Supplemental Information for the Scott's Seaside Sparrow

Biological Status Review Report

The following pages contain peer reviews received from selected peer reviewers, comments received during the public comment period, and the draft report that was reviewed before the final report was completed

March 31, 2011

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Peer review #1 from Dr. Tom Webber

From: Tom Webber
To: Imperiled
Subject: BSR for Scott"s Seaside Sparrow
Date: Monday, January 10, 2011 11:21:03 AM

Good morning,

I've now studied the Biological Status Review of Scott's Seaside Sparrow (**Ammodramus maritimus peninsulae**) by Michael Delany, Katy NeSmith, and Bill Pranty.

The authors have covered the relevant literature well, and have directly consulted the best-informed authorities on the subject.

They have applied the resulting information to the selection criteria in a straightforward and clear manner.

The standard for classification of a taxon as threatened is clear and simple: "Each taxon must be assessed against all [IUCN] criteria, but if the taxon meets any of a the criteria for a particular category it qualifies as threatened."

Since the authors show beyond reasonable doubt that Scott's Seaside Sparrow meets substantially more than one of the criteria, it follows that this taxon qualifies as threatened.

(Minor technical note: The Check-list Committee of the American Ornithologists' Union places **Ammodramus maritimus** in the family Emberizidae <http://aou.org/checklist/north/>.)

Thank you for the opportunity to review this important work.

Sincerely,

Tom Webber
Bird Collection Manager
Florida Museum of Natural History
Museum Road at Newell Drive
University of Florida
Gainesville FL 32611-7800 USA

Peer review #2 from John Greenlaw

From: Jon S. Greenlaw
To: Imperiled
Subject: Evaluation of draft BSR of Scott"s Seaside Sparrow
Date: Monday, January 03, 2011 1:09:39 PM
Attachments: Scott"s Seaside Sparrow Revised Appendix 2.doc
Scott"s Seaside Sparrow Final Draft BSR 11-17-10.doc
Review of Scott"s Seaside Sparrow draft BSR.doc

Dear Mike et al.

I attach a general evaluation of your draft BSR on *A. m. peninsulae* and a copy of the draft with marginal comments and text insertions as suggestions for changing the existing text. Overall, the draft was well-written, concise, and appropriate from a biological perspective.

Jon S. Greenlaw

Attachments:
(1) MSWord document, summary review of draft BSR
(2) Draft of BSR w/ comments and suggestions
(3) Appendix to BSR (no comments)

Date: 3 January 2011

From: Dr. Jon S Greenlaw

To: Imperiled@MyFWC.com

RE: Scott's Seaside Sparrow Biological Status Review (BSR): Draft Evaluation

The following is a summary of my evaluation of the draft BSR of Scott's Seaside Sparrow (*Ammodramus maritimus peninsulae*). Detailed suggestions and comments are found in the draft BSR manuscript attached here.

Overall, the review is an accurate and complete statement of current knowledge on this subspecies. I believe that the assumptions underlying the review analysis and the conclusions drawn from the available information is appropriate. I mainly updated remarks in the review that pertained to the evolutionary history of Seaside Sparrows and their subspecies. The old citations of Beecher (1955) and Funderberg and Quay (1983) are pre-empted by more modern studies, which I have summarized in the text (see Wakulla Seaside Sparrow for suggested prose) and added to the Literature Cited. Subspecies limits need a formal, modern revision, as the BSR points out.

The BSR recommendation for field monitoring is especially important. Going into this review, data on total area of available marsh habitat and total population size of the taxon either were unavailable, or very speculative. The estimates of total size especially need attention. Such information is important as a baseline for future reviews. Based on the review of subspecies by Kale (1983) and MacDonald (1988), I suggest that merging *A. m. peninsulae* and *A. m. juncicolus* into a single management unit would make sense. The two subspecies are weakly defined (characters are clinal), and probably will not pass muster in a formal review based on an analysis of geographic variation. The two subspecies evidently are not separated by a strong geographic disjunction, as occurs between *peninsulae* and *mirabilis* to the south, and *juncicolus* and *fisheri* to the west on the panhandle.

I believe the marginal comments and suggestions speak for themselves in the attached draft manuscript.

Sincerely,

Jon S Greenlaw (signed)

Jon S Greenlaw, Ph.D.
Emeritus Professor of Biology
Long Island University

Biological Status Review
for the
Scott's Seaside Sparrow
(*Ammodramus maritimus peninsulae)*

EXECUTIVE SUMMARY

The Florida Fish and Wildlife Conservation Commission (FWC) directed staff to evaluate all species listed as Threatened or Species of Special Concern as of September 1, 2010. Public information on the status of the Scott's seaside sparrow was sought from September 17 to November 1, 2010. The three-member Biological Review Group met on November 3 – 4, 2010. Group members were Michael F. Delany (FWC lead), Katy NeSmith (Zoologist with the Florida Natural Areas Inventory), and Bill Pranty (Avian Ecologist Contractor). In accordance with rule 68A-27.0012 Florida Administrative Code (F.A.C.), the Biological Review Group (BRG) was charged with evaluating the biological status of the Scott's seaside sparrow using criteria included in definitions in 68A-27.001(3) and following the protocols in the *Guidelines for Application of the IUCN Red List Criteria at Regional Levels (Version 3.0)* and *Guidelines for Using the IUCN Red List Categories and Criteria (Version 8.1)*. Please visit http://www.myfwc.com/WILDLIFEHABITATS/imperiledSpp_listingprocess.htm to view the listing process rule and the criteria found in the definitions.

The Biological Review Group concluded from the biological assessment that the Scott's seaside sparrow met criteria for listing and recommend retaining the species on the FWC list of threatened species.

This work was supported by a Conserve Wildlife Tag grant from the Wildlife Foundation of Florida.

BIOLOGICAL INFORMATION

Life History References – Nicholson (1928), Werner (1975), McDonald (1986), Post (1974, 1981), -Post and Greenlaw (1975,1994, 2000), Post et al. (1983), Greenlaw and Post (1985), Stevenson and Anderson (1994), Kale (1996), Hill and Post (2005), and sources cited in McDonald (1983).

Taxonomic Classification – Seaside sparrows (*Ammodramus maritimus*) are classified within the Order Passeriformes belonging to the family ~~Fringillidae, subfamily EmberizinaeEmberizidae~~ (AOU 19~~98~~83). The scientific name was officially changed from *Ammospiza maritima* to *Ammodramus maritimus* in 1982 (AOU 1983). Taxonomic history is complex (Austin 1983) with three species once recognized (AOU 1957). Nine subspecies are generally accepted on the basis of plumage, geographical distribution, and migratory behavior (AOU 1957, Post and Greenlaw 1994). Subspecies of seaside sparrows may have formed with the sedentary nature of populations and their isolation due to a post-glacial rise in sea levels (Beecher 1955) and other ecological factors (Funderburg and Quay 1983). The nominate race (*A. m. maritimus*) was described by Alexander Wilson in 1811 (Austin 1983) from specimens collected in New Jersey. The Scott's seaside sparrow (*A. m. peninsulae*) was first described in

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Comment [JSG1]: American Ornithologists' Union. 1998. Check-list of North American Birds, 7th ed. American Ornithologists' Union, Washington, D.C.

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Comment [JSG2]: This view is extremely outdated, as is Funderburg & Quay's views. Genetic evidence of divergence betw/ Atlantic vs Gulf taxa is max 500,000 yrs BP (but probably somewhat less by unknown span). In contrast, within these two disparate taxa, subspecies differentiation, esp of minor difference as between peninsulae vs juncicola is likely to be post-Pleistocene (thousands of years perhaps). Most recent source for this info is :Johnson, N. K., and C. Cicero. 2004. New mitochondrial DNA data affirm the importance of Pleistocene speciation in North American birds. Evolution 58:1122-1130. Delete highlighted.

Comment [JSG3]: See Wakulla seaside sparrow for suggestion

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1888 (Allen 1888) based on two females collected by W. E. D. Scott at Tarpon Springs, (Pinellas County, Florida,) on 28 February 1888, and has remained a valid subspecies (AOU 1957). The Scott's seaside sparrow is one of 5 subspecies that are resident in the coastal marshes of Florida (Kale 1983). The northernmost subspecies (*A. m. maritimus*) is migratory and winters on Florida's Atlantic coast (Post and Greenlaw 1994). The 4 other resident seaside sparrows in Florida include the MacGillivray's seaside sparrow (*A. m. macgillivraii*), the endangered (USFWS 1999) Cape Sable seaside sparrow (*A. m. mirabilis*), Wakulla seaside sparrow (*A. m. juncicola*), and the Louisiana seaside sparrow (*A. m. fisheri*). Two extinct Florida subspecies are the Smyrna seaside sparrow (*A. m. pelonotus*) and the dusky seaside sparrow (*A. m. nigrescens*). One other subspecies, *A. m. sennetti*, is found along the Texas coast. Genetic examination of seaside sparrows in Florida found evidence of two phylogenetically distinct groups between Atlantic and Gulf coast subspecies (Avise and Nelson 1989). The maximum divergence between these two groups may be as old as 500,000 yrs BP (Avise and Walker 1998, Johnson and Cicero 2004). There appears to be an overlap in range and a morphological gradation between Scott's seaside sparrows and Wakulla seaside sparrows along the northeast Gulf coast at Dixie County (Kale 1983). Based on distribution and morphological characteristics, Kale (1996) and McDonald (1988) recommended merging the Scott's and Wakulla seaside sparrows into one subspecies. Because the Scott's seaside sparrow has taxonomic precedence, this broadened subspecies would be *A. m. peninsulae*. Subspecies designation islimits are in need of revision. However, taxonomic changes should follow a modern study of geographic variation (Post and Greenlaw 1994).

Comment [JSG4]: Avise, J. C., and D. Walker. 1998. Pleistocene phylogeographic effects on avian populations and the speciation process. Proceedings of the Royal Society of London B 265 (no. 1395):457-463.

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Population Status and Trend – Difficulty in conducting surveys in relatively inaccessible salt marsh has limited monitoring, and information on abundance is sparse. Kale (1983) conducted surveys along the Gulf coast of Florida during 1979 and estimated between 2,500 and 3,500 pairs of Scott's seaside sparrows. Surveys by McDonald (1988) in 1987 estimated between 5,000-10,000 birds, but this included both Scott's and Wakulla seaside sparrows. More recently, Scott's seaside sparrows (23, range of averages from 3 repeated measures) were detected during surveys along one transect located in Dixie County (29.71365, -83.49502) in 2010 (FWC, unpublished data). There appears to be contraction at the southernmost extent of the subspecies' range (Howell 1932, Stevenson and Anderson 1994, Tracey and Greenlaw 2009). The Florida Natural Area Inventory ranks the combined populations of Scott's seaside sparrows and Wakulla seaside sparrows as rare and restricted in distribution globally and in Florida (G4T3Q/S3). Although results are based on only 5 routes and may be imprecise, trend information from the North American Breeding Bird Survey (BBS 2010) indicate a -1.5 percent annual decline in the abundance of seaside sparrows in Florida from 1966-2007. The FWC list of species of greatest conservation need (FWC 2005) ranks the status of the Scott's seaside sparrow as "medium" with a "declining" population. The International Union for the Conservation of Nature (IUCN 2009) ranks the global status of the seaside sparrow as a species of Least Concern. An array of point count stations (see Ralph et al. 1995) should be established within the range of the Scott's seaside sparrow and surveys conducted at 5-year intervals to monitor trends in abundance.

Comment [JSG5]: 23 what?? Needs some units or explanation

Comment [JSG6]: Last ref specifically evaluates this issue, & is most current

Comment [JSG7]: But I believe that none of the routes surveyed Scott's (or Wakulla) Seaside Sparrow

Geographic Range and Distribution – Seaside sparrows are restricted to coastal salt and brackish marshes from New Hampshire to southern Texas (Post and Greenlaw 1994). Populations north of Virginia are usually migratory and some Gulf coast populations may shift

longitudinally (Robbins 1983). The Scott's seaside sparrow type specimen was collected near Tarpon Springs (Pinellas County, Florida) (Howell 1932). In 1979, Kale (1983) found sparse breeding aggregations of Scott's seaside sparrows in coastal marshes from New Port Richey (Pasco County) to the mouth of the Homossasa River in Citrus County. He found Scott's seaside sparrows more numerous in marshes north of the Homossasa River, with distribution extending to the historic northern limit of the subspecies at Pepperfish Keys off Dixie County. More recently, surveys by Tracey and Greenlaw (2009) found the southern extent of observed Scott's seaside sparrows in Pasco County at Sand Bay (28.220, -82.763), with the southern extent of a singing individual at Brasher Park, Port Richey (28.285, -82.731). The Florida Breeding Bird Atlas (FWC 2003, 1986-1991) documented confirmed and probable breeding in 9 atlas blocks within this range. Florida land cover information (Water Management Districts, photography dates 1999-2008) indicates 376.2 km^2 of potential salt marsh habitat within the range of the Scott's seaside sparrow. The subspecies is resident at breeding locations and is considered non-migratory.

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Comment [JSG8]: Redundant, see above. You might want to delete the preceding statement, which is almost verbatim.

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Quantitative Analyses - A population viability analysis (PVA) was conducted for the combined populations of Scott's seaside sparrows and Wakulla seaside sparrows using baseline demographic parameters and models for ~~using both~~ all potential habitat and for habitat located on protected lands. This analysis found a 0% chance of extinction or decline in abundance within the next 100 years (Endries et al. 2009).

BIOLOGICAL STATUS ASSESSMENT

Threats – The narrow coastal range of the Scott's seaside sparrow makes it vulnerable to habitat loss and fragmentation due to dredging and filling in conjunction with coastal development, impoundments for mosquito control and waterfowl, flooding from severe storms and hydrological changes, sea level rise, chemical and oil spills, and disposal of dredged material (Montague and Wiegert 1990, FWC 2005). Development of adjacent uplands also may contribute to habitat degr~~a~~edation. The vulnerability of resident seaside sparrows is exemplified by the rapid decline and extinction of the dusky seaside sparrow (Delany et al. 1981), and extreme fluctuations in ~~the~~ number~~s~~ of Cape Sable seaside sparrows (Federal Register 2007). Climate change is a potential threat at the southern extent of its range where salt marsh habitat may be lost to the invasion of mangroves as the climate warms (Stevenson and Anderson 1994). Sea level rise also may lead to coastal problems and habitat loss in Florida (Walton 2007). However, responses of most species, especially short-lived species, to future climate change are not understood well enough to predict impacts (Akcakaya et al. 2006). This is a species of "management concern" throughout most of its breeding range because of habitat loss and alteration (Greenlaw 1992). The current condition of salt marsh habitats in Florida is considered "poor and declining" (FWC 2005). While there has been some loss and degradation of gulf coast salt marshes (Alexander et al. 1986), strict regulatory protections and public ownership provide some protection. Seaside sparrows require coastal wetlands that include a mosaic of dense and sparse herbaceous vegetation maintained by intertidal disturbance and fire. Seaside sparrows along the Gulf coast require a mixture of smooth cordgrass (*Spartina alternaflora*) black needle rush (*Juncus romerianus*), and seashore saltgrass (*Distichlis spicata*). Seaside sparrows will abandon salt marsh sites when the density of invading of woody vegetation (especially mangroves) reaches a critical density. Nests are vulnerable to loss from predation, with mortality

rates in Florida higher than those at other locations (Post et al. 1983). The activity of rice rats (*Oryzomys palustris*) influences habitat use by gulf coast seaside sparrows and the two species compete for nesting sites (Post 1981).

Statewide Population Assessment – The (IUCN) developed criteria for the evaluation of extinction risk for any taxon, with the exception of micro-organisms (IUCN 2010). Each taxon must be assessed against all criteria, but if the taxon meets any of the criteria under a particular category it qualifies as threatened. IUCN criteria use the terms observed, estimated, projected, inferred, and suspected to refer to the quality of information used to assess the status of a species. The assessment criteria can be applied at a regional (e.g., Florida) level with a consideration of the status and impact of extra-regional populations (IUCN 2003). Findings from the BRG are included in the Biological Status Review Information table below.

In our review of the status of the Scott's seaside sparrow, the Biological Review Group made the following assumptions and conclusions:

1. Because the time estimated for 3 generations was <10 years, the IUCN criteria (2010) stipulation of 10 years was used in assessments.

~~1.~~2. Early estimates of the number of mature individuals ranged from 2,500-3,500 pairs (Kale 1983).

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~~1.~~3. The extent of occurrence was 376.2 km^2 based on the availability of salt marsh habitat within the range of the sparrow.

~~1.~~4. The sparrow is endemic to Florida.

5. E~~There is e~~vidence indicates~~of~~ range contraction at the southernmost extent of the subspecies' distribution (Howell 1932, Tracey and Greenlaw 2009).

~~5.~~6. The condition of salt marsh habitat in Florida is considered to be poor and declining (FWC 2005).

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~~5.~~7. E~~There is e~~vidence suggests that ~~of a~~ populations may be in decline in Florida, based on data from the USGS Breeding Bird Survey (BBS 2010).

LISTING RECOMMENDATION

Staff recommends that the Scott's seaside sparrow be listed as a Threatened species because the subspecies meets criteria for listing as described in 68A-27.001(3). F.A.C.

SUMMARY OF THE INDEPENDENT REVIEW

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Peer review #3 from Ken Tracey

Ken F. Tracey

Peer Review – "Biological Status Review for the Scott's Seaside Sparrow (*Ammodramusmaritimus peninsulae)*

1. "The completeness and accuracy of the biological information and data analyses in the BSR." The data used as a base for the population estimates of this sub-species appear to be lacking in scientific process, some made without physically accessing the prime nesting areas of the Scott's Seaside Sparrow. The BSR states that an array of point count stations should be established and counted at five-year intervals, but since that has not been done the few surveys over the last 30 years conducted on the Scott's range is the only population data available and those population numbers are stated by the different researchers to be estimates. Without repeated surveys done with something that could access marsh bayous like air boats and recording responses by seaside's enlisted by taped seaside song playing on territories can populations be determined or trends in populations noted. The BSR reports appears to make use of all known science that exists on the Scott's Seaside Sparrow. My own estimate of 5690 total population for Scott's Seaside's based on habitat area and using the percentages of habitat usage I found in Pasco County would support some of the population estimates of other researchers.

2. "The reasonableness and justifiability of our assumptions, interpretations of the data, and conclusions in the BSR."
   I agree with staff recommendation that the Scott's Seaside Sparrow should be listed as a "Threatened species". The measure of population size and trend is the strongest argument for this listing. Although the existing population estimates I feel are scientifically weak the standard of less than 10,000 individuals is clearly met. With the population severely fragmented even within vast marsh expanses. This sparrow is endemic to the Gulf coast of Florida, so there is no other gene pool to draw from if it approaches extinction.
   The quality of habitat and extent of occurrence for the southern most range of the Scott's Seaside Sparrow will continue to decline. New development along the Gulf coast will
   Page 1 of 2
   further isolate the remaining small populations there as the quality and size of the salt marsh decline. The advancement of mangroves will continue to degrade the southern habitat range of the Scott's Seaside Sparrows. So the 1.3 % decline is reasonable to expect to continue. The population is also obviously at risk along the whole Gulf coast from a stochastic event like a hurricane. Hopefully the listing recommendation of "Threatened" will bring about five year surveys to arrive at a science based population total and trend, and that fire management will occur to improve habitat, chances of population recovery, and reduced predation.

Letters and emails received during the solicitation of information from the public period of September 17, 2010 through November 1, 2010

Email from Ken Tracey

From: Ken Tracey [mailto:kftracey@verizon.net]
Sent: Tuesday, November 02, 2010 10:18 AM
To: Delany, Michael
Subject: Imperlied Walkula & Scott's Seaside Sparrow Report

Hello Mike,

I have attached a word document " Imperiled Species Biological Review" that contains my findings. I also have attached three Excel spreadsheets that I used for my referenced data on the two sub-species of Seaside Sparrows.

Ken Tracey

Population estimate of Gulf Coast Seaside Sparrows

Location	Sub-species	Block #	Percent of block	Population Number
Breeding location # 1 - Hogtown Bayou/Choctawhatchee Bay, Walton County				
	juncicola	1	0.6	
	"	2	0.7	
	"	3	0.1	
	"	4	0.1	
	"	5	0.3	
	"	6	0.2	
Location #1 totals			**8 sq km**	**250**
Breeding location #2 - West Bay/East Bay/ Goose Bayou, Washington County				
	juncicola	1	0.1	
	"	2	0.2	
	"	3	0.1	
	"	4	0.1	
	"	5	0.2	
	"	6	0.1	
	"	7	0.1	
	"	8	0.1	
Location #2 totals			**4 sq km**	**125**
Breeding location #3 - Saint Joseph Bay to Saint George Bay, Gulf & Franklin County				
	juncicola	1	0.2	
	"	2	0.2	
	"	3	0.4	
	"	4	0.3	
	"	5	0.1	
	"	6	0.4	
	"	7	0.4	
	"	8	0.7	
	"	9	0.4	
	"	10	0.2	
	"	11	0.2	
	"	12	0.1	
	"	13	0.1	
	"	14	0.2	
	"	15	0.3	
	"	16	0.2	
	"	17	0.1	
	"	18	0.1	
	"	19	0.1	
	"	20	0.1	

	"	21	0.1	
	"	22	0.1	
	"	23	0.2	
	"	24	0.2	
Location #3 totals			**21.6 sq km**	**675**
Breeding location #4 - Bald Point to Horseshoe Beach, Wakulla, Jefferson, Taylor, Dixie County				
	juncicola	1	0.2	
	"	2	0.3	
	"	3	0.4	
	"	4	0.3	
	"	5	0.3	
	"	6	0.2	
	"	7	0.4	
	"	8	0.3	
	"	9	0.3	
	"	10	0.3	
	"	11	0.3	
	"	12	0.3	
	"	13	0.4	
	"	14	0.6	
	"	15	0.7	
	"	16	0.4	
	"	17	0.5	
	"	18	0.3	
	"	19	0.2	
	"	20	0.2	
	"	21	0.1	
	"	22	0.3	
	"	23	0.2	
	"	24	0.3	
	"	25	0.1	
	"	26	0.1	
	"	27	0.1	
	"	28	0.3	
	"	29	0.1	
	"	30	0.3	
	"	31	0.2	
	"	32	0.4	
	"	33	0.6	
	"	34	0.4	
	"	35	0.3	
	"	36	0.2	
	"	37	0.5	

"	38	0.6
"	39	0.6
"	40	0.4
"	41	0.7
"	42	0.3
"	43	0.4
"	44	0.2
"	45	0.6
"	46	0.6
"	47	0.3
"	48	0.7
"	49	0.1
"	50	0.6
"	51	0.6
"	52	0.5
"	53	0.2
"	54	0.5
"	55	0.6
"	56	0.5
"	57	0.8
"	58	0.7
"	59	0.6
"	60	0.2
"	61	0.3
"	62	0.3
"	63	0.2
"	64	0.1
"	65	0.4
"	66	0.1
"	67	0.2
"	68	0.3
"	69	0.1
"	70	0.7
"	71	0.1
"	72	0.4
"	73	0.2
"	74	0.1
"	75	0.2
"	76	0.2
"	77	0.1
"	78	0.1
"	79	0.1
"	80	0.2

	"	81	0.1	
	"	82	0.1	
	"	83	0.4	
	"	84	0.4	
Location #4 totals			**112.4 sq km**	**3514**
Totals	***juncicola***		**146 sq km**	**4564**
Breeding location #5 - Horseshoe Cove to Salt Springs Bayou, Dixie, Levy, Citrus, & Hernando County				
	peninsulae	1	0.1	
	"	2	0.3	
	"	3	0.2	
	"	4	0.3	
	"	5	0.4	
	"	6	0.4	
	"	7	0.7	
	"	8	0.4	
	"	9	0.5	
	"	10	0.6	
	"	11	0.6	
	"	12	0.3	
	"	13	0.4	
	"	14	0.8	
	"	15	0.3	
	"	16	0.6	
	"	17	0.8	
	"	18	0.7	
	"	19	0.2	
	"	20	0.7	
	"	21	0.2	
	"	22	0.4	
	"	23	0.3	
	"	24	0.3	
	"	25	0.2	
	"	26	0.7	
	"	27	0.7	
	"	28	0.6	
	"	29	0.1	
	"	30	0.1	
	"	31	0.6	
	"	32	0.2	
	"	33	0.3	
	"	34	0.4	
	"	35	0.5	

"	36	0.6
"	37	0.5
"	38	0.4
"	39	0.6
"	40	0.9
"	41	0.2
"	42	0.4
"	43	0.3
"	44	0.7
"	45	0.7
"	46	0.7
"	47	0.4
"	48	0.5
"	49	0.3
"	50	0.3
"	51	0.1
"	52	0.4
"	53	0.3
"	54	0.2
"	55	0.2
"	56	0.3
"	57	0.2
"	58	0.5
"	59	0.1
"	60	0.3
"	61	0.1
"	62	0.1
"	63	0.2
"	64	0.2
"	65	0.2
"	66	0.2
"	67	0.4
"	68	0.8
"	69	0.7
"	70	0.7
"	71	0.6
"	72	0.2
"	73	0.4
"	74	0.2
"	75	0.2
"	76	0.4
"	77	0.5
"	78	0.5

	"	79	0.3	
	"	80	0.7	
	"	81	0.5	
	"	82	0.3	
	"	83	0.5	
	"	84	0.2	
	"	85	0.7	
	"	86	0.5	
	"	87	0.8	
	"	88	0.5	
	"	89	0.5	
	"	90	0.7	
	"	91	0.1	
	"	92	0.5	
	"	93	0.2	
	"	94	0.2	
	"	95	0.2	
	"	96	0.3	
	"	97	0.5	
	"	98	0.3	
	"	99	0.3	
	"	100	0.3	
	"	101	0.4	
	"	102	0.3	
	"	103	0.1	
	"	104	0.2	
	"	105	0.1	
Location #5 totals			**167.2 sq km**	**5227**
Breeding location #6 - Hernando County line to Salt Springs Bayou, Pasco County				
	peninsulae	1	14.8 sq km	463
Location #6 totals			**14.8 sq km**	**463**
Totals	***peninsulae***		**182 sq km**	**5690**

Pasco Salt Marsh Size & Seaside Sparrow Population (Map blocks equal 1 sq. km.)

Map Block #	% Marsh in block	Surveyed	Seasides
1	0.4	yes	no
2	0.2	yes	no
3	0.8	yes	yes
4	0.3	yes	probable
5	0.6	no	no
6	0.3	yes	probable
7	0.7	no	probable
8	0.4	no	probable
9	0.3	no	probable
10	0.6	no	probable
11	0.6	yes	yes
12	0.7	yes	yes
13	0.1	yes	no
14	0.8	no	probable
15	0.6	yes	yes
16	0.6	yes	yes
17	0.8	yes	no
18	0.7	yes	yes
19	0.2	yes	yes
20	0.1	yes	no
21	0.6	yes	yes
22	0.4	yes	no
23	0.7	yes	yes
24	0.3	yes	no
25	0.5	yes	yes
26	0.2	yes	no
27	0.3	yes	no
28	0.3	yes	no
29	0.4	yes	no
30	0.2	yes	no
31	0.3	yes	no
32	0.5	yes	no
33	0.3	yes	no
	14.8		
			9.8 sq km occupied
		9.8 x 47.22 =	**463 birds**

Table # 1
Ammodramus Sparrow Survey - Pasco

Site #	G.P.S.	Location, County & Description	Estimated Size Needle Rush Marsh
4	82 45.784 x 28 13.194	Pasco, Sand Bay	50m x 100m
5	82 45.100 X 28 13.267	Pasco, Eagle Point	100m x 100m
6. A	82 44 46 x 28 15 14	Pasco, Green Key	200m x 200m
6. B	82 44 45 x 28 15 0	Pasco, Green Key	200m x 200m
7	82 43.994 x 28 16.721	Pasco, Winslow Park, Port Richey	100m x 200m
8	82 43.838 x 28 17.128	Pasco, Brasher Park, Port Richey	200m x 200m
9	82 43.444 x 28 17.343	Pasco, EMC & State Park	50m x 200m
10. A	82 43.851 x 28 17.511	Pasco, State Park, Salt Springs	200m x 500m
10. B	82 43.636 x 28 17.574	Pasco, State Park, Salt Springs	300m x 300m
11. A	82 43 49 x 28 18 4	Pasco, State Park, Air Boat Trails	500m x 2000m
11. B	82 43 40 x 28 18 12	Pasco, State Park, Air Boat Trails	300m x 1000m
11. C	82 43 44 x 28 18 23	Pasco, State Park, Air Boat Trails	300m x 500m
11. D	82 43 45 x 28 18 56	Pasco, State Park, Air Boat Trails	500m x 500m
12. A	82 42 47 x 28 19 23	Pasco, State Park, Salt Barrens	300m x 300m
12. B	82 42 57 x 28 19 14	Pasco, State Park, Salt Barrens	300m x 500m
12. C	82 43 21 x 28 19 37	Pasco, State Park, Salt Barrens	300m x 500m
12. D	82 43 25 x 28 19 21	Pasco, State Park, Salt Barrens	300m x 500m
13	82 42 40 x 28 19 49	Pasco, State Park, South Hwy 52	300m x 300m
14	82 42 32 x 28 19 58	Pasco, State Park, Hwy 52	200m x 200m
15	82 42 30 x 28 20 07	Pasco, State Park, North Hwy 52	200m x 200m
16	82 42.121 X 28 21.948	Pasco, Port Hudson	100m x 200m
17. A	82 41 43 X 28 22 37	Pasco, Seabird Sanctuary	200m x 300m
17. B	82 41 58 X 28 22 46	Pasco, Seabird Sanctuary	300m x 300m
18	82 41.651 X 28 23.228	Pasco, North Sea Pines	500m x 500m
19. A	82 40 41 x 28 24 35	Pasco, Fillman's Bayou	200m x 300m
19. B	82 40 51 x 28 24 59	Pasco, Fillman's Bayou	100m x 200m
19. C	82 41 2 x 28 24 48	Pasco, Fillman's Bayou	300m x 500m
20. A	82 40 23 x 28 25 53	Pasco, South Aripeka	300m x 500m
20. B	82 40 30 x 28 25 48	Pasco, South Aripeka	200m x 500m

Email from Jon S. Greenlaw

From: Jon S. Greenlaw
Sent: Monday, November 01, 2010 7:39 AM
To: Delany, Michael
Subject: Re: Evaluation of imperiled species

Hi Michael,

Attached is my assessment report on the Gulfside Seaside Sparrows, the Monday morning before your meeting begins. The report and two figures go together. Hope you find them useful.

All the best,

Jon

Attachments

29 Oct 2010

RE: Seaside Sparrows Report to **Biological Review Panel**

From: Jon S Greenlaw, Tampa FL, jgreenlaw@earthlink.net

The following constitutes an assessment report by JSG on the vulnerability status of Scott's Seaside Sparrow (*Ammodramus maritimus peninsulae*) and Wakulla Seaside Sparrow (*A. m. juncicolus*) under IUCN criteria.

Background

North of Cape Sable in Florida, two subspecies of Seaside Sparrow are recognized (American Ornithologists' Union [AOU] 1957, Dickinson 2003). Both are resident and both have limited distributions along the Gulf of Mexico coast: *A. m. peninsulae* from Pasco Co. (Tracey and Greenlaw 2009) north (traditionally; AOU 1957) through Dixie Co.; *A. m. juncicolus*, from southern Taylor Co. north and west in the eastern Panhandle to Wakulla Co,, sparingly westward through Franklin Co. to St. Joseph Sound area, Gulf Co. *A. m. juncicolus* may not be a valid subspecies (Kale 1983, McDonald 1988), but no revision of subspecies of Seaside Sparrow has been published. Little biological or survey work has been done on the two subspecies. William Post studied a marked population of *A. m. peninsulae* in 1979 and 1980 at Gulf Hammock, Levy Co. (Post 1981a, Post et al. 1983). His work still provides the sole source of information for any population of Gulf coast Seaside Sparrow on habitat and nest-site characteristics, population density, space use, reproductive success and female productivity, and nestling diet. No data are available on adult or juvenile survivorship. Survey work is somewhat more comprehensive. Good baseline field surveys were done on *A. m. juncicolus* by Herb Kale (1983) and Vickie McDonald (1988). Until recently, no survey work has been done on *A. m. peninsulae* (Tracey and Greenlaw 2009; Pasco Co. only by Ken Tracey). Three Breeding Bird Censuses (National Audubon Society) were published on the Gulf Hammock population (Post 1981b, McDonald 1982, 1983), none elsewhere. Reviews of the distributions of subspecies of Seaside Sparrows, including the Gulf coast races, are Funderburg and Quay (1983) and Robbins (1983). Breeding Bird Surveys (USFWS) provides no data on population trends of Seaside Sparrows in Florida. Christmas Bird Counts (National Audubon Society) offer limited information on *A. m. peninsulae* (West Pasco and Cedar Key counts) and on *A. m. juncicolus* (St. Marks, Apalachicola Bay, and Port St. Joe counts). These works contain the entirety of information on breeding biology and population survey for the two Seaside Sparrow subspecies under consideration here. Like Seaside Sparrows elsewhere, populations of this subspecies are crucial keystone indicators of the health of salt marsh habitats all along the Gulf and Atlantic coasts of the United States. Salt marshes are among America's most threatened habitats (Chapman 1977).

Methods

I evaluate the conservation status of the two subspecies separately in relation to the Red List Categories and Criteria for Vulnerable taxa specified by the International Union for the Conservation of Nature (IUCN). With few exceptions (A1(b)), if a criterion cannot be evaluated (usually too little information), then I do not mention it here. When information is available for a criterion, I specify the criterion, detail and discuss the available evidence, and draw my own

conclusion on conservation significance. CBC counts were examined for a local trend using linear regression. These local trends cannot be interpreted as a range-wide or regional trend because the sample sizes for both *A. m. peninsulae* and *A. m. juncicolus* are too small (n = 2-3). I know of no evidence of migrant augmentation (*A. m. maritimus*) in Gulf coast populations.

Scott's Seaside Sparrow (*A. m. peninsulae*)

- **A1(b) Reduction in population size under an index of abundance appropriate to the taxon.** West Pasco and Cedar Key CBC counts (http://audubon2.org) over the last 10 years indicate low, local numbers and wide annual fluctuations (2-13 birds across both localities). West Pasco is at the southern edge of the subspecies' range where numbers may be expected to be low. Cedar Key is well within the taxon range and thus one might think a center of abundance of the subspecies. Numbers encountered from 2000-2009 in the two count circles were similar, but they averaged higher at Cedar Key (WP: mean 4.5 ± 3.64 (SD); range 2-13; CK: 6.4 ± 2.73, 2-11; each mean was well within only one standard deviation of the other). Both West Pasco and Cedar Key counts exhibited positive apparent trends from 2000-2010 (Fig. 1). These "trends" may have been artifacts because one or two high counts in those years could come as easily early in the time period examined as later. Thus, the trends are suggestive and purely local. The results cannot be construed as support for a range-wide trend in *A. m. peninsula*. Measured population density in the Cedar Key area, 1980-1982, was 26, 15.8, and 18 males per 10 ha during the three years.
- **Conclusion A1b:** Regional trend not demonstrable (too few data). Populations at surveyed localities in my experience are low (CBC surveys) to moderate (densities observed at Gulf Hammock, Levy Co.), and do not represent densities in most sections of occupied marshes. The densities at Gulf Hammock are ecological densities found within an occupied area at one non-random site. I suspect that these values represent reasonable "best result" estimates for this taxon at sites known to be occupied in the center of its limited range.

- **B1. Extent of occurrence (EOO):** The total area of saltmarsh habitats in the region covered by Pasco, Hernando, Citrus, Levy, and Dixie cos. is not available. *A. m. peninsulae* is endemic to these marshes. However, the total area of saltmarsh in Florida is estimated to be about 170, 000 ha or 1700 km^2 (Montegue and Wiegert 1990). This area is substantially less than the threshold for this criterion, and is even less than the threshold for criterion **B2, Area of occupancy (AOO)**. Ken Tracey recently (Oct 2010; pers. communication) provided estimates of EOO (total salt marsh habitat available) and AOO (area of marsh known to have Seaside Sparrows) for Pasco Co. He determined that *A. m. peninsulae* occurred in 9.8 km^2 of salt marsh out of a total tidal marsh area of about 14.8 km^2. **Conclusion:** The areas of occurrence and occupancy (about 2/3 of EOO in Pasco Co.) within the range of *A. m. peninsulae* are less than the IUCN thresholds. Saltmarsh habitats are localized and restricted in area, but most of them are already protected at the state or county level (FNAI).

- **B2(a), and AOO severely fragmented:** By common experience, saltmarsh habitats are known to be highly fragmented ecosystems. The shallow waters, sheltered shores, and depositional conditions required for their formation are localized (e.g., behind barrier

islands, in estuaries, around the edges of sheltered bays). Large sections of exposed coasts are without examples of such wetlands. Moreover, development has destroyed large acreages of saltmarsh in the past, with the result that once more widespread tidal marshes are now gone or greatly reduced and degraded. **Conclusion:** *A. m. peninsulae*, like other populations of this species, depend on a single ecosystem type that is known to be strongly fragmented along coastlines.

- **B2(c)(iii) Extreme fluctuations in number of locations or subpopulations:** No data are directly available on this subject, but local subpopulations are small in Pasco Co. (1-20 males in 19 localities out of 36 surveyed). Seaside Sparrows were not found at 17 other sites even though some of those localities appeared to have suitable habitat. Small populations, especially those consisting of a couple dozen adults or less, are known to suffer high rates of local extirpation for stochastic reasons. The longer the period of time, the greater the chances of local extinction for a population of a given size. This probability increases as local populations decrease (Shaffer 1987). **Conclusion:** *A. m. peninsulae* occurs in small subpopulations in Pasco Co.; one can argue that these local populations are subject to high rates of chance extinction.

- **C2(a i), (Or) Number of mature individuals in each subpopulation:** Seaside Sparrow populations are fragmented by marsh isolation, by patchiness of suitable microhabitat on marshes, and by local extirpation that produces gaps even when local habitat is present. In Pasco Co., only about 67% of marsh localities had Seaside Sparrows, and local population size varied from 1 or 2 males to 20 males. Total population size in Pasco Co. was estimated to be 85 singing males. Assuming a balanced sex ratio (not always the case; usually some males are unmated), the total population size of breeding adults in this county at best is 170 birds. We do not know total saltmarsh area in other counties occupied by *A. m. peninsulae* (Hernando, Citrus, Levy, Dixie), so extrapolation of results from Pasco Co. cannot be applied for even a crude estimate of total population size. Still, I would not be surprised if this size were < 1,000 adults within the subspecies' range, although numbers may be higher if occupied habitat is very extensive in Levy and Dixie cos., where historical factors reducing tidal marsh area have been minimal and where the greatest development of salt marshes occurs within the distribution of *A. m. peninsulae* (Montague and Wiegert 1990).
- **Overall Conclusion:** This subspecies is best known based on recent survey data in Pasco Co. (Tracey and Greenlaw 2009; Tracey, unpublished data). Other populations, especially those in Levy and Dixie cos., where habitat is relatively undisturbed and extensive, have not been studied or surveyed for several decades. We do not know how much marsh is present in most of the counties within the subspecies' range, and we have no good idea about occupation rate locally. On population trends (CBC data for Cedar Key), local data based on one locality sample suggests (conservatively) a stable local population. The strongest arguments, using IUCN criteria, for vulnerability listing is derived from size of geographic range (B1, B2), strong habitat fragmentation (B2(a)), and extreme fluctuations in numbers of subpopulatons (B2(c)(iii).

Wakulla Seaside Sparrow (*A. m. juncicolus*)

- This subspecies is resident and endemic to tidal marshes of northwest Florida in Taylor, Jefferson, Wakulla, Franklin and Gulf cos. Details of occurrence in most of Franklin, Gulf and Bay cos. remain incomplete. An apparent hiatus in the distribution of Seaside Sparrows was reported from Franklin Co. westward to Walton and Santa Rosa cos. (Kale 1983; also summarized in McDonald 1988). Kale's work in 1979-1980 failed to corroborate historical reports of occurrence west of Apalachee Bay (Wakulla Co.). However, recent CBC counts find small numbers of sparrows westward in western Apalachicola Bay (Franklin Co.) and at Port St. Joe (Gulf Co.). Such small numbers, and sporadic zero counts at Port St. Joe, suggest an edge of range effect. John Murphy, an experienced local birder in Franklin Co., reported (pers. communication, October 2010) that while sparrows are "common year round" at St. Marks NWR, "once {one} crosses the bridge into Franklin Co., the situation changes dramatically." At Bald Point, a large salt marsh occurs along a tidal creek, but no more than 4 sparrows have been noted on some single visits in accessible portions of the marsh during the breeding season. JM added: "Good habitat exists in other areas of Franklin Co., such as Alligator Harbor, the mouth of the Carrabelle River, Yent's Bayou, and the upper reaches of Apalachicola Bay, but I've yet to find any evidence of [Seaside Sparrows] in these locations. According to the bird list for St. Vincent NWR [included in Apalachicola Bay CBC], Seaside Sparrows are 'common' in spring, and 'uncommon' the remainder of the year."
- **A1(b):** The only population data of recent vintage are three CBC counts at St. Marks NWR (SM), Apalachicola Bay-St. Vincent NWR (AB) and Port St. Joe (SJ). Each locality exhibits a different trend, one positive, one negative, and one nearly flat. Observed number of sparrows was small at AB and SJ, and somewhat higher at SM. None of the trends are significantly different from the null hypothesis. **Conclusion:** Too few data are available from CBC counts to draw any conclusion either about local population trends or a range-wide trend. Criteria A cannot be evaluated.
- **B1:** We do not have county-based estimates on areas of tidal marshes. Still, because the total area of salt marshes in Florida is less than the EOO and AOO thresholds (see above), it is a trite observation to say that the range-wide areas of salt marsh available to *A. m. juncicolus* have to be less as well.
- **B2(a):** The arguments for severe fragmentation of available habitat made for *A. m. peninsulae* above apply equally to *A. m. juncicolus*. Area of occupancy (AOO) is even more fragmented by the microhabitat patchiness of salt marshes. Habitat selection in Seaside Sparrows is known to be relatively narrow and restrictive such that only relatively small, local areas tend to meet the characteristics used by breeding birds (Greenlaw 1983, Tracey and Greenlaw 2009). Thus, breeding requirements based on a narrow range of microhabitat characteristics may account for much of the reason why sparrow populations are so local, with seemingly "suitable" areas of marsh going unoccupied.
- **B2(c)(iii):** The small number of subpopulations present in the region west of Wakulla Co., relative to historical reports of presence (Kale 1963; McDonald 1988), and the low numbers in all surveyed populations, cause these populations to be vulnerable to high risks of local extirpation by chance (Shaffer 1987).
- **Overall Conclusion:** We know even less about *A. m. juncicolus* than we do about *A. m. peninsulae*. At best, we can argue that local populations are very small and that their distribution is highly fragmented. Areas that were reported occupied historically in the

western sections of the range of the subspecies were not occupied during Kale's 1979-1980 survey, and they are still mostly unoccupied, so far as we know. Habitats are clearly restricted within the subspecies range, and because of small local population size, we can argue that number of subpopulations may be subject to extreme fluctuations. Beyond that, we can say little, simply because we lack basic data. If nothing else, this evaluation of the two subspecies of Seaside Sparrows on Florida's Gulf coast makes a strong case for seeking more information on their population biology. Basic survey data extended over a period of years in several reference populations is much needed.

Recommendation: Whatever the outcome of the IUCN-based status review of these subspecies, I recommend that they be considered a single management unit. Although no formal revision exists, it is unlikely that *A. m. juncicolus* is a valid subspecies. Available evidence does not support the view that variation between the two ends of the *peninsulae-juncicolus* geographic space is anything more than clinal (Kale, 1983, McDonald 1988).

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Copy of the Scott's seaside sparrow BSR draft report that was sent out for peer review

Biological Status Review for the Scott's Seaside Sparrow (*Ammodramus maritimus peninsulae)*

EXECUTIVE SUMMARY

The Florida Fish and Wildlife Conservation Commission (FWC) directed staff to evaluate all species listed as Threatened or Species of Special Concern as of September 1, 2010. Public information on the status of the Scott's seaside sparrow was sought from September 17 to November 1, 2010. The three-member Biological Review Group met on November 3 – 4, 2010. Group members were Michael F. Delany (FWC lead), Katy NeSmith (Zoologist with the Florida Natural Areas Inventory), and Bill Pranty (Avian Ecologist Contractor). In accordance with rule 68A-27.0012 Florida Administrative Code (F.A.C.), the Biological Review Group (BRG) was charged with evaluating the biological status of the Scott's seaside sparrow using criteria included in definitions in 68A-27.001(3) and following the protocols in the *Guidelines for Application of the IUCN Red List Criteria at Regional Levels (Version 3.0)* and *Guidelines for Using the IUCN Red List Categories and Criteria (Version 8.1)*. Please visit http://www.myfwc.com/WILDLIFEHABITATS/imperiledSpp_listingprocess.htm to view the listing process rule and the criteria found in the definitions.

The Biological Review Group concluded from the biological assessment that the Scott's seaside sparrow met criteria for listing and recommend retaining the species on the FWC list of threatened species.

This work was supported by a Conserve Wildlife Tag grant from the Wildlife Foundation of Florida.

BIOLOGICAL INFORMATION

Life History References – Nicholson (1928), Werner (1975), McDonald (1986), Post (1974, 1981), Post and Greenlaw (1975,1994, 2000), Post et al. (1983), Greenlaw and Post (1985), Stevenson and Anderson (1994), Kale (1996), Hill and Post (2005), and sources cited in McDonald (1983).

Taxonomic Classification – Seaside sparrows (*Ammodramus maritimus*) are classified within the Order Passeriformes belonging to the family Fringillidae, subfamily Emberizinae (AOU 1983). The scientific name was officially changed from *Ammospiza maritima* to *Ammodramus maritimus* in 1982 (AOU 1983). Taxonomic history is complex (Austin 1983) with three species once recognized (AOU 1957). Nine subspecies are generally accepted on the basis of plumage, geographical distribution, and migratory behavior (AOU 1957, Post and Greenlaw 1994). Subspecies of seaside sparrows may have formed with the sedentary nature of populations and their isolation due to a post-glacial rise in sea levels (Beecher 1955) and other

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ecological factors (Funderburg and Quay 1983). The nominate race (*A. m. maritimus*) was described by Alexander Wilson in 1811 (Austin 1983) from specimens collected in New Jersey. The Scott's seaside sparrow (*A. m. peninsulae*) was first described in 1888 (Allen 1888) based on two females collected by W. E. D. Scott at Tarpon Springs (Pinellas County, Florida) on 28 February 1888, and has remained a valid subspecies (AOU 1957). The Scott's seaside sparrow is one of 5 subspecies that are resident in the coastal marshes of Florida (Kale 1983). The northernmost subspecies (*A. m. maritimus*) is migratory and winters on Florida's Atlantic coast (Post and Greenlaw 1994). The 4 other resident seaside sparrows in Florida include the MacGillivray's seaside sparrow (*A. m. macgillivraii*), the endangered (USFWS 1999) Cape Sable seaside sparrow (*A. m. mirabilis*), Wakulla seaside sparrow (*A. m. juncicola*), and the Louisiana seaside sparrow (*A. m. fisheri*). Two extinct Florida subspecies are the Smyrna seaside sparrow (*A. m. pelonotus*) and the dusky seaside sparrow (*A. m. nigrescens*). One other subspecies, *A. m. sennetti*, is found along the Texas coast. Genetic examination of seaside sparrows in Florida found evidence of two phylogenetically distinct groups between Atlantic and Gulf coast subspecies (Avise and Nelson 1989). There appears to be an overlap in range and a morphological gradation between Scott's seaside sparrows and Wakulla seaside sparrows along the northeast Gulf coast at Dixie County (Kale 1983). Based on distribution and morphological characteristics, Kale (1996) and McDonald (1988) recommended merging the Scott's and Wakulla seaside sparrows into one subspecies. Because the Scott's seaside sparrow has taxonomic precedence, this subspecies would be *peninsulae*. Subspecies designation is in need of revision. However, taxonomic changes should follow a modern study of geographic variation (Post and Greenlaw 1994).

Population Status and Trend – Difficulty in conducting surveys in relatively inaccessible salt marsh has limited monitoring, and information on abundance is sparse. Kale (1983) conducted surveys along the Gulf coast of Florida during 1979 and estimated between 2,500 and 3,500 pairs of Scott's seaside sparrows. Surveys by McDonald (1988) in 1987 estimated between 5,000-10,000 birds, but this included both Scott's and Wakulla seaside sparrows. More recently, Scott's seaside sparrows (23, range of averages from 3 repeated measures) were detected during surveys along one transect located in Dixie County (29.71365, -83.49502) in 2010 (FWC, unpublished data). There appears to be contraction at the southernmost extent of the subspecies' range (Howell 1932, Stevenson and Anderson 1994). The Florida Natural Area Inventory ranks the combined populations of Scott's seaside sparrows and Wakulla seaside sparrows as rare and restricted in distribution globally and in Florida (G4T3Q/S3). Although results are based on only 5 routes and may be imprecise, trend information from the North American Breeding Bird Survey (BBS 2010) indicate a -1.5 percent annual decline in the abundance of seaside sparrows in Florida from 1966-2007. The FWC list of species of greatest conservation need (FWC 2005) ranks the status of the Scott's seaside sparrow as "medium" with a "declining" population. The International Union for the Conservation of Nature (IUCN 2009) ranks the global status of the seaside sparrow as a species of Least Concern. An array of point count stations (see Ralph et al. 1995) should be established within the range of the Scott's seaside sparrow and surveys conducted at 5-year intervals to monitor trends in abundance.

Geographic Range and Distribution – Seaside sparrows are restricted to coastal salt and brackish marshes from New Hampshire to southern Texas (Post and Greenlaw 1994).

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Populations north of Virginia are usually migratory and some Gulf coast populations may shift longitudinally (Robbins 1983). The Scott's seaside sparrow type specimen was collected near Tarpon Springs (Pinellas County, Florida) (Howell 1932). In 1979, Kale (1983) found sparse breeding aggregations of Scott's seaside sparrows in coastal marshes from New Port Richey (Pasco County) to the mouth of the Homossassa River in Citrus County. He found Scott's seaside sparrows more numerous in marshes north of the Homossasa River, with distribution extending to the historic northern limit of the subspecies at Pepperfish Keys off Dixie County. More recently, surveys by Tracey and Greenlaw (2009) found the southern extent of observed Scott's seaside sparrows in Pasco County at Sand Bay (28.220, -82.763), with the southern extent of a singing individual at Brasher Park, Port Richey (28.285, -82.731). The Florida Breeding Bird Atlas (FWC 2003, 1986-1991) documented confirmed and probable breeding in 9 atlas blocks within this range. Florida land cover information (Water Management Districts, photography dates 1999-2008) indicates 376.2 km^2 of potential salt marsh habitat within the range of the Scott's seaside sparrow. The subspecies is resident at breeding locations and is considered non-migratory.

Quantitative Analyses - A population viability analysis (PVA) conducted for the combined populations of Scott's seaside sparrows and Wakulla seaside sparrows using baseline demographic parameters and models using both all potential habitat and habitat located on protected lands found a 0% chance of extinction or decline in abundance within the next 100 years (Endries et al. 2009).

BIOLOGICAL STATUS ASSESSMENT

Threats – The narrow coastal range of the Scott's seaside sparrow makes it vulnerable to habitat loss and fragmentation due to dredging and filling in conjunction with coastal development, impoundments for mosquito control and waterfowl, flooding from severe storms and hydrological changes, sea level rise, chemical and oil spills, and disposal of dredged material (Montague and Wiegert 1990, FWC 2005). Development of adjacent uplands also may contribute to habitat degredation. The vulnerability of resident seaside sparrows is exemplified by the rapid decline and extinction of the dusky seaside sparrow (Delany et al. 1981), and extreme fluctuations in the number of Cape Sable seaside sparrows (Federal Register 2007). Climate change is a potential threat at the southern extent of its range where salt marsh habitat may be lost to the invasion of mangroves as the climate warms (Stevenson and Anderson 1994). Sea level rise also may lead to coastal problems and habitat loss in Florida (Walton 2007). However, responses of most species, especially short-lived species, to future climate change are not understood well enough to predict impacts (Akcakaya et al. 2006). This is a species of "management concern" throughout most of its breeding range because of habitat loss and alteration (Greenlaw 1992). The current condition of salt marsh habitats in Florida is considered "poor and declining" (FWC 2005). While there has been some loss and degradation of gulf coast salt marshes (Alexander et al. 1986), strict regulatory protections and public ownership provide some protection. Seaside sparrows require coastal wetlands that include a mosaic of dense and sparse herbaceous vegetation maintained by intertidal disturbance and fire. Seaside sparrows along the Gulf coast require a mixture of smooth cordgrass (*Spartina alternaflora*) black needle rush (*Juncus romerianus*), and seashore saltgrass (*Distichlis spicata*). Seaside sparrows will abandon salt marsh sites when the density of invading of woody vegetation (especially

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mangroves) reaches a critical density. Nests are vulnerable to loss from predation, with mortality rates in Florida higher than those at other locations (Post et al. 1983). The activity of rice rats (*Oryzomys palustris*) influences habitat use by gulf coast seaside sparrows and the two species compete for nesting sites (Post 1981).

Statewide Population Assessment – The (IUCN) developed criteria for the evaluation of extinction risk for any taxon, with the exception of micro-organisms (IUCN 2010). Each taxon must be assessed against all criteria, but if the taxon meets any of the criteria under a particular category it qualifies as threatened. IUCN criteria use the terms observed, estimated, projected, inferred, and suspected to refer to the quality of information used to assess the status of a species. The assessment criteria can be applied at a regional (e.g., Florida) level with a consideration of the status and impact of extra-regional populations (IUCN 2003). Findings from the BRG are included in the Biological Status Review Information table below.

In our review of the status of the Scott's seaside sparrow, the Biological Review Group made the following assumptions and conclusions:

8. Because the time estimated for 3 generations was <10 years, the IUCN criteria (2010) stipulation of 10 years was used in assessments.

9. Early estimates of the number of mature individuals ranged from 2,500-3,500 pairs (Kale 1983).

10. The extent of occurrence was 376.2 km^2 based on the availability of salt marsh habitat within the range of the sparrow.

11. The sparrow is endemic to Florida.

12. There is evidence of range contraction at the southernmost extent of the subspecies (Howell 1932, Tracey and Greenlaw 2009).

13. The condition of salt marsh habitat in Florida is considered to be poor and declining (FWC 2005).

14. There is evidence of a population decline based on data from the USGS Breeding Bird Survey (BBS 2010).

LISTING RECOMMENDATION

Staff recommends that the Scott's seaside sparrow be listed as a Threatened species because the subspecies meets criteria for listing as described in 68A-27.001(3). F.A.C.

SUMMARY OF THE INDEPENDENT REVIEW

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Biological Status Review Information Findings				
	Species/taxon:	Scott's Seaside Sparrow		
	Date:	11/03/10		
	Assessors:	Michael Delany, Katy NeSmith, and Bill Pranty		
	Generation length:	<3 years; IUCN 10-year period was used		
Criterion/Listing Measure	**Data/Information**	**Data Type***	**Criterion Met?**	**References**
*Data Types - observed (O), estimated (E), inferred (I), suspected (S), or projected (P). Criterion met - yes (Y) or no (N).				
(A) Population Size Reduction, ANY of				
(a)1. An observed, estimated, inferred or suspected population size reduction of at least 50% over the last 10 years or 3 generations, whichever is longer, where the causes of the reduction are clearly reversible and understood and ceased[1]	not available			
(a)2. An observed, estimated, inferred or suspected population size reduction of at least 30% over the last 10 years or 3 generations, whichever is longer, where the reduction or its causes may not have ceased or may not be understood or may not be reversible[1]	not available			
(a)3. A population size reduction of at least 30% projected or suspected to be met within the next 10 years or 3 generations, whichever is longer (up to a maximum of 100 years) [1]	not available			
(a)4. An observed, estimated, inferred, projected or suspected population size reduction of at least 30% over any 10 year or 3 generation period, whichever is longer (up to a maximum of 100 years in the future), where the time period must include both the past and the future, and where the reduction or its causes may not have ceased or may not be understood or may not be reversible.[1]	not available			
[1] based on (and specifying) any of the following: (a) direct observation; (b) an index of abundance appropriate to the taxon; (c) a decline in area of occupancy, extent of occurrence and/or quality of habitat; (d) actual or potential levels of exploitation; (e) the effects of introduced taxa, hybridization, pathogens, pollutants, competitors or parasites.				
(B) Geographic Range, EITHER				
(b)1. Extent of occurrence < 20,000 km^2 (7,722 mi^2) OR	376.2 km^2 of salt marsh within extent of range	E	Y	Suwanee and Southwest Florida Water Management Districts, photography dates 1999-2008
(b)2. Area of occupancy < 2,000 km^2 (772 mi^2)	not available			
AND at least 2 of the following:				

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a. Severely fragmented or exist in ≤ 10 locations	Exists in <10 locations that are threatened by single events such as a hurricane or oil/chemical spill. "Local populations are subject to high rates of chance extinction."	I/S	Y	FWC (2003), J. S. Greenlaw pers. comm., 4 Nov 2010
b. Continuing decline, observed, inferred or projected in any of the following: (i) extent of occurrence; (ii) area of occupancy; (iii) area, extent, and/or quality of habitat; (iv) number of locations or subpopulations; (v) number of mature individuals	(i, ii, iii, iv) contraction at the southernmost extent of range from habitat loss; (iii) The current condition of salt marsh habitat in Florida is poor and declining; (v) A 1.3% annual decline in seaside sparrow numbers estimated from 1966-2007 is projected to continue	O/E	Y	FWC (2005), Tracey and Greenlaw (2009); USGS Breeding Bird Survey data for Florida
c. Extreme fluctuations in any of the following: (i) extent of occurrence; (ii) area of occupancy; (iii) number of locations or subpopulations; (iv) number of mature individuals	not available			
(C) Population Size and Trend				
Population size estimate to number fewer than 10,000 mature individuals AND EITHER	2500-3500 pairs estimated in 1979	E	Y	Kale (1983)
(c)1. An estimated continuing decline of at least 10% in 10 years or 3 generations, whichever is longer (up to a maximum of 100 years in the future) OR	not available			
(c)2. A continuing decline, observed, projected, or inferred in numbers of mature individuals AND at least one of the following:	A 1.3% annual decline in seaside sparrow numbers estimated from 1966-2007 is projected to continue	E	Y	USGS Breeding Bird Survey data for Florida
a. Population structure in the form of EITHER	Seaside sparrows at Cedar Key area probably number more than 1000 individuals	E	N	M. V. McDonald pers. comm., 3 Nov 2010
(i) No subpopulation estimated to contain more than 1000 mature individuals; OR				
(ii) All mature individuals are in one subpopulation	All mature individuals in one intermixing subpopulation	I	Y	J. S. Greenlaw pers. comm., 4 Nov 2010
b. Extreme fluctuations in number of mature individuals	Vulnerability of seaside sparrows in Florida is exemplified by rapid decline and extirpation and extreme fluctuations in numbers.	I	Y	Delany et al. (1981), Federal Register (2007)
(D) Population Very Small or Restricted, EITHER				
(d)1. Population estimated to number fewer than 1,000 mature individuals; OR	2500-3500 pairs estimated in 1979	E	N	Kale (1983)
(d)2. Population with a very restricted area of occupancy (typically less than 20 km^2 [8 mi^2]) or number of locations (typically 5 or fewer) such that it is prone to the effects of human activities or stochastic events within a short time period in an uncertain future	Exists in one location that is prone to the effects of human activities or stochastic events within a short time period in an uncertain future	I	Y	FWC (2003)
(E) Quantitative Analyses				

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e1. Showing the probability of extinction in the wild is at least 10% within 100 years	not applicable; PVA included two subspecies	E	N	Endries et al. (2009)

Initial Finding (Meets at least one of the criteria OR Does not meet any of the criteria)	Reason (which criteria are met)
Meets at least one of the criteria	B1(a)(b i, ii, iii, iv, v); C2a(ii); C2b; D2
Is species/taxon endemic to Florida? (Y/N)	Y
If Yes, your initial finding is your final finding. Copy the initial finding and reason to the final finding space below. If No, complete the regional assessment sheet and copy the final finding from that sheet to the space below.	
Final Finding (Meets at least one of the criteria OR Does not meet any of the criteria)	Reason (which criteria are met)
Meets at least one of the criteria	B1(a)(b i, ii, iii, iv, v); C2a(ii); C2b; D2

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Appendix 1. Brief biographies of the members of the Scott's seaside sparrow Biological Review Group.

Michael F. Delany (M.S., Wildlife Ecology, University of Maryland Appalachian Laboratory) is an Associate Research Scientist with the Florida Fish and Wildlife Conservation Commission (FWC). He started work with the FWC in 1979 and is the Florida coordinator for the U.S. Geological Survey's Breeding Bird Survey and the U.S. Fish and Wildlife Service's eastern painted bunting monitoring program. Mike is principal investigator for field studies of the endangered Florida grasshopper sparrow. Studies addressing management needs for grasshopper sparrows, dusky seaside sparrows, American alligators, and Northern bobwhite resulted in over 40 publications. He is a Certified Wildlife Biologist with the Wildlife Society.

Katy NeSmith (M.S., Biological Science, Florida State University) is a zoologist with the Florida Natural Areas Inventory (FNAI). Katy is responsible for collecting and processing rare animal occurrence data, concentrating on birds; conducting field surveys for rare animals (past surveys include seaside sparrow, marsh wren, limpkin, Florida scrub-jay, red-cockaded woodpecker, and gopher tortoise); and identifying, evaluating, and describing high priority natural areas in Florida. She has worked on county inventories and has been involved in several current and historic natural community mapping projects.

Bill Pranty is an avian ecologist who has studied Florida Scrub-Jays, Florida Grasshopper Sparrows, and Painted Buntings for the Florida Fish and Wildlife Conservation Commission and Archbold Biological Station. He compiles bird observations for the Florida Ornithological Society, and edits the Christmas Bird Counts in Florida for National Audubon. He is keenly interested in documenting Florida's avifauna, with an emphasis on rare and exotic species. Bill is the author of *A Birder's Guide to Florida* (American Birding Association 1996 and 2005), and co-author of *Birds of Florida* (Lone Pine Press 2006).

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Appendix 2. Summary of letters and emails received during the solicitation of information from the public period of September 17, 2010 through November 1, 2010.

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Appendix 3. Information and Comments Received from Independent Reviewers.

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