

the TCPA and whether it may inadvertently encumber technologies that do not fall within the TCPA. Next, the Commission seeks comment on whether there are ways in which the telecommunications industry might assist to ensure that calls made by individuals with disabilities under the proposed exemption do not run afoul of the condition that such calls not be charged to the called party. The Commission seeks comment on alternative ways to accomplish this objective including voluntary efforts by industry or equipment manufacturers.

57. The Commission expects to more fully consider the economic impact and alternatives for small entities following review of comments and costs and benefits analysis filed in response to the NPRM. The Commission’s evaluation of this information will shape the final alternatives it considers, the final conclusions it reaches, and any final actions it ultimately takes in this proceeding to minimize any significant economic impact that may occur on small entities.

Federal Rules That May Duplicate, Overlap, or Conflict With the Proposed Rules

58. None.

Ordering Clauses

59. Accordingly, *it is ordered*, pursuant to sections 1–4, 225, 227, 255, and 403 of the Communications Act of 1934, as amended, 47 U.S.C. 151–154, 227, 255, and 403 that the *Notice of Proposed Rulemaking and Notice of Inquiry* is hereby *Adopted*.

60. *It is further ordered* that, pursuant to applicable procedures set forth in §§ 1.415 and 1.419 of the Commission’s Rules, 47 CFR 1.415, 1.419, interested parties may file comments on the *Notice of Proposed Rulemaking and Notice of Inquiry* on or before 30 days after publication in the **Federal Register**, and reply comments on or before 45 days after publication in the **Federal Register**.

61. *It is further ordered* that the Commission’s Office of Secretary, *shall send a copy of the Notice of Proposed Rulemaking*, including the Initial Regulatory Flexibility Analyses, to the Chief Counsel for Advocacy of the Small Business Administration.

List of Subjects in 47 CFR Part 64

Communications common carriers, Communications equipment, Individuals with disabilities, Reporting and recordkeeping requirements, Telecommunications, Telephone.

Federal Communications Commission.

Marlene Dortch,
Secretary.

Proposed Rules

For the reasons discussed above, the Federal Communications Commission proposes to amend 47 CFR part 64 as follows:

PART 64—MISCELLANEOUS RULES RELATING TO COMMON CARRIERS

■ 1. The authority citation for part 64 continues to read as follows:

Authority: 47 U.S.C. 151, 152, 154, 201, 202, 217, 218, 220, 222, 225, 226, 227, 227b, 228, 251(a), 251(e), 254(k), 255, 262, 276, 403(b)(2)(B), (c), 616, 620, 716, 1401–1473, unless otherwise noted; Pub. L. 115–141, Div. P, sec. 503, 132 Stat. 348, 1091.

Subpart L—Restrictions on Telemarketing, Telephone Solicitation, and Facsimile Advertising

- 2. Amend § 64.1200 by:
 - a. Removing the word “or” at the end of paragraph (a)(3)(iv);
 - b. Removing the period at the end of paragraph (a)(3)(v) and adding “; or” in its place;
 - c. Adding paragraphs (a)(3)(vi), (a)(9)(v), and (a)(13);
 - d. Revising paragraph (b)(1);
 - e. Removing the word “and” at the end of paragraph (f)(9)(i)(A);
 - f. Removing the period at the end of paragraph (f)(9)(i)(B) and adding “; and” in its place; and
 - g. Adding paragraphs (f)(9)(i)(C) and (f)(20).

The additions and revisions read as follows:

§ 64.1200 Delivery restrictions.

- (a) * * *
- (3) * * *
- (vi) Is made by an individual with a speech or hearing disability using any technology, including artificial intelligence technologies, designed to facilitate the ability of such individuals to communicate using an artificial or prerecorded voice over the telephone and does not include or introduce an advertisement or constitute telemarketing.

* * * * *

- (9) * * *
- (v) Calls made by individuals with speech or hearing disabilities using any technology, including artificial intelligence (AI) technologies, designed to facilitate the ability of such individuals to communicate using an artificial or prerecorded voice over the telephone, provided that the calls must not include any telemarketing or advertising content.

* * * * *

(13) Callers making an AI-generated call subject to the requirements contained in paragraphs (a)(1) through (3) of this section must provide clear and conspicuous disclosure that they intend to use AI-generated voice or text content on such calls when obtaining the prior express consent of the called party.

(b) * * *

(1) At the beginning of the message, state clearly the identity of the business, individual, or other entity that is responsible for initiating the call, and disclose whether the call uses an artificial intelligence-generated voice. If a business is responsible for initiating the call, the name under which the entity is registered to conduct business with the State Corporation Commission (or comparable regulatory authority) must be stated;

* * * * *

(f) * * *

(9) * * *

(i) * * *

(C) For AI-generated calls, that the caller intends to make use of AI-technology to generate voice or text content and the person signing the agreement specifically agrees to receive calls that include AI-generated content.

* * * * *

(20) The term *AI-generated call* means a call that uses any technology or tool to generate an artificial or prerecorded voice or a text using computational technology or other machine learning, including predictive algorithms, and large language models, to process natural language and produce voice or text content to communicate with a called party over an outbound telephone call.

* * * * *

[FR Doc. 2024–19028 Filed 9–9–24; 8:45 am]

BILLING CODE 6712–01–P

DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

[Docket No. FWS–R4–ES–2024–0130; FXES111109FEDR–245–FF09E21000]

RIN 1018–BH45

Endangered and Threatened Wildlife and Plants; Endangered Species Status for the Alabama Hickorynut and Threatened Status With Section 4(d) Rule for *Obovaria cf. unicolor*

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Proposed rule.

SUMMARY: We, the U.S. Fish and Wildlife Service (Service), propose to list the Alabama hickorynut (*Obovaria unicolor*) as an endangered species and the undescribed *Obovaria* cf. *unicolor* as a threatened species under the Endangered Species Act of 1973 (Act), as amended. Both species are freshwater mussels. This document also serves as our 12-month finding on a petition to list the Alabama hickorynut. For *Obovaria* cf. *unicolor*, we also propose a rule issued under section 4(d) of the Act to provide for the conservation of the species. If we adopt this rule as proposed, it would apply the protections of the Act to these species. We find that designation of critical habitat for both the Alabama hickorynut and *Obovaria* cf. *unicolor* is prudent but not determinable at this time.

DATES: We will accept comments received or postmarked on or before November 12, 2024. Comments submitted electronically using the Federal eRulemaking Portal (see **ADDRESSES**, below) must be received by 11:59 p.m. eastern time on the closing date. We must receive requests for a public hearing, in writing, at the address shown in **FOR FURTHER INFORMATION CONTACT** by October 25, 2024.

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

(1) *Electronically:* Go to the Federal eRulemaking Portal: <https://www.regulations.gov>. In the Search box, enter FWS-R4-ES-2024-0130, which is the docket number for this rulemaking. Then, click on the Search button. On the resulting page, in the panel on the left side of the screen, under the Document Type heading, check the Proposed Rule box to locate this document. You may submit a comment by clicking on "Comment."

(2) *By hard copy:* Submit by U.S. mail to: Public Comments Processing, Attn: FWS-R4-ES-2024-0130, 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: Supporting materials, such as the species status assessment report, are available at <https://www.regulations.gov> under Docket No. FWS-R4-ES-2024-0130.

FOR FURTHER INFORMATION CONTACT: Bill Pearson, Field Supervisor, U.S. Fish and

Wildlife Service, Alabama Ecological Services Field Office, 1208 Main Street, Daphne, AL 36526; telephone 251-441-5870. 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-2024-0130 on <https://www.regulations.gov> for a document that summarizes this rulemaking.

SUPPLEMENTARY INFORMATION:

Executive Summary

Why we need to publish a rule. Under the Act (16 U.S.C. 1531 *et seq.*), a species warrants listing if it meets the definition of an endangered (in danger of extinction throughout all or a significant portion of its range) or a threatened species (likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range). If we determine that a species warrants listing, we must list the species promptly and designate the species' critical habitat to the maximum extent prudent and determinable. We have determined that the Alabama hickorynut meets the Act's definition of an endangered species and that *Obovaria* cf. *unicolor* meets the Act's definition of a threatened species; therefore, we are proposing to list them accordingly. Listing a species as an endangered species or a threatened 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. We propose to list the Alabama hickorynut as an endangered species, and we propose to list *Obovaria* cf. *unicolor* as a threatened species with a rule issued under section 4(d) of the Act (a "4(d) rule").

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. We

have determined that the Alabama hickorynut is endangered due to the following threats: sedimentation, altered flow regimes, point and nonpoint source pollution, climate change, direct and indirect impacts of development and anthropogenic disturbances, and sea level rise associated with climate change. We have further determined that *Obovaria* cf. *unicolor* is threatened due to the following threats: sedimentation, altered flow regimes, point and nonpoint source pollution, climate change, direct and indirect impacts of development and anthropogenic disturbances, and sea level rise associated with climate change.

Information Requested

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

- (1) The species' biology, range, and population trends, including:
 - (a) Biological or ecological requirements of the species, including habitat requirements for feeding, breeding, and sheltering;
 - (b) Genetics and taxonomy;
 - (c) Historical and current range, including distribution patterns and the locations of any additional populations of these species;
 - (d) Historical and current population levels, and current and projected trends; and
 - (e) Past and ongoing conservation measures for these species, their habitats, or both.
- (2) Threats and conservation actions affecting these species, including:
 - (a) Factors that may be affecting the continued existence of these species, which may include habitat modification or destruction, overutilization, disease, predation, the inadequacy of existing regulatory mechanisms, or other natural or manmade factors;
 - (b) Biological, commercial trade, or other relevant data concerning any threats (or lack thereof) to these species; and
 - (c) Existing regulations or conservation actions that may be addressing threats to these species.

(3) Additional information concerning the historical and current status of these species.

(4) Information to assist with applying or issuing protective regulations under section 4(d) of the Act that may be necessary and advisable to provide for the conservation of the *Obovaria* cf. *unicolor*. In particular, we seek information concerning:

(a) The extent to which we should include any of the Act's section 9 prohibitions in the 4(d) rule; and

(b) Whether we should consider any additional or different exceptions from the prohibitions in the 4(d) rule.

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

Please note that submissions merely stating support for, or opposition to, the action under consideration without providing supporting information, although noted, do not provide substantial information necessary to support a determination. Section 4(b)(1)(A) of the Act directs that determinations as to whether any species is an endangered 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. Based on the new information we receive (and, if relevant, any comments on that new information), we may conclude that one or both species are a different status, or we may conclude that one or both species do not warrant listing as either an endangered species or a threatened species. In addition, for *Obovaria* cf.

unicolor, we may change the parameters of the prohibitions or the exceptions to those prohibitions in the protective regulations under section 4(d) of the Act if we conclude it is appropriate in light of comments and new information received. For example, we may expand the prohibitions if we conclude that the protective regulation as a whole, including those additional prohibitions, is necessary and advisable to provide for the conservation of the species. Conversely, we may establish additional or different exceptions to the prohibitions in the final rule if we conclude that the activities would facilitate or are compatible with the conservation and recovery of the species. In our final rule, we will clearly explain our rationale and the basis for our final decisions, 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 in the **Federal Register**. The use of virtual public hearings is consistent with our regulations at 50 CFR 424.16(c)(3).

Previous Federal Actions

In April 2010, the Alabama hickorynut was included in a petition from the Center for Biological Diversity and others (CBD 2010, entire) requesting that the Service list 404 aquatic, riparian, and wetland species as endangered or threatened species under the Act. In response to the petition, on September 27, 2011, the Service published in the **Federal Register** (76 FR 59836) a partial 90-day finding in which we announced our finding that the petition contained substantial information indicating that listing may be warranted for numerous species, including the Alabama hickorynut.

On February 27, 2020, the Center for Biological Diversity filed a lawsuit against the Service, alleging, among other claims, that the Service violated the Act (16 U.S.C. 1533(b)(3)(B)) by delaying the 12-month finding for the

listing of the Alabama hickorynut. The parties entered a settlement agreement on July 24, 2023, in which the Service committed to submit the 12-month finding to the **Federal Register** by September 2, 2024. This document complies with the settlement agreement.

We note that the April 2010 petition specified an accepted range for the Alabama hickorynut of the eastern Gulf Coast drainages of the Mobile River Basin, the Pascagoula River drainage, the Pearl River drainage, and the Lake Pontchartrain drainages. However, as discussed below under I. Proposed Listing Determination, Background, preliminary data support that Alabama hickorynut (*Obovaria unicolor*) is found only in the Mobile River Basin, and the individuals from the other three drainages are a distinct species still undescribed, *Obovaria* cf. *unicolor*. Because the Alabama hickorynut was petitioned with the accepted range including all four drainages and because the genetic analysis distinguishing two distinct species is still unpublished, we evaluated the Alabama hickorynut and the undescribed species throughout the entire accepted petitioned range.

Peer Review

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

In accordance with our joint policy on peer review published in the **Federal Register** on July 1, 1994 (59 FR 34270), and our August 22, 2016, memorandum updating and clarifying the role of peer review in listing and recovery actions under the Act, we solicited independent scientific review of the information contained in the SSA report for the Alabama hickorynut and *Obovaria* cf. *unicolor*. We sent the SSA report to five independent peer reviewers and received no responses.

I. Proposed Listing Determination Background

The SSA report (Service 2023, pp. 9–16) presents a thorough review of the taxonomy, life history, and ecology of the Alabama hickorynut (*Obovaria unicolor*) and *Obovaria* cf. *unicolor*.

Species taxonomic status remains unclear for the Alabama hickorynut.

Genetics data support Alabama hickorynut (*Obovaria unicolor*) as a Mobile River Basin endemic and the individuals of the western drainages (Pascagoula, Pearl, and Pontchartrain) comprising a distinct species yet to be formally described, *Obovaria cf. unicolor* (Inoue et al. 2013, pp. 2670–2683). Genetics work by the U.S. Geological Survey (USGS) is upcoming to resolve the taxonomic uncertainty. In the SSA report, we evaluated both the Alabama hickorynut and *Obovaria cf. unicolor* because the petitioned entity included the entire range of both species and because *Obovaria cf. unicolor* has not yet been formally described. Both species have a lifespan of 20 to 44 years. The two entities are allopatric, meaning they occur in separate, non-overlapping geographical areas. In the SSA report, we have assumed similarities between the two species in biology and ecology, but we have assessed their differences in geographic occupancy and threats faced.

The Alabama hickorynut (*Obovaria unicolor*) has a generally round to oval shape with a moderately thick shell. The species is moderately inflated and grows up to a length of 50 to 70 millimeters (mm). Males grow to be slightly larger than females (Haag and Rypel 2011, pp. 225–247). Posterior and anterior margins are rounded. The umbo is inflated and elevated above the hinge line (Williams et al. 2008, pp. 476–477; Haag, from Mirarchi et al. 2004, p. 99). The lateral teeth are short and straight. The pseudocardinal teeth are triangular and erect with two divergent teeth in the left valve and one in the right valve. The nacre inside the shell is usually white but occasionally pink (Williams et al. 2008, pp. 476–477). *Obovaria cf. unicolor* has yet to be formally described, but has a similar morphology to Alabama hickorynut.

The Alabama hickorynut and *Obovaria cf. unicolor* occupy large creeks and streams to large rivers with sand, gravel, and silt substrates in slow to moderate current (Williams et al. 2008, p. 477; Mirarchi et al. 2004, p. 99). Historically, the Alabama hickorynut occupied the mainstem of the Tombigbee and Alabama Rivers along with their associated large tributaries. *Obovaria cf. unicolor* historically occupied the mainstem and associated large tributaries of the Pascagoula, Pearl, Tangipahoa, Tickfaw, and Amite Rivers. Occurrence data collected over time indicate that both species were historically found in low densities and were relatively rare in mussel assemblages.

The Alabama hickorynut and *Obovaria cf. unicolor* have complex life

cycles that rely on fish hosts for successful reproduction, similar to other mussels. Both species are long-term brooders, gravid from August to the following June, with glochidia being fully developed by November (Haag and Warren 2003, p. 83). Several host fish species have been documented for the Alabama hickorynut and *Obovaria cf. unicolor*, and all host fishes appear to be relatively common species of darters (Percidae) of the genera *Ammocrypta*, *Etheostoma*, and *Percina*.

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.

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.

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.

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

To assess the viability of Alabama hickorynut and *Obovaria cf. unicolor*, we used the three conservation biology principles of resiliency, redundancy, and representation (Shaffer and Stein 2000, pp. 306–310). Briefly, resiliency is the ability of the species to withstand environmental and demographic stochasticity (for example, wet or dry, warm or cold years), redundancy is the ability of the species to withstand catastrophic events (for example, droughts, large pollution events), and representation is the ability of the species to adapt to both near-term and long-term changes in its physical and biological environment (for example, climate conditions, pathogens). In general, species viability will increase with increases in resiliency, redundancy, and representation (Smith et al. 2018, p. 306). Using these principles, we identified the species’

ecological requirements for survival and reproduction at the individual, population, and species levels, and described the beneficial and risk factors influencing the species’ viability.

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

The following is a summary of the key results and conclusions from the SSA report; the full SSA report can be found at Docket No. FWS–R4–ES–2024–0130 on <https://www.regulations.gov>.

Summary of Biological Status and Threats

In this discussion, we review the biological conditions of the species and their resources, and the threats that influence the species’ current and future conditions, in order to assess each species’ overall viability and the risks to that viability.

Population and Species Needs

The individual, population-level, and species-level needs of the species are summarized below in table 1. For additional information, please see the

SSA report (Service 2023, pp. 19–20). Briefly, for populations to be sufficiently resilient, they must have adequate water quality, natural flow regimes, stable habitat, and substrates on a larger scale. Connectivity is also an important factor for populations because it facilitates gene flow within and among populations, thereby promoting adaptive potential, and it enables movement and dispersal of individuals to suitable habitat. Natural flow regimes are an important resource need for Alabama hickorynut and *Obovaria cf. unicolor* populations as flows are a habitat requirement for all life stages. More specifically, the species require flowing water for sheltering (habitat requirement), feeding, reproduction, and dispersal. Altered flow regimes may thus cause decreased spawning, recruitment, and survival. Adequate water quality is a need at the individual level for sheltering, reproduction, and feeding (to ensure food source is present). Stable habitat, and in particular the presence of stable sand, gravel, and silt substrates, is an important resource need for sheltering and feeding, especially for juveniles and adults due to their limited movement and dispersal abilities during these life stages. At the species level, both species need a sufficient number and distribution of healthy populations to withstand environmental and demographic stochasticity (resiliency), withstand catastrophes (redundancy), and adapt to biological and physical changes in their environment (representation). Genetic diversity should be high enough that the species will be able to adapt to changing environmental factors through the process of natural selection.

TABLE 1—SUMMARY OF THE INDIVIDUAL RESOURCE NEEDS BY LIFE STAGE OF THE ALABAMA HICKORYNUT (*Obovaria unicolor*) AND *Obovaria cf. unicolor*

Life stage	Resources needed
Fertilized Eggs	<ul style="list-style-type: none"> • Mature males upstream from mature females. • Suitable flow.
Glochidia	<ul style="list-style-type: none"> • Suitable water quality and quantity. • Interactions with appropriate host fish.
Juveniles	<ul style="list-style-type: none"> • Connectivity to suitable habitat for dispersal by fish. • Suitable flow. • Suitable water quality and quantity for glochidia and host fish.
Adults	<ul style="list-style-type: none"> • Suitable, stable substrate. • Sufficient food availability within sediment. • Sufficient water flow.
Adults	<ul style="list-style-type: none"> • Suitable water quality and quantity. • Suitable, stable substrate. • Sufficient food availability in water column. • Suitable flow. • Suitable water quality and quantity.

Summary of Threats

To assess the status of the Alabama hickorynut and *Obovaria cf. unicolor*, we first examined the following influences on viability in our SSA analysis: sedimentation; altered flow regimes; point and nonpoint source pollution, which come from a variety of sources, including urbanization, agriculture, forestry, and mining; and a constricted range and reduced connectivity from impoundments (Service 2023, p. 21). We then determined which influences were most significant for viability of both the species, then modeled those influences and carried them forward in our analysis. Those influences include: habitat loss, degradation, and fragmentation (Factor A); water quality degradation (Factor A); altered flow regimes (Factor A); sedimentation from land use (Factor A); the influences of climate change on stream flow, water temperature, and sea level rise (Factor E); and their cumulative effects. We summarize these threats, as well as their sources and the responses of the Alabama hickorynut and *Obovaria cf. unicolor* to those threats, below. For a detailed description of threats that may influence the viability of both species, please refer to chapter 4 of the SSA report (Service 2023, pp. 21–36).

Sedimentation

Sedimentation due to a variety of sources, including agriculture, forestry practices, urbanization, bank erosion, and gravel mining, is considered a stressor to Alabama hickorynut and *Obovaria cf. unicolor* throughout their ranges. Sediment is composed of both organic (biological material) and inorganic (sand, silt, clay) particulate matter formed through various processes including weathering, wind/wave/ice action, and tectonic uplift (Perkins et al. 2022, p. 2). Sediment is listed as the most common pollutant in rivers, streams, lakes, and reservoirs and is estimated to cause approximately \$16 billion in damage every year (EPA 2005, pp. 9–25; Du Plessis 2019, pp. 86–87). While all streams carry some sediment, aquatic ecosystems are negatively affected if sediment loads are excessive enough to alter channel formation, stream productivity, or both.

River channel erosion, precipitation runoff, and wind transport account for 30 percent of the total sediment load in aquatic systems, while land-use activities such as agriculture (Peacock et al. 2005, p. 548), logging (Beschta 1978, entire), mining (Seakem Group et al. 1992, p. 17), urbanization (Guy and Ferguson 1963, entire), and hydrological

alteration (Hastie et al. 2001, entire) account for the remaining 70 percent (Du Plessis 2019, pp. 86–87). Agricultural activities have been found to produce the most significant amount of sedimentation (e.g., livestock grazing/trampling near water's edge; Nolte et al. 2013, p. 296).

Increased sedimentation may result in decreases in feeding and respiration, which could result in negative alterations to mussel's energetic metabolism and growth (Dimock and Wright 1993, p. 183; La Peyre et al. 2019, p. 5). Specifically, as sedimentation increases, clearance rates (i.e., volume of water completely cleared of particles per unit time) decrease and pseudofeces (i.e., waste) increase to prevent gill filaments from clogging (Bayne and Newell 1983, entire; Madon et al. 1998, p. 401). If the stressor becomes long-term, mussels may find feeding to be outweighed by the energetic cost of sorting food vs. non-food material, decreasing the individual's body condition (Bayne and Widdows 1978, p. 137; Madon et al. 1998, p. 401).

Increased sedimentation is expected to interfere with mussel-host fish interaction, further impacting the reproductive success of mussels due to physical abrasion of the host fish's gills or decreased visibility within the water column. Successful glochidial attachment and metamorphosis has been found to be reduced at concentrations ranging from 1,250 to 5,000 milligrams per liter (mg/L) of montmorillonite clay in the water column (Beussink et al. 2007, pp. 15–17). This reduction is attributed to physical abrasion of fish gill tissues from increased suspended sediment; increased fish mucus production in attempt to protect the gill from physical abrasion; coughing, which may dislodge glochidia from the gills; or declines in keratocytes (i.e., wound-healing cells), which would harm glochidia's ability to encapsulate (Beussink et al. 2007, pp. 15–17).

Dams and Impoundments

The detrimental effects of impoundments and dams on aquatic habitats and freshwater mussels are relatively well-documented (Watters 1999, p. 261). Increased demand for transportation, power, and water needs in the 1920s and 1930s led to rapid industrialization (Haag 2012, p. 329). Currently, there are an estimated 3,404 dams within the Mobile River basin. More than 1,000 miles of small and large river habitat in the Mobile River drainage have been impounded for navigation, flood control, water supply,

and/or hydroelectric production purposes (58 FR 14330 at 14335, March 17, 1993). These impoundments kill riverine mussels during construction and dredging, suffocate them by accumulating sediments, lower food and oxygen availability for the mussels by the reducing water flow, and cause local extirpation of host fish. Within the eastern United States, extinction and/or extirpation of native freshwater mussels has been attributed to impoundment and inundation of riffle habitats in all major river basins (Haag 2008 p. 107; Neves et al. 1997, p. 63).

After a dam is installed and reservoir created, the aquatic habitat typically accumulates more silt, loses shallow water habitat, decreases in water flow, accumulates more pollutants (adhered to sediment particles), and overall accumulates more nutrient-poor water (due to decaying algae within the reservoir, which depletes dissolved oxygen) (Watters 1999, p. 261). Typically, mussels are abundant in shallower waters and cannot tolerate impoundment depths and temperatures or fluctuating conditions found in tailwaters of dams (Fagin 2020, p. 2). Further, impoundments become sediment traps, which may increase the chance of smothering and decrease species' interactions with host fish. Mussels living in the tailwaters may experience fluctuations in temperatures and water levels (Watters 1999, p. 262). These fluctuations may expose individuals to dewatering events and/or excessively warm- or cold-water temperatures (Watters 1999, p. 262). Ultimately, the survival and overall reproductive success of mussels is influenced both upstream and downstream of dams.

Within the range of *Obovaria cf. unicolor*, plans for a new reservoir on the Pearl River downstream of Ross Barnett Reservoir near Jackson, Mississippi, are under consideration (Lindeman 2013, pp. 202–203). Of particular note is the proposed One Lake project, which includes a new dam and commercial development area 9 miles (14.5 kilometers) south of the current Ross Barnett Reservoir Dam near Interstate 20. The intent of the One Lake project is to dredge the Pearl River in order to widen, deepen, and straighten an additional 10 miles (16.1 kilometers) of waterway for flood control protection and commercial development opportunities. The One Lake project is still being debated, and the project's future is uncertain. If the One Lake project is implemented, it will likely alter the hydrologic regime and geomorphology of the Pearl River (similar to how the construction of Ross

Barnett Reservoir altered the system in the 1960s). This potential altered regime could increase channel instability and erosion through drastic changes in water outflows at dams, which can lead to bank collapse.

Also within the range of *Obovaria cf. unicolor*, plans for new reservoirs on Big Cedar Creek in the Pascagoula River drainage have been proposed in the past as the Lake George Project; however, the current status of the project is unknown. If the Lake George project is implemented, it will likely alter the hydrologic regime and geomorphology of the Big Cedar Creek and subsequently the Pascagoula River. This potential altered regime could lead to increased channel instability.

Channelization

Channelization activities profoundly alter riverine habitats by reducing habitat heterogeneity and aquatic diversity (Ebert 1993, p. 157; Watters 1999, p. 268). These activities affect many physical characteristics of streams through accelerated erosion (*i.e.*, headcutting), increased bedload (sediment that moves along the streambed), reduced depth, decreased habitat diversity, geomorphic instability (channel modification and subsequent instability), and riparian canopy loss (Hartfield 1993, p. 139). Further, changes in water velocity and depth associated with channelization increase turbulence and suspended sediments. These impacts contribute to loss of habitat for the Alabama hickorynut and *Obovaria cf. unicolor*, as well as interfere with gravid female host-fish interactions.

One of the largest water development projects within the United States, the Tennessee-Tombigbee Waterway (TTW) in Alabama and Mississippi is within the Alabama hickorynut's range. While the project was authorized in 1946, the TTW did not begin construction until 1972. The TTW constructed to provide more direct access from the Tennessee River to the Gulf of Mexico, was completed in 1984 and includes 10 lock and dams as well as 377 km of channelization (Haag 2012, p. 330). This project significantly altered the Tombigbee River, which had been the last free-flowing, unpolluted, diverse stream systems within the Mobile Basin, into a series of artificial canals and reservoirs. The construction of the TTW has significantly negatively impacted the Alabama hickorynut's range and abundance by rendering the majority of the mainstem of the Tombigbee River inhospitable to the Alabama hickorynut. The impacts of this channelization are ongoing.

No other new channelization projects are on the horizon; however, the U.S. Army Corps of Engineers (USACE) is undergoing planning efforts to improve navigation in the TTW, which will include deepening the channel. Because the underlying geology is particularly sensitive to disturbance, further bed instability is likely throughout the channel and downstream without effective planning and designs to prevent head-cuts.

Dredging and channelization of fluvial (flowing water) systems include the widening and deepening of stream channels, which increases channel capacity, shortens stream length, and increases stream gradient (Pierce and King 2013, p. 223). These activities allow greater volumes of water to move through the system at a faster rate; however, they also hydrologically disconnect river channels from the adjacent floodplain. Within the southeastern United States, channelization has been used for navigation and to reduce flooding, and it is likely even more extensive than damming (Haag 2012, p. 330).

Channels dredged for navigation or flood control will eventually begin to refill with material. To ensure minimum depth, the channel is often periodically re-dredged. Subsequent dredge spoil (*i.e.*, unconsolidated mixed sediment composed of rock, soil, and/or shell material) and contaminants associated with the waste are often deposited in upland areas (Watters 1999, p. 268). Over time, this waste may re-enter the water via surface runoff, biological uptake and cycling, and/or leaching into groundwater (Watters 1999, p. 268), and may subsequently affect the Alabama hickorynut and *Obovaria cf. unicolor* directly or may affect their habitats.

Gravel Mining

The Alabama hickorynut and *Obovaria cf. unicolor* are not found in impounded waters and are intolerant of lentic (standing water) habitats that may be formed by gravel mining or other landscape-altering practices. Incompatible sand and gravel mining, with its disruption of topography, vegetation, and flow pattern of streams, is considered a major stressor to the Bogue Chitto River in the Pearl River drainage where *Obovaria cf. unicolor* occurs (TNC 2004, p. 16). Although Louisiana has reduced the number of gravel mining permits issued, mining in the floodplain continues to be a significant threat to *Obovaria cf. unicolor* in that state.

In *Obovaria cf. unicolor*'s range in the Pascagoula River drainage, the results of historical sand and gravel dredging

impacts have been a concern for the Bouie and Leaf Rivers (Mississippi Department of Environmental Quality (MDEQ) 2000, pp. 1–98). Historically, the American Sand and Gravel Company (1995, p. B4) has mined sand and gravel using a hydraulic suction dredge, operating within the banks or adjacent to the Bouie and Leaf Rivers. Large gravel bars of the river and its floodplain were removed over a period of 50 years, creating open-water areas that function as deep lake systems (American Sand and Gravel Company 1995, pp. B4–B8). The creation of these large, open-water areas has accelerated geomorphic processes, specifically headcutting (erosional feature causing an abrupt drop in the streambed) that has adversely affected the flora and fauna of many coastal plain streams (Patrick et al. 1993, p. 90). The infilling of these gravel pits and their downstream effects back to a natural riverine state is predicted to take hundreds of years (Grimball and Heitmuller 2012, p. 158). Mining in active river channels typically results in incision upstream of the mine by knickpoints (breaks in the slope of a river or stream profile caused by renewed erosion attributed to a bottom disturbance that may retreat upstream), sediment deposition downstream, and an alteration in channel morphology that can have impacts for years (Mossa and Coley 2004, pp. 1–20). The upstream migration of knickpoints, or headcutting, may cause undermining of structures, lowering of alluvial water tables (aquifer comprising unconsolidated materials deposited by water and typically adjacent to rivers), channel destabilization and widening, and loss of aquatic and riparian habitat. This geomorphic change may cause the extirpation of riparian and lotic (flowing water) species (Patrick et al. 1993, p. 96).

Contaminants

Metals—Freshwater mussels are one of the most sensitive species to metals, ammonia, and ion constituents including copper, alachlor (*i.e.*, an herbicide), nickel, chloride, sulfate, zinc, and potassium (Wang et al. 2017, p. 1). Despite limited research, data indicate mussels representing different families or tribes have similar sensitivities to most chemicals, regardless of mode of toxic exposure (Wang et al. 2017, p. 1). This information indicates thresholds identified for other freshwater mussels can be used to infer the response of the Alabama hickorynut and *Obovaria cf. unicolor*.

Metals naturally occur in aquatic ecosystems and are primarily introduced to waterways due to weathering of rocks, soil erosion, and/or dissolution of water-soluble salts (Garbarino et al. 1995, p. 1). While naturally occurring metals often move through aquatic ecosystems without detrimental effects to aquatic biota, this is not necessarily the case with anthropogenic sources of metals. Industrial and forestry activities within the region that do not employ best management practices (BMPs) and directly discharge into river systems significantly increase heavy metal loads (Suryawanshi 2017, p. 625; Uttermann et al. 2019, p. 200). As a result, river systems that are habitat for the Alabama hickorynut and *Obovaria cf. unicolor* may have metal contamination, which may negatively impact the species; however, we do not have specific data about the streams the two species inhabit.

Nutrients and ions—The southeastern United States is affected by intense pressures of fossil fuel mining, urban development/sprawl, agricultural and forestry practices, and increasing demands for fresh water (Archambault et al. 2017, p. 395). Runoff associated with these practices when BMPs are not employed (*i.e.*, fertilizers, pesticides, industrial and wastewater effluents, mining discharge, and sediment) increases nutrient and ion concentrations in waterways that (depending on magnitude and duration) may exceed freshwater mussel thresholds (Salerno et al. 2020, pp. 1–2).

Climate Change

Climate change has the potential to increase vulnerability of the Alabama hickorynut and *Obovaria cf. unicolor* to catastrophic events or to alter habitat suitability (*e.g.*, water temperature, dissolved oxygen, sea level rise) within the species' range. Over the years, climate change impacts (impaired waters and reduced water supply security) have been reportedly more frequent and intense (Intergovernmental Panel on Climate Change (IPCC) 2022, p. 1931). Extreme heat and precipitation trends have altered ecosystem processes (*e.g.*, freshwater cycling). Further, projected droughts will become more intense because of higher temperatures, and the progressive loss of seasonal water storage will lead to lower summer stream flows (IPCC 2022, p. 1932). Population growth and agricultural activities are expected to continue to place high demands on the water supply within the range of the species, impacting stream flow. These lower

stream flows may negatively impact the Alabama hickorynut and *Obovaria cf. unicolor*.

Conservation Efforts and Regulatory Mechanisms

Most of the land within the ranges of the Alabama hickorynut and *Obovaria cf. unicolor* is privately owned, with some exceptions. The Alabama hickorynut currently occupies 58 protected river miles of habitat in the Buttahatchee River, 28 protected river miles in the Sipsey River, and 30 protected river miles of the Noxubee River, all of which are tributaries to the Tombigbee River. The protected land of the Buttahatchee is Wildlife Mississippi property and the Sam R. Murphy Wildlife Management Area. In the Sipsey River, the protected land is State-owned Forever Wild land, and in the Noxubee River, the protected land is federally owned as the Sam D. Hamilton Noxubee National Wildlife Refuge.

For *Obovaria cf. unicolor*, there are currently occupied protected lands in the Pascagoula River system and in the Pearl River system. In the Pascagoula River system, there are a total of 113 protected river miles, most of which are within the Pascagoula Wildlife Management Area (WMA) in the Pascagoula River, Black Creek, and Red Creek. The Nature Conservancy protects 7 river miles of currently occupied habitat in the Chickasawhay River, and there are 16 river miles protected on the Leaf River by the Camp Shelby and Mississippi Land Trust and the Mississippi River Trust. In the Pearl River system, there are a total of 69 protected river miles that are currently occupied. Three river miles are protected in the upper Pearl River as Wildlife Mississippi property, and 66 river miles are protected on the lower Pearl River as the Bogue Chitto National Wildlife Refuge.

Neither Alabama hickorynut or *Obovaria cf. unicolor* are protected under state laws. However, some streams that are occupied by the species have water quality protections in place. The Clean Water Act of 1972 (33 U.S.C. 1251 *et seq.*) regulates dredge and fill activities that would adversely affect streams and wetlands. Such activities are commonly associated with dry land projects for development, flood control, and land clearing, as well as for water-dependent projects such as docks/marinas and maintenance of navigational channels. The USACE and the Environmental Protection Agency (EPA) share the responsibility for implementing the permitting program under section 404 of the Clean Water Act. Permit review and issuance follows

a process that encourages avoidance, minimizing and requiring mitigation for unavoidable impacts to the aquatic environment and habitats. This includes protecting the riverine habitat occupied by Alabama hickorynut and *Obovaria cf. unicolor*. This law has resulted in some enhancement of water quality and habitat for aquatic life, particularly by reducing point-source pollutants. For Alabama hickorynut, two occupied waterways have Total Maximum Daily Loads (TMDLs) established by Alabama Department of Environmental Management (ADEM) for *E. coli*: the Luxapallila River and the Noxubee River. For *Obovaria cf. unicolor*, Tallahala Creek in the Pascagoula drainage has a TMDL established by Mississippi Department of Environmental Quality (MDEQ) for biological impairment, total nitrogen, pH, and total phosphorus.

Cumulative Effects

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

Current Conditions

Delineating Populations

To assess resiliency of Alabama hickorynut and *Obovaria cf. unicolor* populations, we first delineated populations in the most biologically meaningful way. We based our delineations on occurrence records through time, on our knowledge of the species' habitat and resource needs, and on expert input. We determined there to be three total Alabama hickorynut populations and six total *Obovaria cf. unicolor* populations. We also delineated subpopulations for each species to refine occupancy, influence of threats, and average abundance. The Alabama hickorynut has 13 subpopulations within its three populations, and *Obovaria cf. unicolor* has 16 subpopulations within its six populations.

Delineating Representative Units

Representation is the ability of a species to adapt to both near-term and long-term changes in its physical and biological environment. Differences in life-history traits, habitat features, and/or genetics often aid in the delineation of representative units, which are used to assess species representation. For representative unit delineation, we consulted with experts in each State and considered differences in ecological setting and connectivity at a larger scale. Based on the natural lack of large-scale connectivity, the Alabama hickorynut in the Mobile River Basin was split into two representative units: Eastern Mobile River Basin (Alabama and Cahaba Rivers) and Western Mobile River Basin (Tombigbee River). *Obovaria cf. unicolor* was divided into five representative units: the Pascagoula, the Pearl, the Tangipahoa, the Tickfaw, and the Amite Rivers. The Tangipahoa, Tickfaw, and Amite Rivers all drain into Lake Pontchartrain, and occurrences extend very close to the mouth of each river; however, the influence of salt water in Lake Pontchartrain likely limits any connectivity between these representative units.

Current Resiliency

Sufficiently resilient populations of the Alabama hickorynut and *Obovaria cf. unicolor* should be robust following normal demographic and environmental stochastic events or disturbances. We assessed the resilience of each Alabama hickorynut and *Obovaria cf. unicolor* population by synthesizing the best available information about habitat condition and population demographics. Based on the individual and population needs of the Alabama hickorynut and *Obovaria cf. unicolor* (such as adequate water quality/quantity; the presence of stable, unaltered habitat; and appropriate population size and connectivity to support reproduction and recruitment within a population), we developed an approach using key habitat and demographic factors to assess population resiliency. We assessed two demographic condition parameters (persistence through time (amount of historical range that is still currently occupied) and estimated average abundance) and one habitat condition parameter (amount of altered habitat (impoundment, channelization, head cutting, etc.)). Based on the Alabama hickorynut's lifespan, we determined the time period from 2000 to 2023 to represent the current condition of these species. We ranked subpopulations based on estimated average abundance

by reviewing count data from occurrence records and using expert elicitation based on the experts' knowledge of historical numbers. We considered a subpopulation to have a low abundance if the estimated average count per sample is 0 to 5 individuals. A subpopulation with moderate abundance has an estimated average count per sample of 6 to 10 individuals, and a subpopulation with high abundance has an estimated average count of more than 10 individuals.

In order to better facilitate comparisons of current and future conditions, we categorized resiliency into three levels, as follows:

- High—population substantially contributes to overall species viability by having more than 75 percent of its historical range that is currently occupied, relatively low amounts of altered habitat, and high abundance.
- Moderate—population contributes to overall species viability by having 50–75 percent of its historical range that is currently occupied, relatively moderate amounts of altered habitat, and ample abundance.
- Low—population is likely persisting but also likely does not contribute to overall species viability because less than 50 percent of its historical range is currently occupied, there is relatively high amounts of altered habitat, and low abundance.

i. Alabama Hickorynut (*Obovaria Unicolor*)

Alabama River—There are two subpopulations within the Alabama River population: mainstem Alabama River and Pine Barren Creek. The Alabama hickorynut historically occupied at least 233 river miles in the Alabama River and 11 river miles in Pine Barren Creek. Degradation and loss of habitat due to impoundment resulted in the extirpation of this population. Live individuals were last detected in the Alabama River mainstem in 1999 (Mcgregor et al. 2000, pp. 215–237) and last detected in Pine Barren Creek in 1917. Our analysis indicated that 100 percent of the Alabama River population's habitat has been altered.

Cahaba River—Historically, Alabama hickorynut occupied 117 river miles in the Cahaba River, a major tributary to the Alabama River. The species is now considered extirpated from this system. Surveys from 2000 to present have only detected relic, weathered shells. Seventy-four river miles of the historical range within the Cahaba River are altered.

Tombigbee River—The Alabama hickorynut occurred throughout approximately 1,077 river miles of the

mainstem Tombigbee River and several large tributaries: the Buttahatchee River, the East Fork of the Tombigbee, the Sucarnoochee River, the Sipsey River, the Black Warrior River, Luxapallila Creek, the Noxubee River, Lubbub Creek, Trussels Creek, Tibbee Creek, Bogue Chitto Creek, and Santa Bogue Creek. The construction of the TTW, which artificially connects the Tennessee River to the Tombigbee River, has led to the extirpation of many species from the river's main channel (Bennett et al. 2008, p. 467). Today, the Alabama hickorynut is considered extirpated from the mainstem Tombigbee River (approximately 300 river miles) and the Black Warrior River (approximately 170 river miles) due to impoundment, dredging, and the creation of the TTW. Most of the tributaries also experienced a reduction in extant range due to these effects. As discussed previously, the Alabama hickorynut is naturally a larger river species, occupying mostly mainstem rivers and then branching out into larger tributaries of those rivers. In the Tombigbee River system, the species has lost suitable habitat in the mainstem Tombigbee and is now isolated to several tributaries. We do not find there is much, if any, subpopulation connectivity between these tributaries due to the loss of the connecting mainstem Tombigbee habitat. However, historically, these units would all have been connected, so we consider the entire Tombigbee River system one population with 13 subpopulations. Of the 1,077 river miles historically occupied in this population, only 362 river miles are considered to be currently occupied, meaning the Alabama hickorynut currently occupies 33.62 percent of its historical range in the Tombigbee population. As a result, we consider the Tombigbee population to have low resiliency.

Currently, the Alabama hickorynut is extant in seven subpopulations of the Tombigbee population, and the species is considered extirpated in six subpopulations. Extant subpopulations are the East Fork of the Tombigbee, the Buttahatchee River, the Sipsey River, Luxapallila Creek, Lubbub Creek, the Noxubee River, and the Sucarnoochee River. Although the species is still extant in those subpopulations, it experienced range contraction in five of the seven extant subpopulations. All the extant subpopulations were classified as having low abundance except for the Sipsey River, which is considered to have high abundance. The Alabama hickorynut is considered extirpated from the following subpopulations: the

mainstem Tombigbee River, Tibbee Creek, Santa Bogue Creek, the Black Warrior River, Trussels Creek, and Bogue Chitto Creek.

The stronghold for the entire species is in the Sipsey River. Samples collected from the Sipsey River frequently contain counts of Alabama hickorynut that are orders of magnitude higher than counts currently found anywhere else within the species' range. The Sipsey River supports other rare mussel species that have also experienced precipitous declines elsewhere within their range in the Mobile River Basin, including Alabama spike (*Elliptio arca*), Alabama moccasinshell (*Medionidus acutissimus*), and Southern clubshell (*Pleurobema decisum*), indicating that the Sipsey River has maintained its ecological integrity through time (Mirarchi et al. 2004, entire; Williams et al. 2008, entire; Haag and Warren 2010, pp. 655–667). As noted above, the Sipsey River is the only subpopulation that we consider to have a “high” abundance rating.

Alabama Hickorynut: Summary Resiliency Results

Of the three populations of Alabama hickorynut in the Mobile River Basin, two are considered extirpated (Alabama and Cahaba), and one has low resiliency (Tombigbee). The species historically has been known to occur in 1,438 river miles in Alabama and Mississippi in the Mobile River Basin. The species currently occupies 362 river miles across its range, meaning it currently occupies 25.17 percent of its historical range. Overall, resiliency is considered low, meaning the species is not likely to withstand environmental stochasticity (fire, flood, storms) or disease and mortality events.

ii. *Obovaria cf. Unicolor*

Pascagoula River—Obovaria cf. unicolor historically occupied 549 river miles and is presumed to still occupy the full extent of the river system. The Pascagoula population is divided into five subpopulations: Pascagoula River, Leaf River, Chickasawhay River, Black Creek, and Red Creek. The Service surveyed the Pascagoula River for the species in 2023, and we confirmed current presence with a moderate abundance level. The other four subpopulations do not have current records of the species; however, these rivers and creeks have also not been surveyed recently. A system-wide mussel survey is planned for 2024 by the Mississippi Department of Fish, Wildlife, and Parks (MDWFP). We still assume presence throughout the entire Pascagoula River system despite not

having current records because the Pascagoula River is undammed and not impounded, with 0 miles of the species' range altered. Additionally, 113 river miles of the system are considered protected. Because we predict the Pascagoula River population occupies all of its historical range within the river system, the population is considered to have high resiliency.

*Upper Pearl River, above Ross Barnett Reservoir—*Above the Ross Barnett Reservoir in the Pearl River system, *Obovaria cf. unicolor* historically occupied 92 river miles within two subpopulations: 27 river miles in the Yockanookany River and 65 river miles in the mainstem Pearl River. Currently, the species occupies 32 river miles within this population: 27 river miles in the Yockanookany River and 5 river miles in the mainstem Pearl River.

The Yockanookany River is considered unaltered and 18 river miles are protected in the Natchez Trace Parkway. Twenty-seven river miles of the 65 historically occupied river miles of the mainstem Pearl River in this population are considered altered. Three river miles are in the mainstem Pearl River are protected by Wildlife Mississippi property. The species occupies 34.78 percent of its historical range in the upper Pearl River population. Where found in the upper Pearl population, *Obovaria cf. unicolor* is considered to have low abundance.

Therefore, the upper Pearl River population above Ross Barnett Reservoir is considered to have low resiliency.

*Lower Pearl River, below Ross Barnett Reservoir—*Of the total 589 river miles historically occupied in the lower Pearl population, *Obovaria cf. unicolor* still currently occupies 112 river miles, which is 19.02 percent of its historical range. Historically, there were three subpopulations in the Pearl River system below the Ross Barnett Reservoir; however, the Strong River subpopulation, which historically occupied 46 river miles, is now considered extirpated. *Obovaria cf. unicolor* is extant in the Bogue Chitto River and in the mainstem Pearl River. All of the historical range in the lower Pearl population has been altered, and where the species is still found, its abundance is considered low. The lower Pearl River population below Ross Barnett Reservoir is considered to have low resiliency.

Tangipahoa River—Obovaria cf. unicolor historically occurred in 78 river miles of the Tangipahoa River and currently occupies 60 river miles of this system, meaning it occupies 76.92 percent of its historical range within the Tangipahoa River. Twenty river miles of

the historical range are considered altered. The Tangipahoa River population is considered to have high resiliency.

Tickfaw River—Obovaria cf. unicolor historically occurred in 44 river miles of the Tickfaw and currently occupies 35 river miles of this system, meaning it occupies 79.55 percent of its historical range within the Tickfaw River. The entire historical range within this population is considered unaltered. The Tickfaw River population is considered to have high resiliency.

Amite River—Obovaria cf. unicolor historically occurred in 102 river miles of the Amite River but has not been detected in the system since 1988, so the Amite population is considered extirpated. There are 49 river miles within the historical range that are considered altered.

Obovaria cf. Unicolor: Summary Resiliency Results

Of the six populations of *Obovaria cf. unicolor*, one population is considered extirpated (Amite), two populations are considered to have low resiliency (Upper Pearl and Lower Pearl), and three populations are considered to have high resiliency (Pascagoula, Tangipahoa, and Tickfaw). The species historically has been known to occur in 1,454 river miles in Mississippi and Louisiana. The species currently occupies 788 river miles across its range, meaning it currently occupies 54.2 percent of its historical range. Overall, *Obovaria cf. unicolor* has moderate resiliency.

Current Representation

Representation is the ability of a species to adapt to both near-term and long-term changes in its physical and biological environment. The greater the genetic diversity a species has, the more successfully a species can respond to changing environmental conditions. In the absence of population-level genetic data for the Alabama hickorynut and *Obovaria cf. unicolor*, we considered environmental diversity across each species' range. The best available data indicate two representative units (*i.e.*, two major river systems) where the Alabama hickorynut was historically found, the Alabama River system and the Tombigbee River system, and four representative units where *Obovaria cf. unicolor* is currently found, the Pascagoula River system, the Pearl River system, the Tangipahoa River, and the Tickfaw River.

Alabama Hickorynut

Of the two representative units for Alabama hickorynut, only one remains

extant. The species has been extirpated from the Eastern Mobile River Basin and now only occupies about 25 percent of its historical range. Although still extant, the Western Mobile River Basin representative unit has been left highly fragmented with no connectivity between subpopulations. The Alabama hickorynut was extirpated from the mainstem of the Tombigbee because of the TTW. This also eliminated gene flow between the tributaries of the Tombigbee River. The variety of trend information available across its range (*i.e.*, loss of populations in tributaries or major river systems, declines in population extent and size in portions of the species' range) indicate that the Alabama hickorynut's overall ability to adapt to changing environmental conditions is minimal. This is largely due to pervasive human alteration of habitats, such as the construction and operation of impoundments. Thus, overall representation for the Alabama hickorynut is considered low.

Obovaria cf. Unicolor

Of the five representative units for *Obovaria cf. unicolor*, four remain extant. The Pearl River unit, though still extant, lost nearly 80 percent of its historical range due to human habitat alteration and degradation, which exemplifies that like Alabama hickorynut, *Obovaria cf. unicolor* also has minimal ability to adapt to changing environmental conditions. The loss of connectivity is a significant issue in the Pearl River representative unit. However, *Obovaria cf. unicolor* has representative units still spread across its historical range. One representative unit is considered extirpated, and because the species has shown that it is intolerant of major environmental changes (sedimentation, significant changes in water chemistry, habitat destabilization), we do not expect that the species will return to the unit without significant efforts to address the identified threats in this unit. For these reasons, we consider *Obovaria cf. unicolor* to have moderate representation.

Current Redundancy

Redundancy refers to the ability of a species to withstand a catastrophic event. To determine species redundancy, we assess the species' distribution across its range. The greater the size, resiliency, and/or number of populations, and the more widely they are distributed, the greater the likelihood that the species will be able to withstand and bounce back from a significant loss (*e.g.*, extirpation of a population) from a catastrophic event.

Alabama Hickorynut

Of the three populations known for Alabama hickorynut, only one, the Tombigbee River population, remains extant, and this population has low resiliency. Within the Tombigbee River population, 7 of the 13 subpopulations are still extant. However, all but one of the extant subpopulations are considered to have low abundance, and two of the subpopulations span less than 10 river miles within their tributaries, making them more vulnerable to potential extirpation; the other subpopulations each span at least 20 river miles. All of the extant subpopulations face ongoing headcutting, sedimentation, and erosional issues from surrounding land use practices and dredging operations in the main channel. Due to the lack of connectivity between subpopulations, the species' ability to rebound or recolonize areas after catastrophic events is severely limited. We consider the Alabama hickorynut to have a low level of redundancy overall because only one extant population remains with a low level of resiliency.

Obovaria cf. Unicolor

Of the six populations of *Obovaria cf. unicolor*, one is considered extirpated and five are extant. Three of the extant populations, the Pascagoula, the Tangipahoa, and the Tickfaw, are considered to have a high level of resiliency. The other two extant populations, the upper Pearl (above Ross Barnett Reservoir) and the lower Pearl (below Ross Barnett Reservoir), have low resiliency. Although the Tangipahoa and Tickfaw populations show a high level of resiliency in the current condition, these two populations represent a small proportion of the total range of the species. The Tangipahoa population made up 5.4 percent of the species' historical range, and currently makes up 7.6 percent of the species' range. The Tickfaw population made up 3 percent of the species' historical range, and now makes up 4.4 percent of the species' range. In contrast, the Pascagoula currently makes up 70 percent of the occupied range and has high resiliency, the lower Pearl currently makes up 14 percent of the occupied range and has low resiliency, and the upper Pearl makes up 4 percent of the currently occupied range and has low resiliency. Overall, we consider *Obovaria cf. unicolor* to have moderate redundancy.

Future Conditions

As a part of the SSA, we considered multiple future influences and projected

responses by Alabama hickorynut and *Obovaria cf. unicolor*. Because we determined that the current condition of Alabama hickorynut is consistent with an endangered status (see Determination of Alabama hickorynut Status, below), we are not presenting the results of the future scenarios for Alabama hickorynut in this proposed rule. Below, we present the results for *Obovaria cf. unicolor*. Please refer to the SSA report (Service 2023, pp. 51–55) for the full analysis of future scenarios for both species. *Obovaria cf. unicolor* is most susceptible to climate change, sea level rise, and destruction and/or modification of habitat. We developed multiple future scenarios to capture the range of uncertainties regarding sea level rise and the projected responses by *Obovaria cf. unicolor*.

Climate Change

Climate change predictions under all scenarios are likely to exacerbate the currently declining trend of *Obovaria cf. unicolor*. Most climate change models predict an increase in extreme weather events, such as droughts and heavy precipitation (IPCC 2022 p. 15), and they project that average annual temperatures will increase, cold days will become less frequent, the freeze-free season will lengthen by up to a month, temperatures exceeding 95 degrees Fahrenheit (°F) will increase, and heat waves will become longer (Ingram et al. 2013, p. 32; IPCC 2021, entire). Since the 1970s, moderate to severe droughts in the Southeast have increased by 12 percent during spring months and by 14 percent during summer months (Jones et al. 2015, p. 126). Declines of 65–83 percent in mussel density were observed after severe droughts in the upper reaches of the Sipsy River, and decreases in dissolved oxygen and increases in temperature were cited as causes for the decline (Haag and Warren 2008, pp. 1165–1178). As mentioned, *Obovaria cf. unicolor* is sensitive to drops and fluctuations in dissolved oxygen and to elevated temperatures (van Ee et al. 2022, pp.1–14) since it is naturally adapted to larger riverine systems. The effects of higher temperatures and reduced flows are expected to affect subpopulations of the species in upstream reaches first, reducing overall population resiliency (Haag and Warren 2008, pp.1165–1178).

Sea Level Rise

Sea level rise (SLR) impacts future resilience of *Obovaria cf. unicolor* by influencing the area occupied and habitat available through increased salinity. To estimate loss/degradation of

habitat due to inundation from SLR, we used the National Oceanic and Atmospheric Administration's (NOAA's) shapefiles available at their online sea level rise viewer (NOAA 2020, unpaginated). Projected SLR scenarios from NOAA provide a range of inundation levels from low to extreme. We chose NOAA's intermediate-high and extreme scenarios, which correspond to the representative concentration pathway (RCP)4.5 and RCP8.5 emission scenarios, to encompass the breadth of possible scenarios (IPCC 2013, p. 20). Local scenarios are available at a location near Mobile Bay in Alabama, and they provide estimates of SLR affecting the range of *Obovaria cf. unicolor* at decadal time steps out to the year 2100. We found the average+ SLR estimate for the intermediate and extreme NOAA scenarios from this station and used the estimate (rounded to the nearest foot, because shapefiles are only available at 1-foot increments) to project estimated habitat loss at years 2040 and 2070. Where SLR estimates overlap with known occupied portions of the river system, we assume that area is no longer occupiable by *Obovaria cf. unicolor*.

As expected, projections of SLR only impacted *Obovaria cf. unicolor* in occupied habitat of coastal drainages. *Obovaria cf. unicolor* has projected SLR impacts in the three Pontchartrain drainages: the Amite, the Tickfaw, and the Tangipahoa. The Amite population is already considered extirpated, but we expect SLR to result in contraction of the Tickfaw and Tangipahoa populations in the future, which would reduce each of these population's resiliency from high resiliency to moderate resiliency, and thus reduce their contribution to species representation and redundancy in the future. In the Tickfaw, we project a loss of 8.4 to 17.9 river miles, which corresponds to a 24 to 51 percent range reduction, and in the Tangipahoa, we project a loss of 4.5 to 7.3 river miles, which corresponds to a 7.5 to 12.1 percent range reduction.

Future Viability Summary

In summary, we expect decreased resiliency, redundancy, and representation in the future for *Obovaria cf. unicolor*. The magnitude of reduction in resiliency, redundancy, and representation for this species will depend on the climate change scenario realized and the outcomes of future water engineering projects, which are the two main influences that are expected to exacerbate the negative impacts that populations are

experiencing due to habitat fragmentation and range constriction.

Obovaria cf. unicolor will be vulnerable to future impacts throughout its remaining range. The effects of climate change from sea level rise will reduce the already limited ranges of the Tangipahoa and Tickfaw populations. *Obovaria cf. unicolor* will also experience negative impacts from the increased temperatures, increased occurrences of drought, and reduced dissolved oxygen across the species' range. Meanwhile, the effects of future channel modification projects have the potential to reduce resiliency in the Upper Pearl, Lower Pearl, and Pascagoula populations. Only one population will have high resiliency (Pascagoula), two will have moderate resiliency (Tangipahoa and Tickfaw), and one will have low resiliency (Pearl); the Amite population would remain extirpated. Additionally, due to this expected decrease in future population resiliency and to the expected continued reduction in population ranges, species redundancy and representation are also expected to decrease in the future. Representation will move from currently moderate to low. This will result in decreased adaptive capacity. Redundancy will move from currently moderate to low.

Determination of 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 in danger of extinction throughout all or a significant portion of its range and a "threatened species" as a species 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.

i. Alabama Hickorynut

Alabama Hickorynut—Status Throughout All of Its Range

After evaluating threats to the species and assessing the cumulative effect of the threats under the Act's section 4(a)(1) factors, we determined the primary threats affecting the biological status of Alabama hickorynut include the following: sedimentation, altered flow regimes, point and nonpoint source pollution, and direct and indirect impacts of development and anthropogenic disturbances (Factor A), and impacts of climate change, including sea level rise (Factor E). We delineated 16 Alabama hickorynut subpopulations in three populations across the species' historical range; 13 subpopulations in one population are extant. In our current condition analysis, we assessed habitat condition and population demographics to determine the species' current resiliency. Populations with occurrences since 2000 were considered current. Two Alabama hickorynut populations in the Mobile River Basin have been extirpated (Alabama and Cahaba) and are not expected to naturally re-establish. The one extant Alabama hickorynut population exhibits low current resiliency (Tombigbee).

Based on differences in ecological settings and connectivity at a larger scale, we delineated two representative units for the Alabama hickorynut in the Mobile River Basin: the extirpated Eastern Mobile River Basin (Alabama and Cahaba Rivers) and the Western Mobile River Basin (Tombigbee River). The extant Western Mobile River Basin representative unit is highly fragmented with no connectivity between subpopulations following the completion of the TTW in 1984. This project led to the extirpation of the species from the Tombigbee mainstem due to dredging, channelization, and installation of impoundments, which eliminated gene flow between the tributaries of the Tombigbee River. We determined that the Alabama hickorynut's overall ability to adapt to changing environmental conditions (representation or adaptive capacity) is low.

With one population in low resiliency, the Alabama hickorynut has low redundancy. However, some redundancy is possible within the population, with 7 of the 13 subpopulations distributed such that it would be unlikely for one catastrophic event to extirpate all the subpopulations at once. However, six of seven subpopulations have low abundance, making them more vulnerable to

potential extirpation by catastrophic events.

Our analysis of the species' current condition, as well as the conservation efforts discussed above, show that the Alabama hickorynut is currently in danger of extinction throughout all of its range due to the severity and immediacy of threats currently impacting its populations. The threats are occurring across the entire range of this species, and the species currently exhibits low resiliency, redundancy, and representation. Thus, after assessing the best scientific and commercial data available, we determined that the species meets the definition of an endangered species throughout all of its range.

Alabama Hickorynut—Status Throughout a Significant Portion of Its Range

Under the Act and our implementing regulations, a species may warrant listing if it is in danger of extinction or likely to become so within the foreseeable future throughout all or a significant portion of its range. We have determined that the Alabama hickorynut is in danger of extinction throughout all of its range and accordingly did not undertake an analysis of any significant portion of its range. Because the Alabama hickorynut warrants listing as endangered throughout all of its range, our determination does not conflict with the decision in *Center for Biological Diversity v. Everson*, 435 F. Supp. 3d. 69 (D.D.C. 2020) (*Everson*), because that decision related to significant portion of the range analyses for species that warrant listing as threatened, not endangered, throughout all of their range.

Alabama Hickorynut—Determination of Status

Our review of the best available scientific and commercial information indicates that the Alabama hickorynut meets the Act's definition of an endangered species. Therefore, we propose to list the Alabama hickorynut as an endangered species in accordance with sections 3(6) and 4(a)(1) of the Act.

ii. *Obovaria cf. unicolor*

Obovaria cf. unicolor—Status Throughout All of Its Range

After evaluating threats to the species and assessing the cumulative effect of the threats under the Act's section 4(a)(1) factors, we determined that the primary threats affecting the biological status of *Obovaria cf. unicolor* include: sedimentation, altered flow regimes, point and nonpoint source pollution,

and direct and indirect impacts of development and anthropogenic disturbances (Factor A), and impacts of climate change, including sea level rise (Factor E).

Historically, *Obovaria cf. unicolor* was known from 1,454 river miles in Mississippi and Louisiana. The species currently occupies 788 river miles, or 54 percent of its historical range. We delineated 13 subpopulations in 6 populations across the species' historical range. The Amite population of *Obovaria cf. unicolor* is extirpated. Of five extant populations, two exhibit low current resiliency (Upper Pearl, Lower Pearl), and three exhibit high current resiliency (Pascagoula, Tangipahoa, Tickfaw).

Although *Obovaria cf. unicolor* is extant in four of five representative units: Pascagoula, Pearl, Tangipahoa, and Tickfaw, connectivity within and between the representative units is very low due to unsuitable habitat conditions. The species declines in abundance and distribution indicate it may not be able to tolerate major environmental changes; therefore, we determined *Obovaria cf. unicolor* also has minimal ability to adapt to changing environmental conditions (adaptive capacity). However, three *Obovaria cf. unicolor* populations currently with high resiliency are distributed across the species range, so the species currently has moderate redundancy. Given that *Obovaria cf. unicolor* is still present in four representative units, three of the populations are high resiliency, and these populations are distributed across the range, *Obovaria cf. unicolor* is not currently in danger of extinction.

In the future, continued modification to channels and resource extraction are expected to occur within the range of *Obovaria cf. unicolor*. Additionally, one to 5 feet of sea level rise (depending on the sea level rise scenario) would affect the Tickfaw and Tangipahoa populations, causing a range contraction for the species. Species resilience will decrease, with only one population with high resiliency (Pascagoula), two with moderate resiliency (Tangipahoa and Tickfaw), and one with low resiliency (Pearl); the Amite population will remain extirpated. Representation will move from currently moderate to low. This will result in decreased adaptive capacity. Redundancy will move from currently moderate to low.

Thus, after assessing the best scientific and commercial data available, we determine that *Obovaria cf. unicolor* is not currently in danger of extinction but is likely to become in danger of extinction within the

foreseeable future throughout all of its range.

Obovaria cf. unicolor—Status Throughout a Significant Portion of Its Range

Under the Act and our implementing regulations, a species may warrant listing if it is in danger of extinction or likely to become so within the foreseeable future throughout all or a significant portion of its range. The court in *Everson* vacated the aspect 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" (hereafter "Final Policy"; 79 FR 37578, July 1, 2014) that provided if the Services determine that a species is threatened throughout all of its range, the Services will not analyze whether the species is endangered in a significant portion of its range.

Therefore, we proceed to evaluating whether the species is endangered 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 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.

Following the court's holding in *Everson*, we now consider whether the species is in danger of extinction in a significant portion of its range. In undertaking this analysis for *Obovaria cf. unicolor*, we choose to address the status question first.

We evaluated the range of the *Obovaria cf. unicolor* to determine if the species is in danger of extinction in any portion of its range. The range of the 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. For *Obovaria cf. unicolor*, 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 in that portion.

We examined the following threats: sedimentation, altered flow regimes, point and nonpoint source pollution, impacts of climate change, including sea

level rise, and direct and indirect impacts of development and anthropogenic disturbances, including cumulative effects.

The Pearl River unit (upper and lower populations) is the only unit that could conceivably be in danger of extinction now. The Amite population is extirpated, and lost historical range cannot be a significant portion of a species' range under the Final Policy. The Pascagoula, Tangipahoa, and Tickfaw populations all currently exhibit high resiliency. On the other hand, the Pearl River unit has highly fragmented habitat and low resiliency, representation, and redundancy. Additionally, within this unit, *Obovaria cf. unicolor* has lost a large portion of its range, and the Pearl River (above and below the reservoir) has experienced a high degree of channel modification and changes in flow regime, resulting in degraded and unsuitable habitat conditions for *Obovaria cf. unicolor*. Therefore, the populations in this unit may have a different status than the rest of the range (*i.e.*, this portion may be in danger of extinction).

As a result, we move to the significance question. We considered whether the portion may (1) occur in a unique habitat or ecoregion for the species; (2) contain high-quality or high-value habitat relative to the remaining portions of the range; (3) contain habitat that is essential to a specific life-history function for the species and that is not found in the other portions (for example, the principal breeding ground for the species); or (4) contain a large geographic portion of the suitable habitat relative to the remaining portions of the range for the species. The Pearl River unit is not a significant portion of the range because it does not represent a large geographic portion of *Obovaria cf. unicolor's* range (*i.e.*, it constitutes approximately 18 percent of the occupied range), it is not high-quality habitat relative to the remaining portion of the range (the highest quality habitat is in the Pascagoula unit), and it does not provide unique or important resources to a particular life stage of *Obovaria cf. unicolor*.

Therefore, no portion of the species' range provides a basis for determining that the species is in danger of extinction in a significant portion of its range, and we determine that the species is likely to become in danger of extinction within the foreseeable future throughout all 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, including the definition of "significant" that those court decisions held to be invalid.

Obovaria cf. Unicolor—Determination of Status

Our review of the best available scientific and commercial information indicates that *Obovaria cf. unicolor* meets the Act's definition of a threatened species. Therefore, we propose to list *Obovaria cf. unicolor* as a threatened species in accordance with sections 3(20) and 4(a)(1) of the Act.

Available Conservation Measures

Conservation measures provided to species listed as endangered or threatened species under the Act include recognition as a listed species, planning and implementation of recovery actions, requirements for Federal protection, and prohibitions against certain practices. Recognition through listing results in public awareness, and conservation by Federal, State, Tribal, and local agencies, foreign governments, private organizations, and individuals. The Act encourages cooperation with the States and other countries and calls for recovery actions to be carried out for listed species. The protection required by Federal agencies, including the Service, and the prohibitions against certain activities are discussed, in part, below.

The primary purpose of the Act is the conservation of endangered and threatened species and the ecosystems upon which they depend. The ultimate goal of such conservation efforts is the recovery of these listed species, so that they no longer need the protective measures of the Act. Section 4(f) of the Act calls for the Service to develop and implement recovery plans for the conservation of endangered and threatened species. The goal of this process is to restore listed species to a point where they are secure, self-sustaining, and functioning components of their ecosystems.

The recovery planning process begins with development of a recovery outline made available to the public soon after a final listing determination. The recovery outline guides the immediate implementation of urgent recovery actions while a recovery plan is being developed. Recovery teams (composed of species experts, Federal and State agencies, nongovernmental organizations, and stakeholders) may be established to develop and implement recovery plans. The recovery planning process involves the identification of

actions that are necessary to halt and reverse the species' decline by addressing the threats to its survival and recovery. The recovery plan identifies recovery criteria for review of when a species may be ready for reclassification from endangered to threatened ("downlisting") or removal from protected status ("delisting"), and methods for monitoring recovery progress. Recovery plans also establish a framework for agencies to coordinate their recovery efforts and provide estimates of the cost of implementing recovery tasks. Revisions of the plan may be done to address continuing or new threats to the species, as new substantive information becomes available. The recovery outline, draft recovery plan, final recovery plan, and any revisions will be available on our website as they are completed (<https://www.fws.gov/program/endangered-species>), or from our Alabama Ecological Services Field Office (see **FOR FURTHER INFORMATION CONTACT**).

Implementation of recovery actions generally requires the participation of a broad range of partners, including other Federal agencies, States, Tribes, nongovernmental organizations, businesses, and private landowners. Examples of recovery actions include habitat restoration (*e.g.*, restoration of native vegetation), research, captive propagation and reintroduction, and outreach and education. The recovery of many listed species cannot be accomplished solely on Federal lands because their ranges may occur primarily or solely on non-Federal lands. To achieve recovery of these species requires cooperative conservation efforts on private, State, and Tribal lands.

If these species are listed, funding for recovery actions will be available from a variety of sources, including Federal budgets, State programs, and cost-share grants for non-Federal landowners, the academic community, and nongovernmental organizations. In addition, pursuant to section 6 of the Act, the State of Alabama would be eligible for Federal funds to implement management actions that promote the protection or recovery of Alabama hickorynut or *Obovaria cf. unicolor*. Information on our grant programs that are available to aid species recovery can be found at: <https://www.fws.gov/service/financial-assistance>.

Although the Alabama hickorynut and *Obovaria cf. unicolor* are only proposed for listing under the Act at this time, please let us know if you are interested in participating in recovery efforts for this species. Additionally, we invite you to submit any new

information on these species whenever it becomes available and any information you may have for recovery planning purposes (see **FOR FURTHER INFORMATION CONTACT**).

Section 7 of the Act is titled, “Interagency Cooperation,” and it mandates all Federal action agencies to use their existing authorities to further the conservation purposes of the Act and to ensure that their actions are not likely to jeopardize the continued existence of listed species or adversely modify critical habitat. Regulations implementing section 7 are codified at 50 CFR part 402.

Section 7(a)(2) states that each Federal action agency shall, in consultation with the Secretary, ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of a listed species or result in the destruction or adverse modification of designated critical habitat. Each Federal agency shall review its action at the earliest possible time to determine whether it may affect listed species or critical habitat. If a determination is made that the action may affect listed species or critical habitat, formal consultation is required (50 CFR 402.14(a)), unless the Service concurs in writing that the action is not likely to adversely affect listed species or critical habitat. At the end of a formal consultation, the Service issues a biological opinion, containing its determination of whether the Federal action is likely to result in jeopardy or adverse modification.

In contrast, section 7(a)(4) of the Act requires Federal agencies to confer with the Service on any action which is likely to jeopardize the continued existence of any species proposed to be listed under the Act or result in the destruction or adverse modification of critical habitat proposed to be designated for such species. Although the conference procedures are required only when an action is likely to result in jeopardy or adverse modification, action agencies may voluntarily confer with the Service on actions that may affect species proposed for listing or critical habitat proposed to be designated. In the event that the subject species is listed or the relevant critical habitat is designated, a conference opinion may be adopted as a biological opinion and serve as compliance with section 7(a)(2) of the Act.

Examples of discretionary actions for Alabama hickorynut and *Obovaria cf. unicolor* that may be subject to conference and consultation under section 7 are land management or other landscape-altering activities on Federal lands administered by the USACE, U.S.

Department of Agriculture (including the Natural Resources Conservation Service, Farm Services Agency, and U.S. Forest Service), U.S. Department of Energy, U.S. Department of Transportation, U.S. Environmental Protection Agency (EPA), and U.S. Fish and Wildlife Service, as well as actions on State, Tribal, local, or private lands that require a Federal permit (such as a permit from the USACE under section 404 of the Clean Water Act (33 U.S.C. 1251 *et seq.*) or a permit from the Service under section 10 of the Act) or that involve some other Federal action (such as funding from the Federal Highway Administration, Federal Aviation Administration, or the Federal Emergency Management Agency). Federal actions not affecting listed species or critical habitat—and actions on State, Tribal, local, or private lands that are not federally funded, authorized, or carried out by a Federal agency—do not require section 7 consultation. Federal agencies should coordinate with the local Service Field Office (see **FOR FURTHER INFORMATION CONTACT**, above) with any specific questions on section 7 consultation and conference requirements.

The Act and its implementing regulations set forth a series of general prohibitions and exceptions that apply to endangered wildlife. The prohibitions of section 9(a)(1) of the Act, and the Service’s implementing regulations codified at 50 CFR 17.21, make it illegal for any person subject to the jurisdiction of the United States to commit, to attempt to commit, to solicit another to commit, or to cause to be committed any of the following acts with regard to any endangered wildlife: (1) import into, or export from, the United States; (2) take (which includes harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct) within the United States, within the territorial sea of the United States, or on the high seas; (3) possess, sell, deliver, carry, transport, or ship, by any means whatsoever, any such wildlife that has been taken illegally; (4) deliver, receive, carry, transport, or ship in interstate or foreign commerce, by any means whatsoever and in the course of commercial activity; or (5) sell or offer for sale in interstate or foreign commerce. Certain exceptions to these prohibitions apply to employees or agents of the Service, the National Marine Fisheries Service, other Federal land management agencies, and State conservation agencies.

We may issue permits to carry out otherwise prohibited activities involving endangered wildlife under certain circumstances. Regulations

governing permits for endangered wildlife are codified at 50 CFR 17.22, and general Service permitting regulations are codified at 50 CFR part 13. With regard to endangered wildlife, a permit may be issued: for scientific purposes, for enhancing the propagation or survival of the species, or for take incidental to otherwise lawful activities. The statute also contains certain exemptions from the prohibitions, which are found in sections 9 and 10 of the Act.

II. Protective Regulations Under Section 4(d) of the Act for *Obovaria cf. unicolor*

Background

Section 4(d) of the Act contains two sentences. The first sentence states that the Secretary shall issue such regulations as she deems necessary and advisable to provide for the conservation of species listed as threatened species. Conservation is defined in the Act to mean the use of all methods and procedures which are necessary to bring any endangered species or threatened species to the point at which the measures provided pursuant to the Act are no longer necessary. Additionally, the second sentence of section 4(d) of the Act states that the Secretary may by regulation prohibit with respect to any threatened species any act prohibited under section 9(a)(1), in the case of fish or wildlife, or section 9(a)(2), in the case of plants. With these two sentences in section 4(d), Congress delegated broad authority to the Secretary to determine what protections would be necessary and advisable to provide for the conservation of threatened species, and even broader authority to put in place any of the section 9 prohibitions for a given species.

The courts have recognized the extent of the Secretary’s discretion under this standard to develop rules that are appropriate for the conservation of a species. For example, courts have upheld, as a valid exercise of agency authority, rules developed under section 4(d) that included limited prohibitions against takings (see *Alesea Valley Alliance v. Lautenbacher*, 2007 WL 2344927 (D. Or. 2007); *Washington Environmental Council v. National Marine Fisheries Service*, 2002 WL 511479 (W.D. Wash. 2002)). Courts have also upheld 4(d) rules that do not address all of the threats a species faces (see *State of Louisiana v. Verity*, 853 F.2d 322 (5th Cir. 1988)). As noted in the legislative history when the Act was initially enacted, “once an animal is on the threatened list, the Secretary has an

almost infinite number of options available to [her] with regard to the permitted activities for those species. [She] may, for example, permit taking, but not importation of such species, or [she] may choose to forbid both taking and importation but allow the transportation of such species” (H.R. Rep. No. 412, 93rd Cong., 1st Sess. 1973).

The provisions of this species’ proposed protective regulations under section 4(d) of the Act are one of many tools that we would use to promote the conservation of *Obovaria cf. unicolor*. The proposed protective regulations would apply only if and when we make final the listing of *Obovaria cf. unicolor* as a threatened species. Nothing in 4(d) rules change in any way the recovery planning provisions of section 4(f) of the Act, the consultation requirements under section 7 of the Act, or the ability of the Service to enter into partnerships for the management and protection of *Obovaria cf. unicolor*. As mentioned previously in Available Conservation Measures, section 7(a)(2) of the Act requires Federal agencies, including the Service, to ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of designated critical habitat of such species. In addition, even before the listing of any species or the designation of its critical habitat is finalized, section 7(a)(4) of the Act requires Federal agencies to confer with the Service on any agency action which is likely to jeopardize the continued existence of any species proposed to be listed under the Act or result in the destruction or adverse modification of critical habitat proposed to be designated for such species. These requirements are the same for a threatened species regardless of what is included in its 4(d) rule.

Section 7 consultation is required for Federal actions that “may affect” a listed species regardless of whether take caused by the activity is prohibited or excepted by a 4(d) rule (under general application of the “blanket rule” option (for more information, see 89 FR 23919, April 5, 2024) or a species-specific 4(d) rule). A 4(d) rule does not change the process and criteria for informal or formal consultations and does not alter the analytical process used for biological opinions or concurrence letters. For example, as with an endangered species, if a Federal agency determines that an action is “not likely to adversely affect” a threatened species, this will require the Service’s written concurrence (50 CFR 402.13(c)).

Similarly, if a Federal agency determines that an action is “likely to adversely affect” a threatened species, the action will require formal consultation with the Service and the formulation of a biological opinion (50 CFR 402.14(a)). Because consultation obligations and processes are unaffected by 4(d) rules, we may consider developing tools to streamline future intra-Service and interagency consultations for actions that result in forms of take that are not prohibited by the 4(d) rule (but that still require consultation). These tools may include consultation guidance, Information for Planning and Consultation effects determination keys, template language for biological opinions, or programmatic consultations.

Provisions of the Proposed 4(d) Rule

Exercising the Secretary’s authority under section 4(d) of the Act, we have developed a proposed rule that is designed to address *Obovaria cf. unicolor*’s conservation needs. As discussed previously under Summary of Biological Status and Threats, we have concluded that *Obovaria cf. unicolor* is likely to become in danger of extinction within the foreseeable future primarily due to sedimentation, altered flow regimes, point and nonpoint source pollution, impacts of climate change, including sea level rise, and direct and indirect impacts of development and anthropogenic disturbances. There are other activities that could affect the species and its habitat if they occur in areas occupied by the species, such as impacts to water quality and quantity.

Section 4(d) requires the Secretary to issue such regulations as she deems necessary and advisable to provide for the conservation of each threatened species and authorizes the Secretary to include among those protective regulations any of the prohibitions that section 9(a)(1) of the Act prescribes for endangered species. We are not required to make a “necessary and advisable” determination when we apply or do not apply specific section 9 prohibitions to a threatened species (*In re: Polar Bear Endangered Species Act Listing and 4(d) Rule Litigation*, 818 F. Supp. 2d 214, 228 (D.D.C. 2011) (citing *Sweet Home Chapter of Cmty. for a Great Or. v. Babbitt*, 1 F.3d 1, 8 (D.C. Cir. 1993), *rev’d on other grounds*, 515 U.S. 687 (1995))). Nevertheless, even though we are not required to make such a determination, we have chosen to be as transparent as possible and explain below why we find that, if finalized, the protections, prohibitions, and exceptions in this proposed rule as a whole would satisfy the requirement in

section 4(d) of the Act to issue regulations deemed necessary and advisable to provide for the conservation of the *Obovaria cf. unicolor*.

The protective regulations we are proposing for *Obovaria cf. unicolor* incorporate prohibitions from section 9(a)(1) of the Act to address the threats to the species. The prohibitions of section 9(a)(1) of the Act, and implementing regulations codified at 50 CFR 17.21, make it illegal for any person subject to the jurisdiction of the United States to commit, to attempt to commit, to solicit another to commit or to cause to be committed any of the following acts with regard to any endangered wildlife: (1) import into, or export from, the United States; (2) take (which includes harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect) within the United States, within the territorial sea of the United States, or on the high seas; (3) possess, sell, deliver, carry, transport, or ship, by any means whatsoever, any such wildlife that has been taken illegally; (4) deliver, receive, carry, transport, or ship in interstate or foreign commerce, by any means whatsoever and in the course of commercial activity; or (5) sell or offer for sale in interstate or foreign commerce.

In particular, this proposed 4(d) rule would provide for the conservation of the *Obovaria cf. unicolor* by prohibiting the following activities, unless they fall within specific exceptions or are otherwise authorized or permitted: importing or exporting; take; possession and other acts with unlawfully taken specimens; delivering, receiving, carrying, transporting, or shipping in interstate or foreign commerce in the course of commercial activity; or selling or offering for sale in interstate or foreign commerce.

Under the Act, “take” means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. Some of these provisions have been further defined in regulations at 50 CFR 17.3. Take can result knowingly or otherwise, by direct and indirect impacts, intentionally or incidentally. Regulating take would help preserve the species’ remaining populations and decrease synergistic, negative effects from other ongoing or future threats. Therefore, we propose to prohibit take of *Obovaria cf. unicolor*, except for take resulting from those actions and activities specifically excepted by the 4(d) rule.

Exceptions to the prohibition on take would include all of the general exceptions to the prohibition on take of

endangered wildlife, as set forth in 50 CFR 17.21, and additional exceptions, as described below.

Despite the prohibitions regarding threatened species, we may under certain circumstances issue permits to carry out one or more otherwise-prohibited activities, including those described above. The regulations that govern permits for threatened wildlife state that the Director may issue a permit authorizing any activity otherwise prohibited with regard to threatened species. These include permits issued for the following purposes: for scientific purposes, to enhance propagation or survival, for economic hardship, for zoological exhibition, for educational purposes, for incidental taking, or for special purposes consistent with the purposes of the Act (see 50 CFR 17.32). The statute also contains certain exemptions from the prohibitions, which are found in sections 9 and 10 of the Act.

In addition, to further the conservation of the species, any employee or agent of the Service, any other Federal land management agency, the National Marine Fisheries Service, a State conservation agency, or a federally recognized Tribe, who is designated by their agency or Tribe for such purposes, may, when acting in the course of their official duties, take threatened wildlife without a permit if such action is necessary to: (i) Aid a sick, injured, or orphaned specimen; or (ii) dispose of a dead specimen; or (iii) salvage a dead specimen that may be useful for scientific study; or (iv) remove specimens that constitute a demonstrable but nonimmediate threat to human safety, provided that the taking is done in a humane manner; the taking may involve killing or injuring only if it has not been reasonably possible to eliminate such threat by live capturing and releasing the specimen unharmed, in an appropriate area.

We recognize the special and unique relationship with our State natural resource agency partners in contributing to conservation of listed species. State agencies often possess scientific data and valuable expertise on the status and distribution of endangered, threatened, and candidate species of wildlife and plants. State agencies, because of their authorities and their close working relationships with local governments and landowners, are in a unique position to assist us in implementing all aspects of the Act. In this regard, section 6 of the Act provides that we must cooperate to the maximum extent practicable with the States in carrying out programs authorized by the Act. Therefore, any qualified employee or

agent of a State conservation agency that is a party to a cooperative agreement with us in accordance with section 6(c) of the Act, who is designated by his or her agency for such purposes, would be able to conduct activities designed to conserve *Obovaria cf. unicolor* that may result in otherwise prohibited take without additional authorization.

The proposed 4(d) rule would also provide for the conservation of the species by allowing exceptions that incentivize conservation actions or that, while they may have some minimal level of take of *Obovaria cf. unicolor*, are not expected to rise to the level that would have a negative impact (*i.e.*, would have only de minimis impacts) on the species' conservation. The proposed exceptions to the prohibitions include (1) channel and bank restoration projects, (2) silviculture practices and forest management activities that implement State-approved best management practices (BMPs), and (3) transportation projects that avoid instream disturbance in waters occupied by *Obovaria cf. unicolor*. These proposed exceptions to the prohibitions are described further below and are expected to have negligible impacts to *Obovaria cf. unicolor* and its habitat.

The first exception is for incidental take resulting from channel and bank restoration projects for creation of natural, physically stable, ecologically functioning streams, taking into consideration connectivity with floodplain and groundwater aquifers. This exception includes a requirement that stream bank restoration projects require planting appropriate native vegetation, including woody species appropriate for the region and habitat. Actions related to these restoration projects that would negatively affect *Obovaria cf. unicolor* include individual mussels being removed, crushed, and/or killed by heavy equipment operations and rip-rap placement; removal, destruction, and/or replacement of habitat; increased turbidity from streambed disturbance; and alterations to flow and turbidity from permanent (weirs) or temporary (causeways) structures needed for construction. This provision of the proposed 4(d) rule for channel and bank restoration would promote conservation of *Obovaria cf. unicolor* by excepting incidental take resulting from activities that would improve channel conditions and restore degraded, physically unstable streams or stream segments. We anticipate these activities will advance ecological conditions within a watershed to a more natural state that would benefit *Obovaria cf. unicolor*, providing for its conservation.

The second exception is for incidental take resulting from silviculture practices and forest management activities that use State-approved BMPs to protect water and sediment quality and stream and riparian habitat. Silviculture and forest management activities that use State-approved BMPs to protect water and sediment quality and stream and riparian habitat would provide for the conservation of *Obovaria cf. unicolor*. Best management practices would have to be designed to reduce sedimentation, erosion, and bank destruction, thereby protecting instream habitat for the species. We recognize that silvicultural operations are widely implemented in accordance with State-approved BMPs (as reviewed by Cristan et al. 2018, entire), and the adherence to these BMPs broadly protects water quality, particularly related to sedimentation (as reviewed by Cristan et al. 2016, entire; Warrington et al. 2017, entire; Schilling et al. 2021, entire). This provision of the 4(d) rule would promote conservation of *Obovaria cf. unicolor* by excepting from the prohibition on incidental take those silviculture and forest management activities that use State-approved BMPs because this exception would allow these activities to continue while protecting *Obovaria cf. unicolor*'s habitat.

The third exception is for incidental take resulting from transportation projects that avoid or do not include activities that disturb instream habitat. Bridge designs that include spanning the stream and avoiding stream bank disturbance reduce sedimentation and erosion, thereby protecting instream habitat for *Obovaria cf. unicolor*. This provision of the 4(d) rule would promote conservation of *Obovaria cf. unicolor* by encouraging project designs that preserve and potentially improve stream habitat.

III. Critical Habitat

Background

Critical habitat is defined in section 3 of the Act as:

(1) The specific areas within the geographical area occupied by the species, at the time it is listed in accordance with the Act, on which are found those physical or biological features

(a) Essential to the conservation of the species, and

(b) Which may require special management considerations or protection; and

(2) Specific areas outside the geographical area occupied by the species at the time it is listed, upon a determination that such areas are

essential for the conservation of the species.

Our regulations at 50 CFR 424.02 define the geographical area occupied by the species as an area that may generally be delineated around species' occurrences, as determined by the Secretary (*i.e.*, range). Such areas may include those areas used throughout all or part of the species' life cycle, even if not used on a regular basis (*e.g.*, migratory corridors, seasonal habitats, and habitats used periodically, but not solely by vagrant individuals).

Conservation, as defined under section 3 of the Act, means to use and the use of all methods and procedures that are necessary to bring an endangered or threatened species to the point at which the measures provided pursuant to the Act are no longer necessary. Such methods and procedures include, but are not limited to, all activities associated with scientific resources management such as research, census, law enforcement, habitat acquisition and maintenance, propagation, live trapping, and transplantation, and, in the extraordinary case where population pressures within a given ecosystem cannot be otherwise relieved, may include regulated taking.

Critical habitat receives protection under section 7 of the Act through the requirement that Federal agencies ensure, in consultation with the Service, that any action they authorize, fund, or carry out is not likely to result in the destruction or adverse modification of critical habitat. The designation of critical habitat does not affect land ownership or establish a refuge, wilderness, reserve, preserve, or other conservation area. Such designation also does not allow the government or public to access private lands. Such designation does not require implementation of restoration, recovery, or enhancement measures by non-Federal landowners. Rather, designation requires that, where a landowner requests Federal agency funding or authorization for an action that may affect an area designated as critical habitat, the Federal agency consult with the Service under section 7(a)(2) of the Act. If the action may affect the listed species itself (such as for occupied critical habitat), the Federal agency would have already been required to consult with the Service even absent the designation because of the requirement to ensure that the action is not likely to jeopardize the continued existence of the species. Even if the Service were to conclude after consultation that the proposed activity is likely to result in destruction or adverse modification of

the critical habitat, the Federal action agency and the landowner are not required to abandon the proposed activity, or to restore or recover the species; instead, they must implement "reasonable and prudent alternatives" to avoid destruction or adverse modification of critical habitat.

Under the first prong of the Act's definition of critical habitat, areas within the geographical area occupied by the species at the time it was listed are included in a critical habitat designation if they contain physical or biological features (1) which are essential to the conservation of the species and (2) which may require special management considerations or protection. For these areas, critical habitat designations identify, to the extent known using the best scientific and commercial data available, those physical or biological features that are essential to the conservation of the species (such as space, food, cover, and protected habitat).

Under the second prong of the Act's definition of critical habitat, we can designate critical habitat in areas outside the geographical area occupied by the species at the time it is listed, upon a determination that such areas are essential for the conservation of the species.

Section 4 of the Act requires that we designate critical habitat on the basis of the best scientific data available. Further, our Policy on Information Standards Under the Endangered Species Act (published in the **Federal Register** on July 1, 1994 (59 FR 34271)), the Information Quality Act (section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001 (Pub. L. 106-554; H.R. 5658)), and our associated Information Quality Guidelines provide criteria, establish procedures, and provide guidance to ensure that our decisions are based on the best scientific data available. They require our biologists, to the extent consistent with the Act and with the use of the best scientific data available, to use primary and original sources of information as the basis for recommendations to designate critical habitat.

When we are determining which areas should be designated as critical habitat, our primary source of information is generally the information from the SSA report and information developed during the listing process for the species. Additional information sources may include any generalized conservation, criteria, or outline that may have been developed for the species; the recovery plan for the species; articles in peer-reviewed

journals; conservation plans developed by States and counties; scientific status surveys and studies; biological assessments; other unpublished materials; or experts' opinions or personal knowledge.

Habitat is dynamic, and species may move from one area to another over time. We recognize that critical habitat designated at a particular point in time may not include all of the habitat areas that we may later determine are necessary for the recovery of the species. For these reasons, a critical habitat designation does not signal that habitat outside the designated area is unimportant or may not be needed for recovery of the species. Areas that are important to the conservation of the species, both inside and outside the critical habitat designation, will continue to be subject to: (1) Conservation actions implemented under section 7(a)(1) of the Act; (2) regulatory protections afforded by the requirement in section 7(a)(2) of the Act for Federal agencies to ensure their actions are not likely to jeopardize the continued existence of any endangered or threatened species; and (3) the prohibitions found in section 9 of the Act for Alabama hickorynut and in the 4(d) rule for *Obovaria cf. unicolor*. Federally funded or permitted projects affecting listed species outside their designated critical habitat areas may still result in jeopardy findings in some cases. These protections and conservation tools will continue to contribute to recovery of the species. Similarly, critical habitat designations made on the basis of the best available information at the time of designation will not control the direction and substance of future recovery plans, habitat conservation plans (HCPs), or other species conservation planning efforts if new information available at the time of those planning efforts calls for a different outcome.

Critical Habitat Determinability

We determine that designating critical habitat for the Alabama hickorynut and *Obovaria cf. unicolor* is prudent. Our regulations at 50 CFR 424.12(a)(2) state that designation of critical habitat is not determinable when one or both of the following situations exist:

- (i) Data sufficient to perform required analyses are lacking, or
- (ii) The biological needs of the species are not sufficiently well known to identify any area that meets the definition of "critical habitat."

We reviewed the available information pertaining to the biological needs of the species and habitat characteristics where these species are

located. The species' needs of both the Alabama hickorynut and *Obovaria cf. unicolor* are sufficiently well known, but a careful assessment of the economic impacts that may occur due to a critical habitat designation is ongoing. Until these efforts are complete, information sufficient to perform a required analysis of the impacts of the designation is lacking; therefore, we find designation of critical habitat for both the Alabama hickorynut and *Obovaria cf. unicolor* is prudent but not determinable at this time. We plan to publish a proposed rule to designate critical habitat for both the Alabama hickorynut and *Obovaria cf. unicolor* concurrently with the availability of an economic analysis of the proposed designation.

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.

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

Regulations adopted pursuant to section 4(a) of the Act are exempt from

the National Environmental Policy Act (NEPA; 42 U.S.C. 4321 *et seq.*) and do not require an environmental analysis under NEPA. We published a notice outlining our reasons for this determination in the **Federal Register** on October 25, 1983 (48 FR 49244). This includes listing, delisting, and reclassification rules, as well as critical habitat designations and species-specific protective regulations promulgated concurrently with a decision to list or reclassify a species as threatened. The courts have upheld this position (*e.g., Douglas County v. Babbitt*, 48 F.3d 1495 (9th Cir. 1995) (critical habitat); *Center for Biological Diversity v. U.S. Fish and Wildlife Service*, 2005 WL 2000928 (N.D. Cal. Aug. 19, 2005) (concurrent 4(d) rule)).

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, May 4, 1994), Executive Order 13175 (Consultation and Coordination with Indian Tribal Governments), the President's memorandum of November 30, 2022 (Uniform Standards for Tribal Consultation; 87 FR 74479, December 5, 2022), and the Department of the Interior's manual at 512 DM 2, we readily acknowledge our responsibility to communicate meaningfully with Federally recognized Tribes and Alaska Native Corporations (ANCs) on a government-to-government basis. In accordance with Secretary's 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.

We have determined that no Tribal lands fall within the range of the Alabama hickorynut or *Obovaria cf. unicolor*, and no Tribes will be affected if we list these species.

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 Alabama Ecological Services Field Office (see **FOR FURTHER INFORMATION CONTACT**).

Authors

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

List of Subjects in 50 CFR Part 17

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

Proposed Regulation Promulgation

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

PART 17—ENDANGERED AND THREATENED WILDLIFE AND PLANTS

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

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

■ 2. In § 17.11, amend paragraph (h) by adding entries for “Hickorynut, [no common name]” and “Hickorynut, Alabama” to the List of Endangered and Threatened Wildlife in alphabetical order under CLAMS to read as follows:

§ 17.11 Endangered and threatened wildlife.

* * * * *
(h) * * *

Common name	Scientific name	Where listed	Status	Listing citations and applicable rules
*	*	*	*	*
CLAMS				
*	*	*	*	*
Hickorynut, [no common name].	<i>Obovaria cf. unicolor</i>	Wherever found	T	[Federal Register citation when published as a final rule]; 50 CFR 17.45(i). ^{4d}
Hickorynut, Alabama	<i>Obovaria unicolor</i>	Wherever found	E	[Federal Register citation when published as a final rule].
*	*	*	*	*

■ 3. Further amend § 17.45, as proposed to be amended on March 20, 2023, at 88 FR 16776 and on July 26, 2023, at 88 FR 48294, by adding paragraph (i) to read as follows:

§ 17.45 Species-specific rules—snails and clams.

* * * * *

(i) Hickorynut, [no common name] (*Obovaria* cf. *unicolor*)—(1)
Prohibitions. The following prohibitions that apply to endangered wildlife also apply to *Obovaria* cf. *unicolor*. Except as provided under paragraph (i)(2) of this section and §§ 17.4 and 17.5, it is unlawful for any person subject to the jurisdiction of the United States to commit, to attempt to commit, to solicit another to commit, or cause to be committed, any of the following acts in regard to this species:

(i) Import or export, as set forth at § 17.21(b) for endangered wildlife.

(ii) Take, as set forth at § 17.21(c)(1) for endangered wildlife.

(iii) Possession and other acts with unlawfully taken specimens, as set forth at § 17.21(d)(1) for endangered wildlife.

(iv) Interstate or foreign commerce in the course of a commercial activity, as set forth at § 17.21(e) for endangered wildlife.

(v) Sale or offer for sale, as set forth at § 17.21(f) for endangered wildlife.

(2) *Exceptions from prohibitions.* In regard to this species, you may:

(i) Conduct activities as authorized by a permit under § 17.32.

(ii) Take, as set forth at § 17.21(c)(3) and (4) for endangered wildlife.

(iii) Take, as set forth at § 17.31(b).

(iv) Possess and engage in other acts with unlawfully taken wildlife, as set forth at § 17.21(d)(2) for endangered wildlife.

(v) Take incidental to an otherwise lawful activity caused by:

(A) Channel and bank restoration projects for creation of natural,

physically stable, ecologically functioning streams, taking into consideration connectivity with floodplain and groundwater aquifers. Stream bank restoration projects require planting appropriate native vegetation, including woody species appropriate for the region and habitat.

(B) Silviculture practices and forest management activities that implement State-approved best management practices to protect water and sediment quality and stream and riparian habitat.

(C) Transportation projects that avoid or do not include activities that disturb instream habitat, including, but not limited to, bridge designs that span the stream and avoid stream bank disturbance.

Martha Williams,

Director, U.S. Fish and Wildlife Service.

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