Recovery Plan for the endangered Georgia pigtoe (*Pleurobema hanleyianum*)
https://ecos.fws.gov/docs/recovery_plan/2014%2010%2031%20%20Three%20Mollusks%20final%20recovery%20plan.pdf

Original Approved: November 6, 2014
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Amendment 1

We have identified the best available information that indicates the need to amend recovery criteria for the Georgia pigtoe since the Recovery Plan (RP) was completed. In this proposed modification, we synthesize the adequacy of the existing recovery criteria, show amended recovery criteria, and the rationale supporting the proposed RP modifications. The proposed modifications are shown as an addendum that supplements the recovery plan by adding recovery criteria, superseding the recovery criteria for the Georgia pigtoe in its RP, Part II (USFWS 2014, p. 27). Recovery plans are a non-regulatory document that provides guidance on how best to help recover species.

For
U.S. Fish and Wildlife Service
Atlanta, Georgia

Approved: Franklin D. Arnold III
Acting **Regional Director, U.S. Fish and Wildlife Service**

Date: 9/26/19

METHODOLOGY USED TO COMPLETE THE RECOVERY PLAN AMENDMENT

This amendment was developed using the most recent and best available information for the species. The lead biologist for the species gathered information for the Georgia pigtoe, that included data from recent surveys and/or publications in Alabama, Georgia, and Tennessee. In addition, we notified species experts of the U.S. Fish and Wildlife Service (Service) process to complete this amendment, and a meeting among Service biologists was conducted to develop

the delisting criteria. Ultimately, biologists and managers in the Georgia Ecological Services Office and Alabama Ecological Services Field Office developed the amended recovery criteria utilizing the best available information.

ADEQUACY OF RECOVERY CRITERIA

Section 4(f)(1)(B)(ii) of the Endangered Species Act (Act) requires that each recovery plan shall incorporate, to the maximum extent practicable, "objective, measurable criteria which, when met, would result in a determination...that the species be removed from the list." Legal challenges to recovery plans (see Fund for Animals v. Babbitt, 903 F. Supp. 96 (D.D.C. 1995)) and a Government Accountability Audit (GAO 2006) also have affirmed the need to frame recovery criteria in terms of threats assessed under the five listing factors.

Recovery Criteria

The current recovery plan for Georgia pigtoe (USFWS 2014) does not provide adequate guidance for downlisting or delisting (https://ecos.fws.gov/docs/recovery_plan/2014%2010%2031%20%20Three%20Mollusks%20final%20recovery%20plan.pdf).

Synthesis for the Georgia pigtoe

The Georgia pigtoe mussel was federally listed as endangered, along with designation of critical habitat in approximately 153 kilometers (95.07 miles) of stream channel, on November 2, 2010 (75 FR 67512). The Georgia pigtoe is endemic to the Coosa River drainage of the Mobile River Basin in Alabama, Georgia, and Tennessee.

Georgia pigtoe has disappeared from 90 percent or more of its historical range, primarily due to impoundment of riverine habitats. It is currently known from a few isolated shoals in the Upper Conasauga River in Murray and Whitfield counties, Georgia, and in Polk County, Tennessee (Johnson and Evans 2000, Evans 2001, Johnson *et al.* 2005, MRBMRC 2010). Recent surveys in Tennessee encountered the Georgia pigtoe in 2014 (2 live), 2015 (1 live) and 2018 (1 live) in the Conasauga River (D. Hubbs, pers. comm. 2018). While it remains extant in the short section of the river recently surveyed, it is rare and represented by older/larger individuals (D. Hubbs, pers. comm. 2018). Georgia has only one occurrence record from the Conasauga River in 2016 (1 live). A Georgia pigtoe relic shell was found in the Conasauga in 2014 with no other occurrences since 1999. The most recent occurrences of the Georgia pigtoe in Alabama are from Little Canoe Creek (St. Clair/Etowah County line) in 2018 (1 fresh dead) and Big Canoe Creek

(St. Clair County) in 2019 (2 live) (T. Fobian pers. comm. 2019). It is believed to have possibly been found in Yellowleaf Creek in 2016 (1 live) (Gangloff 2016).

AMENDED RECOVERY CRITERIA

Recovery criteria serve as objective, measurable guidelines to assist in determining when an endangered species has recovered to the point that it may be downlisted to threatened, or that the protections afforded by the Act are no longer necessary and the Georgia pigtoe may be delisted. Delisting is the removal of a species from the Federal Lists of Endangered and Threatened Wildlife and Plants. Downlisting is the reclassification of a species from endangered to threatened. The term "endangered species" means any species (species, sub-species, or DPS) which is in danger of extinction throughout all or a significant portion of its range. The term "threatened species" means any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

Revisions to the Lists, including delisting or downlisting a species, must reflect determinations made in accordance with sections 4(a)(1) and 4(b) of the Act. Section 4(a)(1) requires that the Secretary determine whether a species is an endangered species or threatened species (or not) because of threats to the species. Section 4(b) of the Act requires that the determination be made "solely on the basis of the best scientific and commercial data available." Thus, while recovery plans provide important guidance to the Service, States, and other partners on methods of minimizing threats to listed species and measurable objectives against which to measure progress towards recovery, they are guidance and not regulatory documents.

Recovery criteria should help indicate when we would anticipate that an analysis of the species' status under section 4(a)(1) would result in a determination that the species is no longer an endangered species or threatened species. A decision to revise the status of or remove a species from the Federal Lists of Endangered and Threatened Wildlife and Plants, however, is ultimately based on an analysis of the best scientific and commercial data then available, regardless of whether that information differs from the recovery plan, which triggers rulemaking. When changing the status of a species, we first propose the action in the *Federal Register* to seek public comment and peer review, followed by a final decision announced in the *Federal Register*.

Amended Recovery Criteria

We are providing recovery criteria for the Georgia pigtoe RP which will supplement the existing criteria. The below recovery criteria describes a recovered species, or a species that should be considered for removal from the List of Endangered and Threatened Wildlife and Plants (50 CFR 17).

1) At least six (6) populations exhibit a stable or increasing trend, evidenced by natural recruitment, and multiple age classes (Factors A and E).

2) At least four (4) populations (as defined in Criteria 1) occupy four of the six HUC8 watersheds (Conasauga, Coosawattee, Oostanaula, Upper Coosa, Middle Coosa, and Lower Coosa), and one (1) population occupies the main stem of the Oostanaula or the Coosa River to protect against extinction from catastrophic events and maintain adaptive potential (Factors A and E).

3) Threats have been addressed and/or managed to the extent that the species will remain viable into the foreseeable future (Factors A, C, D, and E).

Justification for Amended Recovery Criteria

Criterion 1: Populations that exhibit a stable or increasing trend, natural recruitment, and multiple age classes demonstrate that the population is secure and will be resilient to stochastic events (Factor A and E). For this mollusk it is believed that six populations exhibiting these traits are necessary to ensure sufficient redundancy such that the species will no longer require protection under the Act.

Criterion 2: To ensure that the species will not become threatened with extinction in the foreseeable future a sufficient number of populations should be distributed throughout its historical range. Therefore, we believe it is necessary for the species to occur in these representative units and in a variety of stream sizes. Using HUC8s as recovery units establish the spatial distribution required to reduce the likelihood of extinction from catastrophic events. Expanding the species' range into historically occupied river reaches will increase its resiliency, representation, and redundancy, and reduce threats due to curtailment of range (Factor A) and stochastic events (Factor E).

Criterion 3: Abatement of the threats will allow populations to become stable and contribute to the viability of the species. Georgia pigtoe is only known to persist in free-flowing streams. Eliminating significant sources of sedimentation, avoiding channelization and further dam construction, and adhering to good land management practices that minimize non-point source pollution in these sub-basins, will contribute to the conservation of the species into the foreseeable future. Agreements and management plans targeting threats related to these three species are necessary to ensure the species will no longer require protection under the Act (Factors A, C, D, and E).

Rationale for Recovery Criteria

The Service adopted analysis of Resiliency, Redundancy, and Representation (3Rs) as a means to determine species viability in regards to listing and other regulatory decisions. The amended criteria follow a similar analysis process. All criteria must address and meet the species needs to accomplish the standards under the 3Rs.

Resiliency (as defined in Smith *et al.* 2018) is met through Criteria 1 listed above. The Service believes the establishment of a stable or increasing trend in population numbers, and determining successful recruitment through multiple age classes, that the species will withstand any stochastic disturbance that may occur into the future.

Redundancy (as defined in Smith *et al.* 2018) is addressed in Criteria 1 and 3. The requirement of six resilient populations of the Georgia pigtoe across multiple HUC8 watersheds, as well as, in multiple stream orders will provide the distribution necessary to avoid extinction following any catastrophic event. Each of the HUC8s possess unique land characteristics, annual climate variations, and stream morphology. These variances will shield populations across multiple possible catastrophic events.

Representation (as defined in Smith *et al.* 2018) will be accomplished when all three criteria listed above are accomplished. The species will be distributed across multiple states, physiographic provinces, and stream orders. This should allow for preservation of genetic exchange into the future between two or more populations, distribution across multiple natural variances in habitat types, and allow for future adaptations to the changing environmental conditions.

Specifically, the proposed delisting recovery criteria reflect the best available and most up-to-date information for the Georgia pigtoe. The stability of six populations reduces the probability of extinction in the foreseeable future, but aquatic species, and especially freshwater mussels, are subject to habitat degradation from effects throughout their entire catchment. This relationship is reflected in the wide variety of threats mentioned under Factor A and E in the initial listing publication (58 FR 14330). Due to the large number of threats to each population, the only way to ensure that the species will not become threatened with extinction in the future is to create a sufficient number of populations distributed throughout the Coosa Basin, such that the loss of any one population due to unforeseen circumstances does not limit the continued existence of the species. For this reason we believe that a robust and well developed propagation and reintroduction strategy is necessary for the delisting of this species. We suggest the maintenance and improvement of the existing populations along with the establishment of additional

populations will have demonstrated that the combination of threats acknowledged in the initial listing are reduced to a degree that is manageable, and that species viability can be sustained despite remaining threats.

Additionally, the development of a successful reintroduction strategy (redundancy across tributaries and large river systems) will demonstrate that future threats are likely to be addressed through active management of the species without resort to future re-listing of the species, ensuring they no longer meet the definition of an endangered species.

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