Anastasia Island Beach Mouse (*Peromyscus polionotus phasma*) Recovery Plan
https://ecos.fws.gov/docs/recovery_plan/930923b.pdf

Original Approved: September 23, 1993
Original Prepared by: Southeast Region

AMENDMENT 1

We have identified the need to amend recovery criteria for Anastasia Island beach mouse (*Peromyscus polionotus phasma*; AIBM). In this proposed modification, we synthesize the adequacy of the existing recovery criteria; show amended recovery criteria, and provide the rationale supporting the modification. The proposed modification is an addendum that supplements the AIBM Recovery Plan (USFWS 1993) by adding delisting criteria which were not developed at the time of publication. The Recovery Objective and the Recovery Actions are described in Part II: RECOVERY sections A and B (pages 8-12) of the AIBM Recovery Plan. Recovery plans are non-regulatory documents that provide guidance on how best to help recover the species.

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

Approved: Larry Williams
Acting **Regional Director, U.S. Fish and Wildlife Service**

Date: September 26, 2019

METHODOLOGY USED TO COMPLETE THE RECOVERY PLAN AMENDMENT

This proposed amendment to the recovery criteria was developed using the best available information for the species. The U.S. Fish and Wildlife Service (Service) North Florida Ecological Services Field Office analyzed this information and formulated delisting criteria for the AIBM. The Service published the proposed delisting criteria as a proposed Amendment to the recovery criteria in the Federal Register in order to announce its availability for public comment. We only received comments from the Florida Fish and Wildlife Conservation Commission, and we reviewed, addressed, and incorporated these comments into this final 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 AIBM Recovery Plan (USFWS 1993, p. 9 https://ecos.fws.gov/docs/recovery_plan/930923b.pdf only provides downlisting criteria for the AIBM.

Synthesis

The assessment of threats, suggested recovery actions, and life history information included in the Recovery Plan (USFWS 1993) and 5-Year Review Action Items (USFWS 2019) largely remain applicable and relevant. Habitat loss, fragmentation, and need for management/restoration (Factor A), as well as invasive house mice and predation by free-roaming cats (Factor C) are still relevant to AIBM's recovery. Hurricanes and sea level rise are also identified as stressors (Factor D and E) in the 5-Year Review (USFWS 2008).

In developing the delisting criteria, the Service reviewed and utilized the existing downlisting criteria from the AIBM Recovery Plan (USFWS 1993) and information from the 5-Year Review (USFWS 2019). The 5-year Review (USFWS 2019), initiated in 2014, was delayed due to extensive habitat impacts to Anastasia Island from Hurricane Matthew in October 2016 and Hurricane Irma in September 2017. Both hurricanes produced storm surges ranging from 8-11 feet that caused severe erosion, overwash, and large amounts of precipitation. Considering the significance of the impacts on habitat, the status of the existing AIBM populations tenuous and uncertain. Post-storm monitoring and habitat assessments were completed by the Florida Fish and Wildlife Conservation Commission, Florida State Parks, National Park Service, St. Johns County and the Service. The results of the post-storm monitoring and habitat assessment were also considered in the development of delisting criteria.

At the time of listing in 1989, AIBM were distributed along the entire length of Anastasia Island, from the southern end at Fort Matanzas National Monument (FMNM) to the northern end at Anastasia State Park (ASP). The listing rule and the recovery plan describe two extant populations, one at ASP, one at FMNM, and an uncertain but likely low number of beach mice that occupied the dune habitats between these two populations. The two recognized populations

and the sparsely distributed individuals in between the populations reflect the level of species' resiliency, or the ability of the species to withstand stochastic disturbance events (USFWS 2016). Because resiliency is associated with population size, growth rate, and habitat quality, we characterize these three groups of AIBM as resiliency units in the Amendment.

Historical observations and collections document the distribution of the AIBM north of St. Augustine Inlet to an area now known as Mickler's Landing near the St. Johns - Duval County line. But, this population was extirpated prior to listing. The final rule that listed the AIBM noted the historic range most likely extended north to the St. Johns River (54 FR 20598 and USFWS 1993). In 1992 and 2000, attempts to reintroduce mice into at the Guana-Tolomato-Matanzas NERR (an area north of St. Augustine inlet) proved unsuccessful.

Currently, AIBM continue to occupy the coastal dunes and swales along the entire length of Anastasia Island. The status of AIBM is tenuous without significant habitat restoration and management, and without acquiring, protecting and managing additional habitat along Anastasia Island.

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 either be downlisted to threatened, or delisted, meaning that 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. Downlisting is the reclassification of a species from an endangered species to a threatened species. 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, and second we publish a final decision, with responses to comments, in the Federal Register.

Because the Recovery Plan (USFWS 1993) only developed downlisting criteria as discussed above, we hereby provide the following delisting criteria for the AIBM.

Downlisting Recovery Criteria

We are not amending the existing downlisting criteria (listed above; also refer to page 8 of the AIBM Recovery Plan; https://ecos.fws.gov/docs/recovery_plan/930923b.pdf .

Amended Delisting Recovery Criteria

The Anastasia Island beach mouse shall be considered for delisting when the following criteria are met:

1. The three (3) Anastasia Island Resiliency Units (RU) exhibit stable or increasing demographic and/or occupancy trends as compared to historic levels, and exhibit natural recruitment. (addresses Factors A, C and E)
2. Establish two (2) Resiliency Units of AIBM through reintroduction between St. Augustine Inlet and the St. Johns River that exhibit stable or increasing demographic trends and are comparable to the ASP and FMNM RUs, and exhibit natural recruitment. (addresses Factors A, C and E)
3. When in addition to the above criteria, it can be demonstrated that despite habitat loss associated with sea level rise and development within all of the RUs, sufficient suitable habitat remains for AIBM to remain viable into the foreseeable future. (addresses Factors A, C and E) (viable per criterions 1 and 2)

Justification for Amended Recovery Criteria

Resiliency Units

We divided the subspecies range into five units to assess resiliency, three on Anastasia Island (Figure 1) and two north of St. Augustine Inlet at locations yet to be determined. These resiliency units represent groups of beach mice that feed, shelter, breed, and move through the landscape. Because we consider AIBM on Anastasia Island a metapopulation as data are not available to

delineate biological populations, the resiliency units were defined and designed to subdivide the species range in a way that facilitates assessing and reporting the variation in current and future resiliency across its range. The resiliency unit approach also facilitates the implementation of different management prescriptions that are necessary given the different habitat conditions and different landowners involved. The three resiliency units on Anastasia Island are Anastasia State Park, Middle Anastasia Island, and Fort Matanzas National Monument. These units correspond with the major landowners (private, county, state and federal) that exert control over AIBM habitat and Anastasia Island's coastline. The AIBM has a very limited geographic range, and there is no genetic or ecological evidence to support delineating multiple representative units (genetically isolated populations) at this time.

Criterion 1 and 2: Provides redundancy through multiple (5) Resiliency Units and sufficient habitat, additionally reaching demographic parameters allows for resiliency to stochastic events. For the Anastasia Island beach mouse, it is believed that five Resiliency Units, three within the coastal dune, swale, grassland, and scrub habitats along Anastasia Island and two north of St. Augustine Inlet, exhibiting these traits is necessary to ensure this subspecies of beach mouse will no longer require protection under the Act. These demographic metrics provide resiliency, redundancy, and representation and ensure the viability of the Anastasia Island beach mouse into the foreseeable future.

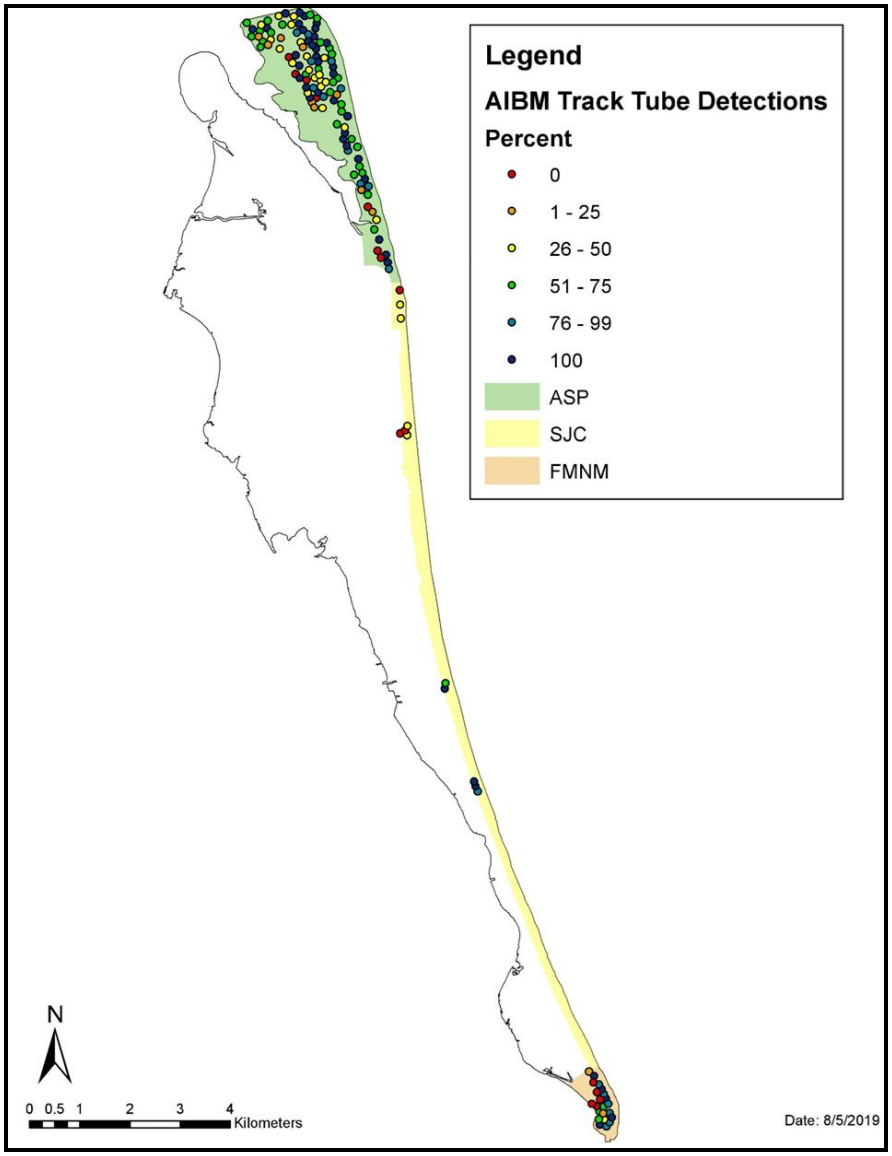

Figure 1. Anastasia Island beach mouse resiliency units, Anastasia State Park, Middle Anastasia Island, and Fort Mantanzas National Monument.

Criterion 3: Adequate suitable habitat to support the Anastasia Island beach mouse's distribution along Anastasia Island and also within a section of the historic range north of St. Augustine Inlet will help ensure viability (measured by Criterions 1 and 2) of this subspecies. In the presence of threats such as development and sea level rise this distribution reflects redundancy and representation and habitat connectivity allows for long-term persistence and viability.

Rationale for Amended Recovery Criteria

The proposed delisting recovery criteria reflect the best available and most up-to-date information on the AIBM, while incorporating information still relevant from the AIBM

Recovery Plan. Furthermore, the delisting criteria were developed to reflect this subspecies overarching recovery strategy, and are consistent with current goals, objectives, and known risk levels. Specifically, each delisting criterion ensures that the underlying causes of decline and impediments to recovery will be addressed and mitigated.

Population Criterion: Provides redundancy and resiliency through multiple (3) Resiliency Units that include all suitable habitat along the length of Anastasia Island and through the demographic parameters that allow for resiliency and stable or increasing trends. Since populations of many small mammals, including the AIBM, fluctuate cyclically, it is necessary to evaluate demographics over time to assess and distinguish long-term trends verses natural variation. This will ensure stable or increasing demographics occur over time and are, at a minimum, comparable to historic levels.

Reintroduced Population Criterion: Provides redundancy and resiliency through multiple (2) Resiliency Units north of St. Augustine Inlet, and by meeting the demographic parameters allows for resiliency and stability and are comparable to the existing Resiliency Units south of the inlet.

Habitat Criterion: Sufficient areas of suitable habitat and habitat connectivity ensures long-term persistence, despite habitat changes, demographic fluctuations, and habitat loss projected due to sea level rise, and development. This criterion provides redundancy through multiple (5) Resiliency Units along north Florida's Atlantic coast, Anastasia Island (3) and north of St. Augustine Inlet (2) that support AIBM and representation through habitat connectivity to ensure gene flow. Viability, stable or increasing demographics and natural recruitment within a Resiliency Unit, and through translocations to isolated Resiliency Units, ensures maintaining genetic diversity, and thus representation, in order to preserve variability and adaptability.

Together, these recovery criteria adequately address current threats related to habitat loss and connectivity, genetic diversity, and sea level rise. All of which are likely drivers of the AIBM's demographics and the species long-term persistence. Once meeting these criteria, we expect the AIBM to have a low probability of extinction in the foreseeable future as there will be five Resilency Units located within north Florida's Atlantic coastal habitat between Matanzas Inlet and the St. Johns River, ensuring long-term recovery. We will work together with our partners to strategically and efficiently achieve the new criteria.

LITERATURE CITED

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