

Early Restoration Attempts in Inland Bays (*Zostera marina*) and Freshwater SAV in Sussex County



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Submerged aquatic vegetation

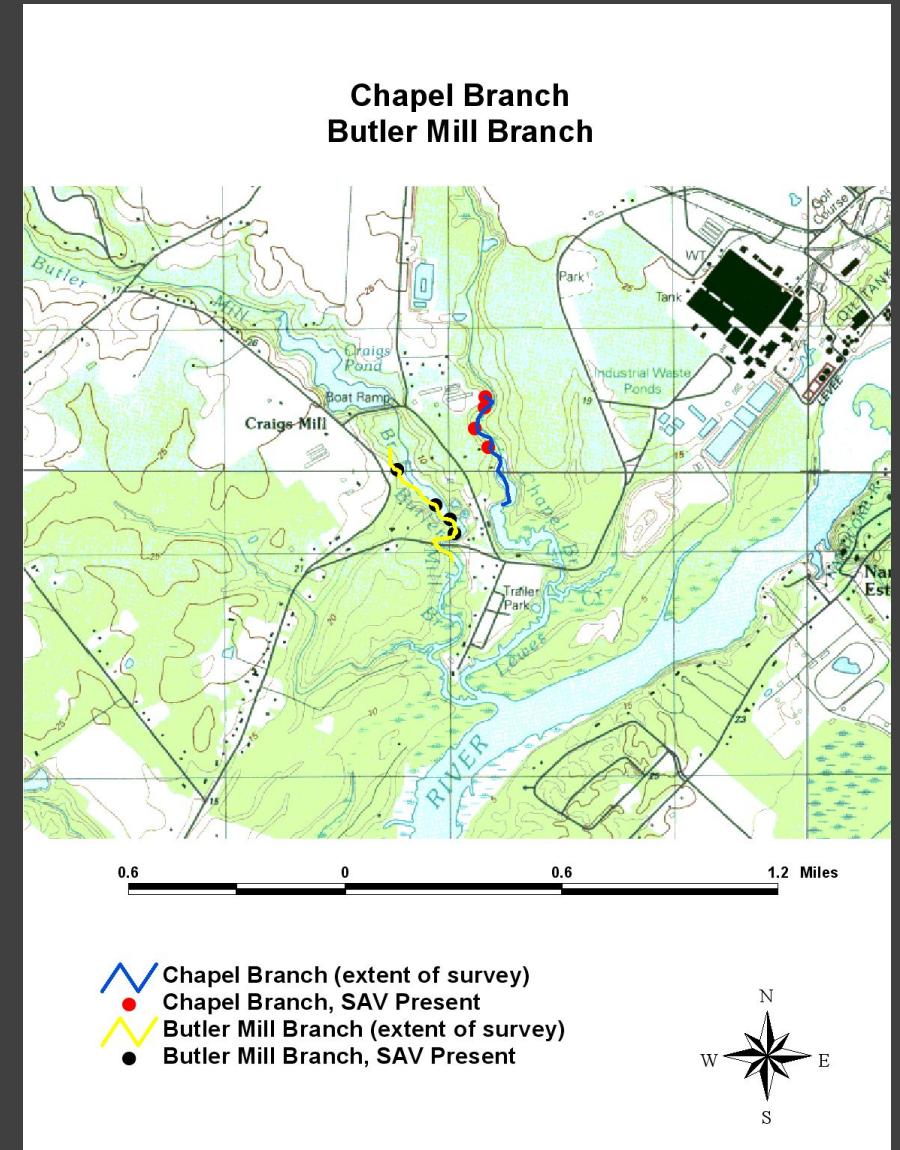
- Not just eelgrass!
- Must grow underwater
- Rooted
- Vascular plants
- Not seaweed, macroalgae, etc.



Rooted *Vallisneria americana*

Background

- Limited information in DE
 - 1988 study in Inland Bays
 - 2005 DNREC survey in the Nanticoke
 - 2020 Center for Inland Bays mapping
- Some restoration and planting attempts
 - Mixed results

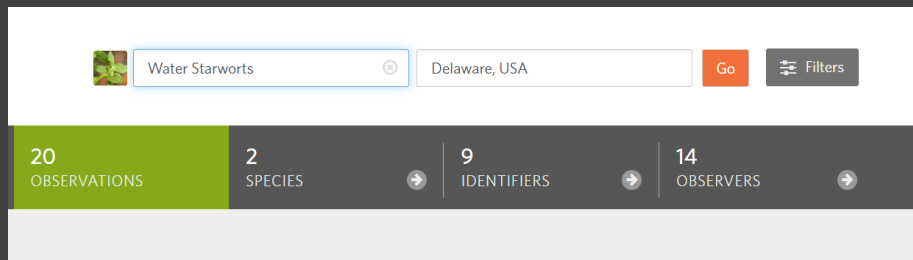


Map from 2005 DNREC study

What do we know?

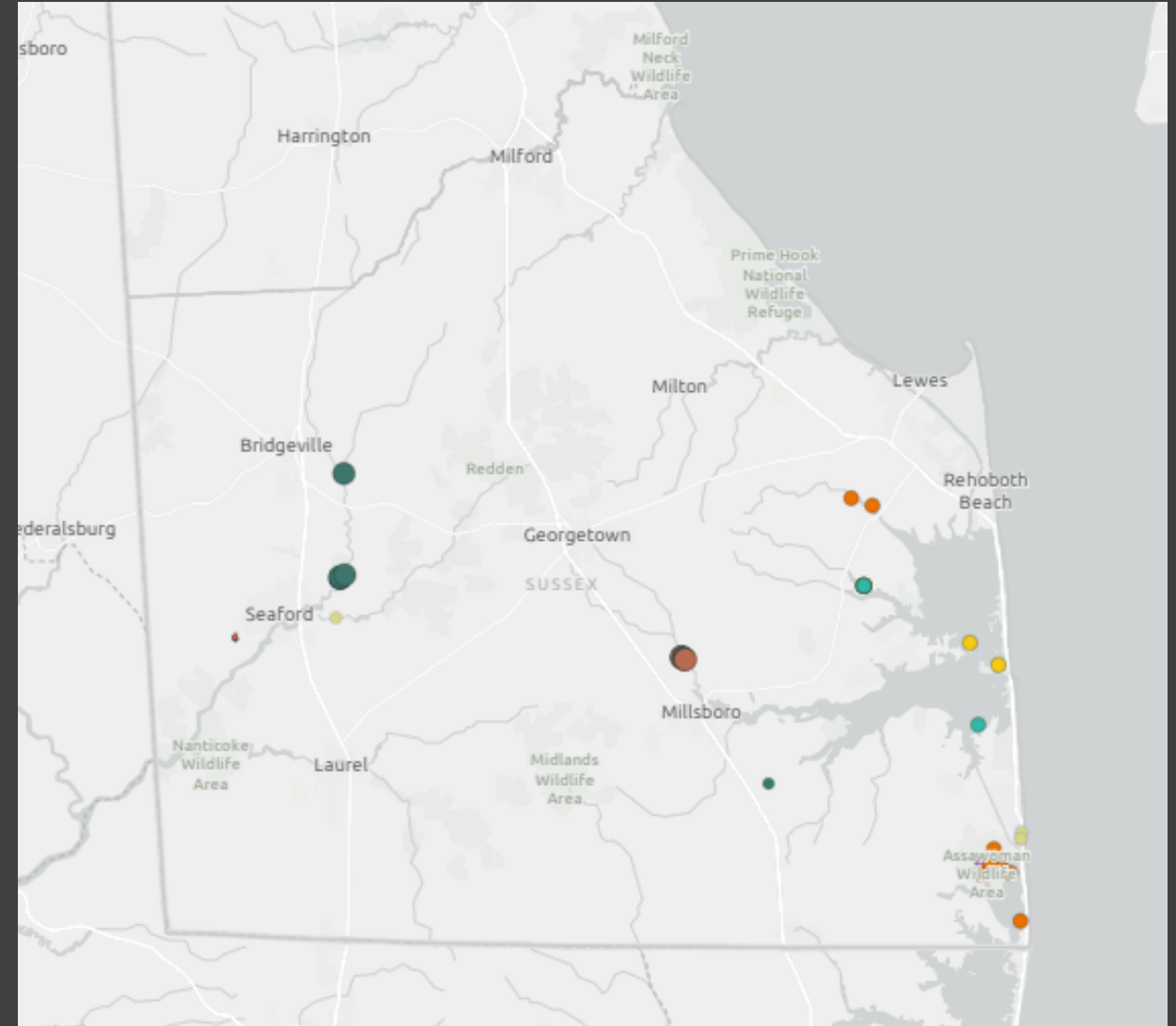
Compiled information

- DNREC surveys (2022-)
 - Quick Capture & Survey123
- CIB mapping (2020-2021)
- Early efforts (2019)
- Previous studies
- Anecdotal information



The image shows a screenshot of the iNaturalist search interface. At the top, there is a search bar with "Water Starworts" entered and a location dropdown set to "Delaware, USA". Below the search bar, a summary bar displays the following statistics: 20 OBSERVATIONS, 2 SPECIES, 9 IDENTIFIERS, and 14 OBSERVERS. Each statistic is accompanied by a right-pointing arrow icon.

Using iNaturalist to find potential survey areas



Map of observed SAV in Sussex county
compiled from various sources



Hydrilla in the Nanticoke



Elodea canadensis and *Elodea nuttallii* in Brandywine

Surveys & Findings

- 14 species total (statewide)
 - ~ 2-3 species per site
 - Most in Brandywine Creek (NCC)

Zostera marina

Efforts

- Summer 2018
 - MD DNR *Zostera* collection permit
 - Sinepuxent Bay- Approx 100 quarts reproductive material collected
 - Pearl bags deployed off Pasture Point
- Summer 2019
 - MD DNR collection permit
 - No luck



Zostera collection and pearl bags



Zostera marina



Pearl bags deployed

Challenges

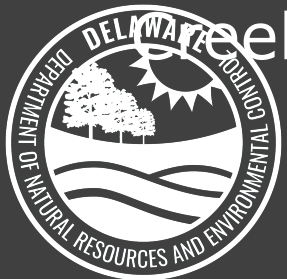
- No prior habitat suitability
- Lack of establish monitoring



Inland Bays

Efforts

- Summer 2019
 - Shoreline and Waterway Management Section and Town of South Bethany
 - Harvester to clear macroalgae, collect detached floating *Ruppia maritima*
 - Pearl Bags, Pasture Point
 - Remaining shoots broadcasted in Herring Creek



South Bethany macro algae and *Ruppia*



Pearl bags deployed

Inland Bays



South Bethany macro algae and *Ruppia*

Challenges

- Local SAV concerns
 - Herbicide application
 - Copper Based herbicide
 - Harvester limitations
- Failed funding
 - DNREC internal funding
- Lack of Collaboration
- Lack of public information



Inland Bays

Efforts

- Summer 2020
 - Visited Herring Creek and observed *Ruppia*
- Summer 2021
 - Visited Herring Creek and did *not* observe *Ruppia*
 - Issued Subaqueous Lands permit- SAV restoration



Herring Creek planting

Inland Bays



Pearl bags

Challenges

- Lack of regular monitoring
- Habitat suitability



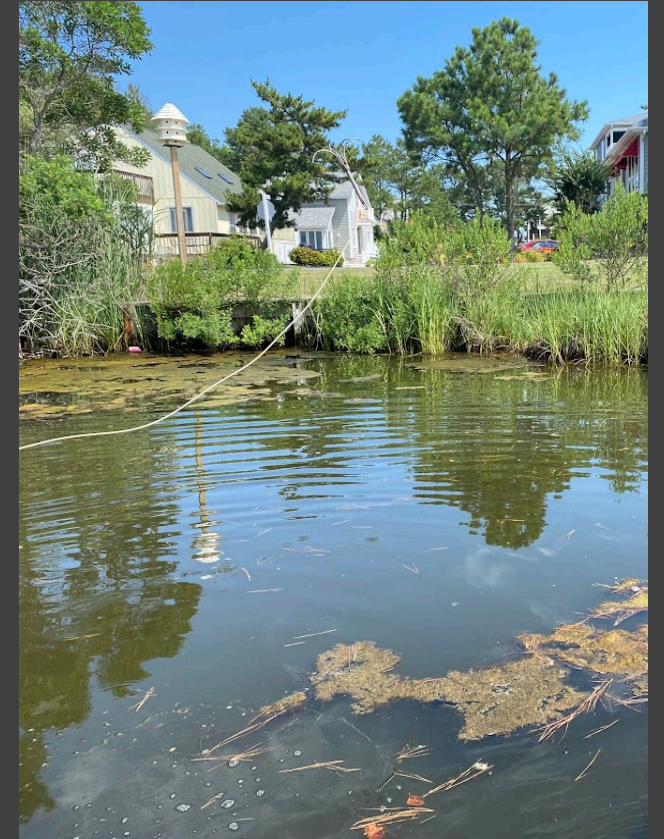
Sussex County

Efforts

- Summer 2021
 - WAMS and EPA R3 Nanticoke mapping- Deep Creek
- Spring 2022
 - Deep creek revisit via kayak
- Summer 2022
 - Bethany seed collection failure



SAV in Deep
Creek



South Bethany
2022

Sussex County



Challenges

- Organizational capacity
- Lack of training/established protocols



Sussex County

Efforts

Surveys conducted

- Cow Bridge Branch (9.14.22)
- Nanticoke (August 2023)
 - Old Furnace (Kayak)
 - Rifle Range (Kayak)
 - Chapel Branch (Unofficial survey)



SAV in
Nanticoke (Old
Furnace)



SAV in Cow Bridge
Branch

Sussex County

Challenges



- Organizational capacity
- Landowner access
- Navigational issues

Potential survey
location in Nanticoke
(Seashore)



Future Needs

- Continued support
 - Collaboration
 - Funding
 - Capacity
- Habitat suitability analyses
- Training
- Access



Questions?

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Species List- for the plant enthusiasts

- *Elodea canadensis*
- *Elodea nuttallii*
- *Callitriche heterophylla*
- *Ceratophyllum demersum*
- *Heteranthera dubia*
- *Hydrilla verticillata*
- *Myriophyllum aquaticum*
- *Najas guadalupensis*
- *Potamogeton berchtoldii*
- *Potamogeton crispus*
- *Potamogeton perfoliatus*
- *Potamogeton natans*
- *Ruppia maritima*
- *Vallisneria americana*

