Recovery Plan for Cape Sable seaside sparrow (*Ammodramus maritimus mirabilis*)
https://www.fws.gov/verobeach/MSRPPDFs/CapeSableSeasideSparrow.pdf

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Original Prepared by: Everglades National Park
Revision Prepared by: South Florida Ecological Services staff

DRAFT AMENDMENT 1

We have identified best available information that indicates the need to amend recovery criteria for the Cape Sable seaside sparrow (CSSS) since the revised recovery plan was completed. In this proposed modification, we synthesize the adequacy of the existing recovery criteria, show amended recovery criteria, and provide the rationale supporting the proposed recovery plan modification. The proposed modification is shown as an addendum that supplements the South Florida Multi-Species Recovery Plan (MSRP; U.S. Fish and Wildlife Service [Service] 1999) by adding delisting criteria for the CSSS that were not developed at the time this recovery plan was completed. The original recovery objectives and the step-down outline are described on pages 4-363 through 4-369 of the MSRP (Service 1999). Recovery plans are a non-regulatory document that provide guidance on how best to help recover species.

For
U.S. Fish and Wildlife Service
Region 4
Atlanta, GA

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METHODOLOGY USED TO COMPLETE THE RECOVERY PLAN AMENDMENT

These proposed amendments to the recovery criteria were developed using the most recent and best available information for the subspecies. Primary sources of information included this species' most recent 5-year review (USFWS 2010) and the current recovery plan (USFWS 1999). This information was prepared by the Service biologists and managers in the South Florida Ecological Services Field Office in order to develop the recovery criteria for the CSSS.

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 MSRP only provides downlisting criteria for the CSSS, and they can be found on page 4-363 of the document (https://www.fws.gov/verobeach/MSRPPDFs/CapeSableSeasideSparrow.pdf).

Synthesis

The assessment of threats, life history information, and suggested recovery actions included in the MSRP and CSSS 5-Year Status Review (Service 2010) largely remain applicable and relevant. Issues related to functional and actual loss of habitat as a result of current and past water management practices (Factor A), dry season wildfires (Factor A), and the invasion of woody and exotic plant species (Factor A); high nest predation (Factor C), and limited distribution and small population size (Factor E) are still relevant to the CSSS's recovery. Relevant, ongoing issues and important advances in our understanding of the CSSS that have been made since the MSRP are summarized below.

The CSSS was listed as an endangered species on March 11, 1967, pursuant to the Endangered Species Preservation Act of 1966 (32 FR 4001) and that protection was continued under the Endangered Species Conservation Act of 1969 and the Endangered Species Act of 1973, as amended (87 Stat. 884; 16 U.S.C. 1531 *et seq*.). The CSSS was listed because of its limited distribution and threats to its habitat posed by large-scale conversion of land in South Florida to agricultural uses.

The CSSS is found only in the short-hydroperiod, freshwater, marl prairies in the south Florida Everglades. Currently, the CSSS metapopulation is distributed among six subpopulations (A through F). Subpopulation A is located west of Shark River Slough in Everglades National Park (ENP) and Big Cypress National Preserve (BCNP) and encompasses the largest block of contiguous marl prairie habitat. Subpopulations B, C, E, and F occur east of Shark River Slough in ENP; and subpopulation D occurs east of Taylor Slough within the Southern Glades Wildlife and Environmental Area, which is managed jointly by the Florida Fish and Wildlife Conservation Commission and the South Florida Water Management District. Helicopter surveys in 1981 and 1992 provided the baseline distribution and abundance of sparrows with an estimate of about 6,600 individuals (Bass and Kushland 1982; Curnutt et al. 1998). The majority of the birds (86 percent) occurred within subpopulations A, B, and E, with over 40 percent (more than 2,600 individuals) occurring within subpopulation A, which included an area of brackish mixed cordgrass marsh within ENP and BCNP in a region known as the Stairsteps (for its jagged park boundary).

Currently, the two largest, relatively stable subpopulations are B and E (estimated 1,920 and 800 birds, respectively; ENP unpublished data, 2018). Subpopulations A, C, D, and F remain small (estimated 32, 144, 256, 32 birds, respectively; ENP unpublished data, 2018). Sparrow numbers were quite high in subpopulation D in 2018, where the population quadrupled in size from the previous year, though this is likely a result of increased survey effort. CSSS are known to be quite sedentary (Lockwood et al. 2001; Baiser et al. 2008; Van Houtan et al. 2010) and dispersal among subpopulations is limited (Dean and Morrison 1998; Virzi et al. 2018). Subpopulation A

is especially isolated from the other subpopulations and immigration from other larger populations is likely very rare to nonexistent (Slater et al. 2014; Virzi et al. 2018). With very limited dispersal among subpopulations, the subpopulations essentially function independent of each other. This makes the smaller subpopulations especially vulnerable to extirpation from loss of genetic diversity, uneven sex and age distributions, and stochastic events (Pimm and Bass 2002; Slater et al. 2009; Factor E).

Altered hydrology due to the Central and Southern Florida (C&SF) Project is believed to be the reason the CSSS population has not recovered from the steep declines in the 1990s (Cassey et al. 2007; Baiser et al. 2008). Depth, duration, and timing of seasonal water flows into CSSS habitat have a significant impact of the sparrow's breeding success (Pimm and Bass 2002; Lockwood et al. 2003; Baiser et al. 2008). CSSSs build nests in clumps of grasses 6 to 8 inches above the ground with the height varying throughout the breeding season in response to water depth (Lookwood et al. 2001). Unnaturally high water during the breeding season floods breeding habitat and nests (Nott et al. 1998; Lockwood et al. 2001) and increases predator abundance leading to high rates of nest failure (Cassey et al. 2007; Baiser et al. 2008; Factors C and E).

High water persisting on marl prairie for several years can make habitat unsuitable for sparrows by changing the structure and composition of the vegetation (Ross et al. 2006). Several wet years following Hurricane Andrew, a category 5 storm, in 1992 resulted in a steep decline in the CSSS population (Factors A and E). The CSSS population has remained low since 1993, fluctuating between 2,400 and 4,000 individuals. Subpopulation A experienced the steepest decline, dropping from more than 2,600 birds in 1992 to 432 birds in 1993 (Curnutt et al. 1998; Pimm and Bass 2002). Subpopulation A has never recovered since 1993 and is now one of the smallest subpopulations.

While the C&SF Project resulted in unnaturally high water discharges on the prairies to the west of Shark River Slough, the shifting of water to the west also resulted in unnaturally drier conditions for the northeastern subpopulations. The habitat in these areas has been degraded by the reduced water flows which allow for encroachment of woody species and increased fire frequency (Pimm and Bass 2002; Lockwood et al. 2003; Factor A). Along the urban-wildland interface in the eastern Everglades, these fires are often human-ignited (unintentional or intentional), occur at the end of the dry season, and burn more intensely than natural, lightning-ignited fires (Slocum et al. 2007). With the CSSS being relatively short-lived (4 – 5 years; Lockwood et al. 1997), persistent years with flooding or fire that prevents successful breeding could result in extirpation. About two-thirds of the total CSSS population currently occur within subpopulation B, which has remained relatively stable. However, if a large fire or other catastrophic event were to occur in this subpopulation, there is a possibility the entire remaining CSSS population could be reduced by 60 percent or more. Unnaturally dry conditions also impact CSSS by delaying initiation of nesting, which shortens the breeding season (Boulton et al. 2011; Factor E).

Alteration of the natural hydrology, from construction of the C&SF Project, remains the largest threat to the CSSS and is the focus of ongoing Everglades restoration planning. Upcoming actions are expected to provide additional flexibility in the system to address water management issues and advance Everglades restoration.

Climate change and sea level rise also represent significant short- and long-term threats to the CSSS and its habitat (Factors A and E). Sea level rise has been estimated by various sources to increase by as much as 1 to 8 feet (ft) by the end of the century, with the business as usual (no reductions in greenhouse gas) scenario predicting 6.6 ft (National Oceanic and Atmospheric Association [NOAA] 2017). Because the entire population of CSSS occurs in low lying areas in south Florida, the population may experience changes in habitat conditions or availability due to climate change and sea level rise over the next several decades (Service 2016).

Subpopulations A, B, and D are particularly vulnerable to the effects of climate change and sea level rise (Service 2016). Based on model projections by the U.S. Army Corps of Engineers, a sea level rise of only 1-ft (0.3 m) mean higher high water (MHHW) could result in habitat loss of approximately 40 percent of subpopulation A and 60 percent of subpopulations B and D (Service 2016). If sea levels were to rise 2 ft (0.6 m) MHHW, it could result in habitat loss of almost 60 percent of subpopulation A and nearly 100 percent of subpopulations B and D (Service 2016). In the long term, all subpopulations could potentially experience major flooding effects due to sea level rise.

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 CSSS 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 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, followed by a final decision announced in the *Federal Register*.

Herein, we provide delisting criteria for the CSSS as the MSRP only developed downlisting criteria as discussed above.

Downlisting Recovery Criteria

We are not amending the existing downlisting criteria (please refer to page 4-363 of the MSRP).

Delisting Recovery Criteria

The CSSS will be considered for delisting when the following criteria are met:

1. At least two (2) populations west of Shark River Slough, including one (1) in the Stairsteps region; and at least four (4) viable populations east of Shark River Slough, including one (1) east of Taylor Slough, exhibit a stable or increasing population trend evidenced by natural recruitment and a stable age distribution (Factors A and E).
2. Populations are connected to the extent that genetic diversity can be maintained without the need for captive breeding, translocation, or other artificial genetic augmentation (Factor A and E).
3. CSSS habitat is properly maintained with appropriate hydrologic and fire regimes and exotic and woody vegetation has been eliminated in CSSS habitat such that enough suitable habitat remains for CSSS to remain viable into the foreseeable future (Factors A and C).
4. In addition to the above criteria, it can be demonstrated that enough suitable habitat remains for CSSS to remain viable into the foreseeable future despite anticipated sea level rise (Factor E).

Justification

The proposed delisting recovery criteria reflect the best available and most up-to-date information for the CSSS, while incorporating information still relevant from the MSRP. Furthermore, the delisting criteria were developed to reflect the 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.

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. Having multiple, subpopulations distributed across the current and historical range of the subspecies will provide the representation and redundancy necessary to assure the subspecies as a whole is resilient to predation, shifts in distribution, climate change, and other environmental stressors. Increasing the abundance and occupancy of the current subpopulations may lead to fewer subpopulations as currently discontinuous populations will likely become continuous. The subpopulations need to be large enough and robust enough to be ecologically and

demographically functional across the geographic range of the subspecies. For the CSSS, it is believed that a minimum of six populations exhibiting these traits are necessary to provide sufficient redundancy to ensure the species will no longer require protection under the Act.

Criterion 2. Having connected subpopulations will allow for gene flow between subpopulations, reduce the frequency of genetic drift, and protect the genetic diversity of the subspecies. Having a genetically robust population will maximize the fitness of the subspecies such that it is healthy, resilient, adaptive, and able to respond to biological and environmental stressors within and among subpopulations across the geographic range of the subspecies.

Criterion 3. Restoring appropriate hydrological and fire regimes is necessary to restore, expand, and maintain suitable habitat for the CSSS. Removing exotic and woody vegetation from marl prairie habitat will increase both the suitability and extent of habitat available for CSSSs. An appropriate hydrologic management regime is necessary to protect sparrow breeding habitat by reducing water flows to the western marl prairies, which are too wet, and increasing water flows to eastern marl prairies that have been over drained. Appropriate fire regimes must also be restored to achieve restoration of CSSS habitat. Fires of appropriate intensity and frequency are necessary to maintain suitable vegetation composition and structure, prevent encroachment of woody vegetation, and prevent buildup of fire fuels that can result in intense wildfires that severely degrade marl prairie habitat making it unsuitable for CSSSs.

Criterion 4. Ensuring sufficient habitat is expected to remain despite habitat changes and habitat loss projected due to sea level rise will allow for resilient and viable CSSS subpopulations across the geographic range of the subspecies.

Together, these recovery criteria cover threats related to functional and actual habitat loss, genetic diversity, nesting success, and climate change; all of which are likely drivers of the CSSS's population demographics and the subspecies' long-term persistence.

Rationale for Amended Recovery Criteria

The existing criteria for the CSSS on page 4-363 in the MSRP (Service 1999) (https://ecos.fws.gov/docs/recovery_plan/sfl_msrp/SFL_MSRP_Species.pdf) included only downlisting criteria. With these proposed amendments, delisting has been clearly defined with measurable, objective criteria in keeping with the recovery strategy and goals outlined in the MSRP. These criteria address what is necessary to ensure resiliency, redundancy, and representation by addressing factors that threaten the species. In achieving these criteria, we expect the CSSS to have a low probability of extinction for the foreseeable future and have stable populations needed for long-term recovery. We will work together with our partners to strategically and efficiently implement the new criteria.

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