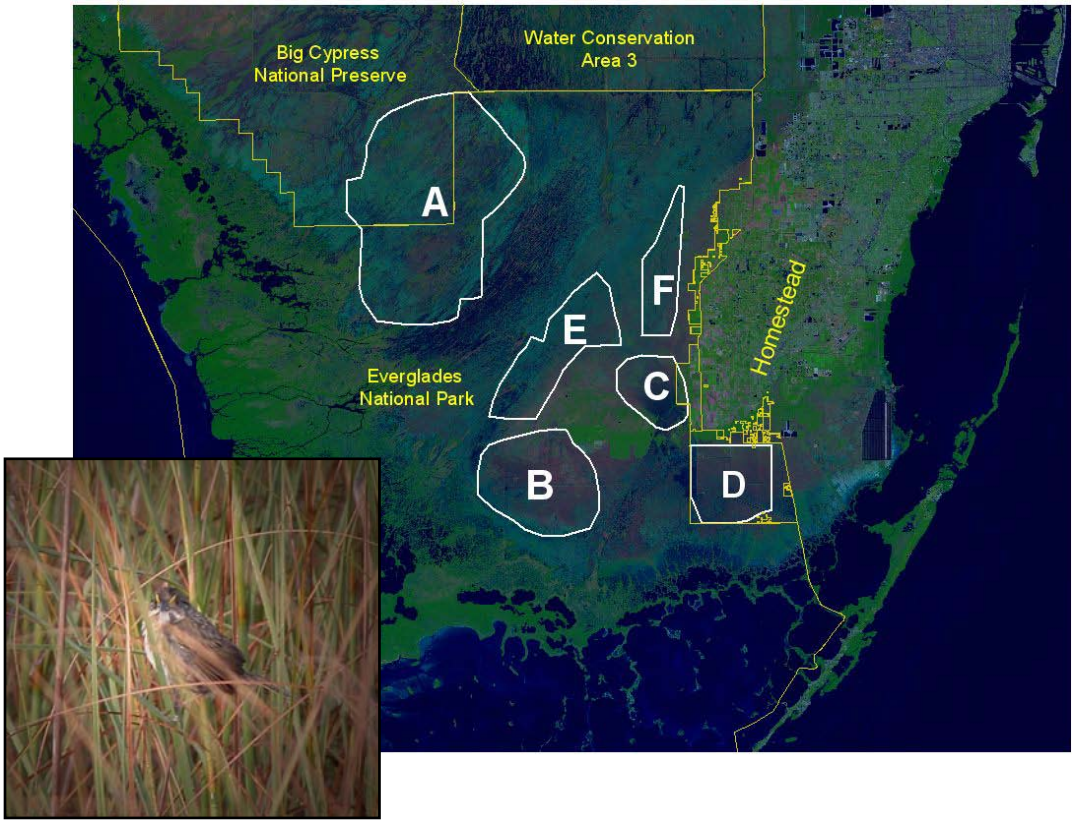
Cape Sable Seaside Sparrow
(Ammodramus maritimus mirabilis)

5-Year Review:
Summary and Evaluation



U.S. Fish and Wildlife Service
Southeast Region
South Florida Ecological Services Field Office
Vero Beach, Florida

5-YEAR REVIEW

Cape Sable seaside sparrow/*Ammodramus maritimus mirabilis*

I. GENERAL INFORMATION

A. Methodology used to complete the review: This review is based on monitoring reports, surveys, and other scientific and management information, augmented by conversations and comments from biologists familiar with the species. The review was conducted by biologists with the South Florida Ecological Services Field Office. Literature and documents used for this review are on file at the South Florida Ecological Services Field Office. All recommendations resulting from this review are a result of thoroughly reviewing the best available information on the Cape Sable seaside sparrow (CSSS). The public notice for this review was published on June 21, 2005, with a 60-day comment period. No comments were received from the public. Comments and suggestions regarding the review were received from peer reviews from outside the Service (see Summary of peer review section). We incorporated comments as appropriate in this review. No part of the review was contracted to an outside party.

B. Reviewers

Lead Region: Southeast Region, Kelly Bibb, (404) 679-7132

Lead Field Office: South Florida Ecological Services Field Office, Sandra Sneckenberger, (772) 562-3909

C. Background

1. Federal Register Notice citation announcing initiation of this review: June 21, 2005, 70 FR 35689.

2. Species status: Declining (Recovery Data Call 2007, 2008, 2009, and Everglades National Park, unpubl. data 2009). Wildfires and declines in five of the six subpopulations suggest an overall declining status within the last 5 years. The overall status of the sparrow declined in 2009. No sparrows were detected in one subpopulation, and two and three males were detected in two others, indicating limited production for these subpopulations. Summer fires in 2008 burned significant portions of three subpopulations, and the burned habitat is not expected to recover fully for at least 2 years (Lockwood et al. 2005; La Puma et al. 2007). Recovery of burned habitat within subpopulation A is particularly tenuous due to water management issues. High water levels can flood nests or preclude CSSS from nesting, and, particularly after fire, high water levels can alter the vegetative community, making it unsuitable to CSSS. The overall population is less secure because of the decline or lack of production in two subpopulations, and degradation of habitat due to fire in three subpopulations.

3. Recovery achieved: 2 (26-50 percent recovery objectives achieved).

4. Listing history
Original Listing
FR notice: 32 FR 4001
Date listed: March 11, 1967
Entity listed: Subspecies
Classification: Endangered

5. Associated rulemakings
Critical Habitat Designation
FR notice: 42 FR 47840
Date: September 22, 1977

Critical Habitat Designation
FR notice: 72 FR 62736
Date: November 6, 2007

6. Review History:

Status Reviews
5-year review announced May 21, 1979 (44 FR 29566)
5-year review announced July 22, 1985 (50 FR 29901)
Notice of completion (no change) for review initiated in 1985; July 7, 1987 (52 FR 25522)
The Service conducted a 5-year review for the CSSS in 1991 (56 FR 56882). In this review, the status of many species was simultaneously evaluated with no in-depth assessment of the five factors or threats as they pertain to the individual species. The notice stated that Service was seeking any new or additional information reflecting the necessity of a change in the status of the species under review. The notice indicated that if significant data were available warranting a change in a species' classification, the Service would propose a rule to modify the species' status. No change in the CSSS listing status was found to be appropriate.
Recovery Plan: 1999
Recovery Data Calls: 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009

7. Species' Recovery Priority Number at start of review (48 FR 43098): 3C.
The CSSS is assigned a recovery priority of 3C because the degree of threat to its persistence is high, and its potential for recovery is high if threats can be eliminated or minimized.

8. Recovery Plan
Name of plan: South Florida Multi-Species Recovery Plan (MSRP)
Date issued: May 18, 1999
Dates of previous plan: Original recovery plan issued April 6, 1983

II. REVIEW ANALYSIS

A. Application of the 1996 Distinct Population Segment (DPS) policy

1. Is the species under review listed as a DPS? No.

2. Is there relevant new information that would lead you to consider listing this species as a DPS in accordance with the 1996 policy? No.

B. Recovery Criteria

1. Does the species have a final, approved recovery plan containing objective, measurable criteria? No. The species has a final approved recovery plan and although the plan provides constructive objectives, some criteria contain elements that are neither objective nor measurable (see criteria below). Several criteria are objective and measurable, incorporating demographic targets; but criteria 1, 2, 5, and 6 do not have measurable targets and include language that requires further definition (i.e., stable, self-sustaining). Revision of the criteria is recommended.

2. List the recovery criteria as they appear in the recovery plan, and discuss how each criterion has or has not been met, citing information.
The criteria included in the approved recovery plan (Service 1999) to reclassify the CSSS from endangered to threatened are:

1) the loss of functional Cape Sable seaside sparrow habitat, as a result of current and past water management practices, and the invasion of woody and exotic plant species, is eliminated;
2) Cape Sable seaside sparrow habitat west of Shark River Slough and in Taylor Slough, which has been degraded by current and past water management practices, is restored;
3) demographic information on the Cape Sable seaside sparrow supports, for a minimum of 5 years, a probability of persistence [T(N)] that is equal to or greater than 80 percent (±0.05), for a minimum of 100 years;
4) the rate of increase (*r*) for the total population is equal to or greater than 0.0 as a 3-year running average for at least 10 years;
5) a minimum of three stable, self-sustaining core breeding areas are secured;
6) a stable age structure is achieved in the core populations; and,
7) a minimum population of 6,600 birds is sustained for an average of 5 years, with all fluctuations occurring above this level.

As indicated by the percent of occupied survey sites, four of six populations are less than 25 percent occupied (Slater et al. 2009). One subpopulation (B) is relatively stable, and another (E) has shown signs of decline in recent years

(Slater et al. 2009). An equilibrium between fire and hydrologic regimes is needed to control the invasion of woody plants and provide habitat suitable to CSSS (Hanan et al. 2009).

Habitat west of Shark River Slough and in Taylor Slough has not recovered from past habitat modification events. The subpopulation occupying this area (A), once with more than 2,500 individuals, has not exceeded 128 birds since 2000 when it supported 400 birds.

There is insufficient demographic information to calculate a probability of persistence with any certainty. However, ongoing field observations suggest that unless most pairs in the sparrow population can breed successfully at least once in a year, the population will decline, and only when all the pairs can complete two successful clutches can the population increase (Lockwood et al. 2001).

Based on estimates of the total population size for each year (Everglades National Park [ENP], unpublished data 2009), the 3-year running average of the intrinsic rate of increase (r) over the period from 1993 to present was calculated. Within the past 10 years, the running average of r has been less than 0 in 7 years, and greater than 0 in 3 years. (An r greater than 0 indicates an increasing population; an r less than 0 indicates a declining population.)

The three subpopulations considered as "core" subpopulations are A, B, and E (Walters et al. 2000; Slater et al. 2009). While B and E are relatively stable, subpopulation A has declined sharply since 1992 and has crossed the thresholds of all three emergency action criteria developed by CSSS experts to trigger emergency actions (Slater et al. 2009). There is insufficient data to determine if a stable age structure has been achieved in the core populations.

Population estimates for CSSS have ranged from 2,400 to 4,000 since the sharp decline in 1993 due to flooding. The greatest population estimate since 1992 was 4,048 in 1997. The average estimated population size for the 5-year period 2005 through 2009 is 3,021 birds (ENP, unpublished data 2009; using 2005 to 2007 average for subpopulation B), which is less than half the minimum population size of 6,600 birds identified in the recovery criterion.

Consequently, none of the recovery criteria have been met. Several research projects and an emergency action plan (Slater et al. 2009) have been developed to guide actions to recover the CSSS.

C. Updated Information and Current Species Status

1. Biology and Habitat

Information regarding CSSS biology and habitat can be found within the recovery plan (Service 1999), and the critical habitat designation (proposed - 71 FR 63979,

Service 2006; final - 72 FR 62736, Service 2007). A summary, with the addition of updated information, is provided below.

a. Abundance, population trends (e.g., increasing, decreasing, stable), demographic features (e.g., age structure, sex ratio, family size, birth rate, age at mortality, mortality rate, etc.), or demographic trends:

Annual CSSS population surveys have resulted in estimates of population size every year since 1992 (Pimm et al. 2002; ENP, unpublished data 2009; Appendix A). In 1993, the total CSSS population declined by approximately half, from an estimated 6,576 individuals to 3,312 individuals. The great majority of the decline occurred within subpopulation A, and resulted from flooding that occurred in the area from 1993 through 1995 (Pimm et al. 2002). Since 1993, the total population size has fluctuated among years, but has remained relatively stable, though declines have occurred within several subpopulations. After the large decline in 1993, subpopulation A has continued to decline, and supported approximately 96 individuals in 2009. Subpopulations D and F both remain at very low levels (fewer than 50 individuals), and have had several years when no birds were recorded during surveys. Subpopulations B and E have remained relatively stable and have consistently supported the largest number of sparrows since 1993, with 2,512 (2007 survey) and 432 (2009 survey) individuals, respectively, reported in most recent surveys. Subpopulation C has fluctuated over time between 48 and 160 individuals since 1993. The current population estimate is approximately 2,900 (ENP, unpublished data 2009).

Based on estimates of the total population size for each year, the 3-year running average of the intrinsic rate of increase (*r*) over the period from 1993 to present was calculated. Within the past 10 years, the running average of *r* has been less than 0 in 7 years, and greater than 0 in 3 years. (An *r* greater than 0.0 indicates an increasing population; an *r* less than 0.0 indicates a declining population.) This is consistent with the observation that the total sparrow population size has slowly declined over the past decade and has fluctuated over time.

Since the mid-1990s, several research efforts have characterized the general demographics of the CSSS. Adult annual survival rates are approximately 66 percent (Lockwood et al. 2001), and sparrows have a relatively short generation time. However, they may be capable of successfully fledging two to four clutches per year, with an average of 3.2 eggs per clutch (Lockwood et al. 2001). Nest success rates may range from approximately 40 to 60 percent (Werner 1975; Lockwood et al. 1997). Consequently, the population may be able to grow rapidly under favorable conditions, but may not be able to persist over periods of prolonged unfavorable conditions. Ongoing research within the small subpopulations may provide additional demographic information and refine estimates of demographic parameters.

b. Genetics, genetic variation, or trends in genetic variation (e.g., loss of genetic variation, genetic drift, inbreeding, etc.): Nelson et al. (2000) investigated the relatedness of CSSS to other seaside sparrow subspecies and reported that CSSS are most likely related to those that occur along the Atlantic coast, and are less related to Gulf Coast subspecies. No studies to date have investigated genetic variation, inbreeding, or other population genetic characteristics.

c. Taxonomic classification or changes in nomenclature: There have been no recent changes to taxonomy or nomenclature (Integrated Taxonomic Information System 2010).

d. Spatial distribution, trends in spatial distribution (e.g. increasingly fragmented, increased numbers of corridors, etc.), or historic range (e.g. corrections to the historical range, change in distribution of the species' within its historic range, etc.): Approximately 150,000 acres of potential CSSS habitat remains, however this includes habitat of various quality and intermittent availability. The current distribution of the CSSS is reduced relative to its historic distribution, and sparrows have been extirpated from two areas of historical occurrence (Cape Sable and the Ochopee area; Kushlan and Bass 1983). Since the early 1990s, the distribution of the total population has remained relatively unchanged, but the distributions of some individual subpopulations have been reduced as subpopulation sizes have declined. The distributions, particularly within subpopulations A and D, have contracted in conjunction with hydrologic alterations and habitat degradation in these areas. The distribution of larger, more stable subpopulations (*i.e.*, B and E) has remained unchanged, and the vast majority of birds, often over 95 percent of the total population, inhabit these two subpopulations.

Of the six currently occupied subpopulation areas (A through F), A, B, and E are considered core subpopulation areas that are potentially capable of supporting relatively large and stable sparrow populations. These areas were identified as important to the persistence of the sparrow (Walters et al. 2000), and together provide the spatial distribution necessary for the species to persist across its range (Slater et al. 2009). The number of sparrows in subpopulation A decreased by 84 percent from 1992 to 1993, a decline from more than 2,600 birds to just over 400 birds. Since 1993, the number of sparrows within subpopulation A has fluctuated between 16 and 448 (Pimm et al. 2002; Pimm and Bass 2004; ENP unpublished data 2009). Subpopulation E has fluctuated between 112 and 1,040 birds since 1994. Despite large variation in numbers, this subpopulation appears to be self-sustaining, and has been able to recover from low numbers. Subpopulation B is considered self-sustaining, and has remained relatively stable at over 1,800 birds since monitoring began in 1992.

Subpopulations C, D and F are the smallest in terms of available habitat and number of sparrows. Subpopulations D and F have approached extirpation, with recent surveys detecting few or no sparrows (Boulton et al. 2009; Slater et al. 2009; ENP, unpublished data 2009). During the 2006 to 2008 nesting seasons, intensive ground surveys were conducted in subpopulations C, D, and F to better understand these small subpopulations (Lockwood et al. 2006; Boulton et al. 2009). Data collected in these surveys included territory size, fecundity, nest success and survival rates. Results indicate that the small subpopulations exhibit: 1) suppressed breeding, 2) an excess of single males, 3) nest survival comparable to larger subpopulations, 4) low hatch rate, and 5) larger territory sizes than birds in the larger subpopulations. Boulton et al. (2009) concluded that the small subpopulations are demographically dynamic and subject to the negative effects of low densities (e.g., Allee effects).

Scientists have been banding CSSS since 1994 with the greatest effort concentrated in the larger subpopulations (B and E). During the period 1994 to 2005, only four instances of long-range sparrow movement between subpopulations A, B, and E were documented (Lockwood et al. 2007). Since the intensive surveys began in 2006, movements have been documented between five subpopulations. This included two single males from subpopulations D and F that moved to subpopulation C, and a male that migrated 31 km from subpopulation F to B (Lockwood et al. 2006, 2007).

e. Habitat or ecosystem conditions (e.g., amount, distribution, and suitability of the habitat or ecosystem): Sparrows build their nests 14 cm, on average, above ground surface and often walk along the ground to forage. If water levels rise above ground surface during the nesting season (March through July), breeding is disrupted and nests and nestlings can drown (Lockwood et al. 2001). Long hydroperiods (greater than 210 days) over several years will change the vegetative character of the habitat from marl prairie to freshwater marsh and eliminate use of this habitat by the sparrow (Pimm et al. 2002; Sah et al. 2008).

Much of the population decline that has occurred since 1993 has resulted from habitat degradation associated with unfavorable hydrologic conditions (Pimm et al. 2002). Hydrologic infrastructure and operations have resulted in longer hydroperiods than those that will support CSSS habitat within portions of subpopulations A and D. At the same time, overdrainage of areas along the eastern boundary of ENP adjacent to urban and agricultural areas, in the vicinity of subpopulations C and F, has resulted in shorter hydroperiods than those that will support CSSS habitat. Extended hydroperiods can result in changes in the plant community from marl prairie to marsh vegetation (Ross et al. 2006), while reduced hydroperiods may result in woody vegetation encroachment and increased risk of fires (Pimm et al. 2002; Ross et al. 2006;

Hanan et al. 2009). Both increased and reduced hydroperiods result in degradation of CSSS habitat suitability and sustainability (Pimm et al. 2002).

Within areas where habitat degradation has occurred, efforts to restore appropriate hydroperiods have often not resulted in recovery of vegetation to conditions favorable for CSSS (Nott et al. 1998; Ross et al. 2006). Degraded vegetation conditions may require long periods of favorable hydrologic conditions to recover (Ross 2006).

Fires also cause temporary habitat degradation. While marl prairie vegetation normally grows rapidly following fires, CSSS do not consistently occupy or nest within burned areas until 2 to 4 years following fire because the vegetation structure necessary to support breeding does not recover quickly (Lockwood et al. 2005; La Puma et al. 2007). As a result, the effects of frequent fires may result in vegetation that contains a species composition similar to that which supports CSSS, but that CSSS are not regularly able to occupy. Low water elevations during the early breeding season may increase the risk or intensity of fires, which renders sparrow habitat unsuitable for up to 3 years and has the potential to kill adult sparrows. Prolonged inundation of habitat post-burn can lengthen the recovery interval of the habitat by as much as 7 years (Sah et al. 2008).

Beyond hydrologic concerns and stochastic events, invasion of mangroves on the southwest Florida coast into CSSS habitat may be due to sea-level rise, and habitat loss east of ENP may have occurred when prairies were transformed for agriculture (Ogden 2007).

2. Five-Factor Analysis (threats, conservation measures, and regulatory mechanisms)

a. Present or threatened destruction, modification or curtailment of its habitat or range: Flooding that occurs as a result of managed water releases, rainfall, and the combined effects of the two, continue to pose a threat to CSSS reproduction and habitat suitability in many areas occupied by CSSS. Similarly, overdrainage in some areas of CSSS habitat may allow woody vegetation encroachment that reduces suitable habitat and continues to result in increased risk of fires.

Water management practices and the invasion of woody and non-native plants continue to threaten CSSS habitat. Habitat west of Shark River Slough (subpopulation A) has not been restored. Taylor Slough sparrow habitat (subpopulation C) has deteriorated due to a combination of overly wet and overly dry conditions. Long hydroperiods in the southern part of subpopulation D indicate that the sparrow habitat in this vicinity cannot be considered restored. In fact, no birds have been observed during annual

surveys in subpopulation D for 5 of the last 8 years (ENP unpublished data 2009).

Within the area that supports the largest subpopulation (subpopulation B), a fire burned a large area and the area was subsequently deeply flooded for several weeks as a result of a natural rainfall event. This resulted in severe degradation of the habitat that may require 10 or more years to recover. The threat of this type of habitat impact is also present in several other areas where managed water releases may affect post-fire recovery. In addition, recent information suggests that habitat recovery has not occurred in areas where habitat was previously degraded due to extended hydroperiods, despite efforts to provide conditions for habitat recovery.

Because CSSS and their habitat currently occur on public lands, the direct threat that development-related impacts pose to the CSSS population is not serious. However, development and maintenance of canals, levees, water detention areas, and other infrastructure may continue to impact small areas of potential CSSS habitat.

b. Overutilization for commercial, recreational, scientific, or educational purposes: This threat is not relevant to this species.

c. Disease or predation: Predation is one of the most common causes of nest failure and may affect more than half of all CSSS nests (Lockwood et al. 1997). Predation events occur throughout the day and night (Boulton et al. 2009); snakes, rice rats (*Oryzomys palustris*), and other predators have been identified as nest predators (Pimm et al. 2002; Lockwood et al. 2006). The risk of nest depredation is related to hydrologic conditions, and as water levels rise, nest losses increase (Lockwood et al. 1997). Baiser et al. (2008) noted that in the nests they monitored, 97 percent of nest failure was the result of predation. Known predators of adult sparrows include snakes and raptors (Ogden 1972; Dean and Morrison 2001).

Predator exclosure fences were deployed in an effort to reduce nest predation events. Following several trials, this management technique's effectiveness could not be determined, it required significant setup time (requiring 6 to 8 days to fully enclose one nest), and most females were not tolerant of the added structure and would not return to the nest (Boulton et al. 2009).

Non-native animals such as the Burmese python (*Python molurus bivittatus)* have become established in southern Florida, and this species, native to South Asia, is now breeding and expanding its range in the greater Everglades ecosystem increasing concerns among land managers about the potential impacts of this invasive snake. More than 935 of the south Asian snakes have been removed from ENP since 2000. Their population numbers are now estimated to be in the thousands in ENP, potentially impacting a wide variety

of listed and native species. A growing wild population of pythons has the potential to create a major ecological problem in ENP and threaten successful restoration of the greater Everglades (National Research Council 2005).

The pythons' rapid and widespread invasion is facilitated by aspects of their natural history such as diverse habitat use, broad dietary preferences, long lifespan (15 to 25 years), high reproductive output, and ability to move long distances. Although CSSS have not been documented to have been predated upon by pythons, other bird species have been found in the digestive tracts of Burmese pythons, including pied-billed grebe (*Podilymbus podiceps*), limpkin (*Aramus guarauna*), white ibis (*Eudocimus albus*), American coot (*Fulica americana*), house wren (*Troglodytes aedon),* domestic goose (*Anser sp.),* and a juvenile wood stork *(Mycteria americana).* There is documented overlap of CSSS subpopulations and python-occupied areas in ENP. Pythons may represent an increased threat of predation of CSSS nests and adults, but relative risk of python predation on sparrows is unknown at this time.

There is no information available about specific threats of disease to CSSS.

d. Inadequacy of existing regulatory mechanisms: Because CSSS occurs entirely on public lands owned and is managed primarily for conservation purposes by Federal and State agencies, there are many regulatory mechanisms available to provide protection to CSSS. Hydrologic management actions that affect all areas occupied by CSSS, including hydrologic restoration projects, require Army Corps of Engineers' permits, and consequently require review and consultation, as appropriate, under the Endangered Species Act (Act) and the Migratory Bird Treaty Act.

Guidelines, conservation measures, and regulatory mechanisms are in place to avoid and minimize impacts to CSSS on Federal and State-owned lands. Annual interagency meetings are held to discuss fire strategies, recent research, and information gaps. Several interagency teams have been developed to provide recommendations for hydrologic operations affecting CSSS during the transition to the completion of the Comprehensive Everglades Restoration Project, and provide guidance on ongoing hydrologic issues.

Critical habitat has been designated for the CSSS and was revised in 2007. The entire designation (84,865 acres) lies within Everglades National Park and 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. Federal agencies that undertake, fund or permit activities that may affect critical habitat are required to consult with the Service to ensure such actions do not adversely modify or destroy designated critical habitat. As a listed species under the Endangered Species Act, the CSSS are already protected wherever they occur, and Federal

agencies are required to consult on any action they take that might affect the species.

The CSSS is listed by the Florida Fish and Wildlife Conservation Commission (FWC) as threatened (Chapter 39-27, Florida Administrative Code). This legislation prohibits take, except under a permit, but does not provide any direct habitat protection. Wildlife habitat is protected on FWC wildlife management areas and wildlife environmental areas according to Florida Administrative Code 68A-15.004.

While existing regulatory frameworks are actively addressing the conservation needs of the CSSS, detailed and continued coordination between state and Federal agencies is essential. The severity of this threat remains high due to the complexity of the issues, coupled with individual agency's mandates and constraints.

e. Other natural or manmade factors affecting its continued existence:
Threats resulting from a limited distribution and small population size are relevant to CSSS. The small size of subpopulations A, C, D, and F result in reduced resiliency and reduced ability to withstand unfavorable conditions that occur within the scope of natural environmental variability. These subpopulations may consequently be at higher risk of extirpation. The limited distribution of the total population also makes it subject to impacts from catastrophic events such as severe weather events (hurricanes) or disease outbreaks. Because the three smallest subpopulations also occur at the perimeter of the current species' range, extirpation of any of these small subpopulations would result in a further reduction in distribution.

Environmental contaminants, specifically methylmercury, could present a threat to CSSS. "Hot spots" have been identified within ENP (Rumbold et al. 2008), and elevated methylmercury levels have been documented in CSSS feather and eggs samples (Krabbenhoft 2009). CSSS could be at risk for adverse effects.

D. Synthesis - South Florida's ecosystems have been severely degraded by the Central and South Florida (C&SF) Project and associated hydrologic operations which have disrupted the natural volume, timing, quality, and flow of surface and ground water throughout the Everglades. The CSSS short hydroperiod prairie habitat is contained entirely within the C&SF Project and has been extensively altered by the project (Nott et al. 1998), with too much water in the western habitats, interrupting breeding and changing vegetation; and too little water in the eastern habitats, allowing invasion of trees into the prairie habitat and allowing frequent, damaging fires. Recent studies within the six subpopulation areas (A through F) have documented such changes in vegetation that reflect a shift from short-hydroperiod prairie habitats suitable for CSSS to conditions that are less suitable for CSSS (Ross et al. 2006) in several areas.

Of the six subpopulations, A, B, and E are considered core subpopulation areas potentially capable of supporting relatively large and stable subpopulations. These areas were identified as important to the persistence of the CSSS (Walters et al. 2000), however the periphery populations are vital to CSSS in the future, as they provide additional refuge areas in case of a catastrophic event in the core subpopulations (Slater et al. 2009). The number of CSSS in subpopulation A decreased by 84 percent from 1992 to 1993, a decline from over 2,600 birds to just over 400 birds (Pimm et al. 2002). The numbers have remained low since that time indicating that there are not three stable, self-sustaining core breeding areas for CSSS. Subpopulations B and E appear to be self-sustaining, but only subpopulation B has been relatively stable over time.

Although Everglades restoration projects are currently being planned that may improve hydrologic conditions for CSSS, the species continues to meet the definition of endangered under the Act as a variety of threats affecting CSSS and its habitat remain, and the level of threat has not been reduced appreciably since the species was listed.

III. RESULTS

A. Recommended Classification

__X__ **No change is needed**

IV. RECOMMENDATIONS FOR FUTURE ACTIONS

Planning is ongoing for the Comprehensive Everglades Restoration Plan (CERP) and other restoration projects. Every effort should be made to ensure that water management plans provide suitable conditions for CSSS to breed within three core subpopulations, and provide conditions that allow for habitat restoration in degraded areas. Every effort should be made to ensure that restoration plans are consistent with the recovery objectives for CSSS. Near-term implementation of the Modified Water Deliveries to Everglades National Park Project (Mod Waters) and the associated Combined Structural and Operational Plan could also be consistent with CSSS recovery objectives and aid in improving habitat conditions to allow population recovery. The Service will continue to

serve as an active participant in the multi-agency planning efforts for CERP, Mod Waters, and other restoration efforts.

Restoring appropriate hydrological conditions to subpopulation A should be a priority. This area contains the largest amount of potential sparrow habitat, and may have supported more CSSS than any other subpopulation prior to 1981 (Slater et al. 2009). Habitat management and enhancement activities, such as prescribed fire and nonnative tree removal should then be conducted, in all subpopulations, to increase the amount of suitable breeding habitat. Consistent and intensive population monitoring and research related to habitat management and restoration should continue. Possible translocation projects and genetics research should be considered.

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Appendix A. Cape Sable seaside sparrow population estimates by year and subpopulation. BC denotes the base count, and Est denotes the population estimate. NS denotes that the area was not surveyed.

Population	A		B		C		D		E		F		Total	
Year	BC	Est	BC	Est	BC	Est	BC	Est	BC	Est	BC	Est	BC	Est
1981	168	2,688	147	2,352	27	432	25	400	42	672	7	112	416	6,656
1992	163	2,608	199	3,184	3	48	7	112	37	592	2	32	411	6,576
1993	27	432	154	2,464	0	0	6	96	20	320	0	0	207	3,312
1994	5	80	139	2,224	NS	NS	NS	NS	7	112	NS	NS	151	2,416
1995	15	240	133	2,128	0	0	0	0	22	352	0	0	170	2,720
1996	24	384	118	1,888	3	48	5	80	13	208	1	16	164	2,624
1997	17	272	177	2,832	3	48	3	48	52	832	1	16	253	4,048
1998	12	192	113	1,808	5	80	3	48	57	912	1	16	191	3,056
1999a	25	400	128	2,048	9	144	11	176	48	768	1	16	222	3,552
1999b	12	192	171	2,736	4	64	NS	NS	60	960	0	0	247	3,952
2000a	28	448	114	1,824	7	112	4	64	65	1,040	0	0	218	3,488
2000b	25	400	153	2,448	4	64	1	16	44	704	7	112	234	3,744
2001	8	128	133	2,128	6	96	2	32	53	848	2	32	204	3,264
2002	6	96	119	1,904	7	112	0	0	36	576	1	16	169	2,704
2003	8	128	148	2,368	6	96	0	0	37	592	2	32	201	3,216
2004	1	16	174	2,784	8	128	0	0	40	640	1	16	224	3,584
2005	5	80	142	2,272	5	80	3	48	36	576	2	32	193	3,088
2006	7	112	130	2,080	10	160	0	0	44	704	2	32	193	3,088
2007	4	64	157	2,512	3	48	0	0	35	560	0	0	199	3,184
2008	7	112	NS	NS	3	48	1	16	23	368	0	0	34	544
2009	6	96	NS	NS	3	48	2	32	27	432	0	0	38	608

U.S. FISH AND WILDLIFE SERVICE
5-YEAR REVIEW of Cape Sable Seaside Sparrow

Current Classification Endangered
Recommendation resulting from the 5-Year Review

__X__ **No change is needed**

Review Conducted By Timothy Pinion, Tylan Dean, Sandra Sneckenberger

FIELD OFFICE APPROVAL:

Lead Field Supervisor, Fish and Wildlife Service

Approve _____ Date 7-26-10

The lead Field Office must ensure that other offices within the range of the species have been provided adequate opportunity to review and comment prior to the review's completion. The lead field office should document this coordination in the agency record.

REGIONAL OFFICE APPROVAL:

The Regional Director or the Assistant Regional Director, if authority has been delegated to the Assistant Regional Director, must sign all 5-year reviews.

Acting
Lead Regional Director, Fish and Wildlife Service

Approve _____ Date 8-18-10

Summary of peer review for the 5-year review of Cape Sable seaside sparrow *(Ammodramus maritimus mirabilis)*

A. Peer Review Method: Recommendations for peer reviewers were solicited from the Florida Fish and Wildlife Conservation Commission, Archbold Biological Station, South Florida Water Management District, and Auburn University. Six peer reviewers were asked to participate in this review. Individual responses were received from four peer reviewers.

B. Peer Review Charge: See attached guidance below this summary.

C. Summary of Peer Review Comments/Report:

Reviewers submitted minor, editorial comments to improve the clarity of the document. One reviewer suggested the inclusion of an estimate of hectares occupied. One reviewer disagreed that threats resulting from regulatory mechanisms are not small.

Most reviewers had many comments on the recovery criteria.

One reviewer stated that CSSS decline is not entirely the fault of the C&SF project. Sea-level rise may be causing the invasion of mangroves on the southwest Florida coast, and CSSS habitat east of Everglades National Park may have been lost to agriculture.

One reviewer questioned the conclusion of Pimm et al. (2002) concerning conditions necessary for population increase. A re-examination with more recent data was recommended.

One reviewer recommends that research focused on understanding the recovery of degraded marl prairie plant communities during extended periods of favorable hydrologic patterns, or lack thereof, should be a priority.

One reviewer stated that while ecosystem restoration and CSSS recovery are not mutually exclusive, the two goals may not be compatible in all locations.

One reviewer felt that while overall, CSSS habitat has not been restored, some between year comparisons are problematic due to rainfall patterns and lags in vegetative responses.

One reviewer thought that a summary of predicted effects from CERP and Decompartmentalization (DECOMP) were warranted.

D. Response to Peer Review:

Editorial comments were incorporated into the document. An estimate of area occupied was added to the review. The discussion of threats related to inadequate regulatory mechanisms was expanded. Comments involving recovery criteria were not addressed as these criteria, taken from the recovery plan, cannot be changed as part of the 5-year status review process.

Discussion of the causes of the CSSS population decline was modified to include examples of habitat loss. The citation was corrected regarding conditions required for a population increase. Additional general comments concerning CSSS recovery were noted and listed in the Summary of Peer Review Comments.

Guidance for Peer Reviewers of Five-Year Status Reviews
U.S. Fish and Wildlife Service, South Florida Ecological Services Field Office

As a peer reviewer, you are asked to adhere to the following guidance to ensure your review complies with U.S. Fish and Wildlife Service (Service) policy.

Peer reviewers should:

1. Review all materials provided by the Service.

2. Identify, review, and provide other relevant data apparently not used by the Service.

3. Not provide recommendations on the Endangered Species Act classification (e.g., endangered, threatened) of the species.

4. Provide written comments on:
   - Validity of any models, data, or analyses used or relied on in the review.
   - Adequacy of the data (e.g., are the data sufficient to support the biological conclusions reached). If data are inadequate, identify additional data or studies that are needed to adequately justify biological conclusions.
   - Oversights, omissions, and inconsistencies.
   - Reasonableness of judgments made from the scientific evidence.
   - Scientific uncertainties by ensuring that they are clearly identified and characterized, and that potential implications of uncertainties for the technical conclusions drawn are clear.
   - Strengths and limitation of the overall product.

5. Keep in mind the requirement that the Service must use the best available scientific data in determining the species' status. This does not mean the Service must have statistically significant data on population trends or data from all known populations.

All peer reviews and comments will be public documents and portions may be incorporated verbatim into the Service's final decision document with appropriate credit given to the author of the review.

Questions regarding this guidance, the peer review process, or other aspects of the Service's recovery planning process should be referred to Cindy Schulz, Endangered Species Supervisor, South Florida Ecological Services Office, at 772-562-3909, extension 305, email: Cindy_Schulz@fws.gov.