



**Department of
Environmental
Conservation**



Science and Restoration of SAV in the Hudson River Estuary

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AIS Coordinator, Region 3

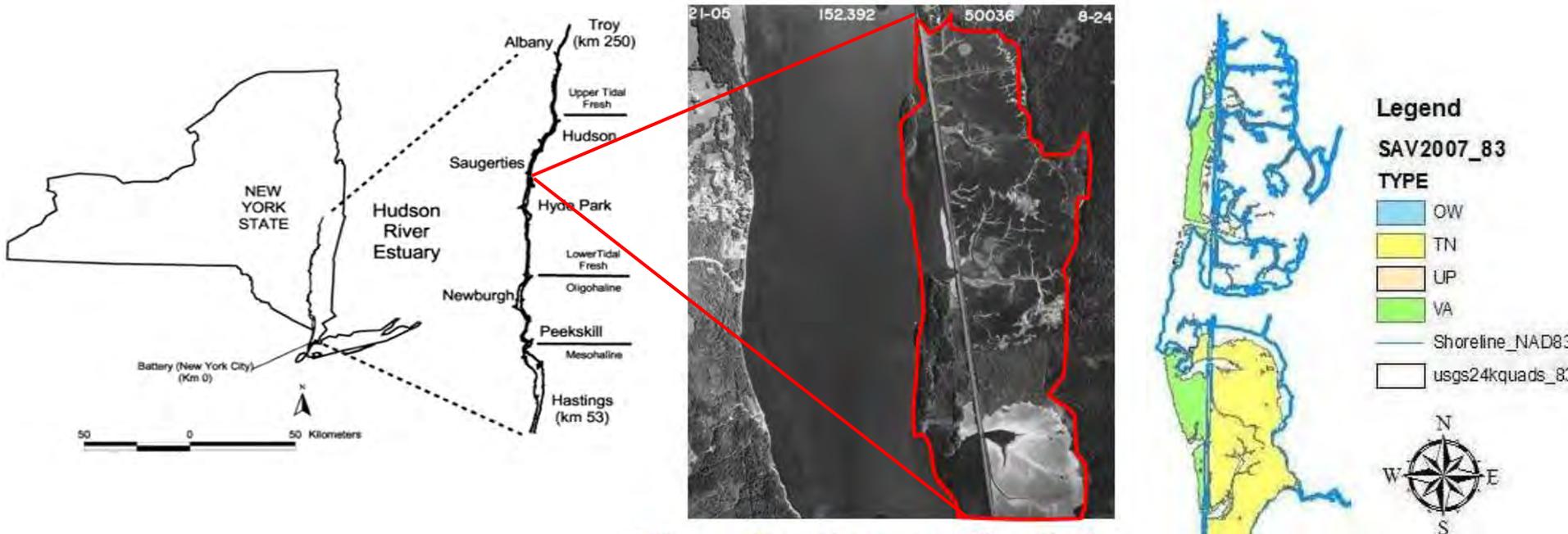
**NYS Department of Environmental
Conservation in coordination with the Water
Resources Institute at Cornell University**

October 23, 2025



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Submerged Aquatic Vegetation Mapping



River Section at Tivoli Bays

Map Year	Hectares of SAV	Acres of SAV	Comparison Years	SAV Change (HA)	Percent Change SAV (HA)
1997	1802.0	4452.7	-----	-----	-----
2002	1760.1	4349.4	1997 - 2002	-41.9	-2.3%
2007	1280.0	3162.5	2002 - 2007	-480.1	-27.3%
2014	482.7	1192.8	2007 - 2014	-797.3	-62.3%
2016	1091.5	2697.1	2014 - 2016	608.8	126.1%
2018	1059.3	2717.7	2016 - 2018	-32.2	-3.0%
2022	1233.3	3047.5	2018 - 2022	174.0	16.4%

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There are over 1,400 acres less SAV habitat today than 25 years ago





Taylor Breton

NERRS Margaret A. Davidson Fellow

See poster session:

“Experimental Field Restoration of *Vallisneria americana* at Stockport Flats: Site, Planting Methods and Genotypic Considerations”

Taylor Breton, Katia Engelhardt, Daniel Miller,
Christina Pacella, Brian DeGasperi, Christopher
Mitchell, Teagan Russell , & Sarah Fernald

Contact: Taylor.Breton@umces.edu

UMCES
Appalachian Laboratory



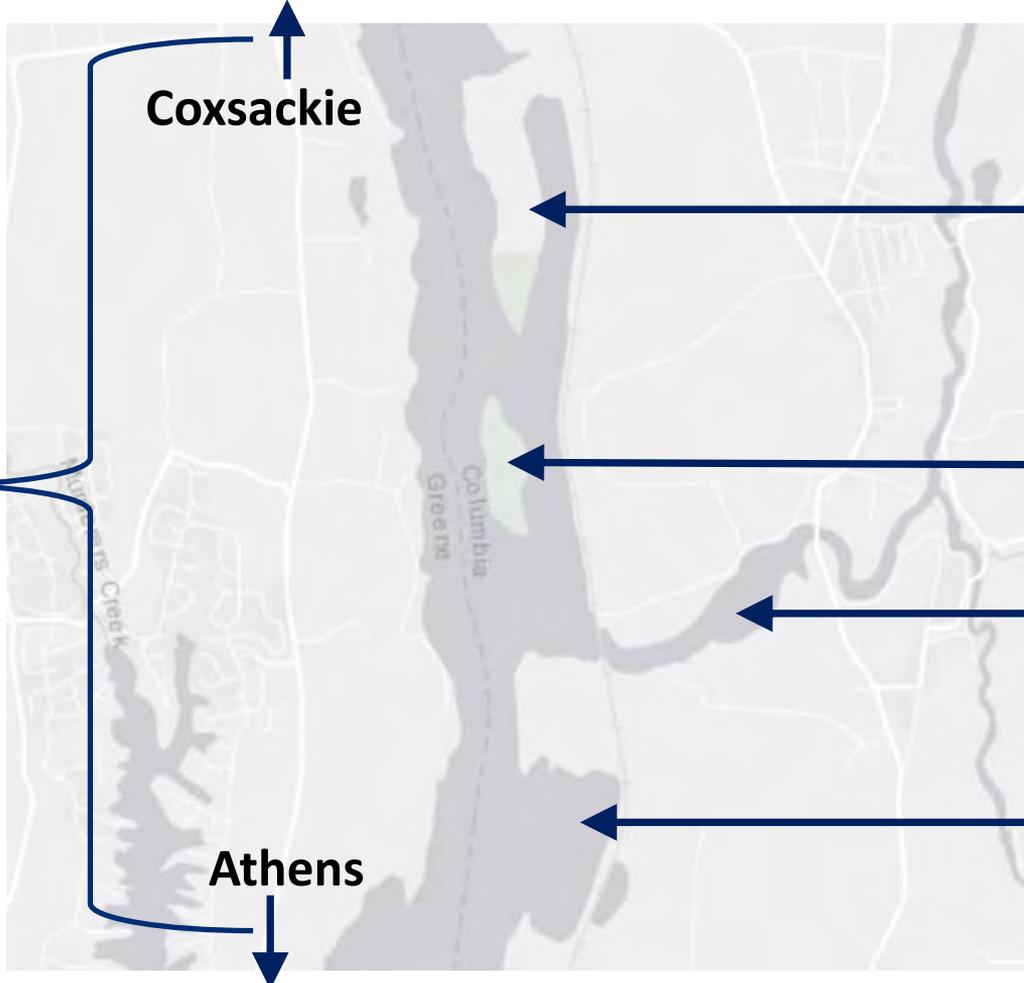
100 YEARS OF SCIENCE



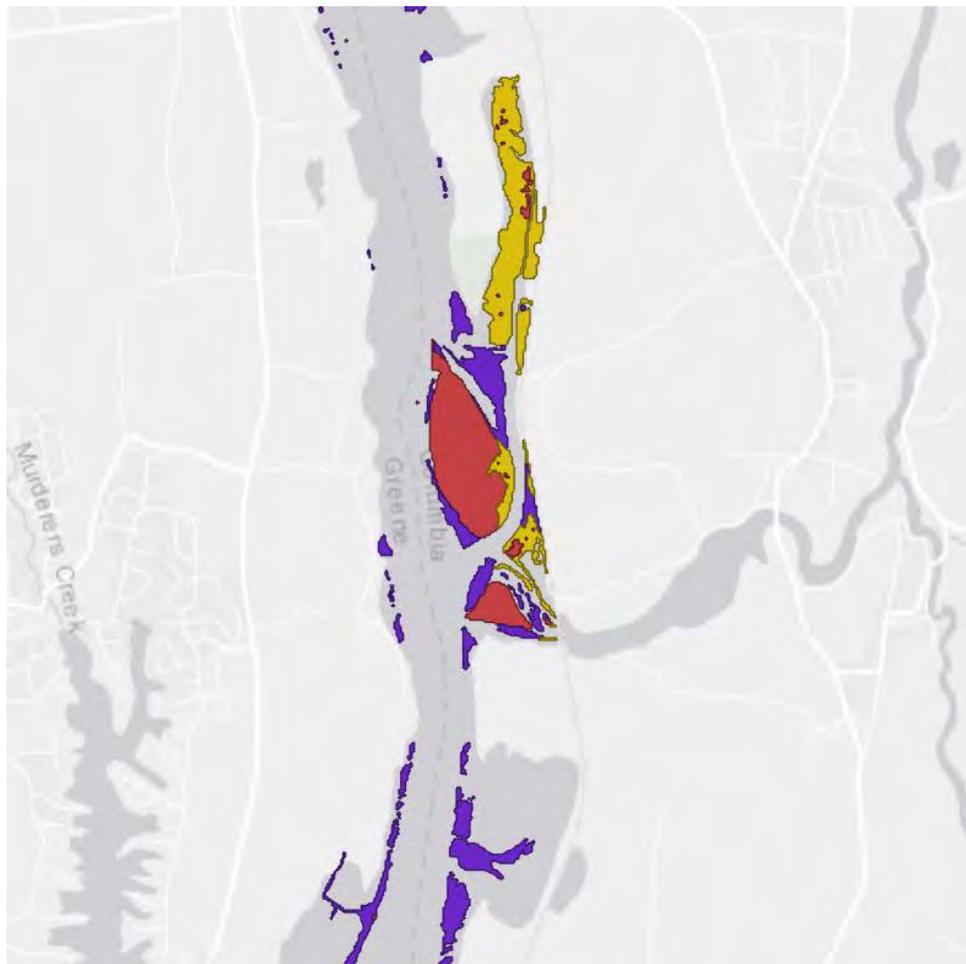
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**Stockport Flats
SAV Maps**

~3.5 miles



Stockport Flats SAV Maps 1997



Legend

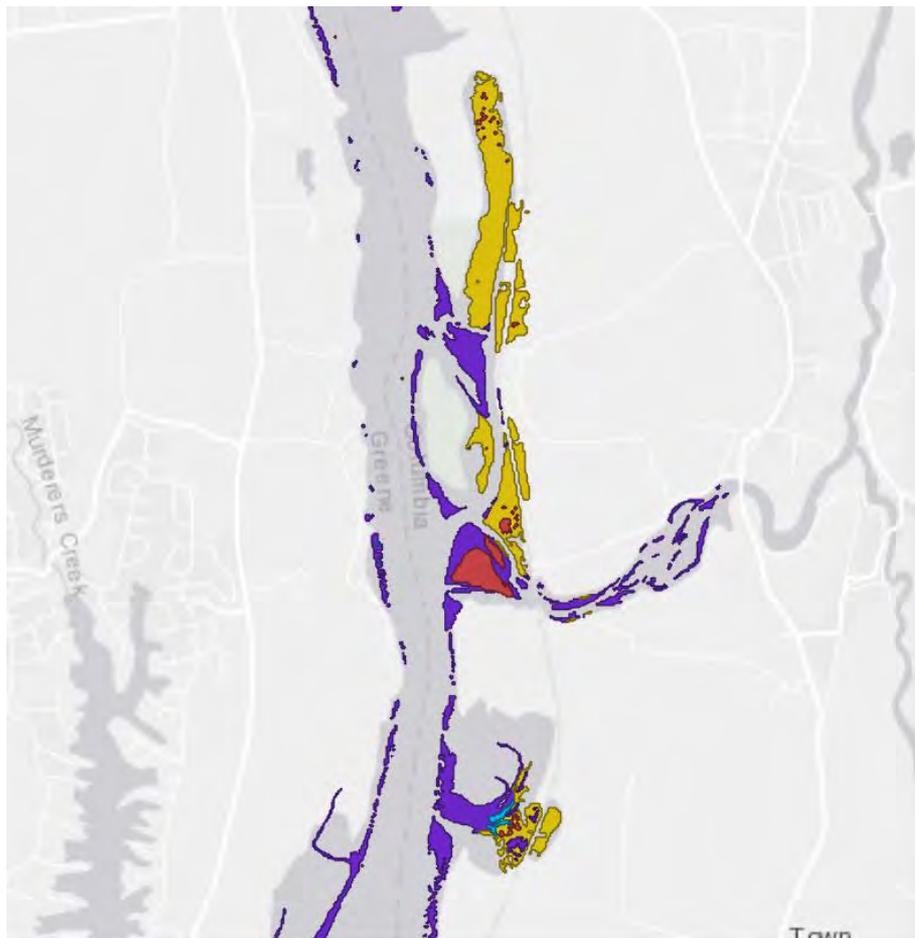
-  SAV – *Vallisneria americana*
-  Water Chestnut – *Trapa natans*
-  Upland



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Stockport Flats SAV Maps

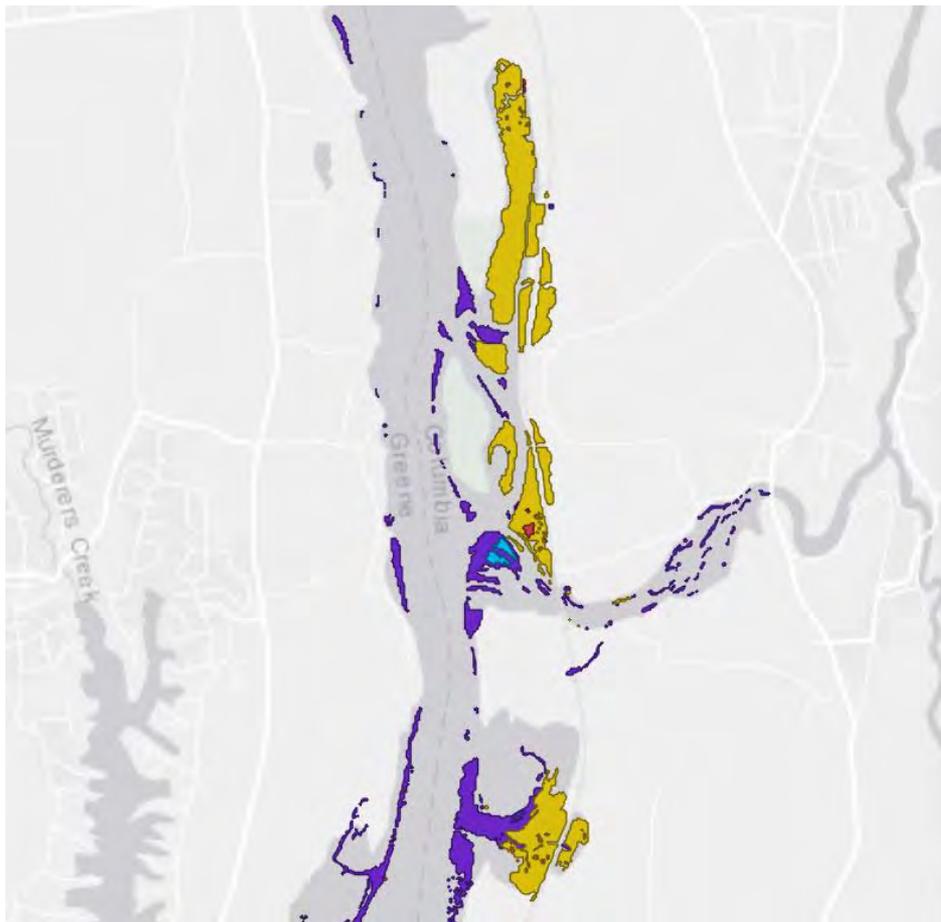
2002



Legend

-  SAV – *Vallisneria americana*
-  Water Chestnut – *Trapa natans*
-  Upland
-  Open water

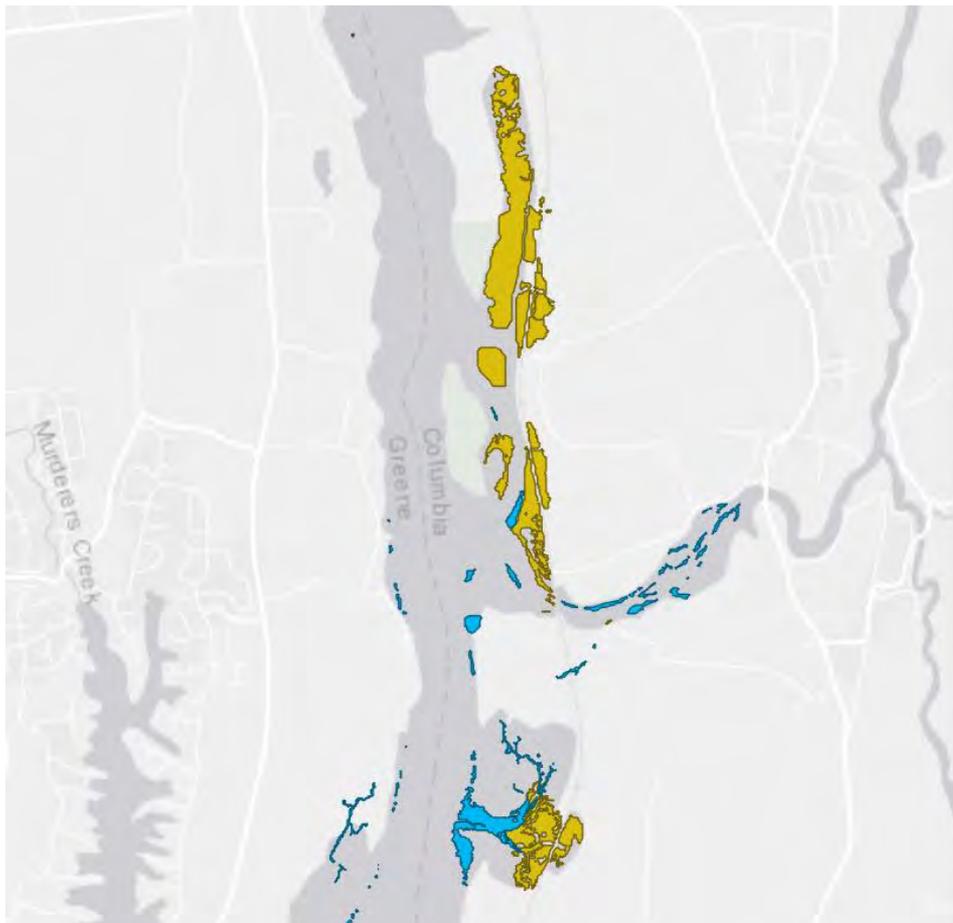
Stockport Flats SAV Maps 2007



Legend

- SAV – *Vallisneria americana*
- Water Chestnut – *Trapa natans*
- Upland
- Open water

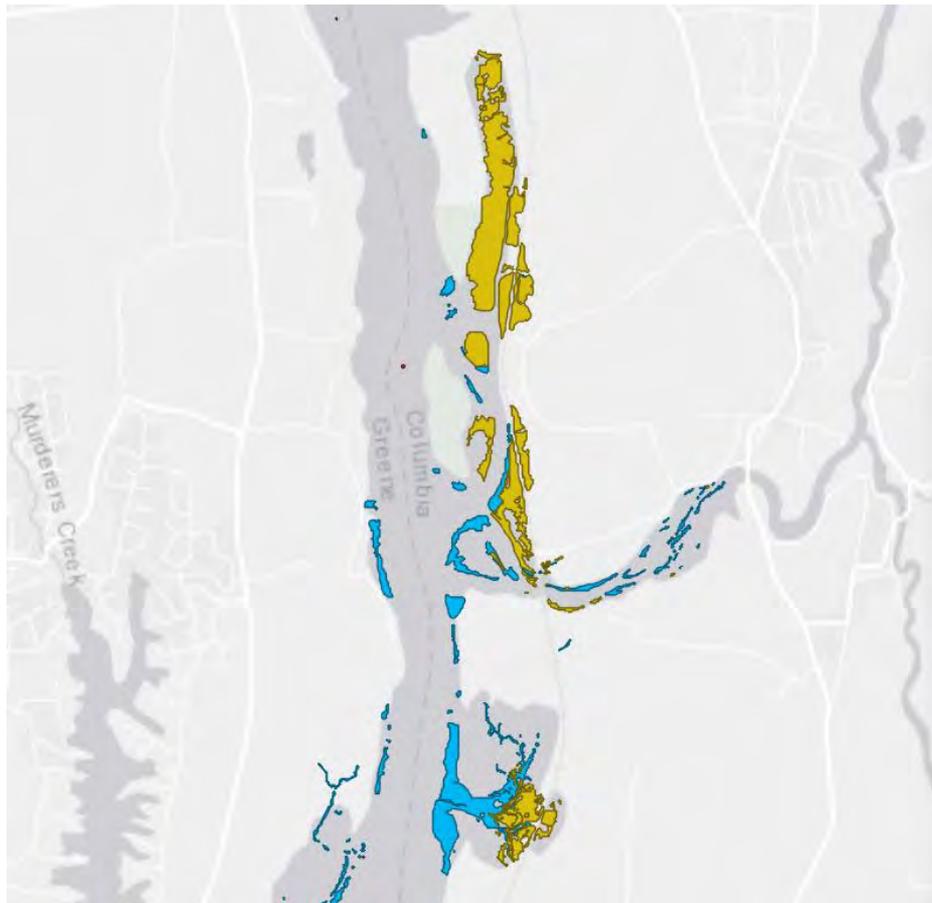
Stockport Flats SAV Maps 2014



Legend

- SAV – *Vallisneria americana*
- Water Chestnut – *Trapa natans*

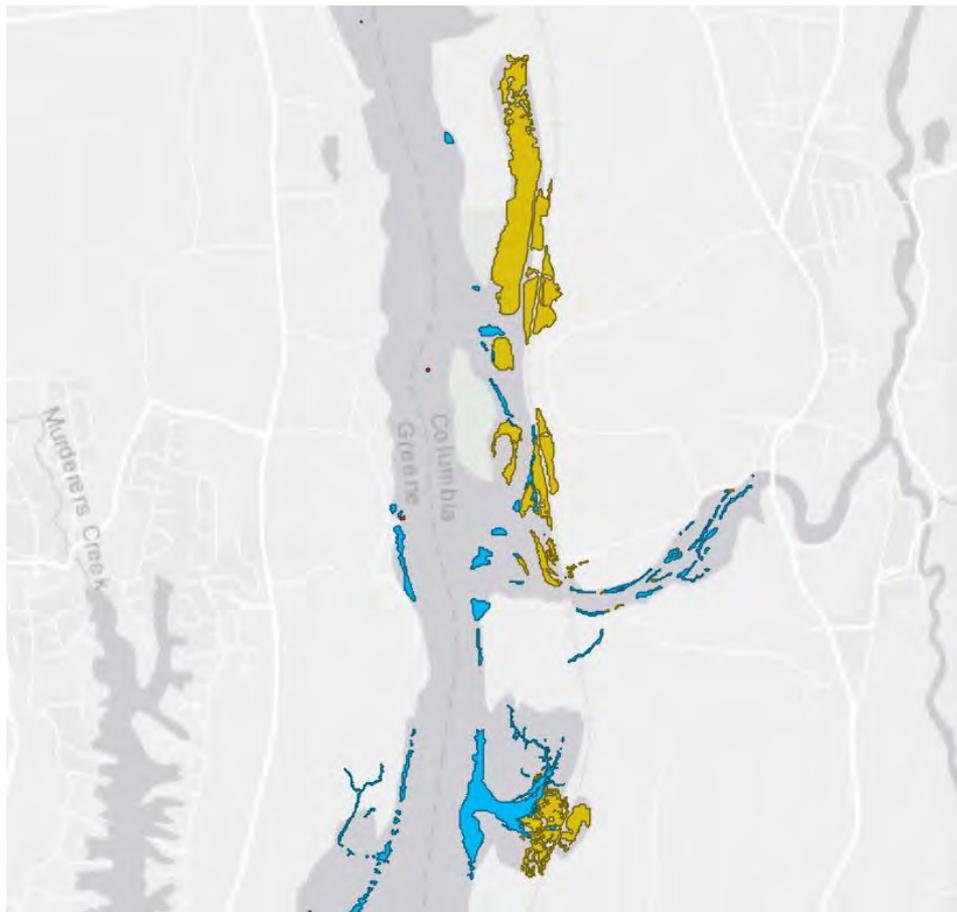
Stockport Flats SAV Maps 2016



Legend

-  SAV – *Vallisneria americana*
-  Water Chestnut – *Trapa natans*

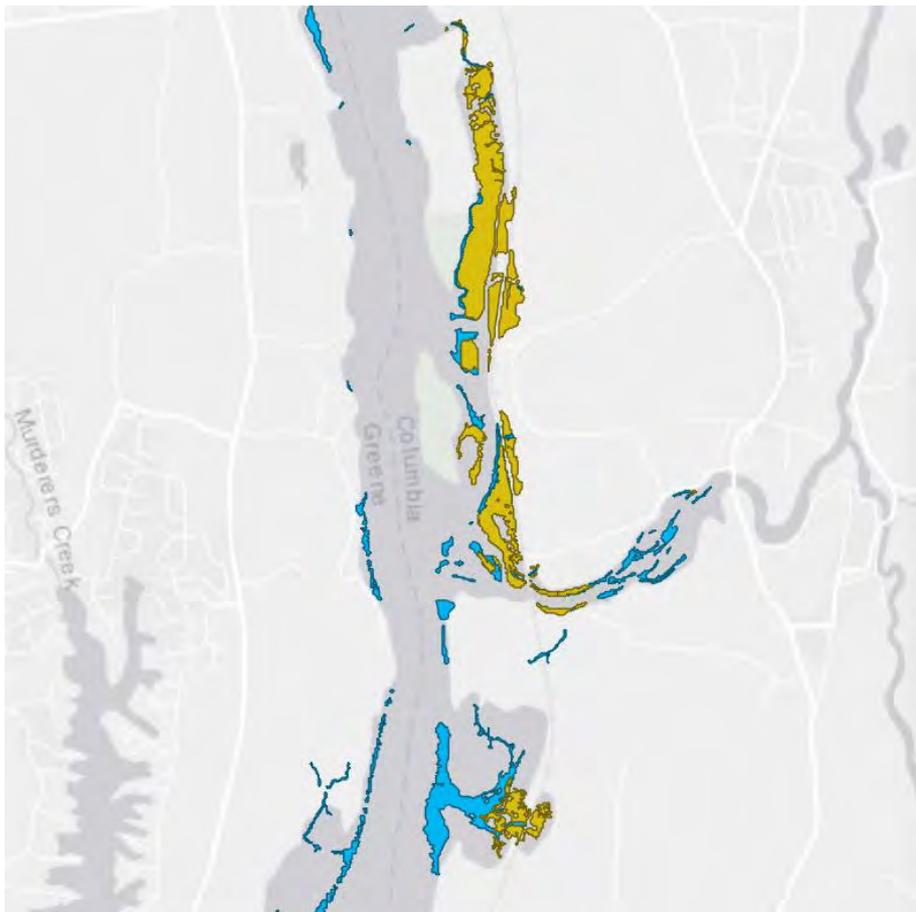
Stockport Flats SAV Maps 2018



Legend

- SAV – *Vallisneria americana*
- Water Chestnut – *Trapa natans*

Stockport Flats SAV Maps 2022



Legend

- SAV – *Vallisneria americana*
- Water Chestnut – *Trapa natans*

Stockport Flats SAV Maps

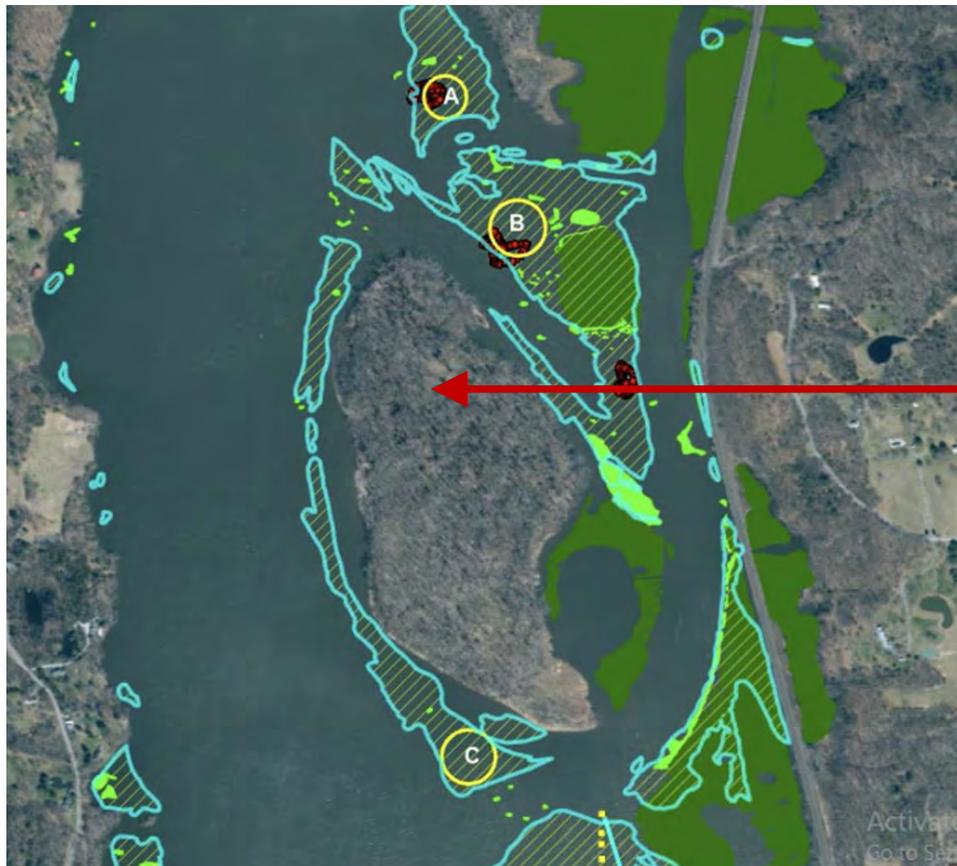
Documented SAV Layer



Legend
● SAV – *Vallisneria americana*

**Stockport
Middle Ground**

Stockport Flats: SAV Planting Study



Site selection rationale

- Where SAV has grown before
- Where there was no natural SAV in 2022
- Where Trapa did not replace SAV in 2022

**Stockport
Middle Ground**

Legend

-  Field Sites
-  Documented SAV, not current
-  Current SAV
-  Current Water Chestnut

FACTORS FOR LOSS AND RESTORATION OF *VALLISNERIA AMERICANA* IN THE HUDSON RIVER - HERBIVORY AND DEPTH IN SEDIMENT

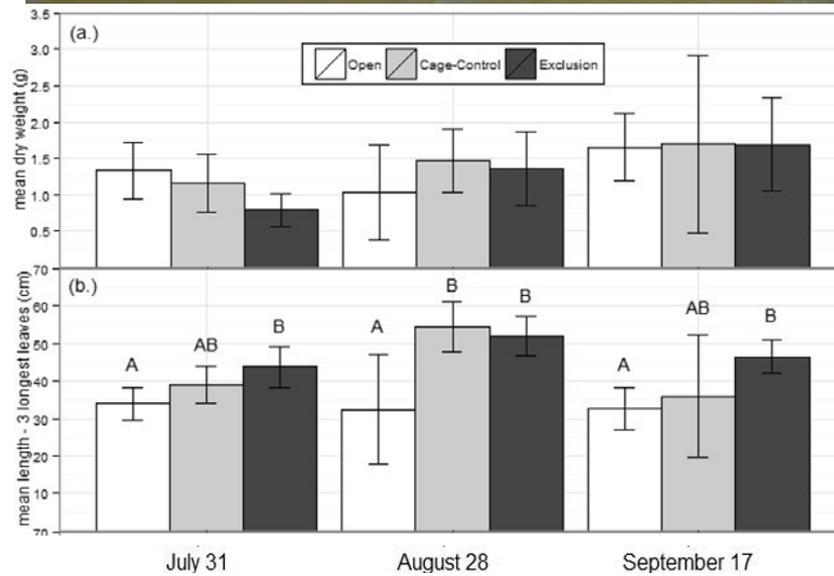
A Final Report of the **Tibor T. Polgar** Fellowship Program

L. Jonas Hamberg

Polgar Fellow
2015

Hamberg, J., K.E. Limburg, S.E.G. Findlay, and S. Diemont

Herbivory pressure was tested in the Hudson River using an exclusion cage experiment with controls. No significant difference in growth was found between treatments.



SAV Propagule Rearing



SAV Planting





~75% no growth

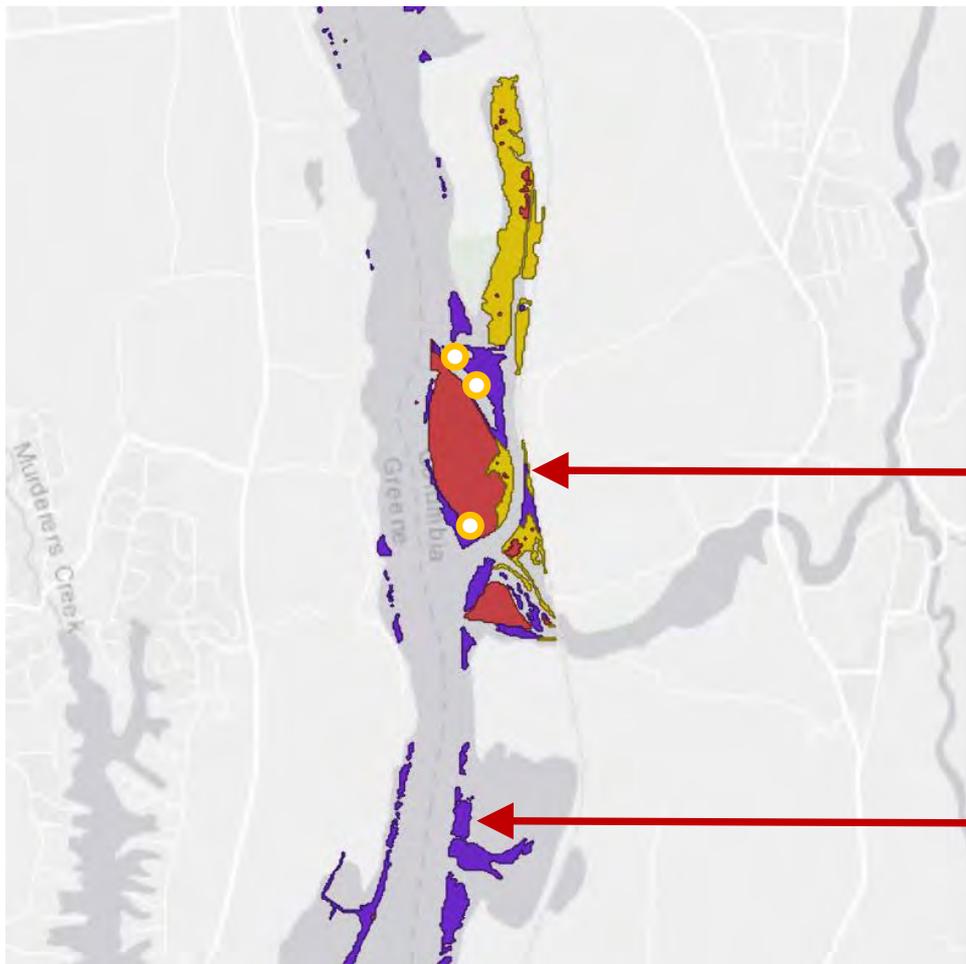


~25% sparse growth



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Stockport Flats SAV Maps 1997



Legend

- SAV – *Vallisneria americana*
- Water Chestnut – *Trapa natans*
- Upland
- Study Sites

**Stockport
Middle Ground**

2025 SAV

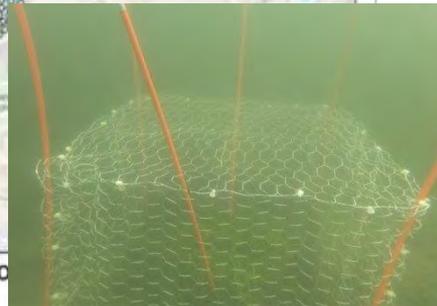
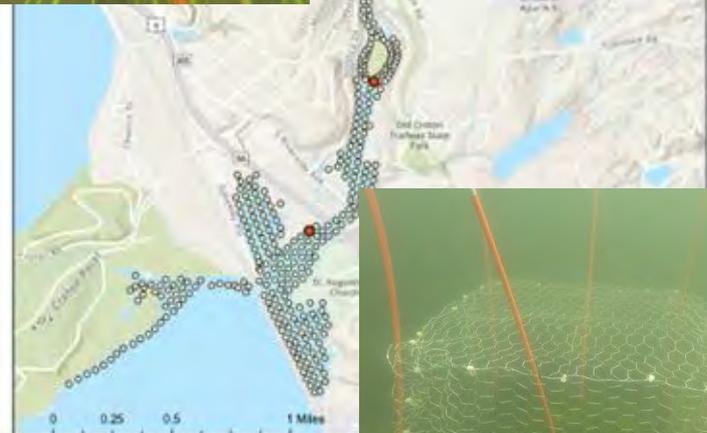
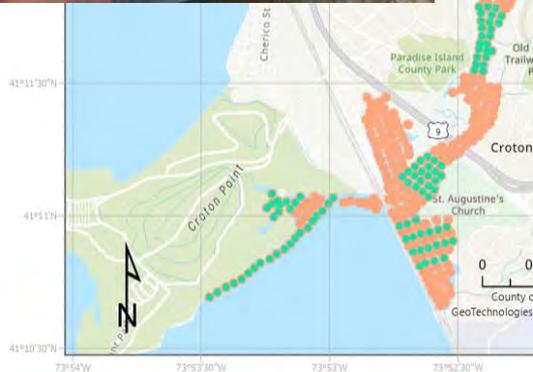
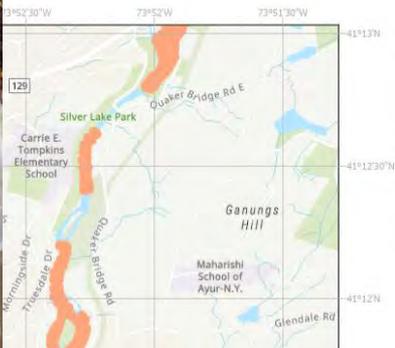


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Croton River Restoration

Restoration Methods 2023 + 2024



Legend

- Croton_River_restoration
- Croton_River_Survey

Plant Growth Method



Plant Growth Method

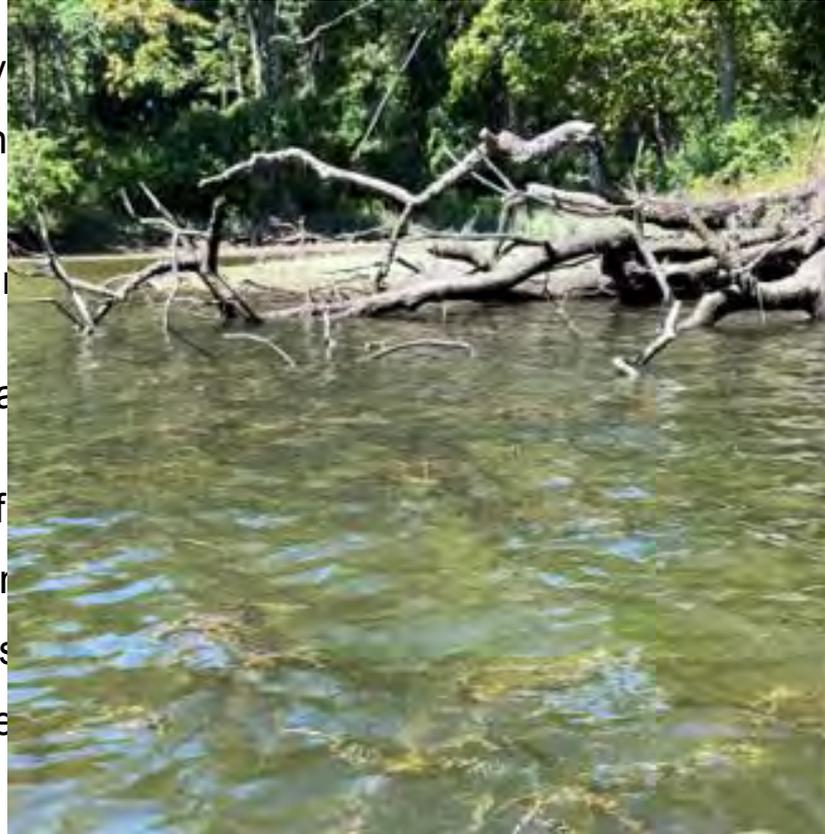


Key Takeaways from 2023+2024

- Areas of high sedimentation and turbidity reduce growth and regrowth
 - Plant in areas where you see other plants (away from mouth of bay)
- Tidal movement (changes in depth)
 - Restoration took place at low tide, finding the shallowest area that remained underwater all day.
- Other invasive species (milfoil, brittle naiad) are present and might compete with the newly planted plants.
 - Any invasive species are pulled from the area before planting
- Large herbivorous fish (carp) graze the limited ideal plants in the area
 - Herbivory cages were used and should be used for several seasons
- Searching for locations with plants present (native or invasive) signal a potentially good restoration location.

Key Takeaways from 2023+2024

- Areas of high sedimentation and turbidity
 - Plant in areas where you see other plants
- Tidal movement (changes in depth)
 - Restoration took place at low tide, first day.
- Other invasive species (milfoil, brittle naiad) were removed from the site
 - Any invasive species are pulled from the site
- Large herbivorous fish (carp) graze the littoral zone
 - Herbivory cages were used and successful
- Searching for locations with plants present is a good restoration location.



water all

wly

2025 Restoration Effort

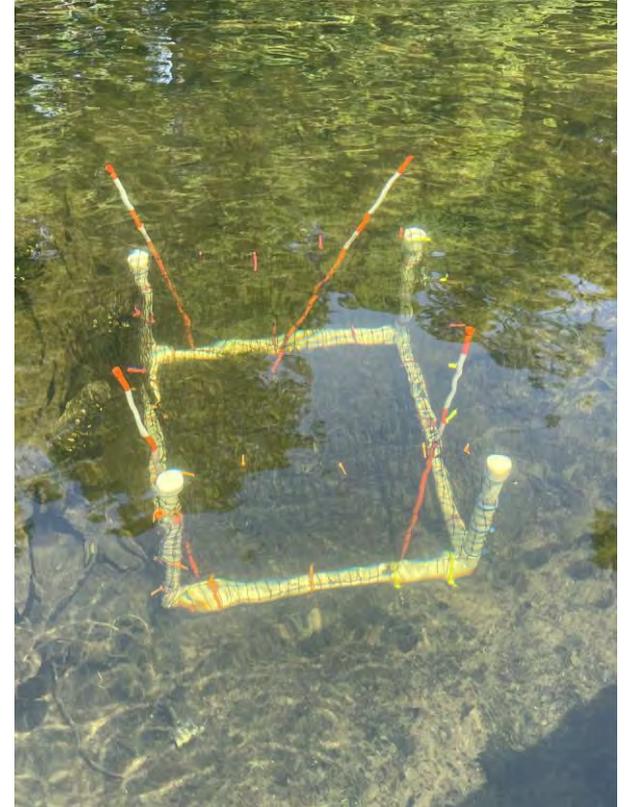
- Plants in river island area (exposed to low sedimentation) survived and came back in 2025, plants in lower river were buried by sediment and could not establish in 2025.



Restoration Methods 2025

Methods:

- Methods from 2024 were repeated with focus on areas of high potential success (areas of low sedimentation).
- In July, plants from 2024 were checked and new cage was installed
- In August, the plants were staked in the Croton and surrounded by a PVC and plastic cage to prevent herbivory.



Restoration Methods 2025

Methods:

- Empty "expansion cages" were placed close to each of the 3 plots to allow for protected expansion of native plants.

Results:

- Plants grew in the cages with plants added to them. No expansion was seen in the empty cages
- Invasive species also didn't grow in the empty cages.



Thanks!!

**Meghan Odell, Chris Donnellan, NYS DEC/WRI
Dr. Katia Englehardt, UMCES
Cary Institute of Ecosystem Sciences
Dr. Catherine McGlynn NYS DEC**



Questions?



Department of Environmental Conservation

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