

Recovery Plan for the Threatened Alabama Moccasinshell (*Medionidus acutissimus*)
https://ecos.fws.gov/docs/recovery_plan/001117.pdf

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Original Prepared by: Jackson, Mississippi Field Office and Mobile River Basin Coalition Planning Committee

We have identified best available information that indicates the need to amend recovery criteria for the Alabama Moccasinshell (*Medionidus acutissimus*). In this proposed modification, we synthesize the adequacy of existing recovery criteria, show amended recovery criteria, and the rationale supporting the proposed recovery plan modification. This amendment supplements the Recovery Objective and Criteria section of the *Recovery Plan for Mobile River Basin Aquatic Ecosystem* (USFWS, 2000, p. 51). Recovery plans are a non-regulatory document that provide guidance on how best to help recover species.

**For
U.S. Fish and Wildlife Service
Southeast Region
Atlanta, GA**

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METHODOLOGY USED TO COMPLETE THE RECOVERY PLAN AMENDMENT

This proposed amendment to the recovery criteria was developed using the most recent and best available information for the species. A team of biologists in the U.S. Fish and Wildlife Service (Service) Region 4 Ecological Services gathered this information to assist the lead Field Office (Alabama Ecological Services Field Office) to complete this amendment.

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 (https://ecos.fws.gov/docs/recovery_plan/001117.pdf) (USFWS 2000) does not provide recovery criteria, but it does outline recovery objectives, see page 51.

Synthesis

The Alabama Moccasinshell was listed as threatened in March 1993 (58 FR 14330). Critical habitat was designated in July 2004 (69 *Federal Register* 40171). Currently the species is threatened by habitat modification, sedimentation, degradation of water quality, impoundment by dams, mining, point and nonpoint discharges, redirection of flow (Factor A); predation disproportionately affecting small populations (Factor C); lack of adequate enforcement of existing Federal or State regulations prohibiting take (Factor D); fragmentation of populations leading to genetic diversity loss (Factor E). Critical habitat was designated in July 2004 (69 FR 40171).

The Alabama Moccasinshell was historically known from the Alabama, Tombigbee, Black Warrior, Cahaba, and Coosa rivers and their tributaries in Alabama, Mississippi, Georgia, and Tennessee (USFWS 2000). Williams *et al.* (2008) also tentatively assigned populations in the Escambia, Yellow and Choctawhatchee River drainages to this species, however this species has not been collected from the Gulf Coast drainages since the 1960s. The species continues to survive in Tombigbee River, Black Warrior River, and in the upper Coosa River drainages. For specific location information, refer to the most recent 5-year review (<https://ecos.fws.gov/ecp0/profile/speciesProfile?spcode=F038>) (USFWS 2008).

Although new tributary populations have been discovered since listing, they are generally characterized as small and localized. The more robust populations in Sipsey Fork, Buttahatchee and Sipsey rivers continue as stronghold populations. Population trends and viability of all other populations are relatively unknown. Low numbers in many stream drainages suggest marginal habitat conditions. All drainage populations remain susceptible to stochastic and catastrophic events (e.g., spills, drought and/or land use runoff).

Extant populations remain vulnerable to habitat degradation and loss, population isolation, and the cumulative effects of land use activities on aquatic environments. Pollution and water quality impairments continue to be factors at most sites where this species occurs. Natural factors, such as drought, also threaten the Alabama Moccasinshell and were documented in Bankhead National Forest during the severe drought in 2000 (Haag and Warren 2003). Natural droughts can potentially have negative effects on water quality and fragment stream sections into isolated pools.

Alabama Moccasinshell status has improved since listing primarily due to the discovery of new populations. The more robust populations in Sipsey Fork, Buttahatchee and Sipsey rivers continue as stronghold populations. Host fish have been identified, and anatomy and behavior to attract host fish have been described. However, the range remains highly fragmented and most populations are small, isolated, and vulnerable to nonpoint source pollution, drought, or other stochastic events. Population trends and resilience of all other populations is unknown. Extreme reduction and fragmentation of range and habitat, low population sizes, and vulnerability of surviving populations to nonpoint source pollution and stochastic events continue to threaten Alabama Moccasinshell. However, the recovery potential for this species is high, due to the presence of multiple populations and the ease of obtaining brood stock and propagation (MRBMRC 2010).

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 reclassified to threatened, or that the protections afforded by the Act are no longer necessary and Alabama Moccasinshell may be delisted. Delisting is the removal of a species from the Federal Lists of Endangered and Threatened Wildlife and Plants. Reclassification is moving 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 reclassifying 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*.

Herein, we provide delisting criteria for the Alabama Moccasinshell (USFWS 2000) as the plan did not specify recovery criteria.

Delisting Recovery Criteria

We are providing recovery criteria for the Alabama Moccasinshell recovery plan (USFWS 2000). The below recovery criteria describes a recovered species, or a species that should be considered for removal from the Federal Lists of Endangered and Threatened Wildlife and Plants (50 CFR 17).

1. Eight (8) populations exhibit a stable or increasing trend, natural recruitment, and multiple age classes (Factors A, D, and E).

2. Two (2) populations (as defined in Criterion 1) occur in each of the following sub-basins: Tombigbee (2), Black Warrior (2), and Coosa rivers (2) (Factors A, D, 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, D, and E).

Justification for Amended Recovery Criteria

The delisting recovery criteria reflect the best available and current information for the Alabama Moccasinshell. The recovery criteria address Factors A, D, and E. Factors B and C are not considered threats to this species.

Criterion 1: Eight populations would expand the species range into historically occupied river drainages increasing its resiliency, representation, and redundancy, and reducing threats due to curtailment of its range or stochastic events. The species' range has been reduced due to habitat degradation from reservoir construction, cumulative effects of land use change, and watershed level effects on water quality, water quantity, habitat connectivity, and instream habitat quality. Recovery Criterion 1 maximizes resiliency by ensuring presence of multiple age classes, and sufficient number of individuals to sustain populations. The criterion also maximizes redundancy by defining the number of resilient populations and proportion of range occupied to delist the species (Factors A, D and E).

Criterion 2: Sustaining spatial distribution of the species throughout each targeted river basin protects against catastrophic or stochastic events that may eliminate or substantially reduce isolated or fragmented populations. 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 Tombigbee, Black Warrior, and Coosa river sub-basins as described in Criterion 2. By ensuring a sufficient number of resilient populations are distributed across the species range, we address representation in order to maintain adaptive potential through preserving genetic and ecological diversity (Factors A, D, and E).

Criterion 3: Abatement of the threats to the Alabama Moccasinshell will allow populations to become stable and contribute to the viability of the species. The Alabama Moccasinshell is only known to persist in free-flowing streams. Current State and Federal regulations regarding pollutants are assumed to be protective of native aquatic species; however, some native species may have lower thresholds to some pollutants than the test organisms commonly used in developing the criteria. Eliminating significant sources of sedimentation, avoiding channelization and further dam construction, and adhering to good land management practices that minimize nonpoint source pollution in these sub-basins, will contribute to the conservation of the species into the foreseeable future (Factors A, D, and E).

Rationale for Amended 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 Criterion 1 listed above. The Service believes establishment of a robust population that demonstrates a stable or increasing trend in population numbers, and determining successful recruitment through multiple age classes, the Alabama Moccasinshell 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 2. The requirement of eight resilient populations across the historical range will represent multiple stream orders and provide the distribution necessary to avoid extinction following any unforeseen catastrophic events. These different drainages 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 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.

LITERATURE CITED

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