

Appendix A

Species Listing PROPOSAL Form:
Listing Endangered, Threatened, and Special Concern Species in Massachusetts

Scientific name: *Ammodramus caudacutus*Current Listed Status (if any): State Wildlife
Action PlanCommon name: Saltmarsh Sparrow**Proposed Action:**☒ X Add the species, with the status of: **Special**

Change the scientific name to: _____

Concern☐ _____ Remove the species

Change the common name to: _____

☐ _____ Change the species' status to: _____

(Please justify proposed name change.)

Proponent's Name and Address:

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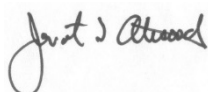
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Association, Institution or Business represented by proponent: Mass Audubon

Proponent's Signature:



Date Submitted: 27 March 2017

Please submit to: Natural Heritage & Endangered Species Program, Massachusetts Division of Fisheries &
 Wildlife, 1 Rabbit Hill Road, Westborough, MA 01581

Justification

Justify the proposed change in legal status of the species by addressing each of the criteria below, as listed in the Massachusetts Endangered Species Act (MGL c. 131A) and its implementing regulations (321 CMR 10.00), and provide literature citations or other documentation wherever possible. Expand onto additional pages as needed but make sure you address all of the questions below. The burden of proof is on the proponent for a listing, delisting, or status change.

(1) Taxonomic status. Is the species a valid taxonomic entity?

Yes

Please cite scientific literature.

Greenlaw and Rising (1994), AOU (1983), del Hoyo et al. (2016), Gill and Donsker (2017)

(2) Recentness of records. How recently has the species been conclusively documented within Massachusetts?

2017

[https://ebird.org/media/catalog?date.beginMonth=1&searchField=species&date.beginYear=2017&date.endYear=2017&taxonCode=sstspa&view=Gallery®ionCode=US-MA&action=show&date.yearRange=YCURRENT&date.endMonth=12&onlyUnrated=false&date.monthRange=M1TO12&start=0&count=30&mediaType=Audio,Photo,Video&sort=upload_date_desc&q=Saltmarsh%20Sparrow%20-%20Ammodramus%20caudacutus&species=Saltmarsh%20Sparrow%20-%20Ammodramus%20caudacutus®ion=Massachusetts,%20United%20States%20\(US\)](https://ebird.org/media/catalog?date.beginMonth=1&searchField=species&date.beginYear=2017&date.endYear=2017&taxonCode=sstspa&view=Gallery®ionCode=US-MA&action=show&date.yearRange=YCURRENT&date.endMonth=12&onlyUnrated=false&date.monthRange=M1TO12&start=0&count=30&mediaType=Audio,Photo,Video&sort=upload_date_desc&q=Saltmarsh%20Sparrow%20-%20Ammodramus%20caudacutus&species=Saltmarsh%20Sparrow%20-%20Ammodramus%20caudacutus®ion=Massachusetts,%20United%20States%20(US))

(3) Native species status. Is the species indigenous to Massachusetts?

Yes.

(4) Habitat in Massachusetts. Is a population of the species supported by habitat within the state of Massachusetts?

Yes. Wiest et al. (2016).

(5) Federal Endangered Species Act status. Is the species listed under the federal Endangered Species Act?

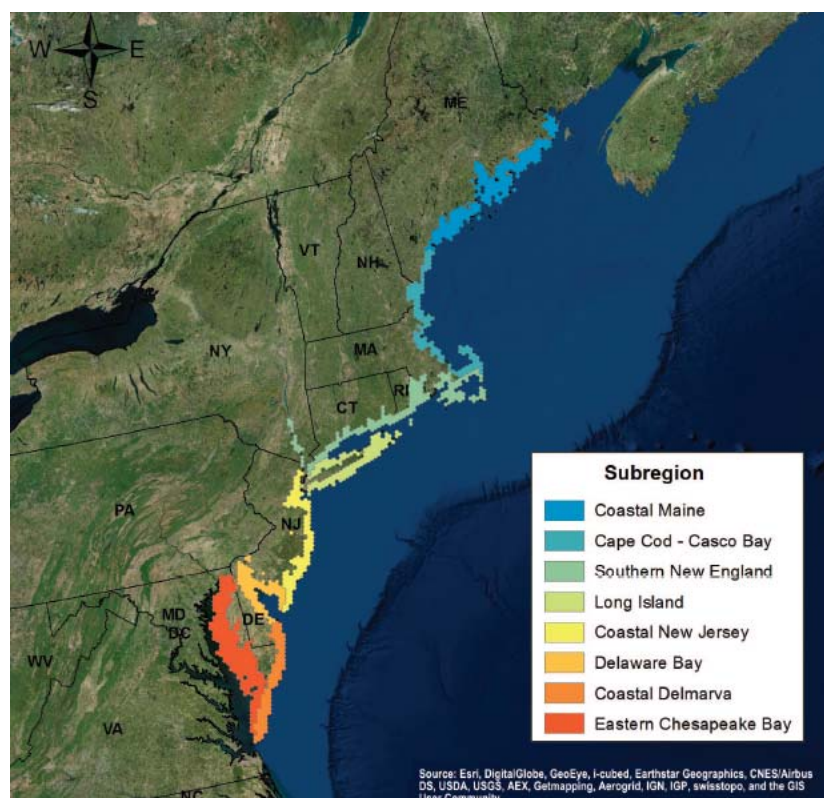
No, but Saltmarsh Sparrow is currently undergoing a Species Status Assessment by USFWS to determine whether it warrants listing
(https://www.fws.gov/northeast/science/pdf/peerreview/Peer_Review_Plan_sharp_tailed_saltmarsh_sparrow_Final.pdf).

If so, what is its federal status (Endangered or Threatened)?

Saltmarsh Sparrow is currently listed as a species of greatest conservation need in Massachusetts' State Wildlife Action Plan (<https://www.mass.gov/files/documents/2016/11/wi/massachusetts-species-of-greatest-conservation-need.pdf>).

(6) Rarity and geographic distribution.

- (a) **Does the species have a small number of occurrences (populations) and/or small size of populations in the state? Are there potentially undocumented occurrences in the state, and if so, is it possible to estimate the potential number of undocumented occurrences?**



The breeding range of the Saltmarsh Sparrow is narrowly linear along the north-central Atlantic coast of the United States, in localized and discontinuous populations, from coastal Maine south to Chesapeake Bay and the Delmarva Peninsula of Maryland and northern Virginia (Greenlaw and Rising 1994).

Acadian coastal salt marshes (NatureServe ID: CES201.578, Comer et al. 2003, Ferree and Anderson 2013) are interspersed as small patches throughout rocky sections of the Gulf of Maine coast along the ocean shoreline and estuary mouths. “Currently, the average patch size of Acadian coastal salt marsh is 2 ha and the largest single patch is 337 ha, compared with 4 ha and 7,877 ha, respectively, for Northern Atlantic Coastal Plain tidal salt marsh (Anderson et al. 2013)” (Wiest et al. (2016). Saltmarsh Sparrows also occur in Northern Atlantic Coastal Plain tidal salt marshes, extending from Cape Cod, Massachusetts, to the mouth of the

Chesapeake Bay, and intermittently along the southern coast of the Gulf of Maine to southern Maine (NatureServe ID: CES203.519, Comer et al. 2003, Ferree and Anderson 2013, Wiest et al. 2016).

BirdLife International (2016) describes the distribution of Saltmarsh Sparrow as “highly fragmented ... [approximately] 20,000 km², within which it occupies an area of less than 2,000 km² of appropriate habitat”.

Population estimates of Saltmarsh Sparrow presented by Wiest et al. (2016) suggest that approximately 37% (10,000 individuals) of the species’ estimated total population (53,000 individuals) is located within the Cape Cod – Casco Bay and Southern New England subregions (shown on map, above). Wiest et al. (2016) did not provide state-by-state estimates, but it seems safe to assume that a sizable portion of the species’ total population breeds in marshes located within the Commonwealth of Massachusetts. The Saltmarsh Sparrow population currently appears to be strong in the state of Massachusetts, but the risk associated with predicted sea level rise is very high.

The Massachusetts Breeding Bird Atlas 1 ([https://www.massaudubon.org/our-conservation-work/wildlife-research-conservation/statewide-bird-monitoring/breeding-bird-atlases/bba1/find-a-bird/\(id\)/173](https://www.massaudubon.org/our-conservation-work/wildlife-research-conservation/statewide-bird-monitoring/breeding-bird-atlases/bba1/find-a-bird/(id)/173)) reported “At Plum Island, Barnstable, Monomoy, and Dartmouth, colonies [of Saltmarsh Sparrows] consisted of 3 to 15 pairs, with 1 to 1.5 pairs per acre, and colonies were .5 to 1 mile apart.” In the second Breeding Bird Atlas ([https://www.massaudubon.org/our-conservation-work/wildlife-research-conservation/statewide-bird-monitoring/breeding-bird-atlases/bba2/find-a-bird/\(id\)/5748](https://www.massaudubon.org/our-conservation-work/wildlife-research-conservation/statewide-bird-monitoring/breeding-bird-atlases/bba2/find-a-bird/(id)/5748)), authors stated (in reference to findings reported in Breeding Bird Atlas 1) “The sprawling saline

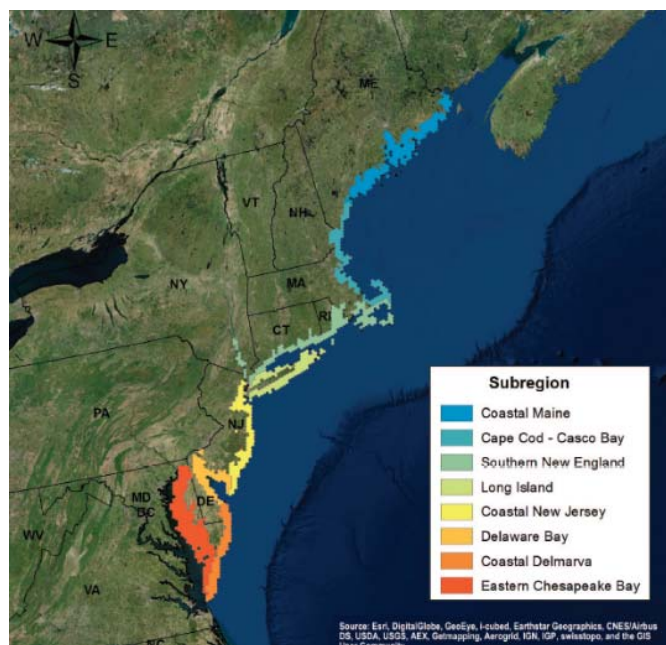
wetlands of coastal Essex County were a haven for loosely associated communities of breeding pairs of Saltmarsh Sparrows. No doubt the presence of breeding Saltmarsh Sparrows in the Boston Basin stood as heartening proof of at least some intact habitat remaining near one of the nation's oldest cities. The southern coast of the Bristol/Narragansett Lowlands was a hotbed of breeding activity, with only a small handful of surveyed coastal blocks failing to house Saltmarsh Sparrows. As with many coastal breeding species, the Cape and Islands accounted for the bulk of Massachusetts Saltmarsh Sparrow breeding locations, with particular aggregations on the Cape Cod National Seashore, at Monomoy, and on Nantucket.” Massachusetts Breeding Bird Atlas 2 ([https://www.massaudubon.org/our-conservation-work/wildlife-research-conservation/statewide-bird-monitoring/breeding-bird-atlases/bba2/find-a-bird/\(id\)/5748](https://www.massaudubon.org/our-conservation-work/wildlife-research-conservation/statewide-bird-monitoring/breeding-bird-atlases/bba2/find-a-bird/(id)/5748)) reported “The most notable gap on the map occurred on the South Shore, where the species vanished from Duxbury, thus leaving a wide unoccupied area between Quincy and Cape Cod”.

(7) Is the species a state or regional endemic?

No, Saltmarsh Sparrow is not endemic to Massachusetts.

What is the extent of the species' entire geographic range, and where within this range are Massachusetts populations (center or edge of range, or peripherally isolated)?

Massachusetts populations of Saltmarsh Sparrow are roughly central within the species' overall breeding distribution.



Subregions indicated in this map (from Wiest et al. 2016) reflect the species' breeding distribution, described by Greenlaw and Rising (1994) as “narrowly linear along the north-central Atlantic coast of the United States, in localized and discontinuous populations, where it extends from coastal Maine, south to Chesapeake Bay and the Delmarva Peninsula of Maryland and northern Virginia”.

Saltmarsh Sparrows winter along the southern coast of the U.S. from North Carolina to Florida (Greenlaw and Rising 1994).

(8) Trends.

Is the species decreasing (or increasing) in state distribution, number of occurrences, and/or population size? What is the reproductive status of populations? Is reproductive capacity naturally low? Has any longterm trend in these factors been documented?

Throughout the breeding range, Saltmarsh Sparrow populations declined between 5% and 9% per year between the 1990s and 2010s, resulting in a total decline of over 75% (Greenlaw and Rising 1994, Shriver et al. 2016). Without management intervention, Greenlaw and Rising (1994) project that the species may become extinct by 2050. Saltmarsh Sparrow was listed by the North American Bird Conservation Initiative (2016) on its Watch List with a concern score of 19 out of 20, and is considered Vulnerable on the IUCN Red List of Threatened Species (BirdLife International 2016). The U.S. Fish and Wildlife Service is currently undertaking a status review to determine whether the species should be listed under the U.S. Endangered Species Act (https://www.fws.gov/northeast/science/pdf/peerreview/Peer_Review_Plan_sharp_tailed_saltmarsh_sparrow_Final.pdf)

(9) Threats and vulnerability.

a. What factors are driving a decreasing trend, or threatening reproductive status in the state? Please identify and describe any of the following threats, if present: habitat loss or degradation; predators, parasites, or competitors; species-targeted taking of individual organisms or disruption of breeding activity.

Continuing habitat loss, associated with direct development of marsh areas, degradation caused by the spread of invasive species such as Phragmites, or construction of infrastructure that prevents sediment accretion within the salt marsh, has resulted in small, isolated populations (Greenlaw and Rising 1994, DiQuinzio et al. 2001). Lane et al. (2011) and Cristol et al. (2011) found that Saltmarsh Sparrows are exposed to mercury levels that warrant concern, with the highest exposure being during the breeding season; Winder (2012), however, found little evidence that mercury bioaccumulation in Saltmarsh Sparrows affected their survivorship.

Compounding these threats, climate change, including the expected rise of sea levels, represents the greatest threat to Saltmarsh Sparrow survival. Bayard and Elphick (2011) reported that “We tested whether variables associated with the timing of nest initiation, tide height, and flooding frequency can be used to estimate three aspects of nest fate: the probability of nest success, the probability of nest failure due to flooding, and the number of offspring lost to flooding. Of the 191 nests that we monitored, only 15% were never flooded and 18% were successful; the mean (\pm SD) number of flooding events observed per nest was 2.8 ± 2.1 (range: 0–10). The top-performing model for each measure of nest fate included variables related to tidal metrics, but model composition for the three measures differed in the importance of particular tide variables. Both tide height and flooding frequency emerged as important drivers of nest fate in this system. Saltmarsh Sparrow nests appear to be extremely vulnerable to even slight increases in sea level.”

Field et al. (2016) observed that “incorporating the timing of semidiurnal high tide events throughout the breeding season, including how this timing is affected by mean sea-level rise, predicts a reproductive threshold that is likely to cause a rapid demographic shift. This shift is likely to threaten the persistence of Saltmarsh Sparrows beyond 2060 and could cause extinction as soon as 2035. Neither extinction date nor the population trajectory was sensitive to the emissions scenarios underlying sea-level projections, as most of the population decline occurred before scenarios diverge.”

(b) Does the species have highly specialized habitat, resource needs, or other ecological requirements?

Within Massachusetts, Saltmarsh Sparrow is restricted to Acadian coastal salt marshes (NatureServe ID: CES201.578) and Northern Atlantic Coastal Plain tidal salt marshes (NatureServe ID: CES203.519).

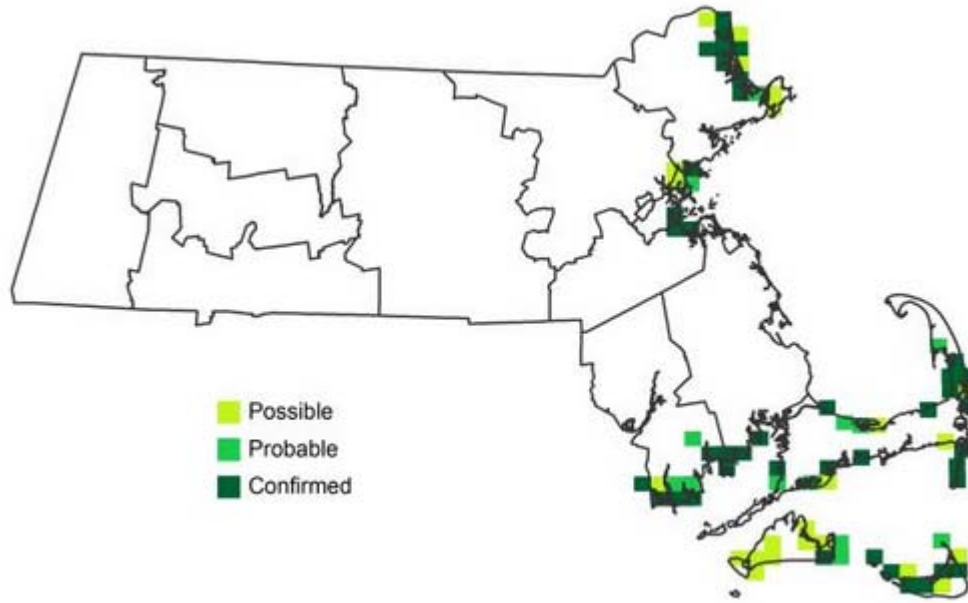
Is dispersal ability poor?

DiQuinzio et al. (2001) reported “We investigated site fidelity and apparent survival in a promiscuous population of Saltmarsh Sharp-tailed Sparrows (*Ammodramus caudacutus*) in southern Rhode Island. Based on capture–recapture histories of 446 color-banded sparrows studied from 1993 to 1998 at our primary study site, Galilee, we observed significant variation in apparent survival rates among years, but not between sexes. Return rates of adult males (37.6%) and females (35.6%) were not significantly different during any year. Juveniles exhibited high return rates, ranging from 0 to 44%, with males (61% of returns) more likely to return than females (35%). In addition, we monitored movements of 404 color-banded sparrows at nine satellite marshes in 1997 and 1998, which supported our findings at Galilee and documented intermarsh movements by 10% of all banded birds. Lack of gender-bias in adult dispersal and strong natal philopatry of sparrows in Rhode Island occurs regularly among passerines possessing a variety of mating systems. Despite emancipation from parental and resource defense duties, adult male Saltmarsh Sharp-tailed Sparrows exhibited apparent survival rates similar to adult females. Availability of high-quality breeding habitat, which is patchy and saturated, may be the most important factor limiting dispersal for Saltmarsh Sharp-tailed Sparrows in Rhode Island.”

(10) Conservation goals.

What specific conservation goals should be met in order to change the conservation status or to remove the species from the state list? Please address goals for any or all of the following:

(a) State distribution, number of occurrences (populations), population levels, and/or reproductive rates.



Mass Audubon's second Breeding Bird Atlas ([https://www.massaudubon.org/our-conservation-work/wildlife-research-conservation/statewide-bird-monitoring/breeding-bird-atlases/bba2/find-a-bird/\(id\)/5748](https://www.massaudubon.org/our-conservation-work/wildlife-research-conservation/statewide-bird-monitoring/breeding-bird-atlases/bba2/find-a-bird/(id)/5748)), conducted from 2007 to 2011, identified 77 atlas blocks where Saltmarsh Sparrows were reported (18.2% in the Southern New England Coastal Plains and Hills ecoregion, 9.1% in the Boston Basin, 16.9% in the Bristol and Narragansett Lowlands, and 55.8% on Cape Cod and the Islands). Focused surveys at all of these locations would provide a more current perspective on the status of Saltmarsh Sparrows in the state.

(b) Amount of protected habitat and/or number of protected occurrences.

“Since Colonial times, almost one third of Massachusetts' wetlands have been destroyed. Concerned about the loss of wetlands, Massachusetts adopted the nation's first wetlands protection laws in the early 1960s. Today, wetlands are protected by state and federal laws.” (<http://www.mass.gov/eea/agencies/massdep/water/watersheds/protecting-wetlands-in-massachusetts.html>). Specifically, the Wetlands Protection Act describes relevant constraints on development of wetlands within the Commonwealth (<https://malegislature.gov/Laws/GeneralLaws/PartI/TitleXIX/Chapter131/Section40>).

(c) Management of protected habitat and/or occurrences.

Federal, state, local, and non-profit organizations are actively involved in salt marsh restoration in Massachusetts (Massachusetts Bays Program, http://www.mass.gov/envir/massbays/bhha_saltmarsh.htm). However, Elphick et al. (2015) cautioned that “millions of dollars have been spent on tidal marsh restoration throughout North America. Southern New England has a long history of tidal marsh restorations, often focused on removal of the invasive plant *Phragmites australis*.... Saltmarsh Sparrows *Ammodramus caudacutus*, which are considered globally vulnerable to

extinction, were less common where tidal flow had been restored than at reference sites and nested in only one of 14 tidal-flow restoration plots. ... Vegetation at sites where tidal flow had been restored showed characteristics typical of lower-elevation marsh, which is unsuitable for nesting Saltmarsh Sparrows. We conclude that, although tidal-flow restorations in Connecticut control *Phragmites* and restore native saltmarsh vegetation, they produce conditions that are largely unsuitable for one of the highest conservation priority species found in eastern U.S. salt marshes.” Furaro (2016) stated that “One way to build up the marshes’ resilience may be to manipulate manmade barriers without removing them completely. Elphick imagines having a controlled tidal system during the breeding season—one that keeps water from rushing in during the highest monthly tides, but allows sediment to build up naturally.” In other words, protection of Saltmarsh Sparrows within Massachusetts may require new strategies that differ from the widespread efforts to restore salt marshes that are commonly pursued.

Literature cited, additional documentation, and comments.

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