or riparian buffers, provide the conditions for stable stream channels, delivery of food items, and improved overall water quality because of their ability to filter runoff. Activities related to dredging, snag removal, agriculture, logging, and urban development are usually common sources of erosion and sedimentation. Dredging was a widespread, intensive, and frequent disturbance within the Apalachicola River that was detrimental to both species at the time of listing. However, over the past 20 years, dredging practices have been restricted through regulations such that very little dredging has occurred, and future dredging activities are expected to be limited. Following the cessation of widespread dredging, signs of habitat recovery have been observed, indicating improved habitat stability for fat threeridge and other freshwater mussels (including Chipola slabshell) in the Apalachicola River (Service 2021, pp. 58–59).

In 2009, we conducted a basin threats assessment for the Chipola River in order to identify and reduce sedimentation risks to aquatic life. Unpaved roads were identified as primary contributors of sandy materials that are easily eroded and transported to stream corridors. All unpaved road-stream crossing sites were ranked and prioritized for subsequent restoration practices, and proximity to sites of listed species and their habitat was a primary consideration (Service 2020, p. 55). We began unpaved stream crossing restoration efforts in 2013, in partnership with the Florida Fish and Wildlife Commission (FWC), and several projects have reduced sediment inputs (Service 2020, p. 56).

Partnerships and programs have had success in restoring and reducing sediment inputs in priority stream reaches that have been identified as highly erodible. We and our partners, including but not limited to the University of Florida's Institute of Food and Agricultural Sciences Extension, Northwest Florida's Water Management District, Florida Department of Agriculture and Conserver Services, Natural Resources Conservation Service, FWC, the U.S. Forest Service, and many landowners (National Fish Habitat Partnership 2020, unpaginated), have successfully restored over 8 km (5 mi) of streams in the Chipola River Basin and continue to implement stream restoration projects (for example, bank stabilization, solar wells, livestock exclusion fencing, riparian restoration, low-water crossings, and reshaping of spring-fed tributaries) to reduce sediment inputs. The Southeast Aquatic Resources Partnership continues to use a Chipola River Basin threats assessment to reduce sedimentation in the basin and identify potential barriers to fish passage (Service 2020 pp. 55–56).

Impoundments

Impoundments can alter downstream water quality and riverine habitat (Service 2020, p. 28). The most consequential direct effects to Chipola slabshell and fat threeridge from impoundments include upstream and downstream flow effects, as well as the loss of and fragmentation of riverine habitat. Pre-existing dams that fragment and inundate habitat and alter natural flow are part of existing baseline conditions for these species and are unlikely to change substantially in the near future (Service 2020, pp. 33–36; Service 2021, p. 112). Impoundments remain within tributaries of the Chipola River, but the mainstem, which contains the majority of Chipola slabshell, as well as critical habitat for fat threeridge, is unobstructed (Service 2020, p. 28; Service 2021, p. 107). The main stem of the Chipola River formerly contained one impoundment, the Dead Lake Dam, which was removed in 1987. The final obstructions to natural flow in the channel were removed in 1989. The dam removal returned connectivity and natural flow conditions to the river, but the local sediment and detritus load is likely still high (Service 2021, p. 81). However, even with the accumulated detritus, the number of fish species almost doubled after the dam was removed, with anadromous fish able to travel through the lake to spawn or seek critical thermal refugia in the upper Chipola River (Service 2020, p. 34).

Following the return of connectivity and natural flow regime of Dead Lakes, habitat conditions are anticipated to become more stable over time. Stable stream habitats are formed and maintained by natural flow regimes, channel features (dimension, pattern, and profile), and natural sediment input to the system through periodic flooding. These events help maintain connectivity and interaction with the floodplain, and consistently transport sediment load over time, such that the stream bed neither degrades nor aggrades (Service 2021, p. 22).

Agriculture

Agriculture is the largest groundwater consumer in the ACF River Basin accounting for 35 percent of all water withdrawals in 2010. Of the groundwater withdrawn in the ACF River Basin, 89 percent was withdrawn in Georgia, and about 11 percent was withdrawn in Alabama and Florida during 2010 to provide irrigation for approximately 736,200 acres (ac) (297,930 hectares (ha)) (Service 2021, p. 87). These groundwater withdrawals exacerbate drought conditions during dry years, which can affect both tributaries and main river channels (Service 2021, p. 86).

Water pollutants associated with agricultural activity may also adversely affect mussels. Ammonia is associated with nitrogenous fertilizers, wastewater from animal feedlots (livestock waste), and the effluents of older municipal wastewater treatment plants. While nitrogen from wastewater inputs originating from septic and sewer sources are also associated with urban centers, other forms of pollution are unique to these agricultural areas (Service 2020, p. 30). Properly implemented agricultural best management practices (BMPs) have improved the water quality in several basins where Chipola slabshell and fat threeridge occur. Implementing BMPs has reduced thousands of pounds of agricultural nitrogen inputs from fertilizers and livestock waste (Service 2020, p. 51).

Agricultural land use is highest in the Lower Flint River, so impacts from stressors associated with agricultural activity could limit fat threeridge in the future. However, land use in the sub-basins with fat threeridge present has remained relatively stable from 2000–2016. A large portion of each sub-basin is also forested, which provides an effective buffer for maintaining sufficient river baseflows, permeability, and reducing overall flooding impacts (Service 2021, p. 87). Fat threeridge will likely maintain resiliency in larger river and mainstem habitats in the ACF River Basin, including the Lower Flint, if adequate water quality and quantity continue at current levels (Service 2021, pp. 129–130).

Urbanization

Urban development not only causes habitat loss and fragmentation, but it also contributes to habitat degradation through storm water runoff and nonpoint source pollution. The term ''development'' refers to urbanization of the landscape, including (but not limited to) land conversion for residential, commercial, and industrial uses and the accompanying infrastructure. Urbanization effects may include alterations to water quality, water quantity, and instream and streamside habitat (Ren et al. 2003, p. 649; Wilson 2015, p. 424). The effects on habitat also include variability in streamflow, typically increasing the extent and volume of water entering a stream after a storm and decreasing the time it takes for the water to travel over the land before entering the stream (Giddings et al. 2009, p. 1). Freshwater mussel populations experience reduced abundance, species richness, reproduction, growth, and survival stemming from the impacts of urbanization on water and habitat quality (Diamond and Serveiss 2001, p. 4716; Gangloff et al. 2009, p. 198; Cao et al. 2013, pp. 1212–1214; Gillis et al. 2017, pp. 674–679). While there are some parts of both the Chipola slabshell's range and the fat threeridge's range that are affected by urbanization, it does not rise to the level that it is affecting current viability (see *Current Conditions* below).

Additional Water Quality and Quantity Considerations

Influences on the viability of the Chipola slabshell and fat threeridge include habitat factors such as water quantity (flow) (Service 2020, p. 28). Flow impacts are varied between low flow and high flow conditions. When water flows decrease, the concentration of water pollutants increases, thus increasing the adverse effects that can negatively impact the freshwater mussels, such as Chipola slabshell and fat threeridge, and their habitat (Service 2020, p. 32; Service 2021, p. 21).

High-flow volumes can be both harmful and beneficial for freshwater mussels. Floods are often associated with habitat destruction and direct mortality, both to juveniles and adults that are stranded in unsuitable habitats (Service 2020, p. 32; Service 2021, p. 65). Floods can also increase the potential for shear stress events to occur. Shear stress is a critical factor in affecting displacement during high-flow events where substrates are unstable, conditions are generally poor for mussel habitation. However, floods can also help remove accumulated silt deposits, algal growth and harmful organic material from sediments, improving habitat for juvenile mussels. It is likely that large woody debris can also help to potentially stabilize sediments in the Coastal Plains ecoregion where Chipola slabshell and fat threeridge occur, and as a result these areas are expected to be the most stable during high flows (Service 2020, p. 32).

Water quantity can become limited by withdrawals and be exacerbated during extreme drought events and periods of low flow. Groundwater recharge provides water to aquifers and springsheds, and alterations to groundwater removal can alter surface water flow impacting spring flow and available surface water (Service 2020, p. 41). Under moderate-flow conditions, groundwater makes up the majority of the Chipola River's discharge and the quality of water discharged from the Chipola River springs is predominantly determined by the quality of groundwater in the Floridan Aquifer (Service 2020, p. 19). The Chipola River's baseflow is derived principally from aquifers, therefore it is not as susceptible to drought conditions. In addition, Chipola slabshell has been found to occupy areas 1 to 2 meters (m) (3.3 to 6.6 feet (ft)) below the water surface, providing a buffer against the effects of low flow conditions. Fat threeridge has also persisted and arguably increased in abundance through these periods of low flow (Service 2021, pg. 103).

For more information regarding threats, see chapter 3 of the Chipola slabshell SSA report and chapter 5 of the fat threeridge SSA report (Service 2020, pp. 27–140; Service 2021, pp. 76–130).

Climate Change

Impacts of climate changes can have direct effects or be driven by one or more factors working synergistically as indirect effects on species. These effects may be neutral, positive, or negative and they may change over time. Despite the recognition of potential climate effects on ecosystem processes, there is uncertainty about what the exact climate future for the southeastern United States will be and how ecosystems and species in this region will respond. The greatest threat from climate change may come from synergistic effects. That is, factors associated with a changing climate may act as risk multipliers by increasing the risk and severity of more imminent threats, especially for rivers in wide flood plains where stream channels have room to migrate (Elliot et al. 2014, pp. 67–68). As a result, impacts from land use change might be exacerbated under even a mild to moderate climate future. A suite of potential hydrological impacts to waters of the southeastern United States is possible under conditions of climate change, but climate models generally predict increases in extreme rainfall events and droughts of greater duration and intensity (Carter et al. 2018, pp. 745–746).

Flooding

Tropical storms occur across the range of Chipola slabshell and fat threeridge, and they have become more intense during the past 20 years. The wind speeds and rainfall associated with hurricanes are likely to increase as the climate continues to warm (United States Environmental Protection Agency (USEPA) 2016b, p. 1, USEPA 2016c, p. 1). In October 2018, Hurricane Michael substantially impacted northwest Florida. According to a report by the Florida Forest Service (FFS), more than 2.8 million ac (1.13 million ha) of forest land were damaged by storm winds. The Chipola River experienced severe impacts, where 75 percent of upland and bottomland trees were damaged (FFS 2018, pp. 1, 4–5). However, high woody debris loading has greatly contributed to the formation of stable, fine sediment habitat in the Lower Chipola River (Kaeser et al. 2019, p. 667), resulting in net positive effects of blowdown for Chipola slabshell and fat threeridge assuming forest cover regenerates.

The increased intensity of hurricanes as well as more frequent high-intensity precipitation events could also increase inland flooding. The precipitation received during heavy storms has increased by 27 percent in the Southeast with the trend for increasingly heavy rainfall events likely to continue into the future (USEPA 2016b, p. 2). With these heavy rainfall events comes flooding, as rivers overtop their banks more frequently, and more water accumulates in low-lying areas that drain slowly. Restoring and preserving flood protection and nutrient reduction capabilities of forested lands along the Chipola River is vital (Northwest Florida Water Management District (NWFWMD) 2018, p. 6).

Drought

Long-term climate records suggest that decade-long ''mega-droughts'' have occurred periodically during the past 700 years in the southeastern United States, including in the ACF River Basin (Stahle et al. 2007, p. 147). Projections for the ACF watershed indicate that future droughts are likely to be more intense (Yao and Georgakakos 2011, entire). This suggests that while the recently observed droughts in 2006–2008 and 2010–2012 were exceptional based on our recent <100-year period of record, they may not be exceptional compared to historic episodes (Pederson et al. 2012, entire).

The duration and severity of droughts may vary within the ranges of Chipola slabshell and fat threeridge. Droughts are likely to be more severe in some locations as periods without rain may be longer and very hot days will be more frequent. Dry spells are expected to be up to 20 days shorter during the cold season in the southern half of Florida, and up to 20 days longer for the same season in Alabama (Keellings and Engstrom 2019, p. 1). While more intense cold season droughts might not be as stressful for mussels as intensification of droughts during the warm season would be, a cool season drought may limit recharge and storage of water in both natural and anthropogenic reservoirs (Engstrom and Keellings 2018, p. 261; Keellings and Engstrom 2019, p. 3). More frequent or severe droughts may reduce streamflow in some areas. In Alabama, the total amount of water running off into rivers or recharging ground water is likely to decline 2.5 to 5 percent, as increased evaporation offsets the greater rainfall (USEPA 2016b, p. 2). Low flows have decreased in the southeastern United States between 1940 and 2019, meaning streams are carrying less water at low flow than historically recorded (USEPA 2016a, p. 2). Low flows have not gone below 200 cubic feet per second (cfs) in the Chipola River in the recent past (1986 to 2019; USGS National Water Resources, 2019, entire), but may in the future.

The Chipola River is a spring-fed river with baseflow derived principally from aquifers, and therefore is not as susceptible to drought conditions derived from changes in precipitation patterns as it is to alterations in groundwater withdrawals. Mussel sites in the Chipola River generally have slopes greater than 20 percent, which helps to limit mussel mortality to less than 1 percent of the local population during low flow events (Service 2016b, p. 125). In addition, Chipola slabshell have been found to occupy areas 1 to 2 m (3.3 to 6.6 ft) below the water surface, providing a buffer against the effects of low flow conditions (Service 2016b, p. 129). Even during severe drought conditions in 2007, Cowarts Creek (which joins Marshall Creek to form the Chipola River) did not exhibit signs of mussel mortality (Garner et al. 2009, p. 693). Cowarts Creek retained adequate dissolved oxygen (6.5 milligrams per liter (mg/L) (81.5 percent saturation)) and temperature (27 °C (81 °F), though the flow was sluggish and phytoplankton seemed elevated (Garner et al. 2009, p. 688).

Sea Level Rise

Most freshwater mussels are intolerant of saline conditions. The potential for sea level rise (SLR), and thus intrusion of saline conditions, is considered for the fat threeridge range; however, the Chipola slabshell's range is not likely to be affected. Exposure to saline conditions (salt at 3 to 6 parts per trillion (ppt)) can decrease the reproduction and survival of freshwater mussels (Blakeslee et al. 2013, p. 2849). The upper limit for exposure of most adult unionid mussels to long-term salinity stress is < 6 ppt, which may be consistent with fat threeridge tolerances. Fat threeridge is not known to occur below the point of tidal influence in the Apalachicola River, where salt exposure is expected to be lethal. An increase in salinity of fresh waters through the intrusion of seawater associated with sea level rise will likely modify community composition of unionids in affected areas, eliminating or at least reducing the abundance of species that are less adapted to increased salinity (Johnson et al. 2018, p. 67).

Climatic changes, including SLR and shifts in seasonal precipitation, temperature, and storm cycles, are major threats to south Florida. Various studies (University of Florida Geoplan 2015, p. 13; The Nature Conservancy 2011, p. 4–6; Sweet et al. 2017, p. 22–23) have developed scenarios that range from less than 0.3 m to 3.2 m (1 to 10.4 ft) of SLR in the south Florida by 2100. Tidal gauges around Florida have shown 25 cm (10 in) of SLR since 1913, with an increase in SLR of 2.56 mm/year (0.1 inch/year) from 1967 to 2019, equivalent to 25 cm (9.8 inches) in 100 years more locally (NOAA 2021, n.p.). This recent acceleration suggests that the intermediate to high SLR scenarios are more likely to occur than the low and intermediate-low scenarios (Sweet et al. 2022, pp. 20–21). Sea level rise since 2000 has generally been within the trajectory of the Intermediate-High scenario, but it is important to note the trajectory could change throughout the century. Rapid ice sheet collapse in Antarctica could move SLR from the intermediate to the high scenario by the end of the century (Sweet et al. 2022, p. 26). Under the high scenario, some areas supporting fat threeridge (*e.g.,* the Lower Apalachicola) will likely become partially inundated (*i.e.,* under water) at some point during this century (Service 2021, p. 102).

Conservation Efforts and Regulatory Mechanisms

Since the listing of Chipola slabshell as an endangered species and fat threeridge as a threatened species under the Act in 1998, Federal agencies have been required under section 7 of the Act to coordinate with us to ensure actions that they carry out, fund, or authorize will not jeopardize either species' continued existence or destroy or adversely modify the critical habitat designated for these species in 2007. This requirement has protected both Chipola slabshell and fat threeridge throughout most of their ranges. Both Federal and State regulations are relevant to the maintenance of water quality where Chipola slabshell and fat threeridge occur.

Water quantity can become limited by agricultural, irrigation, municipal, and industrial withdrawals. Such withdrawals can be exacerbated during extreme drought events and periods of low flow. Groundwater recharge provides water to aquifers and springsheds, and alterations to groundwater removal can alter surface water flow impacting spring flow and available surface water. The State of Florida establishes minimum flow limits (MFLs) to identify the limit at which withdrawals would be significantly harmful to the water resources or ecology of an area. Water reservation is a legal mechanism in Florida that functions to set aside water from consumptive uses for the protection of fish and wildlife or public health and safety (2023 Florida Statutes at section 373.223). Water reservations and MFLs are both important tools to ensure an adequate supply of water for citizens and environment. There is no known comparable mechanism to protect flows in Alabama. Water reservations were established for the Chipola and Apalachicola rivers in 2006 (Florida Administrative Code, rule 40A–2.223). The magnitude, duration and frequency of observed flows are reserved, essentially in total, for the protection of fish and wildlife of the Chipola River, Apalachicola River, associated floodplains, and Apalachicola Bay.

Federal guidelines are in place to minimize alterations to flow regimes. The Service and USEPA proposed instream flow guidelines for protecting riverine ecosystems under a possible interstate water allocation formula between Alabama, Florida, and Georgia for the ACF Basin. Although the three States failed to agree upon an allocation formula and the ACF compact authorizing their negotiations expired in 2003, the Service has applied the instream flow guidelines in consultations with Federal agencies on actions affecting the species addressed in this proposed rule. At minimum, the Environmental Resource Permit Program within the USEPA regulates the construction, alteration, maintenance, removal, modification and operation of all activities in uplands, wetlands and all other surface waters that alter, divert and change the flow of surface waters. Both State and Federal permits may be required to alter wetlands and other surface waters.

Future water quantity models in the Chipola River Basin have projected adequate water supply for citizens and the environment through 2045, even in drought years (NWFWMD 2023, p. ix). Water flows for most of the Chipola slabshell's and fat threeridge's occupied range are protected through consumptive uses by water reservation (legal protection), while other areas are supported by ground water contributions from springs during drought (Service 2020, pp. 96–139; Service 2021, p. 112). Water quantity models are updated every 5 years to ensure sufficient supply planning.

Regional water plans in Georgia are developed in accordance with the Georgia Comprehensive State-wide Water Management Plan (State water plan), which was adopted by the General Assembly in January 2008. The State water plan requires the preparation of regional water development and conservation plans to manage water resources in a sustainable manner through 2050. A water conservation plan is required of all permit holders operating in the Flint River basin. This requirement will benefit fat threeridge resiliency in the future by ensuring permits are sufficiently protective of necessary water quantity and quality. These plans detail best water management practices to be followed, provide direction for funding conservation practices, describe permit conditions for withdrawal permits, and provide guidance for how to minimize and control water loss (Georgia Department of Natural Resources (GADNR) 2006, pp. 161–163).

Minimum water quality standards have been set by Federal agencies both through the Clean Water Act (CWA; 33 U.S.C. 1251 *et seq.*) and other initiatives. The CWA is a Federal law that regulates the discharge of pollutants into surface waters, including lakes, rivers, streams, wetlands, and coastal areas. USEPA and the Service and National Marine Fisheries Service agreed to a national consultation on the CWA Section 304(a) aquatic life criteria as part of a Memorandum of Agreement regarding interagency coordination under the CWA and the Act (66 FR 11202; February 2, 2001). In 2013, the USEPA released new ammonia criteria that included acute and chronic toxicity testing for 13 freshwater mussels, thus leading to an improved understanding of ammonia toxicity and setting a more protective ammonia criteria value for freshwater mussels (USEPA 2013, p. xi). In 2016, the Florida Department of Environmental Protection (FDEP) adopted the chronic criteria for ammonia as both the acute and chronic values (1.408 mg/L), therefore improving the ammonia standard even further for the conservation of freshwater mussels statewide (USEPA 2016a, entire). Georgia Department of Natural Resources' (GADNR) Environmental Protection Division (EPD) also implements the 2013 ammonia criteria as part of their National Pollutant Discharge Elimination System (NPDES) permitting process (GADNR 2022, pp. A–16–17).

Florida has established water classifications that promote water quality standards that are more stringent than those of the CWA. The Florida

Department of Environmental Protection (FDEP) designates Outstanding Florida Waters (OFWs) under 2023 Florida Statutes section 403.061(27). An OFW is defined by FDEP as a waterbody worthy of special protection because of its natural attributes. In general, FDEP cannot issue permits for direct discharges to OFWs that would lower ambient (existing) water quality. FDEP also may not issue permits for indirect discharges that would significantly degrade a nearby waterbody designated as an OFW. The majority of waterbodies and segments in the range of Chipola slabshell and fat threeridge receive regulatory protection through designation as OFWs in addition to protections under their surface water classification as class III waterbodies, which include designated uses for fish consumption, recreation, and propagation and maintenance of a healthy, well-balanced population of fish and wildlife (Service 2020, appendix B). Further, the Florida Springs and Aquifer Protection Act of 2016 (2023 Florida Statutes at section 373.801–373.813) established Outstanding Florida Springs (OFSs) that require additional protections to ensure their conservation and restoration. Under this act, the State of Florida designated the Jackson Blue Spring within the Chipola River Basin as an OFS.

Section 303(d) of the CWA (33 U.S.C. 1251 *et seq.*) requires states to identify waters that do not fully support their designated use classification, and so are deemed impaired. The most recent assessments within the range of Chipola slabshell and fat threeridge were completed by the FDEP and Alabama Department of Environmental Management (ADEM) as of 2018 and GDNR in 2022. Impaired water bodies are placed on each State's 303(d) list, and a total maximum daily load (TMDL) must be developed for the pollutant of concern. A TMDL is an estimate of the total load of pollutants that a segment of water can receive without exceeding applicable water quality criteria. There are several reasons why an impaired waterbody may be delisted, including but not limited to: a subsequent assessment determining that a waterbody-parameter is no longer impaired based on current water quality standards, if there has been a TMDL completed for the verified impaired parameter; or if a flaw in a previous assessment has been determined.

Impaired waterbodies within watersheds occupied by Chipola slabshell and fat threeridge are largely impacted by fecal coliform. The standards for fecal coliform (*e.g., Escherichia coli*) relate to human health and do not necessarily reflect levels that would be harmful to mussels. While some waters are impaired due to nutrients or organic enrichment, these standards are in place to protect human health and do not relate directly to the potential effects of nutrients such as nitrogen on mussels. Monitoring results in Georgia indicate that approximately 60 percent of the streams are impaired for fecal coliform bacteria, with less than 2 percent for ammonia toxicity, which would adversely affect mussels, and those ammonia-impaired streams are not within the range of fat threeridge (GADNR 2022, p. 3–3). The numeric nutrient criteria (NNC) and ammonia standard in Florida reflect nutrient impact thresholds for mussels. This criterion includes total nitrogen (TN) and total phosphorus (TP) for flowing freshwaters. The TN NNC threshold concentrations are 0.67 mg/L for the Chipola River (Panhandle West), which is well below the newly adopted 1.408 mg/L ammonia concentration in Florida (Service 2016a, p. 6). Alabama also has a nitrate/nitrite nitrogen and ammonia standard in addition to other standards that are more representative of the potential harm to mussels than the nutrient or organic enrichment standard, which are no longer used as part of the water quality assessment process (ADEM 2018, pp. 11–14). Many of the delisted waterbodies were previously impaired due to elevated mercury levels in fish, which is also a human-health related standard (FDEP 2013, p. ii) that does not reflect levels that would be harmful to mussels. Given the parameters resulting in impairment and the establishment of TMDLs, water quality within the range of Chipola slabshell and fat threeridge is considered unimpaired in regards to freshwater mussel water quality thresholds.

Current Conditions

Under the SSA framework, we assessed current resiliency, redundancy, and representation for Chipola slabshell and fat threeridge. Resiliency reflects a species' ability to withstand stochastic events (arising from random factors). Resiliency is measured at the population-level using metrics that characterize population health such as demographic rates and population size. We also consider the nature and extent of stressors to a species that could limit resiliency. Populations demonstrating resiliency are better able to withstand perturbations associated with demographic stochasticity (*e.g.,* fluctuations in birth or mortality rates), environmental stochasticity (*e.g.,* variation in precipitation or temperature), and anthropogenic activities. For the species to be considered viable, there must be adequate redundancy (suitable number, distribution, and connectivity of populations to allow the species to withstand catastrophic events). Redundancy improves with increasing numbers of populations distributed across the species range, and connectivity (either natural or human-facilitated) that allows connected populations to ''rescue'' each other after catastrophes. We can best gauge redundancy by analyzing the number and distribution of populations relative to the scale of anticipated species-relevant catastrophic events. Representation refers to the genetic and environmental diversity within and among populations that contributes to the ability of the species to respond and adapt to changing environmental conditions over time. The more representation, or diversity, a species has, the more it can adapt to changes (natural or human caused) in its environment. We can best gauge representation by examining the breadth of genetic, phenotypic, and ecological diversity found within a species and its ability to disperse and colonize new areas. For more information, see chapter 4 in each of the SSA reports (Service 2020, pp. 61–92; Service 2021, pp. 51–75).

Chipola Slabshell

Our current condition analysis for the singular Chipola slabshell population describes the conditions of each of the three MUs (see table 1, above). The magnitude and scale of potential impacts to Chipola slabshell or its habitat by a given threat are considered based on the condition of the watershed. Each HUC–10 watershed within the three MUs was rated as currently being in poor, fair, good, or excellent condition for each of the resiliency factors. Resiliency measures included two population factors (occupancy and abundance/recruitment) and two habitat factors (sedimentation and canopy) that were scored to provide overall MU resiliency (table 2, below). The four condition categories were then converted to numerical ranks and then a weighted average of the factor scores was calculated to generate an overall resiliency score. See the SSA report for details on the scoring methodology (Service 2020, pp. 89–91).

TABLE 2—SUMMARY OF CONDITION CATEGORIES AND RESILIENCY FACTORS TO ASSESS CHIPOLA SLABSHELL'S CURRENT RESILIENCY

Condition category	Population factors (since 2005)		Habitat factors	
	Occupancy (*proportion of occupied HUC–10s*)	Abundance & recruitment (*# individuals and evidence of reproduction*)	Sedimentation index (*(a) Density of road crossings and transmission lines, percent non-natural cover, and (b) soil loss potential*)	Canopy (*% 200-ft buffer with ≥50% canopy cover within assessed stream length*)
Excellent	Consistent occupation in addition to newly occupied.	>100 (live) during a given sampling event; suggests a healthy population (*e.g.,* likely ongoing recruitment).	0–0.08: (a) minimal; (b) low	>90.
Good	Consistent occupancy	10–100 (live or dead); more than one age class represented.	0.09–0.23: (a & b) low	76 to 90.
Fair	<50% Decreased occupancy	<10 individuals (live or dead); potentially represented only by older individuals with limited recruitment.	0.24–0.36: (a & b) moderate	50 to 75.
Poor	≥50% Decreased occupancy	Only dead observed; population reduction likely not offset by recruitment.	0.37–0.76: (a) maximal; (b) moderate to high.	<50.
Ø	No occupancy in HUC–10	No records	N/A	N/A.

Within the single population for Chipola slabshell, there are currently two MUs that demonstrate moderate to high resiliency and one that has low resiliency (table 3, below). MU 1 has only one watershed, whereas MU 2 and MU 3 are each comprised of several watersheds. Although the range is narrow (*i.e.,* solely within the Chipola River), current occupancy of the entire range is evident. Sedimentation, a risk to all mussels, is not a threat in the Chipola River Basin, as indicated by good to excellent indices in all but two areas of MU 3. Although the resiliency of MU 3 is overall low, we note that occupancy is excellent throughout this MU. The SSA report noted that the species is thought to occur in relatively low densities naturally, and the northern part of the range in MU 3 is considered marginal habitat for the slabshell (Service 2020, p. 92). Thus, Chipola slabshell exhibits sufficient resiliency throughout its current range, contributing to overall species viability.

TABLE 3—SUMMARY OF CURRENT RESILIENCY FOR CHIPOLA SLABSHELL MANAGEMENT UNITS (MUS)

MU	HUC–10s	Population factors		Habitat factors		Watershed score	Overall MU resiliency
		Occupancy	Abundance & reproduction	Sedimentation index	Canopy		
1	River Styx & Douglas Slough.	Excellent	Good	Excellent	Excellent	High	High.
2	Merritts Mill Pond—South.	Good	Good	Good	Excellent	Moderate	Moderate.
	Mill Creek	Good	Excellent	Good	Good	Moderate.	
	Tenmile Creek	Good	Excellent	Excellent	Good	High.	
	Dead Lake	Good	Good	Excellent	Good	Moderate.	
3	Marshall Creek	Excellent	Fair	Fair	Good	Low	Low.
	Cowarts Creek	Excellent	Good	Fair	Good	Moderate.	
	Merritts Mill Pond—North.	Excellent	Fair	Good	Excellent	Moderate.	

High redundancy for Chipola slabshell is defined as multiple resilient MUs distributed throughout the species' range. Two-thirds of the species' range has moderate to high levels of resiliency. We considered all three MUs as contributing to redundancy, thus enabling the species to withstand catastrophic events. Most of the population is not currently at risk from habitat modification, indicated by high-ranking habitat factors and watershed scores (table 3, above), and there is a high degree of land protection where the Chipola slabshell habitat is buffered by forested public lands, protecting water quality and ensuring the viability of the population and ultimately the species as a whole.

Representation, which refers to the breadth of genetic and environmental diversity within and among populations, reflects the species' adaptive capacity. Currently, there is limited information pertaining to genetic variation and no evidence to support delineating multiple representation units for Chipola slabshell (Service 2020, p. 74). However, the breadth of environmental diversity within the range (*e.g.,* the north-south gradient with headwater streams to mainstems of the Chipola River and the Apalachicola River) is currently occupied. Our knowledge of the level of genetic diversity for Chipola slabshell is limited; however, it is possible subpopulations exhibit some natural variation in genetic diversity. Chipola slabshell representation has not likely changed over time, but as a narrow endemic, the species' adaptive potential is limited.

Fat Threeridge

Current condition for fat threeridge describes the condition of the six analysis units. Characteristics of resiliency for fat threeridge include evidence of stable or increasing population trends, and evidence of reproduction (either direct observation of juveniles, or of multiple age classes as inferred by length data). An adequate number of resilient populations should be distributed throughout the species range to both protect adaptive capacity of the species, and protect from catastrophic events. We analyzed the resilience of units within the range of fat threeridge slightly differently than we did for Chipola slabshell due to differences in habitat use and perceived stressors. We assessed demographic resiliency factors including abundance, recruitment, and occupancy which inform population trends within the population, and we evaluated habitat resiliency factors related to water quality and water quantity to establish a baseline from which to project future condition (table 4, below).

TABLE 4—SUMMARY OF CONDITION CATEGORIES AND RESILIENCY FACTORS TO ASSESS CURRENT RESILIENCY FOR FAT THREERIDGE

Condition category	Population factors			Habitat factors	
	Abundance	Recruitment	Habitat occupancy	Water quality	Water quantity
High	Recent density and population estimate at high end of known range (>1 per square meter (m²); >1 million). Increasing or stable population trend.	Presence of multiple age classes (individuals > and <50 mm); small individuals (≤35 mm) detected using hydraulic dredge methods.	71–100% or maximal occupancy.	No known or anticipated contaminant or sediment problems given the land cover.	Lower relative risk of direct and indirect impacts to the survival, health, or recruitment of species from low flow events.
Moderate	Recent density and population estimate at lower end of known range (≤1/m² to 0.11/m²; >100k to 1 million). Increasing or stable population trend.	Presence of multiple age classes (individuals > and <50 mm); but no small individuals (≤35 mm) detected using hydraulic dredge methods.	31–70% or intermediate occupancy.	Associated contaminant or sediment issues are likely in some areas.	N/A.
Low	No population estimate, generally known to be present at low density (5–10 individuals minimum and/or ≤0.1/m²). Possible stable trend since 2000, but undetectable in the past.	Only one size class ≥50 mm; no small individuals (≤35 mm) detected using hydraulic dredge methods.	<30% or minimal occupancy.	Associated contaminant or sediment issues increases the risk of negative impacts throughout habitat.	Higher relative risk of direct and indirect impacts to the survival, health, or recruitment of species from low flow events.
Very Low	Not assessed (N/A)	N/A	N/A	Associated contaminant or sediment levels pose the highest relative risk to habitat; Significant, widespread, or prolonged impacts likely occurring.	N/A.
Ø	None	None	None	N/A	Intermittent flow; no survival.

For each population and habitat factor, we considered whether the analysis units were currently in high, moderate, low, or very low condition (table 5, below). None of the analysis units are extirpated or in very low condition. The average of factor rankings was used to generate an overall resiliency score. For more details on the scoring methodology, see chapter 4 of the SSA report (Service 2021, pp. 56–70).

TABLE 5—FAT THREERIDGE RESILIENCY FACTORS AND OVERALL RESILIENCY

Analysis unit	Population factors			Habitat factors		Overall resiliency
	Abundance	Evidence of recruitment	Occupation	Water quality	Water quantity	
Lower Flint	Low	High	High	Low	High	Moderate.
Upper Apalachicola	Moderate	High	Low	Moderate	High	Moderate.
Middle Apalachicola	High	High	High	High	High	High.
Lower Apalachicola	Moderate	High	Moderate	High	High	High.
Lower Chipola	High	High	High	Moderate	High	High.
Chipola NDL *	Low	High	High	Moderate	High	Moderate.

* North of Dead Lakes.

Overall, fat threeridge is more abundant (currently estimated at approximately 12 million individuals) and more widely distributed than when the species was listed (Service 2021, p. 47). When the species was listed in 1998, the most individuals seen at a site was 6 (63 FR 12666); current estimates across 164 sites in the middle Appalachicola alone are over 7.7 million individuals (Service 2021, p. 47). The positive trends for both population and habitat factors, including relatively large population sizes, are indicative of populations that are resilient to stochastic factors. Redundancy for the fat threeridge is moderate to high, as currently all analysis units in the species range exhibit moderate to high resiliency. Each unit contributes to overall species redundancy, or the ability of the species to withstand catastrophic events. Further, the species currently has not had a contraction or disruption of connectivity (such as from an impoundment) within its range and this connectivity corresponds to a lowered risk of extirpation from catastrophic events (Service 2021, p. 72).

The available genetic data for fat threeridge suggests little variation across the species range. This is supported by the absence of notable behavioral, morphological, or life history variation. This suggests genetic variation within the species is low. However, the species maintains ecological diversity in its occupancy of different river ''types'' (*e.g.,* small and large river systems) and ecoregions (*e.g.,* Southeastern Plains and Southern Coastal Plain). Overall, representation or adaptive capacity of fat threeridge is limited, as supported by little genetic variation within a narrow geographic range.

Future Conditions

The main factor influencing the viability of both Chipola slabshell and fat threeridge is habitat degradation or loss through land use change (*e.g.,* urbanization, agriculture). Land use change can lead to direct impacts on viability through increases in sedimentation and contaminants within waters occupied by each mussel species. Predicting future stream-channel conditions, particularly sedimentation, in the ACF River Basin remains a challenge, as the ongoing remobilization of sediments is difficult to separate from the cumulative effects of climate and land-use change (Elliott et al. 2014, p. 66). An increase in the contaminant load from incompatible land uses is expected to continue in varying degrees, depending on a combination of factors including the impacts of climate change across the landscape, with habitat degradation or loss likely to be more significant in some MUs/analysis units compared to others. We attempted to discern this variance by analyzing spatially explicit models of future land use and climate change as indicators of associated water quality and water quantity conditions.

We identified the main drivers of change for the future scenario analyses to be human population growth and subsequent urbanization and land use change. Land use change may have synergistic effects with climate change, so several common climate projections are considered in the assessment of future condition. Species and ecosystems are impacted by the habitat degradation and loss associated with population growth, including impacts to water pollution, local climate conditions, and disturbance dynamics.

Chipola Slabshell

Future conditions of the Chipola slabshell were assessed under three plausible future scenarios (lower, moderate, and higher) incorporating a range of conditions associated with climate and land use change (Service 2020, pp. 96–125). The future scenarios were based, in part, on the results of climate-informed land use change (USGS's FOREcasting SCEnarios of Land-use Change (FORE–SCE)), with special report emissions scenario (SRES) B1 for the lower range, SRES A1B for moderate, and SRES A2 for the higher range, combined with Intergovernmental Panel on Climate Change (IPCC) climate models, with representative concentration pathway (RCP) 4.5 for the lower range, RCP 6.0 for moderate, and RCP 8.5 for higher range, that projected general changes in habitat used by the Chipola slabshell. The factors that influence resiliency in the species (*e.g.,* occupancy, abundance, sediment, canopy) either change minimally from the current condition (lower range scenario) or worsen to a moderate (moderate range scenario) or greater degree (higher range scenario) based on potential future climate and land use and their impacts on water quality and quantity. The expected future resiliency of each MU was forecasted based on events that were projected to occur under each scenario (Service 2020, pp. 208–133). All scenarios assumed that current conservation efforts, which are in place regardless of listing status, would remain in place but that no new actions would be taken. As with current condition estimates, estimates were scaled up to MU and the population levels (table 6, below).

The three scenarios project Chipola slabshell viability 20 and 40 years into the future, with each timestep representing approximately two generations. This projection was chosen to represent a time frame where climate change impacts may become apparent, while effects of management actions can be implemented and realized on the landscape. The 40-year timeframe, which includes approximately 4 to 5 generations, is also reasonable for this relatively long-lived (15 to 20 years) species, with relatively low fecundity, to respond to potential changes on the landscape.

TABLE 6—RESILIENCY SUMMARY FOR CHIPOLA SLABSHELL MUS INCLUDING CURRENT CONDITION, AND EACH OF THREE FUTURE SCENARIOS (LOWER, MODERATE, HIGHER RANGE) AT THE END OF THE 40-YEAR ASSESSMENT PERIOD

MU	Watershed (HUC–10)	Current		Lower range scenario		Moderate range scenario		Higher range scenario	
		Watershed score	Overall MU resiliency	Watershed score	Overall MU resiliency	Watershed score	Overall MU resiliency	Watershed score	Overall MU resiliency
1	River Styx & Douglas Slough.	High	High	High	High	High	High	Moderate	Moderate.
2	Merritts Mill Pond—South.	Moderate	Moderate	Moderate	Moderate	Low	Moderate	Very Low	Low.
	Mill Creek	Moderate		High		Moderate		Moderate	
	Tenmile Creek	High		High		High		High	
	Dead Lake	Moderate		Moderate		Moderate		Moderate	
3	Marshall Creek	Low	Low	Low	Low	Very Low	Very Low	Very Low	Very Low.
	Cowarts Creek	Moderate		Moderate		Very Low		Very Low	
	Merritts Mill Pond—North.	Moderate		Moderate		Low		Low	

In the lower range scenario, we project no loss in MU resiliency and redundancy compared to the current condition. Management units 1 and 2 would retain resiliency (in high or moderate resiliency), and MU 3 would remain at low resiliency. For this scenario, the Chipola slabshell population is expected to persist in much the same condition as it is found currently, with some increases in watershed resilience through time given positive trends (*e.g.,* future forest cover, recent population expansions).

In the moderate range scenario, a loss of some resiliency and redundancy is expected. Management units 1 and 2 retain resiliency, but MU 3 may become extirpated given its overall very low resiliency. The one watershed in MU 1 is expected to retain high resiliency. The condition of MU 2 is expected to decrease slightly, with reduced resiliency in one (of four) watersheds by 2060. Management unit 2 is expected to retain more than one watershed with moderate or high resiliency, while MU 3 is expected to retain only one occupied watershed (Merritts Mill Pond—North), in low resiliency.

In the higher range scenario, we anticipate impacts to resiliency in all management units. Management unit 1 has moderate resiliency with a reduced capacity to mitigate stochastic events. Management units 2 and 3 exhibit reduced resiliency (low and very low, respectively), with MU 3 likely extirpated. Management unit 2 retains resiliency in the center of the Chipola slabshell range within the Mill Creek and Tenmile Creek watersheds, with sparse to no observable presence in the Merritts Mill Pond—South and Dead Lake watersheds. Similar to the moderate range scenario, redundancy would be reduced to three watersheds with likely extirpation in three of eight currently extant watersheds. Only MU 2 retains more than one watershed with resiliency, and MU 3 retains only one occupied watershed (Merritts Mill Pond—North) with low resiliency.

The northern portion of the species range comprising the Chipola River headwaters (MU 3) was the most susceptible to change through time; MU 3 has low resiliency for current condition and is projected to have very low resiliency under the higher range scenario. It is important to note that the habitat in MU 3 is thought to be inherently variable with regards to sedimentation and has overall low suitability for Chipola slabshell. With the exception of small portions of MUs 1 and 3, almost the entirety of the Chipola slabshell population is contained within the Chipola River mainstem in MU 2. Management unit 2 is projected to retain moderate resiliency to 2060 under the lower and moderate range scenarios, but resiliency is reduced by 2060 under the higher range scenario. Management unit 2 retains one watershed (Tenmile Creek) at high resiliency through all scenarios and projection periods. Management unit 1 is also projected to retain high to moderate resiliency under all scenarios, benefitting from the presence of extensive protected areas and more suitable large stream habitats for Chipola slabshell.

Fat Threeridge

Based on our review of factors affecting viability of fat threeridge, we focused our evaluation of future conditions on projected habitat degradation associated with two prevalent land uses in the ACF River Basin, agricultural and urban development, and their associated stressors to water quality and quantity. We also assessed potential impacts of SLR in lower portions of the Apalachicola and Chipola Rivers through removal of suitable habitat from projected saltwater inundation. We assessed resiliency, redundancy, and representation for fat threeridge under three SLR threat levels (intermediate, high, and extreme) and two multi-faceted scenarios incorporating variations in future land and water use. We summarized changes in land use within each of the fat threeridge analysis subwatersheds to assess future changes in nonpoint source pollution. We assessed both the change in the percent forested area in riparian buffers, and also the degree of urbanization and agricultural land use within subwatersheds, similar to what we assessed in current condition. To assess future water quantity, we used the same modeling outputs as in current condition, which provided annual predictions for the time frame 2045–2075. We extracted results for two climate scenarios, RCP 4.5 and RCP 8.5, to bound plausible future outcomes and compared these against a historical simulated state (1950–2005). Annual inputs of both historical and potential future land-cover type and percent impervious area were used to incorporate the effects of changing vegetation and impervious area.

Scenario 1 assumes that conditions in the ACF River Basin continue for the next 50 years along their current trajectory, with climate change trajectories for SRES A2 and RCP 8.5 incorporated. Scenario 2 assumes that conditions in the ACF River Basin continue for the next 50 years along a modified trajectory, with climate change trajectories for SRES B1 and RCP 4.5 incorporated. We analyzed these future threats and their effects on habitat as indicators of directional change in resiliency compared to the current condition (table 7, below). We modeled threats 50 years into the future to project the conditions of analysis units in 2070. This timeframe is biologically appropriate (representing two or three generations) and within the available and reliable modeling timeframe for projecting future threats. The 50-year timeframe, which includes approximately 4 to 5 generations, is also reasonable for this relatively long-lived (15 to 40 years) species, with relatively low fecundity, to respond to potential changes on the landscape. Timeframes earlier than 2070 may be too short to observe a species response (based on a lifespan of at least 30 years) or change in threats, and beyond 2070 were considered too far into the future to reliably account for either. The land and water use threat assessment was completed within the six analysis units.

TABLE 7—SUMMARY OF FAT THREERIDGE CURRENT AND FUTURE RESILIENCY BY ANALYSIS UNIT *

Analysis unit	Current resiliency	Future intermediate sea level rise (SLR)		Future high SLR [2]		Future extreme SLR [2]	
		Scenario 1 [1]	Scenario 2	Scenario 1	Scenario 2	Scenario 1	Scenario 2
Lower Flint	Mod	Mod	Mod	Mod	Mod	Mod	Mod.
Upper Apalachicola	Mod	Mod	Mod	Mod	Mod	Mod	Mod.
Middle Apalachicola	High	Mod	High	Mod	High	Mod	High.
Lower Apalachicola	High	High	High	Low	Low	Low	Low.
Lower Chipola	High	High	High	High	High	Low	Low.
Chipola NDL	Mod	Mod	Mod	Mod	Mod	Mod	Mod.

* Changes in water quality and quantity inform degree of habitat degradation for scenarios 1 and 2, while NOAA SLR projections (intermediate and high) influence habitat removal by 2070.

[1] Scenario 1 includes changes in water quality for the Middle Apalachicola that result in partial habitat degradation.

[2] High and Extreme SLR involves partial removal of Lower Apalachicola.

Future habitat degradation associated with land use change is not expected to impact fat threeridge significantly. No analysis units are projected to become extirpated under any scenario, but one high resiliency unit (Lower Apalachicola) may transition to low resiliency in the future primarily due to SLR effects. Redundancy is maintained in the future, regardless of scenario, as most (four of six) analysis units retain moderate to high resiliency under the most severe projections. Even under high SLR, fat threeridge is projected to maintain representation in each river system (*i.e.,* Apalachicola, Chipola, and Flint) and in each ecoregion (*i.e.,* Southeastern Plains and Southern Coastal Plain).

By using the SSA framework to guide our analyses of scientific information documented in the SSA reports, we have analyzed both individual and cumulative effects on each species through characterizing species condition currently and under various plausible future scenarios. We assumed in our modeling of future conditions for both species that increased habitat degradation could result from increased land use or from climate change, or a combination. The impacts of climate change, along with habitat degradation or loss, are likely to be more significant in some MUs/analysis units than others, however, our projections indicate that both species maintain resiliency. Both species are projected to maintain a broad distribution throughout the ACF River Basin, across a variety of habitats and under both continuation and increased threat scenarios, meaning representation and redundancy are not expected to change.

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

Recovery Criteria

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

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

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

In 2003, we published a recovery plan for seven mussel species, including the Chipola slabshell and fat threeridge (Service 2003, entire). In 2019, we amended the Chipola slabshell and fat threeridge recovery plans to revise the recovery criteria and site-specific recovery actions (Service 2019a, entire; Service 2019b, entire). Both recovery plans for the Chipola slabshell and fat threeridge provide three criteria for delisting.

Chipola Slabshell

For Chipola slabshell, the criteria to delist are: (1) the one existing population must exhibit a stable or increasing trend, natural recruitment, and multiple age classes; (2) the population from criterion 1 occupies each of the three delineated units to protect against extinction from catastrophic events and maintain adaptive potential; and (3) threats are addressed and/or managed to the extent that the species will remain viable into the foreseeable future.

Criterion 1

Criterion 1 states that the one existing population must exhibit a stable or increasing trend, natural recruitment, and multiple age classes. Currently, the Chipola slabshell is known from one panmictic population within the Chipola River Basin. It is currently widespread throughout its range and common at some localities. The comparison between historical and current distribution shows an expansion north, south, and east of the species' previously known range. Occupancy has increased over time, although the magnitude of this estimate varies with spatial scale. Prior to 1991, the Chipola slabshell occupied 46 km (29 mi) in 6 U.S. Geological Survey (USGS) 10-digit hydrologic unit codes (HUC–10s) watersheds, and its current range has expanded to occupy 112 km (69 mi) in 7 HUC–10 watersheds. This increase in occupancy suggests a robust distribution throughout the known range (Service 2020, p. 62).

Our current condition resiliency analysis examined abundance and reproduction across the range. Currently two HUC–10 watersheds have excellent abundance and reproduction, four HUC–10 watersheds have good abundance and reproduction, and two HUC–10 watersheds have fair abundance and reproduction. While there are some portions of the range with lower abundances and levels of recruitment, overall the Chipola slabshell population has multiple age classes showing natural recruitment, and the species has an expanded range. Thus, we conclude that this criterion has been met for Chipola slabshell.

Criterion 2

Criterion 2 states the population (as identified in criterion 1) occupies each of the three delineated units to protect against extinction from catastrophic events and maintain adaptive potential. All three delineated units, or subpopulations, of Chipola slabshell are currently occupied, with two of the three having moderate to high resiliency. Thus, we conclude that this criterion has been met for Chipola slabshell.

Criterion 3

Criterion 3 for consideration of delisting Chipola slabshell states that threats have been addressed or managed to the extent that the species will remain viable into the foreseeable future. At the time of listing, Chipola slabshell faced a variety of threats from declines in water quality, loss of stream flow, riparian and instream fragmentation, and deterioration of instream habitats. Additionally, these threats were expected to be exacerbated by climate change and urbanization.

Future water quantity models (updated every 5 years) in the Chipola River Basin have projected adequate water supply for citizens and the environment through 2045, even in drought years (NFWMD 2023, p. ix). Water flows for most of the Chipola slabshell's occupied range are protected through consumptive uses by water reservation (legal protection), while other areas are supported by ground water contributions from springs during drought (Service 2020, pp. 96–139). Urbanization models have projected little growth in the river basin through 2060 (Service 2020, pp. 27–60 and pp. 95–138).

During the most recent status review, there was no documentation of any significant threats to the species or its habitat, as well as no evidence that the species has experienced curtailment of range or habitat, or is affected by disease or predation, commercial or recreational harvest, the inadequacy of existing regulatory mechanisms, or any other natural or manmade factor (Service 2020, p. 140). Thus, we conclude that this criterion has been met for Chipola slabshell.

Fat Threeridge

For fat threeridge, the criteria to delist are: (1) at least four populations exhibit a stable or increasing trend, evidenced by natural recruitment and multiple age classes; (2) at last one population from criterion 1 occupies each of the Flint and Chipola Rivers sub-basins, and one population occupies two of the three delineated units in the Apalachicola River sub-basin for fat threeridge; (3) threats have been addressed or managed to the extent that each species will remain viable into the foreseeable future (Service 2019a, pg. 4, and Service 2019b, pg. 6).

Criterion 1

Criterion 1 states that at least four populations exhibit a stable or increasing trend, evidenced by natural recruitment and multiple age classes. Since the last 5-year review in 2007, our knowledge of fat threeridge has increased substantially in all three river systems, including what we know about distribution, habitat use, and life history characteristics relevant to species recovery. As a result, we now consider the fat threeridge to consist of one population, with six analysis units. Further, we know that the species occupies most watersheds where it was found historically, and our resiliency analysis indicates that the species maintains moderate to high resiliency in the six analysis units. One of the population factors for resiliency is evidence of recruitment, and all six units exhibit recruitment through observation of small size classes. Its range has expanded in the Chipola and Apalachicola Rivers in Florida. Furthermore, fat threeridge is more abundant and widely distributed among mesohabitats than previously thought, including within deep habitats (Service 2021, pp. 54–55). Thus, fat threeridge has stable trends in all six units, and high levels of recruitment, with an overall indication that multiple age classes exist in each unit throughout the population. For these reasons, we conclude that fat threeridge has met this criterion.

Criterion 2

Criterion 2 for consideration of delisting fat threeridge states that at least one population occupies each of the Flint and Chipola Rivers sub-basins and in the Apalachicola River sub-basin at least one population occupies two of the three delineated units (Service 2019b, p. 6). As described in the SSA report, there are six subpopulations (also referred to as analysis units): one in the Flint, three in the Apalachicola, and two in the Chipola Rivers sub-basins (Service 2021, p. 52). Resiliency is moderate in the Lower Flint, Upper Apalachicola, and Chipola North of Dead Lakes analysis units; it is high in the Middle Apalachicola, Lower Apalachicola, and Lower Chipola analysis units (Service 2021, p. 69). Based on this, we conclude that criterion 2 has been met for fat threeridge.

Criterion 3

Criterion 3 for consideration of delisting fat threeridge states that threats have been addressed or managed to the extent that the species will remain viable into the foreseeable future. The primary threats to fat threeridge include land use change resulting in reduced water quality and quantity, and effects associated with climate change, including sea level rise (SLR). Our future conditions analysis indicates that at the watershed scale, the amount of land development through 2070 is projected to be low across all scenarios (Service 2021, pp. 115–116). No analysis units are expected to become extirpated, but two high resiliency units (Lower Apalachicola, Lower Chipola) may transition to low resiliency in the future as a result of SLR effects as projected in the high SLR scenarios (Service 2021, p.127).

Redundancy is maintained under future scenarios, as most (four of six) analysis units retain resiliency under the most severe projections, and no change from the current condition is expected under intermediate SLR. Even under extreme SLR, ecoregion and river representation for fat threeridge is maintained.

Increased sampling efforts and a better understanding of the species' habitat associations indicate a wider distribution of the fat threeridge than previously understood. In general, fat threeridge is more abundant and widely distributed among habitats than previously thought. Habitat mapping and species distribution modeling in the Apalachicola and Lower Chipola Rivers indicates sufficient abundance of habitat for the fat threeridge in these populations; similar habitat mapping has not been done at that scale for the Flint River, but habitat for the population at Newton, Georgia has supported the fat threeridge since 2006 (Service 2021, pp. 41–50). For these reasons, we conclude that this criterion has been met for fat threeridge.

Determinations of Chipola Slabshell and Fat Threeridge Status

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

Status Throughout All of Their Range

After evaluating the threats to these species and assessing the cumulative effects of the threats under the Act's section 4(a)(1) factors, we find that both the Chipola slabshell and fat threeridge have expanded distributions with nearly all populations having moderate to high resiliency and projections to maintain resiliency into the future. The primary threat at the time of listing was habitat loss and destruction. Based on our analyses of the current and future condition for the Chipola slabshell and fat threeridge, each species currently has sufficient resiliency and is projected to maintain resiliency into the future such that each species can withstand stochastic and catastrophic effects from existing and future threats. Together the current and future conditions analyses informed our determination as to whether each species is in danger of extinction throughout all of its range (*i.e.,* whether each species meets the definition of an endangered species under the Act) or whether each species is in danger of extinction throughout all of its range in the foreseeable future (*i.e.,* whether each species meets the definition of a threatened species under the Act). Our determinations for each species are discussed below.

Chipola Slabshell—Status Throughout All of Its Range

The Chipola slabshell is currently widespread throughout its range and considered common at some localities. Since the time of listing, surveys indicate expansion of its previously known range. Two-thirds of the range have moderate to high resiliency, and the one MU, or sub-population, that has low resiliency (MU 3) has a high proportion of marginal habitat for the species, and naturally low numbers of Chipola slabshell. Despite this, occupancy is good to excellent throughout the range. To summarize the species' current condition, the Chipola slabshell has sufficient resiliency to withstand stochastic events, as well as sufficient redundancy in the distribution of subpopulations with moderate to high resiliency such that the species can withstand catastrophic events.

Potential threats to the species, including habitat degradation which led to the species being listed, appear to be well managed or minimized to the greatest extent possible either through protection, implementation of BMPs, and regulations in CWA or State OFW designations. Sedimentation, which is usually a major threat for mussel species, is not a current threat to Chipola slabshell in the Chipola River Basin. Thus, after assessing the best available information, we determine that Chipola slabshell is not in danger of extinction throughout all of its range.

We next evaluate whether the Chipola slabshell is likely to be in danger of extinction throughout its range within the foreseeable future. We considered climate change and land use change as primary stressors influencing habitat degradation and loss, and we developed three scenarios that project Chipola slabshell viability 40 years into the future. This 40-year foreseeable future includes a time frame where both climate change and land use change effects will become apparent on the landscape. The timeframe also includes up to five generations which we consider reasonable for this relatively long-lived (15 to 20 years), low fecundity species to respond to potential changes on the landscape. We are able to reliably predict both the threats to the species and the species' response to those threats within this timeframe.

Almost the entirety of the Chipola slabshell population is contained within the Chipola River mainstem. The core of the population (MU 2) is projected to retain moderate resiliency to 2060 under the Lower and Moderate Range Scenarios, but resiliency could be reduced by 2060 under the higher range scenario. Despite this, two thirds of the watersheds that make up MU 2 retain moderate to high resiliency through all scenarios and projection periods. In addition, MU 1 is also projected to retain moderate to high resiliency under all scenarios, benefitting from the presence of extensive protected areas and available suitable large stream habitats for Chipola slabshell. Thus, species' viability is sustained within two of the three MUs into the future. The species' ability to retain resiliency 40 years into the future supports the determination that the Chipola slabshell is not in danger of extinction throughout all of its range in the foreseeable future.

Thus, after assessing the best available information, we conclude that Chipola slabshell is not in danger of extinction now or likely to become so in the foreseeable future throughout all of its range.

Chipola Slabshell—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 Chipola slabshell is not in danger of extinction or likely to become so in the foreseeable future throughout all of its range, we now consider whether it may be in danger of extinction (*i.e.,* endangered) or likely to become so in the foreseeable future (*i.e.,* threatened) in a significant portion of its range—that is, whether there is any portion of the species' range for which both (1) the portion is significant; and, (2) the species is in danger of extinction or likely to become so 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 Chipola slabshell, we choose to address the status question first. We began by identifying portions of the range where the biological status of the species may be different from its biological status elsewhere in its range. For this purpose, we considered information pertaining to the geographic distribution of (a) individuals of the species, (b) the threats that the species faces, and (c) the resiliency condition of populations.

We evaluated the range of the Chipola slabshell to determine if the species is in danger of extinction now or likely to become so in the foreseeable future in any portion of its range. The range of a species can theoretically be divided into portions in an infinite number of ways. We focused our analysis on portions of the species' range that may meet the definition of an endangered species or a threatened species. For the Chipola slabshell, we considered whether the threats or their effects on the species are greater in any biologically meaningful portion of the species' range than in other portions such that the species is in danger of extinction now or likely to become so in the foreseeable future in that portion.

The Chipola slabshell is found solely in the ACF River Basin, which extends approximately 620 km (385 mi). This species is a narrow endemic functioning as single, contiguous population and the MUs used do not represent biological populations, rather they were delineated as analysis units. However, these MUs could be considered portions, and one MU (MU 3) may represent a portion of the range that could have a different status. Management unit 3, comprised of marginal habitat and located in the Chipola River headwaters, currently has low resiliency and could possibly become extirpated (projected to have very low resiliency) in the foreseeable future. Thus, this could be a portion of the range that may be in danger of extinction now or within the foreseeable future. Having answered the status question affirmatively for MU 3, we then considered whether this unit is significant.

To assess whether MU 3 is significant, we considered whether the area occupies a relatively large or particularly high-quality or unique habitat. Management unit 3 is not large, as it comprises less than one third of the known range of the species. We also examined whether the unit or characteristics within the unit make the species less susceptible to certain threats than other portions of the species' range, such that it could provide important population refugia in the event of extirpations elsewhere in the species' range. Although MU 3 contributes to the overall species-level representation and redundancy, it does not contain high quality nor high value habitat or any habitat or resources unique to that area. For these reasons, we do not find this portion to be significant. Therefore, this unit does not represent a significant portion of the range, and we find that the species is not in danger of extinction now or likely to become so in the foreseeable future in any significant portion of its range. This does not conflict with the courts' holdings in *Desert Survivors* v. *Department of the Interior,* 321 F. Supp. 3d 1011, 1070–74 (N.D. Cal. 2018), and *Center for Biological Diversity* v. *Jewell,* 248 F. Supp. 3d 946, 959 (D. Ariz. 2017) because, in reaching this conclusion, we did not apply the aspects of the Final Policy on Interpretation of the Phrase ''Significant Portion of Its Range'' in the Endangered Species Act's Definitions of ''Endangered Species'' and ''Threatened Species'' (79 FR 37578; July 1, 2014), including the definition of ''significant'' that those court decisions held to be invalid.

Determination of Status—Chipola Slabshell

Our review of the best scientific and commercial data available indicates that the Chipola slabshell 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(e)(2) currently in effect, the species has recovered to the point at which it no longer meets the definition of an endangered species or a threatened species. Therefore, we propose to remove the Chipola slabshell from the Federal List of Endangered and Threatened Wildlife.

Fat Threeridge—Status Throughout All of Its Range

Fat threeridge is more abundant and widely distributed than previously thought. Current positive trends for both population and habitat factors, including relatively large population sizes with evidence of recruitment, are indicative of populations that are resilient to stochastic factors. All six analysis units across the species range exhibit moderate to high resiliency. The distribution of each resilient unit contributes to the species' ability to withstand catastrophic events. Further, the species has not experienced a change in connectivity—such as an impoundment—within its range, which is what generally corresponds to a lowered risk of extirpation from catastrophic events. For these reasons, we determined that the fat threeridge is not currently in danger of extinction throughout its range.

We then considered whether the species may be likely to become in danger of extinction within the foreseeable future throughout its range. We considered threats 50 years into the future to project the conditions of the six analysis units to 2070. For fat threeridge, this timeframe is biologically appropriate (representing two or three generations) and within the available and reliable modeling timeframe for projecting future water quality and quantity, threats of urbanization and SLR. Timeframes earlier than 2070 were considered too short to observe a species response (based on a lifespan of at least 30 years) or noticeable change in threats, and beyond 2070 were considered too far into the future to reliably account for species response.

Future water quality and quantity degradation associated with land use change is not expected to impact fat threeridge. Over the 50-year timeframe, no analysis units are projected to become extirpated. Two currently high resiliency units (Lower Apalachicola, Lower Chipola) may transition to low resiliency in the future under the most extreme SLR effects. Species' redundancy is maintained in the future, regardless of scenario, as most (four of six) analysis units retain moderate to high resiliency under the most severe projections. Even under extreme SLR, fat threeridge is projected to maintain moderate to high resiliency in all but one analysis unit, thus representation is projected to be maintained in each river system (*i.e.,* Apalachicola, Chipola, and Flint Rivers) and in each ecoregion (*i.e.,* Southeastern Plains and Southern Coastal Plain). For these reasons, we conclude that the fat threeridge is not in danger of extinction now or likely to become so in the foreseeable future throughout all of its range.

Fat Threeridge—Status Throughout a Significant Portion of Range

In undertaking this analysis for fat threeridge, we choose to address the status question first. We began by identifying portions of the range where the biological status of the species may be different from its biological status elsewhere in its range. For this purpose, we considered information pertaining to the geographic distribution of (a) individuals of the species, (b) the threats that the species faces, and (c) the resiliency condition of populations.

We evaluated the range of the fat threeridge to determine if the species is in danger of extinction now or likely to become so in the foreseeable future in any portion of its range. The range of a species can theoretically be divided into portions in an infinite number of ways. We focused our analysis on portions of the species' range that may meet the definition of an endangered species or a threatened species. For fat threeridge, we considered whether the threats or their effects on the species are greater in any biologically meaningful portion of the species' range than in other portions such that the species is in danger of extinction now or likely to become so in the foreseeable future in that portion.

The fat threeridge is found solely in the ACF River Basin, which extends approximately 620 km (385 mi). This species is a single, contiguous population and the units delineated for our analysis do not represent biological populations. We determined that two units together, representing the lower portion of the species' range (Lower Apalachicola and Lower Chipola) are a portion of the range that may have a different status due to effects related to SLR. Current resiliency for this portion is high, therefore the fat threeridge is not in danger of extinction now in this portion of the range, but future projections indicate that this portion could change from high resiliency to low resiliency under the high and extreme SLR scenarios within the foreseeable future. Thus, we considered this a portion of the range that could become in danger of extinction in the foreseeable future.

We next considered whether this portion constitutes a significant portion of the fat threeridge's range. To assess its significance, we evaluated whether the area is relatively large or particularly high-quality, unique habitat. We also examined whether the characteristics within the lower portion of the range make the species less susceptible to certain threats than other portions of the species' range, such that it could provide important population refugia in the event of extirpations elsewhere in the species' range. The Lower Apalachicola and Lower Chipola do not constitute a large geographic area (less than 20 percent of range) nor do they contain habitat of high quality relative to the rest of the range. This portion also does not constitute habitat or resources unique to that area for the species, as similar habitat is found throughout the range. For these reasons, we do not find this portion to be significant. Therefore, the lower portion of the fat threeridge range does not represent a significant portion of the range, and we find that the species is not in danger of extinction now or likely to become so in the foreseeable future in any significant portion of its range. This does not conflict with the courts' holdings in *Desert Survivors* v. *Department of the Interior,* 321 F. Supp. 3d 1011, 1070–74 (N.D. Cal. 2018), and *Center for Biological Diversity* v. *Jewell,* 248 F. Supp. 3d 946, 959 (D. Ariz. 2017) because, in reaching this conclusion, we did not apply the aspects of the Final Policy on Interpretation of the Phrase ''Significant Portion of Its Range'' in the Endangered Species Act's Definitions of ''Endangered Species'' and ''Threatened Species'' (79 FR 37578; July 1, 2014), including the definition of ''significant'' that those court decisions held to be invalid.

Determination of Status—Fat Threeridge

Our review of the best scientific and commercial data available indicates that the fat threeridge 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(e)(2) currently in effect, the species has recovered to the point at which it no longer meets the definition of an endangered species or a threatened species. Therefore, we propose to remove the fat threeridge from the Federal List of Endangered and Threatened Wildlife.

Effects of This Rule

This proposed rule, if made final, would revise 50 CFR 17.11(h) by removing both the Chipola slabshell mussel (*Elliptio chipolaensis*) and the fat threeridge mussel (*Amblema neislerii*) from the Federal List of Endangered and Threatened Wildlife. The prohibitions and conservation measures provided by the Act, particularly through sections 7 and 9, would no longer apply to these species. Federal agencies would no longer be required to consult with the Service under section 7 of the Act in the event that activities they authorize, fund, or carry out may affect these species.

Critical habitat for Chipola slabshell and fat threeridge at 50 CFR 17.95(f) would be removed if this proposal is made final.

Post-Delisting Monitoring

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

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

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

Required Determinations

Clarity of the Rule

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

(1) Be logically organized;
(2) Use the active voice to address readers directly;
(3) Use clear language rather than jargon;
(4) Be divided into short sections and sentences; and
(5) Use lists and tables wherever possible.

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

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 federally recognized 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 proposed rule.

References Cited

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

Authors

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

List of Subjects in 50 CFR Part 17

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

Proposed Regulation Promulgation

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

PART 17—ENDANGERED AND THREATENED WILDLIFE AND PLANTS

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

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

§ 17.11 [Amended]

■ 2. In § 17.11, amend paragraph (h) by removing the entries for ''Slabshell, Chipola'' and ''Threeridge, fat'' under CLAMS from the List of Endangered and Threatened Wildlife.

■ 3. In § 17.95, in paragraph (f), amend the entry for ''Seven mussel species (in four northeast Gulf of Mexico drainages): Purple bankclimber (*Elliptoideus sloatianus*), Gulf moccasinshell (*Medionidus penicillatus*), Ochlockonee moccasinshell (*Medionidus simpsonianus*), oval pigtoe (*Pleurobema pyriforme*), shinyrayed pocketbook (*Hamiota subangulata*), Chipola slabshell (*Elliptio chipolaensis*), and fat threeridge (*Amblema neislerii*)'' by revising the entry's heading, the introductory text of paragraph (2), paragraph (5), the table in paragraph (6), the introductory text of paragraph (8), paragraph (8)(ii), the introductory text of paragraph (13), paragraph (13)(ii), the introductory text of paragraph (14), and paragraph (14)(ii) to read as follows:

§ 17.95 Critical habitat—fish and wildlife.

* * * * *

(f) *Clams and Snails.*

* * * * *

Five mussel species (in four northeast Gulf of Mexico drainages): Purple bankclimber (*Elliptoideus sloatianus*), Gulf moccasinshell (*Medionidus penicillatus*), Ochlockonee moccasinshell (*Medionidus simpsonianus*), oval pigtoe (*Pleurobema pyriforme*), and shinyrayed pocketbook (*Hamiota subangulata*)

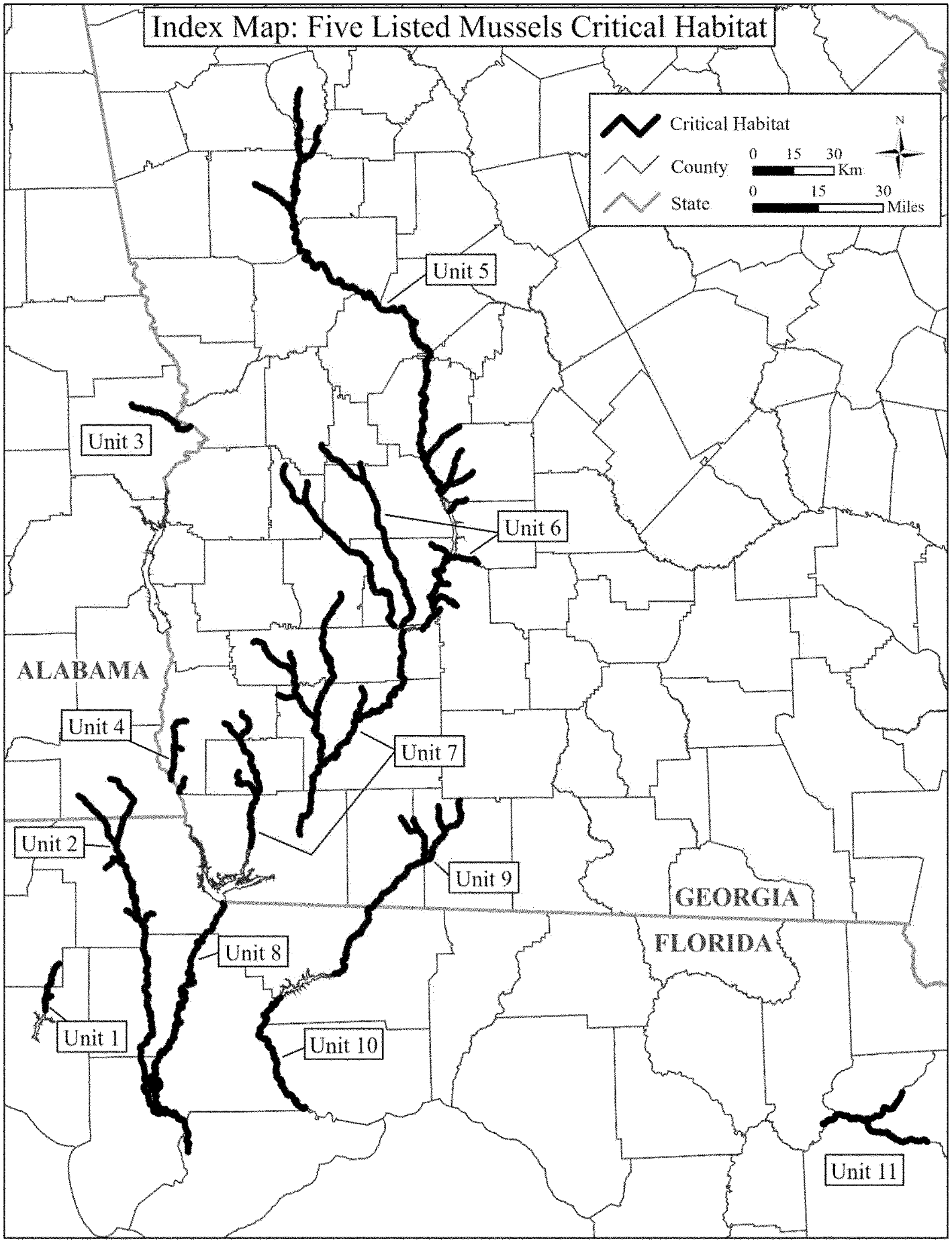
* * * * *

(2) The primary constituent elements of critical habitat for the purple bankclimber (*Elliptoideus sloatianus*), Gulf moccasinshell (*Medionidus penicillatus*), Ochlockonee moccasinshell (*Medionidus simpsonianus*), oval pigtoe (*Pleurobema pyriforme*), and shinyrayed pocketbook (*Hamiota subangulata*), are:

* * * * *

(5) Index map of critical habitat units in the States of Alabama, Florida, and Georgia for the five mussels follows:

Figure 1 to Five mussel species (in four northeast Gulf of Mexico drainages): Purple bankclimber (*Elliptoideus sloatianus*), Gulf moccasinshell (*Medionidus penicillatus*), Ochlockonee moccasinshell (*Medionidus simpsonianus*), oval pigtoe (*Pleurobema pyriforme*), and shinyrayed pocketbook (*Hamiota subangulata*) Paragraph (5)



(6) * * *

Table 1 to Five mussel species (in four northeast Gulf of Mexico drainages): Purple bankclimber (*Elliptoideus sloatianus*), Gulf moccasinshell (*Medionidus penicillatus*), Ochlockonee moccasinshell (*Medionidus simpsonianus*), oval pigtoe (*Pleurobema pyriforme*), and shinyrayed pocketbook (*Hamiota subangulata*) Paragraph (6)

Species	Critical habitat units	States
Purple bankclimber (*Elliptoideus sloatianus*)	Units 5, 6, 7, 8, 9, 10	AL, FL, GA.
Gulf moccasinshell (*Medionidus penicillatus*)	Units 1, 2, 4, 5, 6, 7	AL, FL, GA.
Ochlockonee moccasinshell (*Medionidus simpsonianus*)	Unit 9	FL, GA.
Oval pigtoe (*Pleurobema pyriforme*)	Units 1, 2, 4, 5, 6, 7, 9, 11	AL, FL, GA.
Shinyrayed pocketbook (*Hamiota subangulata*)	Units 2, 3, 4, 5, 6, 7, 9	AL, FL, GA.

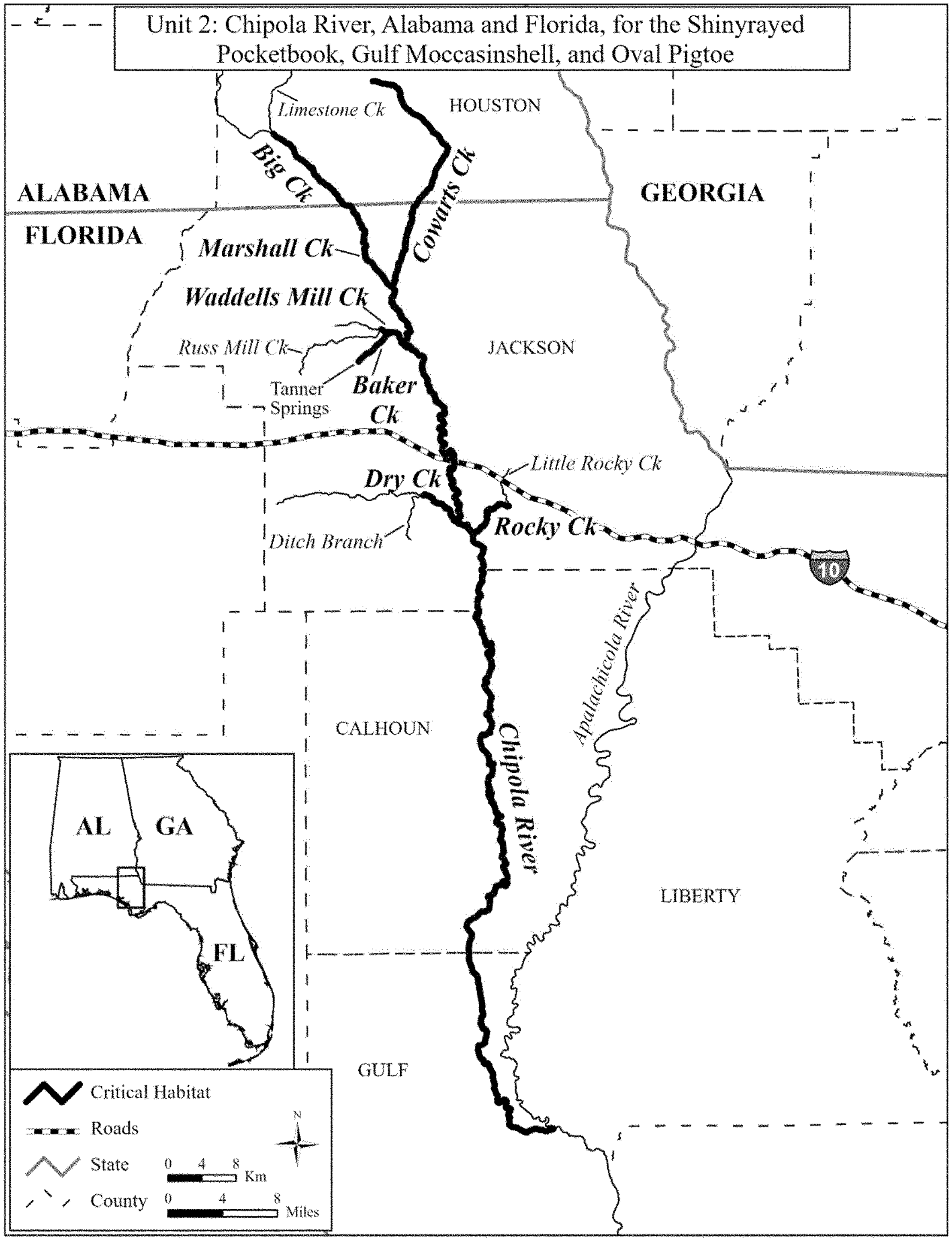
* * * * *

(8) Unit 2. Chipola River and Dry, Rocky, Waddells Mill, Baker, Marshall, Big, and Cowarts Creeks in Houston County, Alabama, and in Calhoun, Gulf, and Jackson Counties, Florida. This is a critical habitat unit for the shinyrayed pocketbook, Gulf moccasinshell, and oval pigtoe.

* * * * *

(ii) Unit 2 map follows:

Figure 3 to Five mussel species (in four northeast Gulf of Mexico drainages): Purple bankclimber (*Elliptoideus sloatianus*), Gulf moccasinshell (*Medionidus penicillatus*), Ochlockonee moccasinshell (*Medionidus simpsonianus*), oval pigtoe (*Pleurobema pyriforme*), and shinyrayed pocketbook (*Hamiota subangulata*) Paragraph (8)(ii)



* * * * *

(13) Unit 7. Lower Flint River and Spring, Aycocks, Dry, Ichawaynochaway, Mill, Pachitla, Little Pachitla, Chickasawhatchee, and Cooleewahee creeks in Baker, Calhoun, Decatur, Dougherty, Early, Miller, Mitchell, and Terrell Counties, Georgia. This is a critical habitat unit for the

shinyrayed pocketbook, Gulf moccasinshell, oval pigtoe, and purple bankclimber.

* * * * *

(ii) Two maps of Unit 7—western part of unit 7 and eastern part of unit 7—follow:

Figure 10 to Five mussel species (in four northeast Gulf of Mexico drainages): Purple bankclimber (*Elliptoideus sloatianus*), Gulf moccasinshell (*Medionidus penicillatus*), Ochlockonee moccasinshell (*Medionidus simpsonianus*), oval pigtoe (*Pleurobema pyriforme*), and shinyrayed pocketbook (*Hamiota subangulata*) Paragraph (13)(ii)

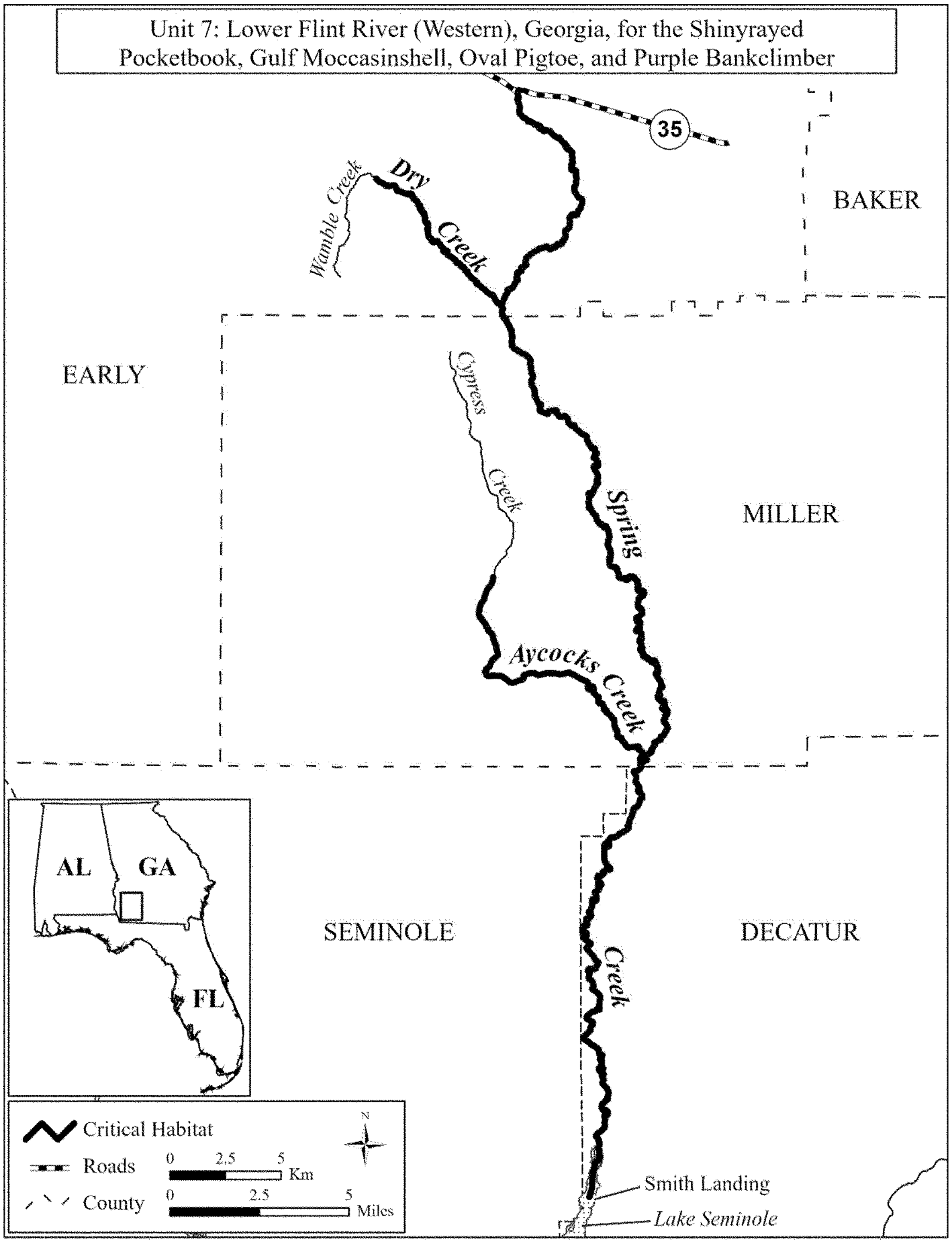


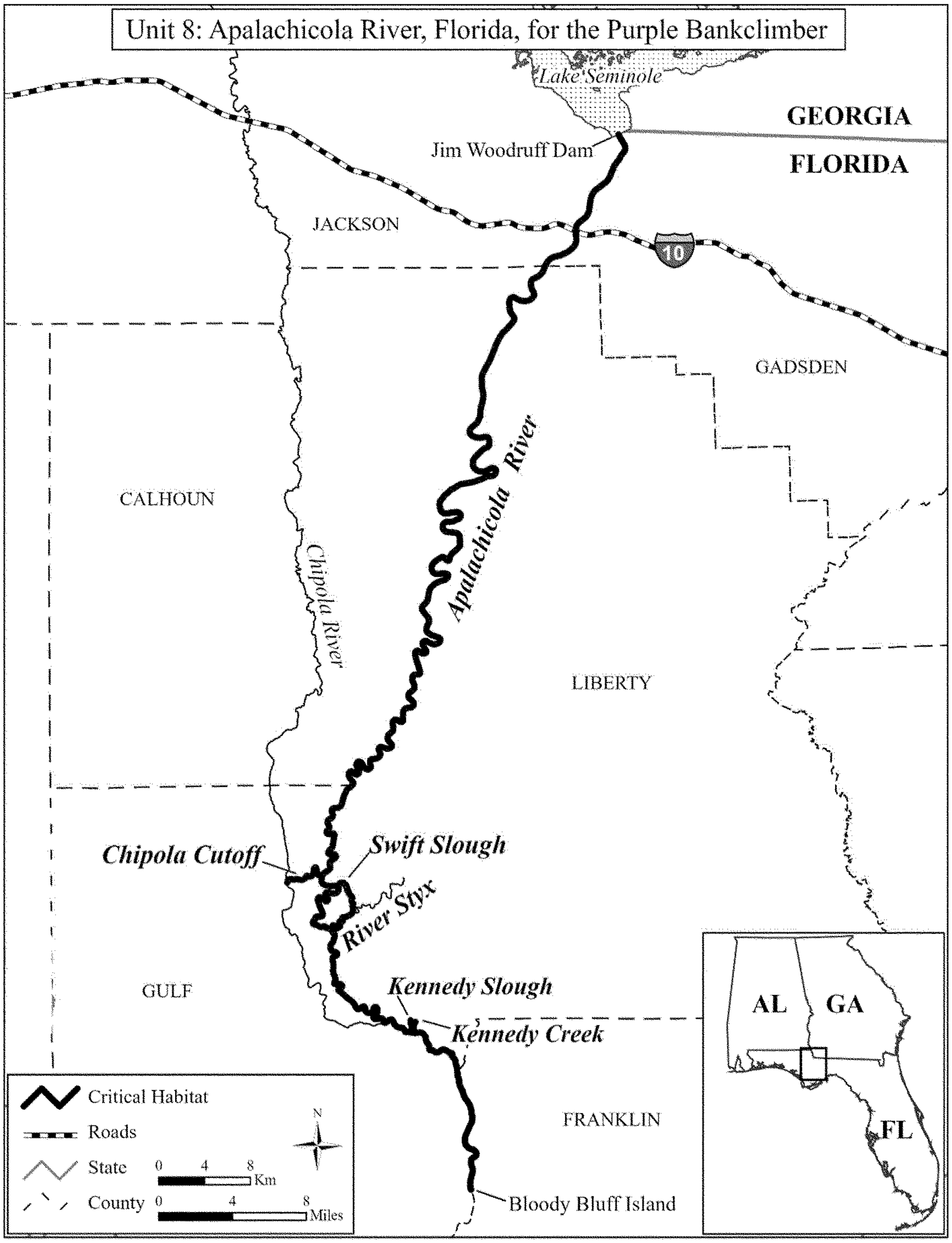
Figure 11 to Five mussel species (in four northeast Gulf of Mexico drainages): Purple bankclimber (*Elliptoideus sloatianus*), Gulf moccasinshell (*Medionidus penicillatus*), Ochlockonee moccasinshell (*Medionidus simpsonianus*), oval pigtoe (*Pleurobema pyriforme*), and shinyrayed pocketbook (*Hamiota subangulata*) Paragraph (13)(ii)

(14) Unit 8. Apalachicola River, Chipola Cutoff, Swift Slough, River Styx, Kennedy Slough, and Kennedy Creek in Calhoun, Franklin, Gadsden, Gulf, Jackson, and Liberty Counties, Florida. This is a critical habitat unit for the purple bankclimber.

* * * * *

(ii) Unit 8 map follows:

Figure 12 to Five mussel species (in four northeast Gulf of Mexico drainages): Purple bankclimber (*Elliptoideus sloatianus*), Gulf moccasinshell (*Medionidus penicillatus*), Ochlockonee moccasinshell (*Medionidus simpsonianus*), oval pigtoe (*Pleurobema pyriforme*), and shinyrayed pocketbook (*Hamiota subangulata*) Paragraph (14)(ii)



* * * * *

Martha Williams,

Director, U.S. Fish and Wildlife Service.

[FR Doc. 2024–23929 Filed 10–28–24; 8:45 am]

BILLING CODE 4333–15–P