Salt Marsh Restoration Priorities for the Saltmarsh Sparrow

Delaware

Last updated 14 April 2022

Goal Statement

This document is intended to provide those interested in salt marsh and Saltmarsh Sparrow conservation with information that will help with conservation implementation. It identifies areas containing salt marsh that are good candidates for restoration, enhancement, and/or conservation to provide persistent high-quality Saltmarsh Sparrow nesting habitat in the next 10 years in addition to long-term salt marsh resilience.

Saltmarsh Sparrow Objectives from the Atlantic Coast Joint Venture (ACJV)

The ACJV's Saltmarsh Sparrow Conservation Plan (Hartley and Weldon, 2020) identifies state-by-state population and habitat goals for the Saltmarsh Sparrow based on a goal population of 25,000 birds. Delaware's breeding Saltmarsh Sparrow population is estimated to be 6.8% of the regional population as of 2011/2012 (Wiest et al. 2019). Its population goal was therefore calculated as 6.8% of the regional population goal of 25,000 birds. Habitat goals listed in the table below are the minimum acres of high-quality habitat (defined below) needed to support the state's population goal. The short-term habitat goal sets a realistic target for the next 10 years (by 2030); the long-term habitat goal is set to achieve and sustain the state's Saltmarsh Sparrow population goal.

	2011/2012 Population Estimate	Confidence Interval	State's %	Population Goal (Indiv)	Short-term Habitat Goal (ac)	Long-term Habitat Goal (ac)	Current High Marsh (Ac)**
Delaware	4,100	(±4,400)	6.8%	1,711	**1,128***	**2,838***	24,441
Regional	60,000			25,000	23,000	79,605	

*Habitat goals represent acres of "high quality habitat," defined below as having conditions that support a stable or growing population.

**Current high marsh acres do not represent high quality high marsh; most existing high marsh acreage has been altered and needs restoration to be high quality habitat.

High-quality Habitat for Saltmarsh Sparrows

High-quality habitat is defined as conditions that allow sufficient reproductive success to support a stable or growing Saltmarsh Sparrow population. Conservation should focus on preserving, restoring, or enhancing high-quality breeding habitat, which will have the following characteristics:

- High marsh patches with the lowest flooding frequency that provide a window of at least 24 days with limited flooding.
- Extensive and dense *Spartina patens* vegetation with a deep, well-developed thatch layer; short-form *S. alterniflora, Distichlis spicata,* and *Juncus gerardii* also comprise high marsh areas and can support Saltmarsh Sparrow nesting.
- The highest quality habitat is often found in the least modified marshes, such as those without ditching, or that are downstream, or free of tidal restrictions like road crossings.

Marsh Prioritization Process

What is a prioritized marsh?

The sites listed in this document hold potential for management action to benefit the saltmarsh sparrow but do not necessarily represent specific proposals, planned actions, regulatory approved plans, or have secured funding at this time. The sites are those that the state and partners consider a high priority for moving forward to pursue these next steps.

How were marshes prioritized?

The marsh parcels outlined in this document were identified and characterized by first identifying the highest-ranked marsh patches identified by the ACJV Saltmarsh Sparrow Habitat Prioritization Tool (top 30%; ACJV 2020). All patches north of Woodland Beach Road were removed because little saltmarsh sparrow nesting has been recorded north of this area. Some of the smallest patches of marsh in the upper areas of tributaries were also removed because of their size, extensive forested edge, and increased *Phragmites australis* (hereafter Phragmites).

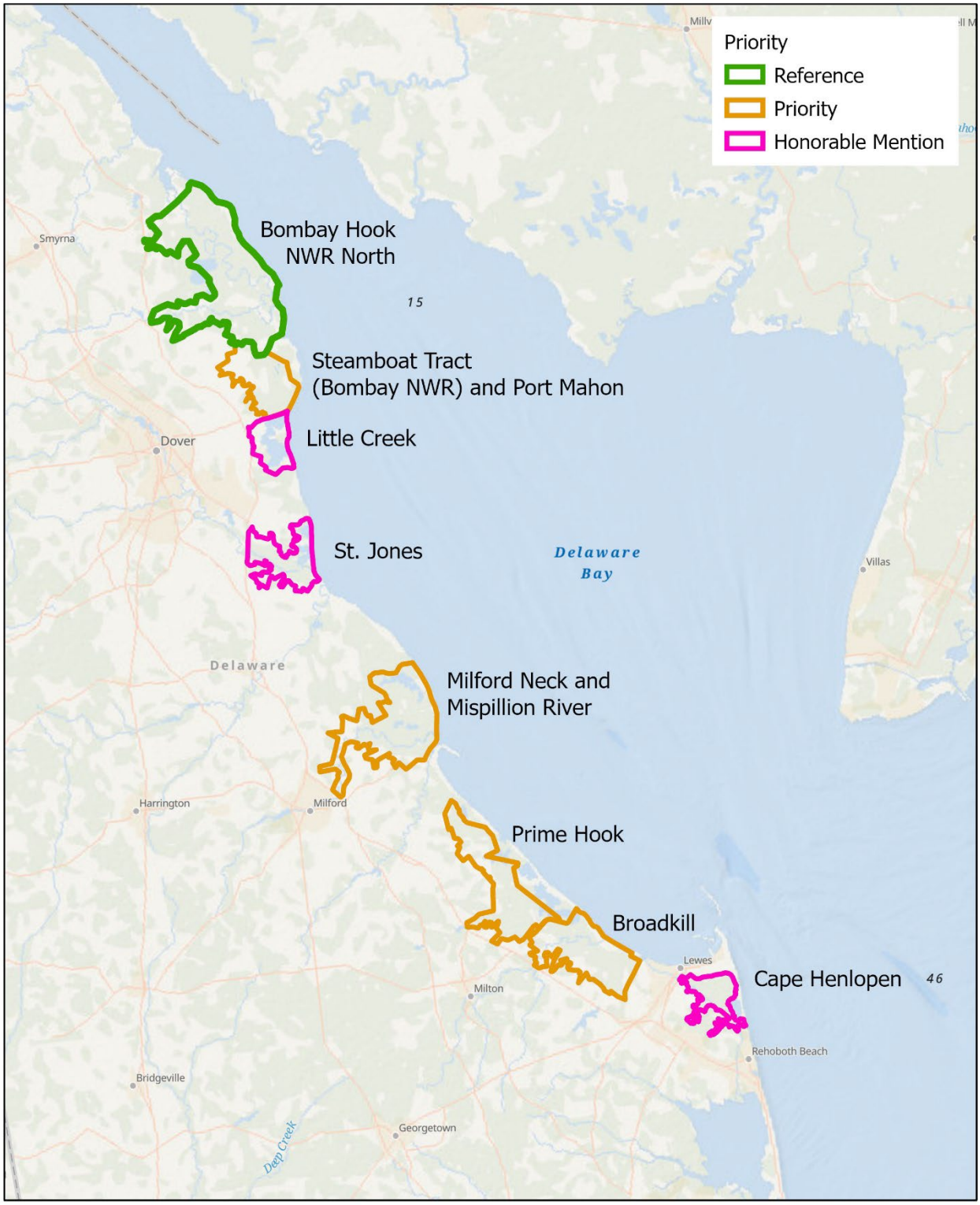
Areas in Delaware were then examined by a small committee of State, ACJV, and U.S. Fish and Wildlife Service (USFWS) biologists by reviewing the patch data with state-specific GIS layers not included in the Saltmarsh Sparrow Habitat Prioritization Tool. This review resulted in the identification of larger patches that could be reviewed by Delaware partners. Information was then solicited from stakeholders using interactive maps and survey followed by a Delaware partner meeting to further discuss and hone the information presented below. This group has sorted marshes into the following subcategories to further refine prioritization within the state.

Priority Marshes: Marshes prioritized for ongoing restoration planning and action to support the Saltmarsh Sparrow in Delaware.

Reference Marshes: These marshes are in near-pristine condition and can act as reference marshes for restoration efforts in the state. Long-term preservation of these areas and the open space around them to facilitate long-term marsh migration is important, but no immediate restoration action is suggested for them.

Honorable Mention: The following marshes were identified by the partner group as important to keep in mind for future work.

This document will be updated over time to reflect additional expert input, changes in species conservation status, and implementation efforts that represent progress towards habitat goals.



Delaware Priority Saltmarsh Sparrow Marshes

Priority Marshes

The following marshes have been preliminarily prioritized for ongoing restoration planning and action to support the Saltmarsh Sparrow in Delaware.

Steamboat Tract at Bombay Hook National Wildlife Refuge (NWR) and Port Mahon - 4,615 acres (1,868 ha)

Existing conditions: This area is mostly in state and federal ownership. These marshes have extensive ditching throughout and limited Open Marsh Water Management (OMWM) in the southwest corner. Significant Phragmites stands transition into forest on the western edge and to a lesser extent along Port Mahon Road. This is a historical location for Black Rail as well, but there have been no detections since the 1990s.

Steamboat Tract of Bombay Hook NWR: There are no known plans for restoration and management with a focus on Saltmarsh Sparrow at the Steamboat Tract. Generally, ditching is not common at the NWR but becomes more common at the Steamboat Tract. Some ditches would benefit from runnelling and ditch remediation in this area but there are also many areas on the tract where grid ditches are slowly reverting to a more effective hydrology. There is more potential for management in this area than elsewhere on the refuge given there is not as much recreation and there are refuge fields in that were bermed and kept in agriculture until approximately 2010 that offer opportunities for facilitated marsh migration to create high marsh.

Port Mahon of Little Creek Wildlife Area: Marsh hydrology is significantly altered here (including tidal restriction from Port Mahon Road) resulting in lower elevation and poor drainage/internal ponding. Phragmites and OMWM dominate the southwestern corner. US Department of Defense (DOD) contractor infrastructure relies on this area persisting into the future and will likely remain a priority for Dover Air Force Base. Existing projects include:

- Delaware Natural Resources and Environmental Control (DNREC): Phragmites management through herbicide and burning.
- DNREC / Delaware Department of Transportation, and others: Shoreline restoration along Port Mahon Road is being considered to prevent the loss of Port Mahon Road; restore horseshoe crab, shorebird, and diamondback terrapin habitat; and protect tidal marsh behind the road.

Existing Sparrow Data: Saltmarsh sparrow present in low densities; breeding has not been confirmed.

Recommended Next Steps to Management Action:

- Hydrological assessment, including OMWM area, for tidal restriction, ponding, and other altered hydrology.
- Facilitate migration onto fallow fields at the Steamboat Tract.
- Assessment for potential elevation enhancement; potential dredge material source exists locally at the Port Mahon Boat Launch and at the Delaware Storage and Pipeline Company berth and access channel.
- Continued Phragmites management through ground spraying, mowing, and aerial herbicide.

Steamboat Tract (Bombay NWR)
and Port Mahon

Milford Neck and Mispillion River – 5,921 acres (2,396 ha)

Existing conditions: This area is mostly in state and conservation organization ownership. Much of it is low marsh with pockets of high marsh. There is extensive grid ditching that is likely adversely affecting hydrology. Large scale ponding is occurring at the north end of the site. There are small patches of Phragmites, although not dominant throughout. Existing projects include:

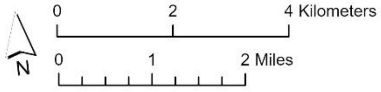
- DNREC and The Nature Conservancy (TNC) have developed a design with the Woods Hole Group to address internal ponding and the restricted tidal flow at the north part of the site and in Greco Canal, the principal tidal channel for much of the area. More support is needed in funding, permitting, and implementation.
- DNREC: Limited Phragmites management through herbicide treatment on Rawley's Island.

Existing sparrow data: Saltmarsh Sparrows present and confirmed breeding at this site.

Recommended next steps to management action: There are several opportunities to work near existing high-quality nesting habitat without modifying high-quality habitat directly at this site.

- Funding and implementation of existing designs for hydrologic alterations at the northern part of the site, largely through improving ebb flow through the main tidal channels, particularly Greco Canal.
- Hydrologic assessment and Real Time Kinematic (RTK) elevation surveys along the Mispillion River and Lighthouse Road for potential runnelling or ditch remediation.
- Phragmites management.
- Assessment for potential elevation enhancement: Cedar Creek (State of DE) and Mispillion inlet (US Army Corps of Engineers; USACE) dredge operations active locally and are potential source of material, although sandy dredged sediments are preferentially used on shorebird habitat in this area.

Milford Neck and Mispillion River



Prime Hook NWR (Units I, II, and III) – 3,944 acres (1,596 ha)

Existing conditions: Prime Hook has the best opportunities for facilitated marsh migration in Delaware based on predicted migration pathways into publicly owned space. Large trees, root zone collapse, and Phragmites in ghost forest are hurdles for marsh migration at this site. Prime Hook Units I, II, and III all have similar migration potential towards the west. There are several active restoration and monitoring projects underway:

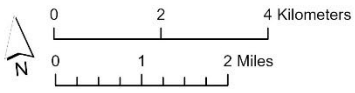
- USFWS: Units II and III were restored 5 years ago after Hurricane Sandy by recreating barrier beach and then repairing hydrology and creating marsh through elevation enhancement (sidecasting), aerial seeding, and removal of tide gates.
- USFWS: Phragmites has been treated annually through aerial herbicide application.
- USFWS: Actively conducting adaptive management for ecosystem function.

Existing sparrow data: Saltmarsh Sparrow present in high densities and confirmed breeding at this site.

Recommended next steps to management action:

- Removal of ghost forests to facilitate marsh migration.
- Continued and expanded Phragmites management with herbicide and prescribed burning.
- Continued monitoring of the Sandy restoration in the eastern half of Units I, II, and III.

Prime Hook



Broadkill ("Great Marsh") and Prime Hook NWR (Unit IV) – 4,355 acres (1,763 ha)

Existing conditions: This area contains a large amount of high marsh with migration space to the west, most of which is privately owned. Restoring degraded habitat adjacent to high quality habitat could result in quick Saltmarsh Sparrow recruitment and persistence. There are several agricultural easements in the area. Much of the state-owned Great Marsh Preserve south and west of the Broadkill River is highly degraded with ditching and internal ponding. Within the marsh in Unit IV, there are upland areas which will eventually transition into marsh; these are managed by NWR staff through mowing and prescribed fire to avoid reforestation and to facilitate future marsh migration.

- The Nature Conservancy (TNC): is considering how to allow and facilitate marsh migration on current agricultural easements along the western boundary of this site.
- USFWS: Planned burning in 400 acres to limit Phragmites and cedar encroachment at the upland interface on Unit IV.

Existing sparrow data: Saltmarsh Sparrow present and confirmed breeding at this site.

Recommended next steps to management action:

- There are large private ag fields along the western side of the area that should be considered for future fee title purchase or conservation easement with any interested landowners.
- There are fields where migration could be supported currently.
- Elevation assessment throughout the site to determine if ditch remediation and runnelling have potential in this area to repair hydrology.
- There is potential for elevation enhancement and creation of a new tidal channel network here to create a new marsh platform; Roosevelt inlet (USACE) is a potential source of dredge material.

Broadkill ("Great Marsh") and
Unit IV of Prime Hook NWR

Reference Marshes

These marshes are less degraded and can act as reference marshes for restoration efforts in the state. Long-term preservation of these areas and the open space around them to facilitate long-term marsh migration is important, but no immediate restoration action is suggested for them. In short, leave these marshes alone.

Bombay Hook North – 14,635 acres (5,923 ha)

This marsh supports high densities of Saltmarsh Sparrows and the marsh platform is relatively unditched. Existing projects:

- USFWS: Wave attenuation project underway on Shearness Flat (700-acre mudflat) to facilitate marsh creation through passive accretion in partnership with Ducks Unlimited and others.

Honorable Mention

The following marshes were identified by the partner group as important to keep in mind and further assess for future work.

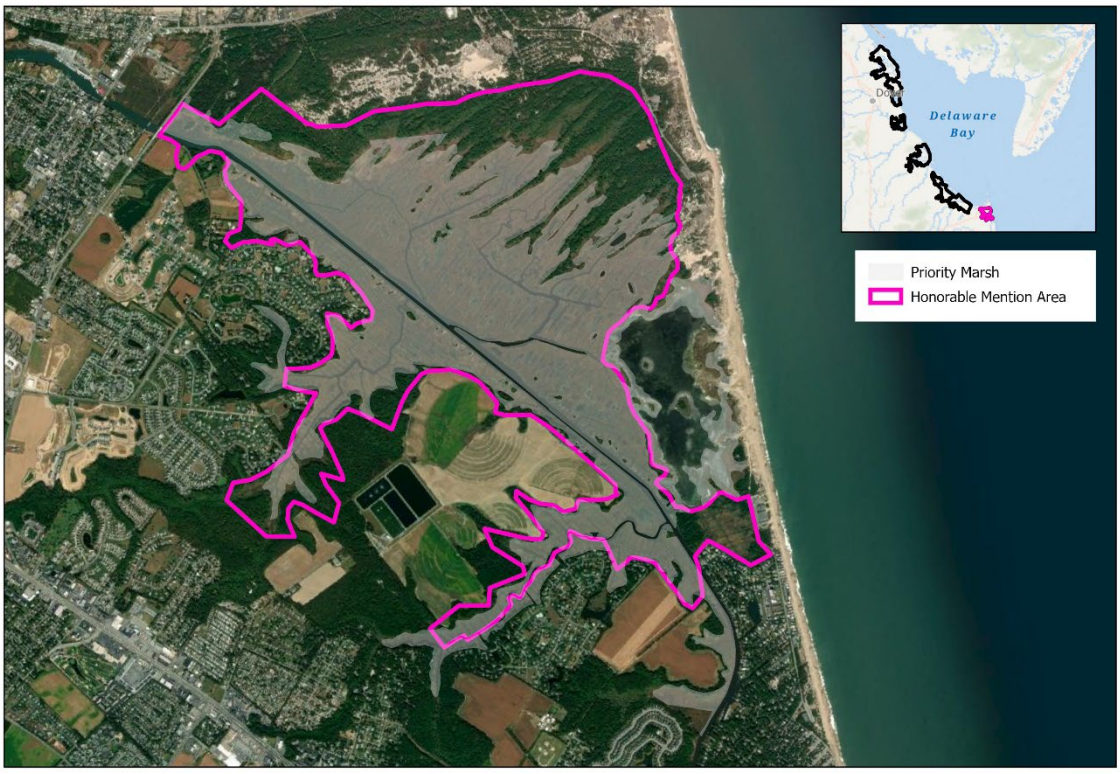
Cape Henlopen State Park – 1,646 acres (666 ha)

Existing conditions: This marsh is ditched throughout and shows extensive internal ponding. Many of the ditches are filling in naturally but this may also be driving the formation of larger internal pools. Invasive Phragmites occurs in small patches along the northeastern edge. Regular, low-volume dredging occurs in the Lewes-Rehoboth Canal that bisects the site. High marsh is concentrated on the upland edges. Some migration space exists along the northern edge of the site but development limits migration space in the south and west. Upland fields on the south side of the canal bordering the marsh are planned to be converted to forest by the Sussex County Wolfe Neck Regional Wastewater Facility which might limit marsh restoration opportunities.

Existing sparrow data: Saltmarsh sparrow present; breeding has not been confirmed.

Recommended next steps to management action:

- Runnelling and ditch remediation to restore marsh hydrology.
- Assessment for elevation enhancement.
- Phragmites management.



Cape Henlopen

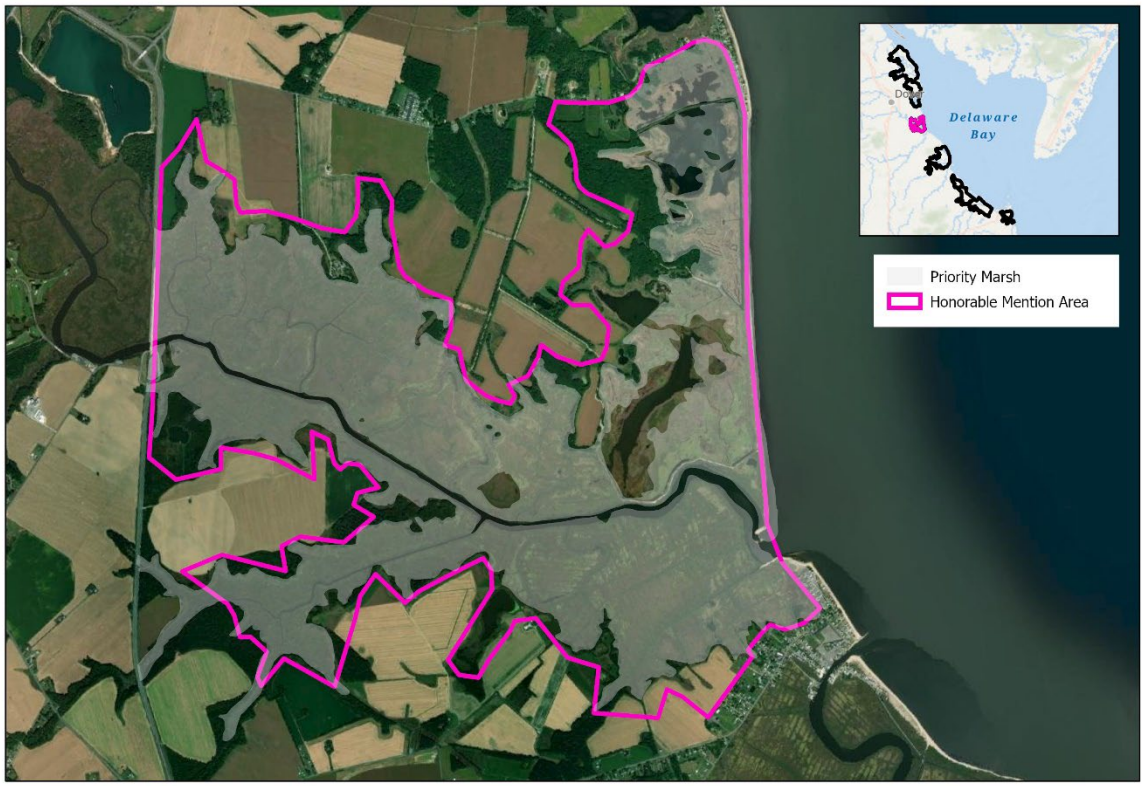
St. Jones – 2,681 acres (1,085 ha)

Existing conditions: Much of the upstream portion of this area is owned or managed by the Delaware National Estuarine Research Reserve (DNERR) as part of their St Jones Preserve. There are several small areas of high marsh within the reserve, most of which are either in transition to or dominated by Phragmites. Along the upland border there is evidence of forest to wetland transition. Many of the parcels surrounding the reserve are under conservation easement. North of the reserve the marshes are often low or dominated by Phragmites. The lower St. Jones is mostly owned and managed by Delaware Division of Fish & Wildlife as Ted Harvey Conservation Area. This marsh has restoration opportunities for long-term resilience.

Existing sparrow data: Saltmarsh Sparrows present; breeding has not been confirmed.

Recommended next steps to management action:

- Dover Airforce Base is pursuing a conservation easement near the St. Jones Reserve.
- Consider managing/removing impoundments on Ted Harvey to create high marsh.
- Facilitate marsh migration; St. Jones Reserve is surrounded by farmed land with limited ways of assisting wetland migration without adjacent landowner involvement.
- Hydrologic assessment to assess potential alterations of heavily ditched marsh on Ted Harvey, including the Morris, Buckaloo, and Logan Lane Tracts.
- Assess whether migration could be facilitated onto any of the Ted Harvey tracts managed as open fields (e.g. Morris and Buckaloo Tracts).
- Phragmites management.



St. Jones

Little Creek – 1,419 acres (574 ha)

Existing conditions: This marsh is all part of the Little Creek Wildlife Area, owned and managed by the Delaware Division of Fish and Wildlife, and has impoundments and pockets of high marsh. Restoration designs exist for several projects in the area, although they are mostly for low marsh. The area is already heavily managed for wildlife and restoration projects; additional land management could therefore be easier here than in some other areas in the state due to existing management. The southwestern edge of the area offers several sites where migration could be facilitated, including into areas currently managed as open fields that are likely to be inundated with less than 1 foot of sea level rise.

Existing sparrow data: Saltmarsh Sparrow present in low densities; breeding has not been confirmed.

Recommended next steps to management action:

- Evaluate impoundment management to assess potential for high marsh restoration.
- Evaluate low lying fields for potential for facilitated marsh migration.

Little Creek

Best practices in marsh management

Any management actions should follow best practices to not irreparably harm existing Saltmarsh Sparrow habitat. Necessary precautions include:

- Consulting local land managers and owners before any monitoring or management action is planned
- Initially limit management impact to a small portion of the high marsh (e.g. <25%)
- Conduct all management action outside the window of active Saltmarsh Sparrow breeding season (avoid May – September annually)

The State of Delaware considers it very important for sites currently known to have extensive nesting not be extensively altered to avoid unintentional changes to vegetation and hydrology that could disrupt nesting.

Monitoring

Any habitat restoration efforts should be monitored both pre-construction and post-construction to measure change and determine whether vegetation goals and elevations have been met. This monitoring will ideally include an array of ecological metrics specific to tidal marshes in Delaware and will be integral to build upon the existing knowledge base for salt marsh restoration in this area.

Acknowledgments

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