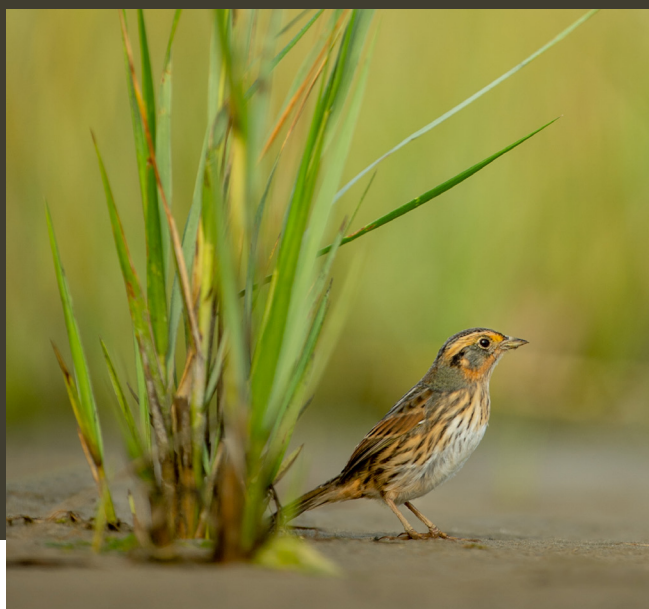


Saltmarsh Restoration
Priorities for the
Saltmarsh Sparrow

Delaware



Last Updated March 8, 2024
Saltmarsh Sparrow. Ray Hennessy



Saltmarsh Sparrow. Ray Hennessy

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 6 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 2030; the long-term habitat goal is set to achieve and sustain the state's Saltmarsh Sparrow population goal.

	2011/2012 Population Estimate*	State's %	Population Goal (Indiv)*	2030 high marsh goal (ac)**	Total marsh needed to meet 2030 goal (ac)***	Long-term High Marsh Goal (ac)**	Total marsh needed to meet 2069 goal (ac)***
Delaware	4,100 (±4,400)	6.8%	1,711	1,128	3,133	2,838	7,883
Regional	60,000		25,000	22,943	63,731	79,603	221,119

*Updated population estimates exist for each marsh patch within the range of the Saltmarsh Sparrow, however they are currently under peer review. When they are published, these figures will be updated to reflect the detections in the maps contained within this document.

**High marsh goals represent acres of "high quality habitat," defined as having conditions that support a stable or growing population of breeding Saltmarsh Sparrows.

*** Acreage based on the assumption that ~36% of tidal marsh acreage is high marsh (Correll et al. 2019).

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 Rd. crossings.



Delaware saltmarsh. Brian Henderson, Creative Commons

Marsh Identification and 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 Rd. 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 a survey followed by a Delaware partner meeting to further discuss and hone the information presented below. This information was last reviewed by partners in February 2024. The 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.

The information in this document including spatial delineations of priority marshes are available as part of a regional set of marsh restoration priorities for the Saltmarsh Sparrow. This information is available to view on the [ACJV Saltmarsh Sparrow mapper](#).



Whorles of Spartina patens. Mo Correll

Restoration Technique Definitions

The following terms are used repeatedly throughout this document to identify opportunity for different techniques at identified marshes, including in the “attributes” section. ***This information is meant to identify opportunity and potential for these restoration techniques at each site but is not meant to be prescriptive.*** A formal site assessment and design is always necessary to identify specific next steps and restoration strategies within each marsh parcel.

Sediment placement

Placement of material (including sediments from dredging efforts) on the marsh platform. Includes thin-layer placement, thick-layer placement, beneficial use of dredged sediments, formation of hummocks, microtopography, etc.

Repair hydrology - runnelling / channel creation

Modification of marsh platform using shallow channel creation to remove or prevent ground water saturation at the marsh surface that results in marsh vegetation death and marsh subsidence. Excavated peat is reused to create structured microtopography.

Repair hydrology - tidal restriction mitigation

Removal or modification of large-scale tidal restrictions such as Rd. crossings, culverts, bridges, etc. to restore tidal flow.

Repair hydrology - address ditch plugs

Adjustment of ditch plugging on marsh platform to improve hydrology.

Repair hydrology - ditch remediation

Adjustment of human-made ditches on the marsh platform to improve hydrology.

Repair hydrology - berm, embankment, or levee modification

Removal or alteration of berms, stonewalls or embankments to restore hydrology of marsh platform and marsh migration corridor.

Land acquisition / protection

Purchase or easement of land to protect for eventual marsh migration.

Facilitated marsh migration

Active assistance of marsh migration through modification of the environment.

Invasive plant species mitigation (*Phragmites australis*, etc.)

Removal or mitigation of invasive plants.

Living shoreline development

Development of nature-based features to promote shoreline stabilization.

Wildlife herbivory mitigation

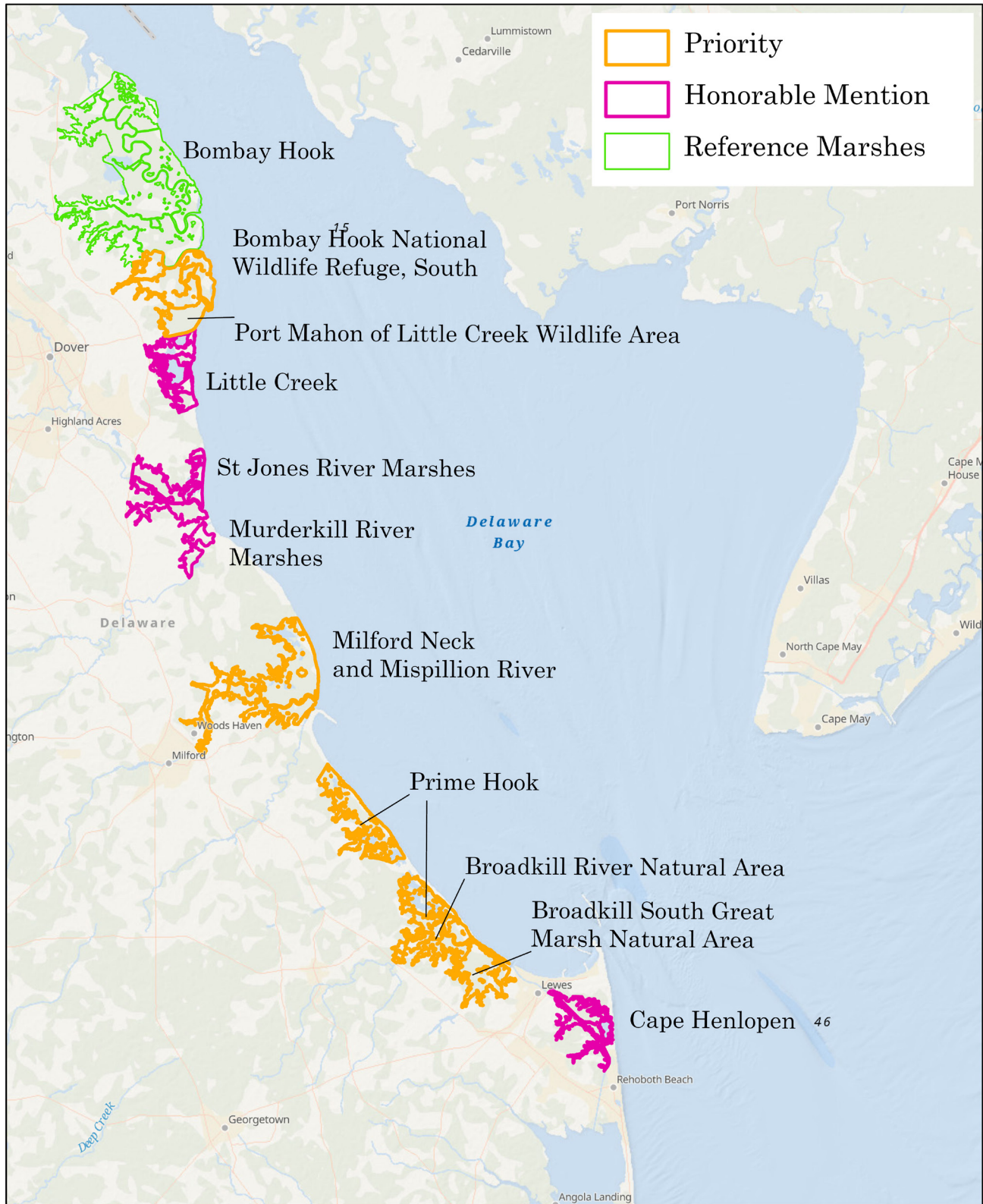
Removal or management of wildlife Ducks Unlimited to overgrazing including deer, horses, crabs, geese, etc.

Additional ecological assessment needed

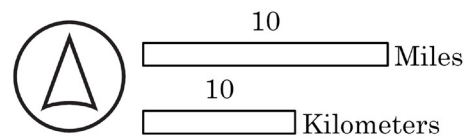
Additional monitoring and site assessment is necessary to determine specific next steps or assess existing restoration efforts at this site.

Priority Marshes

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



Delaware Priority Saltmarsh Sparrow Marshes



Bombay Hook National Wildlife Refuge (NWR) South- 3,473 acres (1,406 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 stands of the exotic *Phragmites australis* (hereafter *Phragmites*) transition into forest on the western edge.

Generally, ditching is not common at the refuge 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 that were bermed and kept in agriculture until approximately 2010 that offer opportunities for facilitated marsh migration to create high marsh.

Existing Projects

There are no known plans for restoration at this site, currently. Some areas are being considered for marsh transgression assessment and/or facilitation in the upcoming years.

Existing Sparrow Data

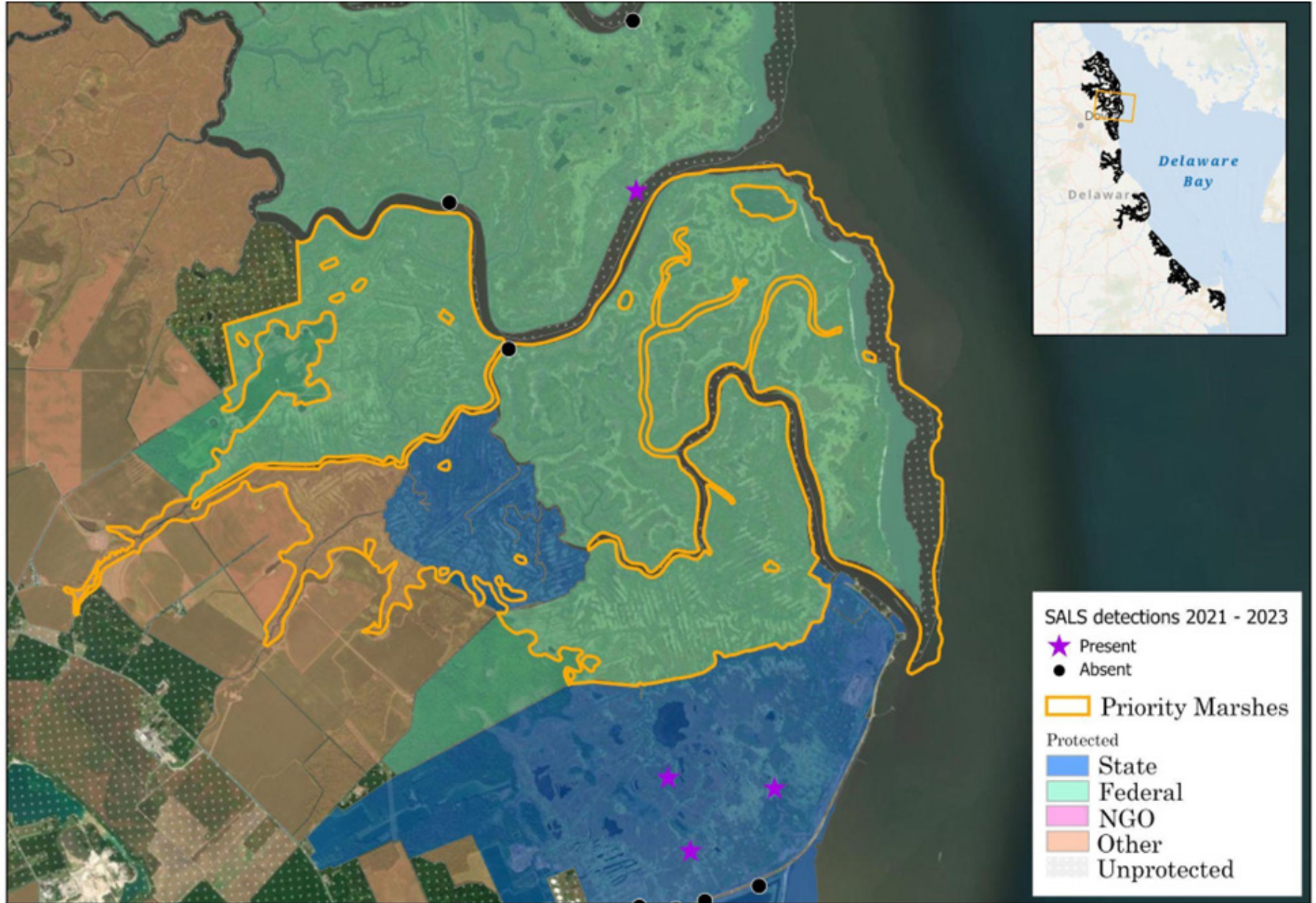
Saltmarsh Sparrow detected historically (SHARP 2014) but not in most recent regional surveys (2021/2022; SHARP 2023); breeding has not been confirmed.

Recommended Management / Next Steps To Management Action

- Facilitate migration onto fallow fields at the Steamboat Tract.
- Continue *Phragmites* management through ground spraying, mowing, and aerial herbicide
- Remove berms near agricultural fields to facilitate marsh migration.

Attributes

Sediment placement	N
Repair hydrology - runnelling / channel creation	N
Repair hydrology - tidal restriction mitigation	N
Repair hydrology - address ditch plugs	N
Repair hydrology - ditch remediation	N
Repair hydrology - berm, embankment, or levee modification	Y
Land acquisition / protection for marsh migration	Y
Facilitated marsh migration	Y
Invasive plant species mitigation (<i>Phragmites australis</i> , etc.)	Y
Living shoreline development	Y
Wildlife herbivory mitigation	N
Additional ecological assessment needed	Y



Bombay Hook National Wildlife Refuge South



1 Miles

1.5 Kilometers

Port Mahon of Little Creek Wildlife Area – 1,142 acres (462 ha)

Existing Conditions

Marsh hydrology is significantly altered here (including tidal restriction from Port Mahon Rd) 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. This is a historical location for Black Rail as well, but there have been no detections since the 1990s. This area is a top priority for restoration for the state of Delaware.

Existing Projects

Shoreline and Waterway Management Section: In the early stages of coordinating with DNREC Division of Fish and Wildlife and USFWS to consider using a section of salt marsh immediately north of Port Mahon Rd. as a beneficial use site for dredged material from the Little River. Support still needed for design, permitting, implementation, and monitoring. Best contact: Brian Marsh (Brian_marsh@fws.gov)

Delaware Natural Resources and Environmental Control (DNREC): *Phragmites* management through herbicide and burning. Best contact: Jamie Joachimowski (James.Joachimowski@delaware.gov)

Delaware Department of Transportation: Partial conceptual designs exist for a shoreline protection strategy for the bayward side of Port Mahon Rd.. The project goal is mostly Rd. protection but protecting the Rd. protects the salt marsh behind the Rd. DNREC Division of Fish and Wildlife have separate conceptual designs for some of the same area with goals of protecting the Rd. and restoring horseshoe crab, shorebird, and diamondback terrapin habitat and protecting tidal marsh behind the Rd.. These projects are in early planning stages; support is still needed to further develop designs and funding will be needed for installation. Best contact: Stephanie Johnson (stephanie.johnson@delaware.gov)

DNREC: Working with USFWS and Ducks Unlimited to develop an assessment strategy to gather data to inform restoration planning for a section of the state lands portion of this area between Port Mahon Rd and Kelly's Ditch. Funding may be a combination of National Fish and Wildlife Foundation (NFWF) and Pittman Robertson (PR) funds at least for assessment. Funding needed for implementation and monitoring. Best contact: Kaitly Ripple (kaitlyn_ripple@fws.gov), Brian Marsh (Brian_marsh@fws.gov)

Existing Sparrow Data

Saltmarsh sparrow detected and confirmed breeding at this site (DNREC unpublished data, 2023)

Recommended Management / Next Steps To Management Action

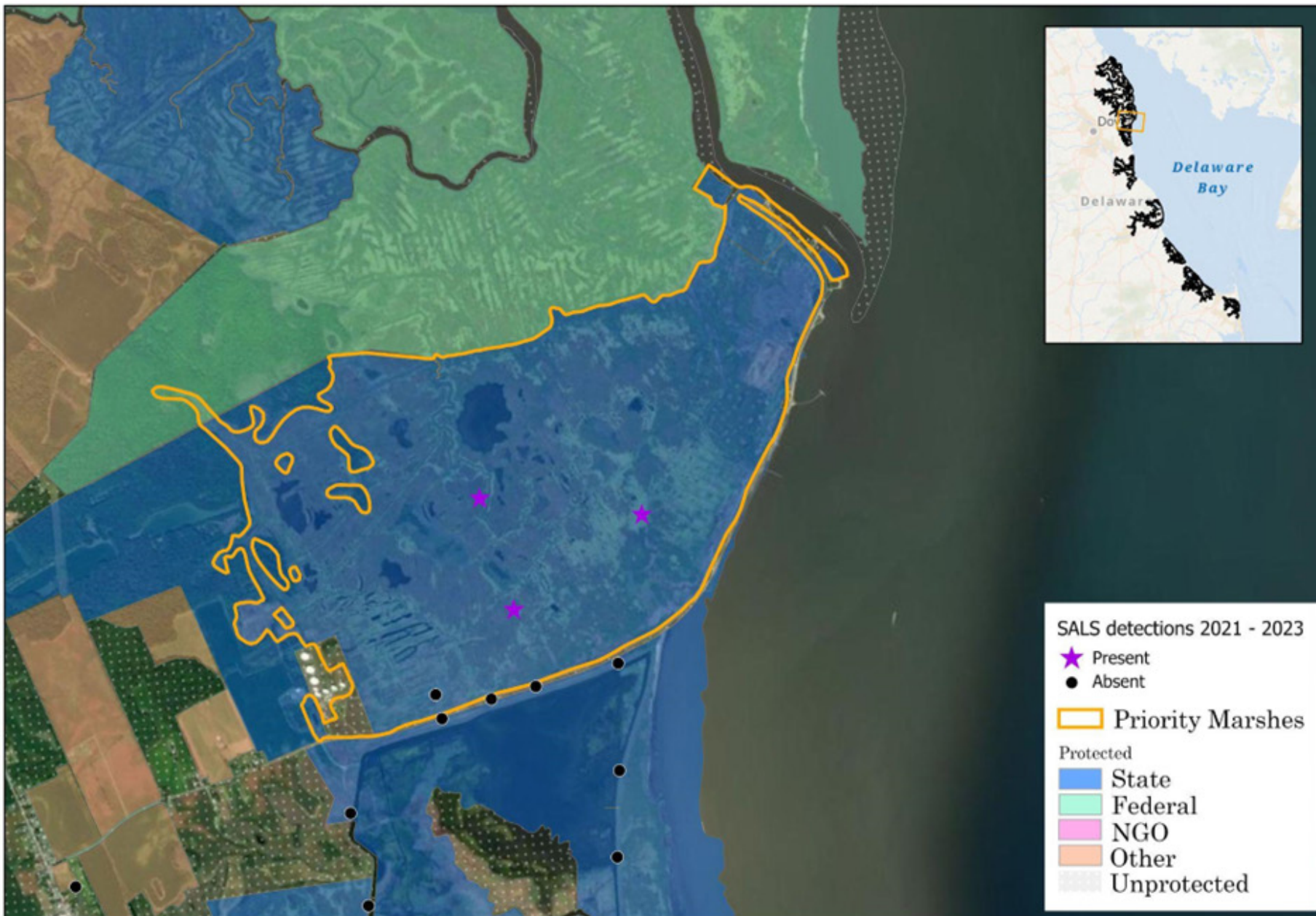
- Hydrological assessment for tidal restriction, ponding, and other altered hydrology.
- Assessment for potential elevation enhancement; potential dredge material source exists locally at Little River, the Port Mahon Boat Launch, and at the Delaware Storage and Pipeline Company berth and access channel.
- Continued *Phragmites* management through ground spraying, mowing, and aerial herbicide.
- Reestablish some channels and ditch maintenance to aid in drainage.
- Grey infrastructure may be necessary to establish some wave attenuation mitigation.

Attributes

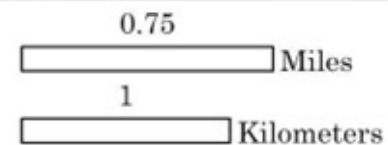
Sediment placement	Y
Repair hydrology - runnelling / channel creation	Y
Repair hydrology - tidal restriction mitigation	Y
Repair hydrology - address ditch plugs	N
Repair hydrology - ditch remediation	Y
Repair hydrology - berm, embankment, or levee modification	Y
Land acquisition / protection for marsh migration	N
Facilitated marsh migration	Y
Invasive plant species mitigation (<i>Phragmites australis</i> , etc.)	Y
Living shoreline development	Y
Wildlife herbivory mitigation	N
Additional ecological assessment needed	Y

The exotic form of Phragmites australis occurs in tidal marshes with significant freshwater input and altered hydrology. Chesapeake Bay Program





Port Mahon of Little
Creek Wildlife Area



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.



Saltmarsh Sparrow in a Delaware marsh. Liz Tymkiw

Existing Projects

DNREC and The Nature Conservancy

(TNC): Developed a conceptual 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. Restoration was planned conceptually but needs funding for full design, permitting, implementation, and monitoring. The project has been on hold for several years Ducks Unlimited to TNC staff changes. Best contact: William Helt (william.helt@tnc.org)

DNREC: Limited *Phragmites* management through herbicide treatment on Rawley's Island. Best contact: Jamie Joachimowski (James.Joachimowski@delaware.gov)

Partnership for the Delaware Estuary (PDE): Small living shoreline project along shoreline (complete). Best contact: Danielle Kreeger (DKreeger@DelawareEstuary.org)

USFWS and Ducks Unlimited: A partnership led by USFWS and Ducks Unlimited is assessing the salt marsh between the Mispillion River and Cedar Creek for runnelling, ditch maintenance, and potentially other low-cost and low-disturbance restoration methods. Best contact: Kaitlyn Ripple (kaitlyn_ripple@fws.gov).

US Army Corps of Engineers (USACE): The USACE with DNREC as a local sponsor is starting a Section 111 study to investigate and mitigate impacts associated with the Mispillion Inlet. Potentially this could include looking at salt marsh in the Mispillion Harbor area. Best contact: Jesse Hayden (Jesse.Hayden@delaware.gov)

Existing Sparrow Data

Saltmarsh Sparrows detected (2021/2022; SHARP 2023) and confirmed breeding at this site.

Recommended Management / Next Steps To Management Action

- Work near existing high-quality nesting habitat without modifying high-quality habitat directly at this site.
- Funding and implementation of existing designs (TNC) 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 Rd. for potential runnelling or ditch remediation.

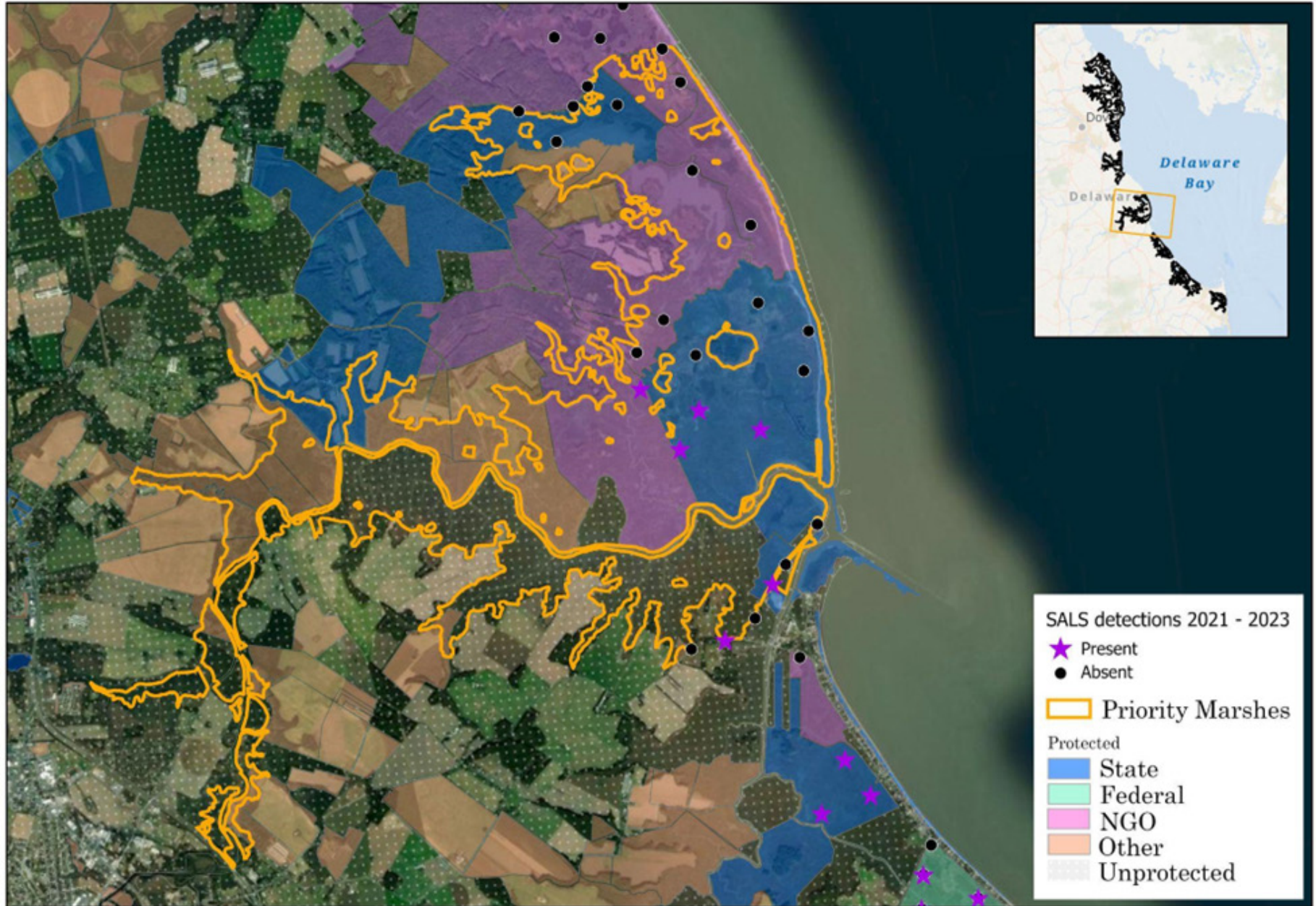
- *Phragmites* management.
- Tidal restriction mitigation near Greco mouth.
- Assessment for potential elevation enhancement: Cedar Creek (State of DE) and Mispillion inlet (USACE) dredge operations active locally and are potential source of material, although sandy dredged sediments are preferentially used on shorebird habitat in this area.
- Acquisition of southern bounding areas of privately owned agricultural areas.

Attributes

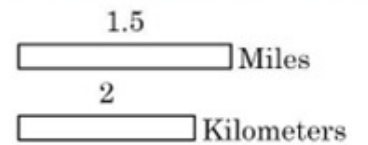
Sediment placement	Y
Repair hydrology - runnelling / channel creation	Y
Repair hydrology - tidal restriction mitigation	Y
Repair hydrology - address ditch plugs	N
Repair hydrology - ditch remediation	Y
Repair hydrology - berm, embankment, or levee modification	Y
Land acquisition / protection for marsh migration	Y
Facilitated marsh migration	Y
Invasive plant species mitigation (<i>Phragmites australis</i> , etc.)	Y
Living shoreline development	Y
Wildlife herbivory mitigation	N
Additional ecological assessment needed	Y



Tidal marshes can migrate into surrounding lands, creating ghost forests and new areas of marsh, as sea levels rise.
 Cyndy Sims, Creative Commons



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.



Prime Hook National Wildlife Refuge. Matthew Truck, Creative Commons

Existing Projects

USFWS: Units II and III were restored 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. Project is complete but support is needed for post-restoration monitoring. Best contact: Susan Guiteras (susan_guiteras@fws.gov)

USFWS: *Phragmites* has been treated periodically through aerial herbicide application. Best contact: Susan Guiteras (susan_guiteras@fws.gov)

USFWS: Actively conducting adaptive management for ecosystem function (prescribed fire). Best contact: Susan Guiteras (susan_guiteras@fws.gov)

Existing Sparrow Data

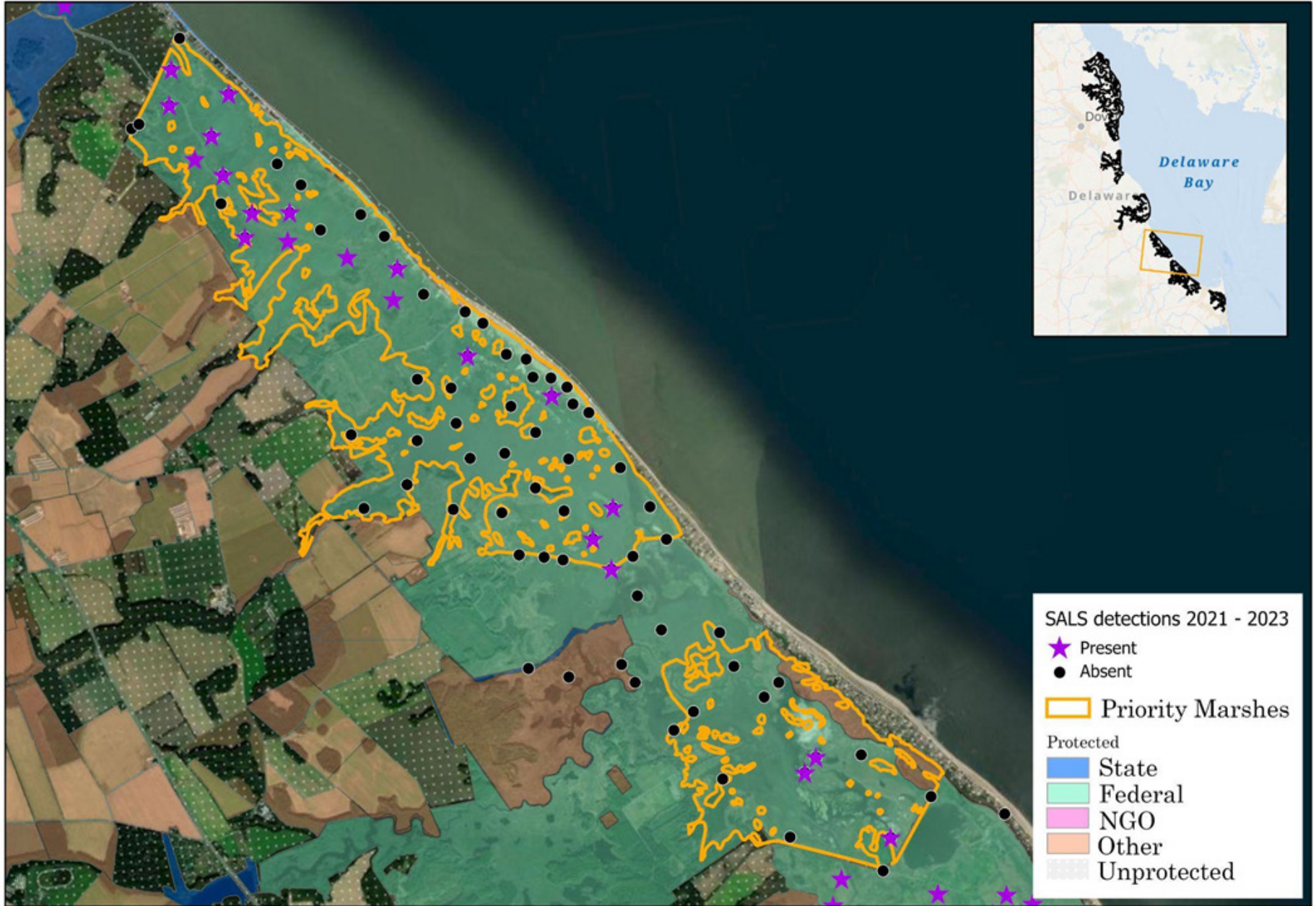
Saltmarsh Sparrow detected (2021/2022; SHARP 2023) and confirmed breeding at this site.

Recommended Management / Next Steps To Management Action

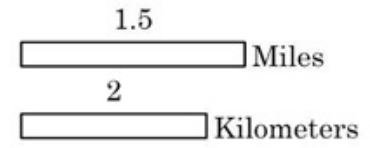
- Removal of ghost forests to facilitate marsh migration.
- Continued and expanded *Phragmites* management with herbicide and prescribed burning.
- Continued monitoring of the Sandy restoration in the eastern half of Units I, II, and III

Attributes

Sediment placement	N
Repair hydrology - runnelling / channel creation	Y
Repair hydrology - tidal restriction mitigation	Y
Repair hydrology - address ditch plugs	N
Repair hydrology - ditch remediation	N
Repair hydrology - berm, embankment, or levee modification	Y
Land acquisition / protection for marsh migration	Y
Facilitated marsh migration	Y
Invasive plant species mitigation (<i>Phragmites australis</i> , etc.)	Y
Living shoreline development	Y
Wildlife herbivory mitigation	N
Additional ecological assessment needed	Y



Prime Hook National Wildlife Refuge



Broadkill North– 2,379 acres (963 ha)

Existing Conditions

This area contains a large amount of high marsh north and south of the Broadkill river which is within Prime Hook NWR Unit IV north of the Broadkill and privately owned to the south, partially by TNC. Restoring degraded habitat adjacent to this could result in quick improvement of potential Saltmarsh Sparrow habitat. There are several agricultural easements in the area. 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.

Existing Projects

TNC: Considering how to allow and facilitate marsh migration on current agricultural easements along the western boundary of this site. Best contact: Will Helt (william.helt@tnc.org)

USFWS: Prescribed burning is planned in 400 acres to limit *Phragmites* and cedar encroachment at the upland interface on Unit IV. No additional support is needed for implementation; support is still needed for monitoring. Best contact: Susan Guiteras (susan_guiteras@fws.gov)

USFWS: Assessing salt marsh sites north of the Broadkill River (Unit IV) potentially suitable for runnelling. This is a partnership between USFWS Refuge and Delaware Bay Coastal Program staff. Best contact: Kaity Ripple (kaitlyn_ripple@fws.gov)

Existing Sparrow Data

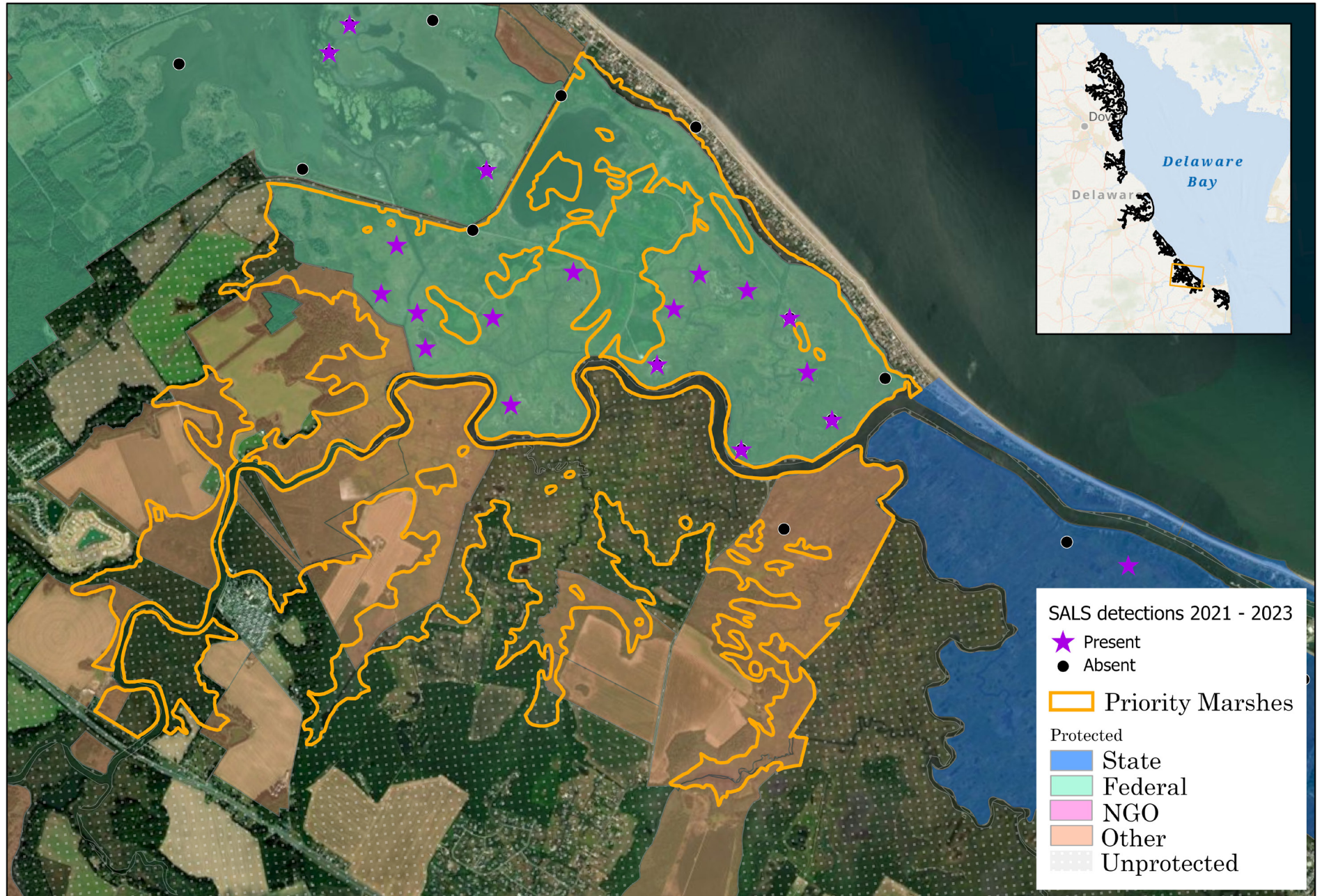
Saltmarsh Sparrow detected (2021/2022; SHARP 2023) and confirmed breeding at this site.

Recommended Management / Next Steps To Management Action

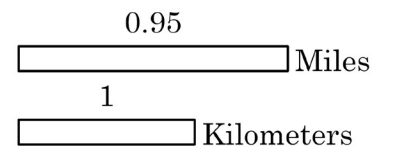
- There are large private agricultural fields along the western side of the area that should be considered for future fee title purchase or conservation easement with any interested landowners.
- Facilitated marsh migration into adjoining agricultural fields.
- Elevation and hydrological assessment throughout the site to determine if ditch remediation and runnelling have potential in this area.

Attributes

Sediment placement	N
Repair hydrology - runnelling / channel creation	Y
Repair hydrology - tidal restriction mitigation	N
Repair hydrology - address ditch plugs	N
Repair hydrology - ditch remediation	Y
Repair hydrology - berm, embankment, or levee modification	Y
Land acquisition / protection for marsh migration	Y
Facilitated marsh migration	Y
Invasive plant species mitigation (<i>Phragmites australis</i> , etc.)	Y
Living shoreline development	Y
Wildlife herbivory mitigation	N
Additional ecological assessment needed	Y



Broadkill North



Broadkill South – 1,973 acres (798 ha)

Existing Conditions

Includes state-owned Great Marsh Preserve and privately owned lands adjacent to it. Much of the state-owned Great Marsh Preserve south and west of the Broadkill River is highly degraded with ditching and internal ponding. There are patches of *S. patens* and *D. spicata* along tidal channels and short form *S. alterniflora* throughout, creating a mix of marsh zonation throughout.



Swirling patterns of *Spartina patens*. Chesapeake Bay Program

Existing Projects

USFWS: Working with the state to consider this site for low-tech restoration. Funding needed for ecological assessment. Best contact: Kaity Ripple (Kaitlyn_ripple@fws.gov)

Delaware State Parks: Academic research ongoing at this site. Best contact: Chris Bennett (chris.bennett@delaware.gov)

Existing Sparrow Data

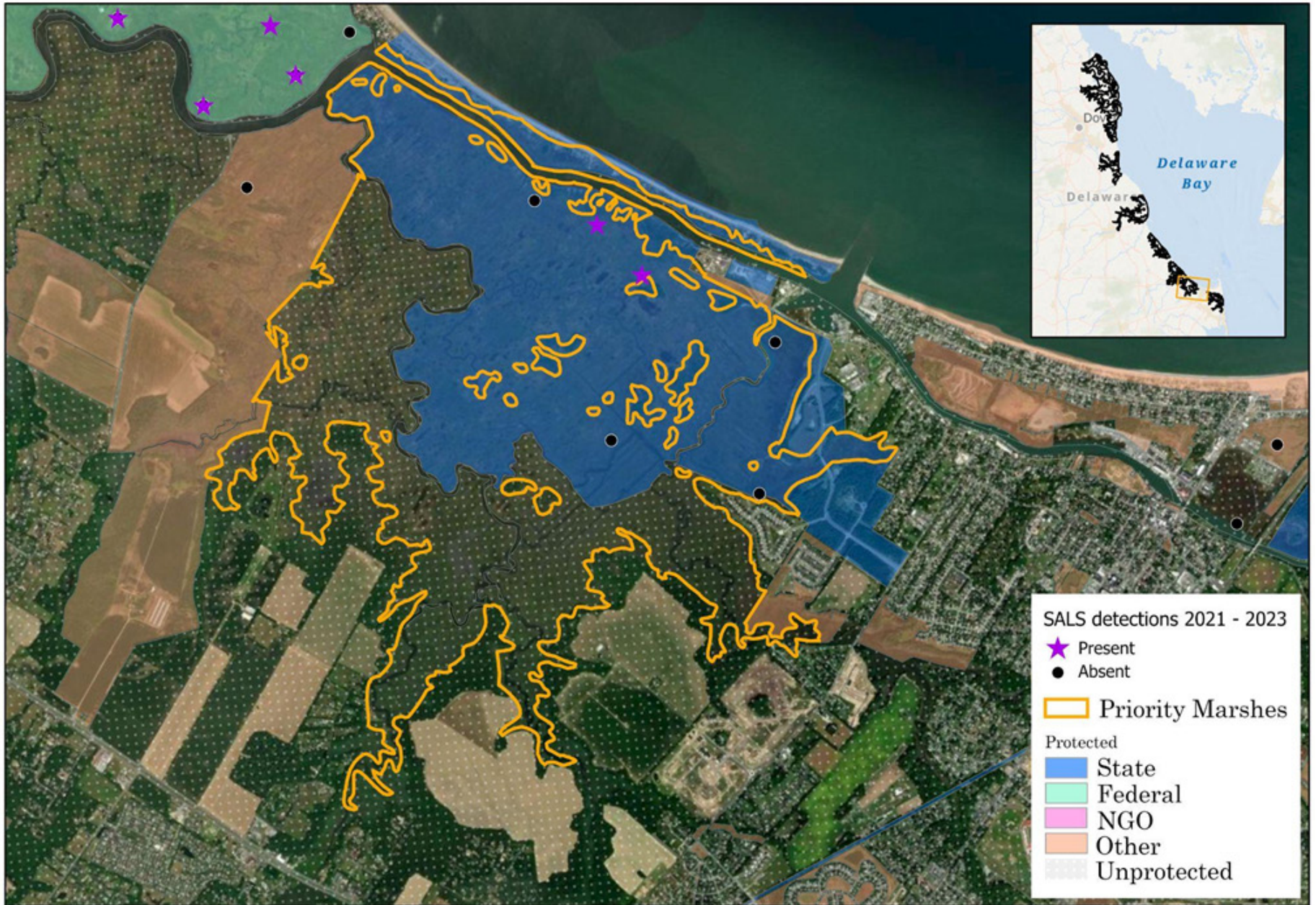
Saltmarsh Sparrow detected (2021/2022; SHARP 2023) and confirmed breeding at this site.

Recommended Management / Next Steps To Management Action

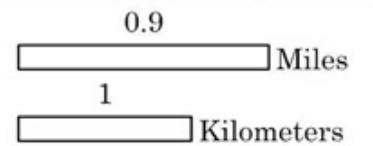
- There are large private agricultural fields along the western side of the area that should be considered for future fee title purchase or conservation easement with any interested landowners.
- Facilitated marsh migration into agricultural fields.
- Elevation assessment throughout the site.
- There is potential for elevation enhancement and creation of a new tidal channel network here to create a new marsh platform; Roosevelt inlet is dredged by the USACE and is a potential source of dredge material.

Attributes

Sediment placement	N
Repair hydrology - runnelling / channel creation	Y
Repair hydrology - tidal restriction mitigation	N
Repair hydrology - address ditch plugs	N
Repair hydrology - ditch remediation	Y
Repair hydrology - berm, embankment, or levee modification	N
Land acquisition / protection for marsh migration	Y
Facilitated marsh migration	Y
Invasive plant species mitigation (<i>Phragmites australis</i> , etc.)	Y
Living shoreline development	Y
Wildlife herbivory mitigation	N
Additional ecological assessment needed	Y



Broadkill South



Honorable Mention

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

Little Creek – 1,760 acres (712 ha)

Existing Conditions

This marsh includes much of Little Creek Wildlife Area owned by DNREC 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 Ducks Unlimited 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 Sparrows detected at this site in pre-2020 survey data (SHARP 2023).

Recommended Management / 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.

Murderkill River Marshes – 706 acres (286 acres)

Existing Conditions

This marsh area is made up of both state and private land. All of it is ditched with ponding beginning to occur. Patches of high marsh are still present, though early stages of degradation are occurring or ponding is beginning to encroach on remaining patches. Some ditches have begun to fill in on their own, however some have begun to form ponds where outlets have healed and held in water. *Phragmites* is present along the Rd. and upland borders. The private parcels are adjacent to farms and could provide potential opportunities for facilitated migration.

Existing Projects

USFWS: Assessing salt marsh in partnership with Ducks Unlimited, PDE, and other partners at a portion of the state-owned Hall Tract along the north side of the Murderkill River to develop restoration options using runnelling and other approaches. Best contact: Kaity Ripple (kaitlyn_ripple@fws.gov).

Existing Sparrow Data

Saltmarsh Sparrows have not been detected at this site despite significant survey effort (SHARP 2023; DNREC 2023).

Recommended Management / Next Steps To Management Action

- Hydrologic and elevation assessment to look at potential restoration approaches
- Reach out to private landowners to gauge interest in facilitated marsh migration via NRCS programs such as WRE, EQIP, and WFLW.
- *Phragmites* management.

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 DNREC as the Ted Harvey Conservation Area.

Existing Projects

USFWS: Assessing salt marsh in partnership with Ducks Unlimited, PDE, and other partners at a portion of the state-owned Buckaloo Tract along the south side of the St Jones River to develop restoration options using runneling and other approaches. Best contact: Kaity Ripple (kaitlyn_ripple@fws.gov)

Existing Sparrow Data

Saltmarsh Sparrows detected at this site (2021/2022; SHARP 2023; DNREC unpublished data 2023). Breeding has not been confirmed.

Recommended Management / Next Steps To Management Action

- 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.

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 detected at this site (DNREC unpublished data, 2023); breeding unconfirmed.

Recommended Management / Next Steps To Management Action

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

Reference Marsh

This marsh is less degraded and can act as reference marsh for restoration efforts in the state. Long-term preservation of this area and the open space around it to facilitate long-term marsh migration is important, but no immediate restoration action is suggested. In short, leave this marsh 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 Sheariness Flat (700-acre mudflat) to facilitate marsh creation through passive accretion in partnership with Ducks Unlimited and others. This is currently in the design phase, support is still needed for full implementation and monitoring. Best contact: Ed Farley (efarley@ducks.org)

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.



Dance fever Saltmarsh Sparrow style. Ray Hennessy

Monitoring

Any habitat restoration efforts should be monitored both pre-construction (2+ years before implementation) and post-construction (up to 10 years after implementation is complete) 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. The ACJV, SHARP, and Ducks Unlimited recently released recommendations for monitoring saltmarsh sparrows at restoration sites which includes a decision tree for deciding timelines, level and type of monitoring, and spatial distribution of data collection locations.

The DNERR (a cooperative program between NOAA and the State of Delaware: DNREC) established the Marsh Bird Monitoring Program using SHARP protocols in 2013 as a part of [our long-term coastal monitoring](#). This is an annual monitoring program, but does not include detailed demographics surveys, only point counts and vegetation at each point. All data is uploaded to the SHARP database.

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Distichlis spicata in high marsh.
Lauren Glevanik, iNaturalist



Saltmarsh Sparrow chicks. USFWS

Contact & Citation Information

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