Recovery Plan for: Southern Combshell Mussel (*Epioblasma penita*)
Black Clubshell Mussel (*Pleurobema curtum*)
Available at: https://ecos.fws.gov/docs/recovery_plan/891114e.pdf

Original Approved: November 14, 1989
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AMENDMENT 1

We have analyzed the best available information that indicated the need to amend recovery criteria for these species since the recovery plan was completed. In this recovery plan amendment, we reference the current criteria; identify the criteria amendments, and document information and changes in status and management we considered in drafting criteria amendments. The criteria amendments are shown as an appendix that supplements the recovery plan, superseding only Part II, A, p. 9, of the recovery plan (U.S. Fish and Wildlife Service (USFWS, Service) 1989). 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: _____
Acting **Regional Director, U.S. Fish and Wildlife Service**

Date: 9/26/19

METHODOLOGY USED TO COMPLETE THE RECOVERY PLAN AMENDMENT

In amending the recovery goal and criteria, we used information derived during the 5-year reviews of the five Tombigbee River mussels (USFWS 2009, 2015), which were peer-reviewed by State, Service, and other species and ecosystem experts. We have also considered information derived and provided by collaborators and states since the last 5-year review. We provided the draft revised recovery goal and criteria for southern combshell and black clubshell mussels to States and other conservation collaborators for their review, and have incorporated their pertinent comments and edits.

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 delisting factors.

Recovery Criteria

The recovery plan (https://ecos.fws.gov/docs/recovery_plan/891114e.pdf) (USFWS 1989) contained no criteria for downlisting or delisting the southern combshell or black clubshell mussels (see page 9).

Synthesis

The southern combshell and black clubshell are two of five mussel species in the Tombigbee River drainage that were protected under the Endangered Species Act following the construction of the Tennessee-Tombigbee Waterway (TTW). Because of extensive habitat loss and curtailment of range the recovery objective for all five mussel species, including the southern combshell and black clubshell, was to prevent their extinction (Service 1989).

The Mobile River Basin is renowned for high diversity and endemism of aquatic species, particularly freshwater mussels. Due to basin-wide habitat loss and fragmentation particularly from impoundment, high numbers of listed and imperiled aquatic species, and the isolation of their surviving populations from each other, the Service developed the Mobile River Basin Aquatic Ecosystem Recovery Plan (https://ecos.fws.gov/docs/recovery_plan/001117.pdf; Ecosystem Plan; USFWS 2000). This plan not only recognized the need for protection and restoration of mussel habitats, but also absence of the science and facilities essential to their management (USFWS 2000). Lacking these, the recovery objective for all listed mussels within the basin was limited to preventing their extinction through protection of the species and their remaining occupied habitats, while developing the science, technology, facilities, and partnerships necessary for propagation, reintroduction, and long-term husbandry.

Our 2009, 5-year review of the Five Tombigbee River mussels found no evidence since 1997 of the persistence of black clubshell in the East Fork, Tombigbee River. However, survival and recruitment of southern combshell was documented from the Buttahatchee River, along with indications that habitats within that river were improving (USFWS 2009). The review also confirmed southern combshell extirpation from the Cahaba, Alabama, Coosa, and Tombigbee Rivers, noting, however, that conditions in some of these rivers had improved to a point that they might once again support the species. The 2009 review also recognized that in response to the Ecosystem Plan, the Alabama Aquatic Biodiversity Center (AABC) had been established by the State of Alabama to develop facilities, techniques, and science required for imperiled aquatic mollusk management within the Mobile River Basin, and was actively working with southern combshell. By 2007, attempts by AABC to propagate the southern combshell had been marginally successful, but limited (USFWS 2009).

Following the 2009 review, a Plan for the Population Restoration and Conservation of the Freshwater Mollusks of the Mobile River Drainage through a process of controlled propagation, reintroduction, and augmentation was developed (Mobile River Basin Mollusk Restoration

Committee 2010). This plan provided a formal federal and state framework for the restoration of freshwater mollusk resources and their ecological functions into appropriate reaches of the Mobile River Basin.

By the time of our 2015, 5-year review, an intensive systematic mussel survey of the East Fork Tombigbee including the site last known to support black clubshell found no evidence of the species' survival (Gangloff and Hamstead 2012). Conditions at the historical collection site had also degraded to such an extent that few mussels of any species were found there. However, other portions of the river appear to be stabilizing (Gangloff and Hamstead 2012), and the potential of survival persists.

Buttahatchee River habitats, however, demonstrated continued improvement, and surveys there documented an increase in southern combshell range to a 50 km reach of the river (USFWS 2015). Propagation technology and science at AABC had also improved to the extent that juvenile combshells were produced in sufficient numbers that they could be released into a reach of the Cahaba River, Alabama, in 2012 and 2015, with releases planned for the East Fork Tombigbee drainage, Mississippi, in 2016 (USFWS 2015). Recent monitoring of both these reaches show survival and persistence of the reintroduced combshells. Although there has been no evidence of recruitment as of yet, follow up monitoring in the Cahaba River has detected gravid female southern combshells on multiple occasions (P. Johnson, (AABC), pers. comm. 2018).

The development of propagation technology and facilities for imperiled Mobile River Basin mussel species, along with a federal/state framework and partnership to restore species within their historical ranges, allows us to now consider the potential for recovery of the southern combshell and black clubshell mussels and identify recovery criteria.

AMENDED RECOVERY CRITERIA/OBJECTIVE

Recovery criteria serve as objective, measurable guidelines to assist in determining when an endangered species has recovered to the point that it may be delisted and the protections afforded by the Act are no longer necessary. Delisting is the removal of a species from the Federal Lists of Endangered and Threatened Wildlife and Plants. 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 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. 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*.

The recovery objective is to secure the conservation of the southern combshell and black clubshell mussels to the extent that the protections of the Act are no longer required. This will require reestablishing multiple, independent, viable populations across the species' ranges, and securing management of those populations and their habitats for the foreseeable future.

Herein, we provide delisting criteria for the southern combshell and black clubshell mussels as follows:

Delisting Recovery Criteria

Southern Combshell Mussel

Southern combshell mussel will be considered for delisting when:

1) The southern combshell population in the Buttahatchee River remains stable or increases over time, as evidenced by the presence of multiple age classes and naturally produced juveniles (**Factor A**).
2) At least two additional independent, self-sustaining populations are reestablished within the historical range as conditions allow, with a spatial distribution that is protective against extinction from any single catastrophic event and that provides for maintaining the adaptive potential of the species (**Factors A, E**).
3) Active management programs and partnerships are in place in the historically occupied drainages and have assurance of continuing for the foreseeable future. Programs must demonstrate their potential to maintain or improve habitats, provide for stability or expansion of existing or reestablished populations, and allow for species reintroduction within improved reaches (**Factors A, D, and E**).
4) Technology and facilities for maintaining and propagating southern combshell mussels, and regulatory mechanisms for managing and reestablishing the species within its historical range are secured (**Factor D**).

Black Clubshell Mussel

Black clubshell mussel will be considered for delisting when:

1) At least three independent, self-sustaining populations are discovered or reestablished within the historical range, with a spatial distribution that is protective against extinction from any single catastrophic event and that provides for maintaining the adaptive potential of the species (**Factors A, E**).
2) Active management programs and partnerships are in place in the historically occupied drainage with assurance of continuing for the foreseeable future. Programs must demonstrate their potential to maintain or improve habitats, provide for stability or expansion of existing or reestablished populations, and allow for species reintroduction within improved reaches (**Factors A, D, and E**).
3) Technology and facilities for maintaining and propagating black clubshell mussels, and regulatory mechanisms for managing and reestablishing the species within its historical range are secured (**Factor D**).

Justification of Criteria

The delisting recovery criteria reflect the best available and most up-to-date information on these species. These criteria address the five factors described in section 4(a)(1) of the Act and incorporate the conservation biological principles of representation, resiliency, and redundancy (Wolf *et al.* 2015).

Southern Combshell Mussel

Criterion 1: When listed, the only known surviving southern combshell mussel population occurred within a short reach of the Buttahatchee River, Mississippi (Service 2015). The primary threats to the species were identified as destruction and modification of habitat, and curtailment of range (**Factor A**). Criterion 1 demonstrates that the surviving population is secure. The criterion is measured by persistence and natural recruitment of the species over time. Conservation of the only surviving population is protective of the species remaining genetic and habitat representation.

Criterion 2: Expanding the species range into historically occupied river drainages increases its resiliency, representation, and redundancy, and reduces threats due to curtailment of range (**Factor A**) or stochastic events (**Factor E**).

Criteria 3 & 4: Due to extreme habitat fragmentation by multiple dams and large expanses of impounded waters, the southern combshell will remain a conservation reliant species in need of management and manipulation into the foreseeable future (Factor A). Therefore, strong federal/state/ private partnerships with adequate regulatory mechanisms which are adaptable to, and address future natural and human changes within the Basin will be required within each occupied watershed (**Factors A, D, E**).

Black Clubshell Mussel

Criterion 1: When listed, the primary threat to black clubshell was destruction and modification of habitat, and curtailment of range (**Factor A**). Location and conservation of a surviving population is protective of the species remaining genetic and habitat representation. Expanding the species range into historically occupied river reaches (e.g., below Tenn-Tom dams) will increase its resiliency, representation, and redundancy, and reduce threats due to curtailment of range (**Factor A**) and stochastic events (**Factor E**).

Criteria 2 & 3: Due to extreme habitat fragmentation by multiple dams and large expanses of impounded waters, the black clubshell will remain a conservation reliant species in need of management and manipulation into the foreseeable future (**Factor A**). Therefore, strong federal/state/ private partnerships with adequate regulatory mechanisms which are adaptable to and address future natural and human changes within the Basin will be required within each occupied watershed (**Factors A, D, E**).

Rationale for Amended Recovery Criteria

The delisting recovery criteria reflect the best available and most up-to-date information on the southern combshell and black clubshell mussels. The documentation that populations are self-sustaining and the threats are being managed will ensure the resiliency of these populations into the foreseeable future. The location or establishment of additional populations for each of these within historical watersheds will provide a buffer against loss through catastrophic events, thereby ensuring representation and redundancy in these species. Since establishment of new populations will likely be required to meet these criteria, the technical and logistical aspects of captive propagation for these species will be needed.

LITERATURE CITED

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