Spring HGIT Meeting– April 25th, 2023

Chesapeake Bay Program

Submerged Aquatic Vegetation

Brooke Landry
Maryland DNR and
Chair, SAV Workgroup

Through the Chesapeake Bay Watershed Agreement*, the Chesapeake Bay Program has committed to…*

Goal: ***Vital Habitats***

Outcome:

Sustain and increase the habitat benefits of SAV in the Chesapeake Bay. Achieve and sustain the ultimate outcome of 185,000 acres of SAV Bay-wide necessary for a restored Bay. Progress toward this ultimate outcome will be measured against a target of 90,000 acres by 2017 and 130,000 acres by 2025.

What is our Progress?
(no update since Nov. meeting – 2022 #s aren't out yet)

Chesapeake Bay SAV Abundance 1984-2021

67,470 acres of SAV in 2021

- 52% of the 2025 target of 130,000 acres
- 36% of the ultimate 185,000-acre goal

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The Submerged Aquatic Vegetation (SAV) Outcome is off course. Gains from 2020 to 2021 are positive, indicating an on-course trajectory, but these gains don't yet offset the recent major declines of underwater grasses observed in 2019. Additional years of positive trajectory will help clarify whether this recent gain in 2021 is the start of a new positive trend toward higher levels of SAV across the Bay, but it is unlikely that the 2025 goal of 130,000 acres will be reached.

https://www.chesapeakeprogress.com/abundant-life/sav

Note: All four Salinity Zones increased from 2020-2021.

What is our Progress?
(no update since Nov. meeting – 2022 #s aren't out yet)

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- 52% of the 2025 target of 130,000 acres
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BUT Wait! There's more!

Although only 28% of the Bay is fully mapped for 2022, there appears to be an Increase in All Four Salinity Zones.
(this could, of course, change as more mapping progress is made, but for now, we maintain hope….)

Chesapeake Bay SAV Abundance 1984-2021

	Complete	Change
Tidal Fresh Zone	8%	+6%
Oligohaline Zone	25%	+5%
Mesohaline Zone	33%	+22%
Polyhaline Zone	46%	+29%
Chesapeake Bay	28%	+21%

In terms of projects….

2023 GIT-Funded Project Lead: SAV Workgroup

Protecting Chesapeake Bay SAV Given Changing Hydrologic Conditions: Priority SAV Area Identification and Solutions Development

Project Objective

This project will identify high-priority SAV areas within the Chesapeake Bay Watershed and determine which BMPs could be most effective in protecting those areas from loss during high-flow events/years using GIS spatial analysis/modeling and existing SAV, flow, land-use, and water quality data. With this information, steps can be taken to target high-priority SAV areas for implementation of BMPs and land management policies that will protect or restore those priority SAV habitats.

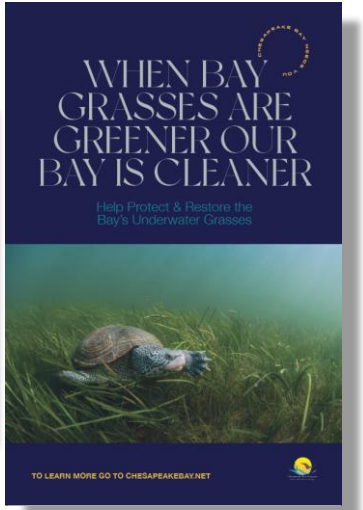
https://cbtrust.org/grants/git/ Scope of Work #11

2023 GIT-Funded Project Lead: Comms Workgroup

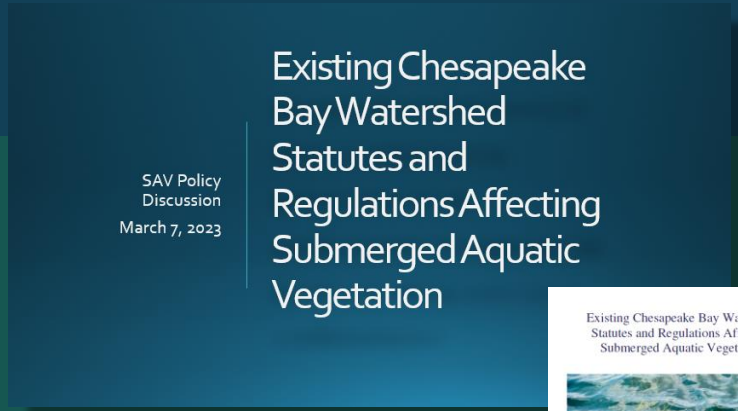
Advancing Social Marketing Through Two Pilot Programs

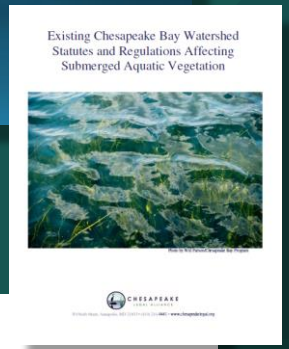
Proposed Project Outcomes
This project will develop pilot programs for two existing community-based social marketing (CBSM) campaigns that have been previously developed (2018 GIT funding, completed 2020…)

Behavior Change Training and SAV Pilot Implementation sought to understand how shoreline property owners perceive and make decisions about SAV adjacent to their property. Background research was completed, including a survey of shoreline property owners and a literature review. The research determined that the behavior to focus on was to encourage homeowners not to disturb their SAV. Marketing materials were developed but the project did not include a strategy for implementation.



SAV Regulatory Review Meeting – Workplan Action 2.1a – March 7th, 2023





03/07/2023 – SAV POLICY MEETING

MEETING: SAV Policy Meeting
DATE/TIME: 03/07/2023, 1:00pm ET
PARTICIPANTS (17): **Dede Lawal** (CRC), **Katlyn Fuentes** (CRC), **Chris Guy** (USFWS), **Gina Hunt** (MDNR), **Becky Golden** (MDNR), **Brooke Landry** (MDNR), **Robbie Callahan** (USFWS), **Jen Dietzen** (DC DOEE), **Tish Roberston** (VA DEQ), **Rese Cloyd** (DC Fish & Wildlife), **Heather Nelson** (MDE), **Sean Corson** (NOAA), **Matthew Jones** (DE), **Dave Goshorn** (MDNR), **Chris Spaur** (USACE), **Mark Hoffman** (Chesapeake Bay Commission), **Rachel Peabody** (VMRC)

Meeting Objectives:

- Gather state and agency representatives that work in the policy and regulatory realm to discuss report recommendations.
- Review report and recommendations.
- Determine which recommendations are feasible and should be pursued, if any.
- Schedule follow-up meeting.

Meeting Overview:

Several topics were flagged for further discussion, including:

- SAV definition consensus
- Maintenance dredging policy review
- Beneficial use guidelines

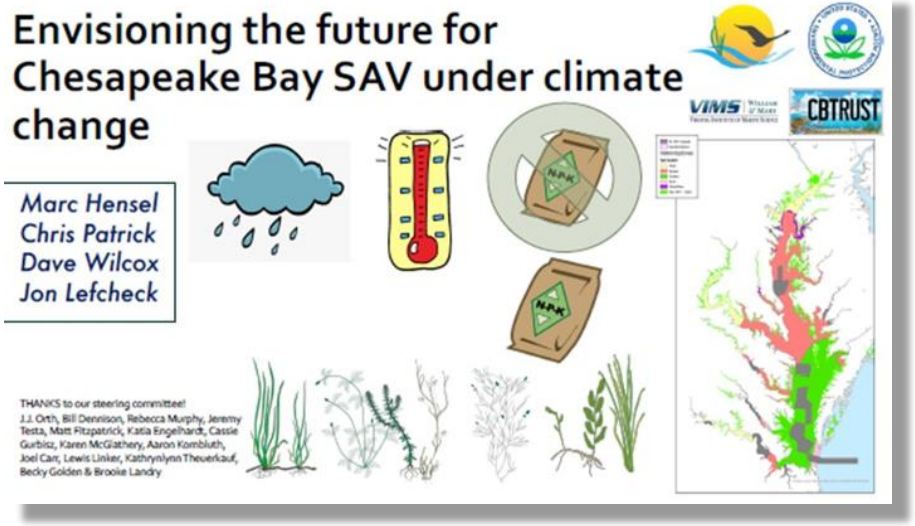
2017 GIT Funding; Completed 2019

https://www.chesapeakebay.net/who/group/submerged-aquatic-vegetation-workgroup

2021 GIT-Funded Project

Modeling Climate Impacts on SAV in Chesapeake Bay

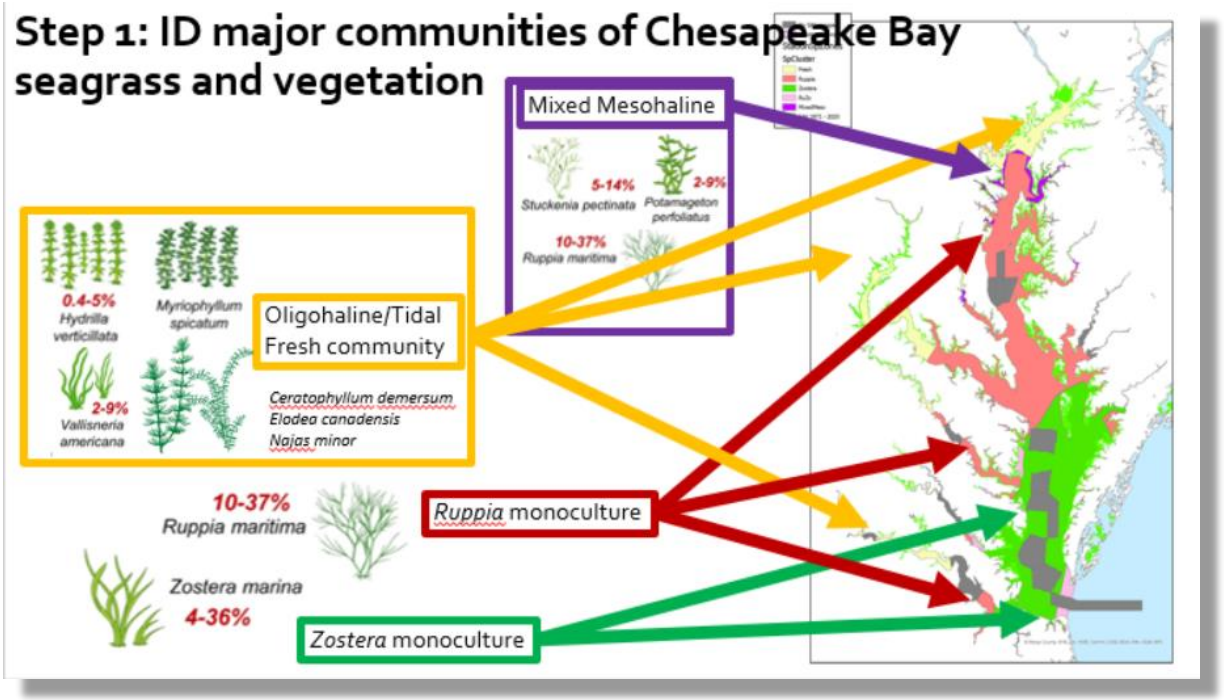
- STAR/SAV Workgroup Collaboration
- Contracted to VIMS (Chris Patrick's team is lead) with sub-contract to Jon Lefcheck at SERC.



This project addressed the role of climate stressors on Chesapeake Bay SAV, including warming temperatures, rising sea levels, and increased runoff driven by greater precipitation and more frequent, intense storm activity.

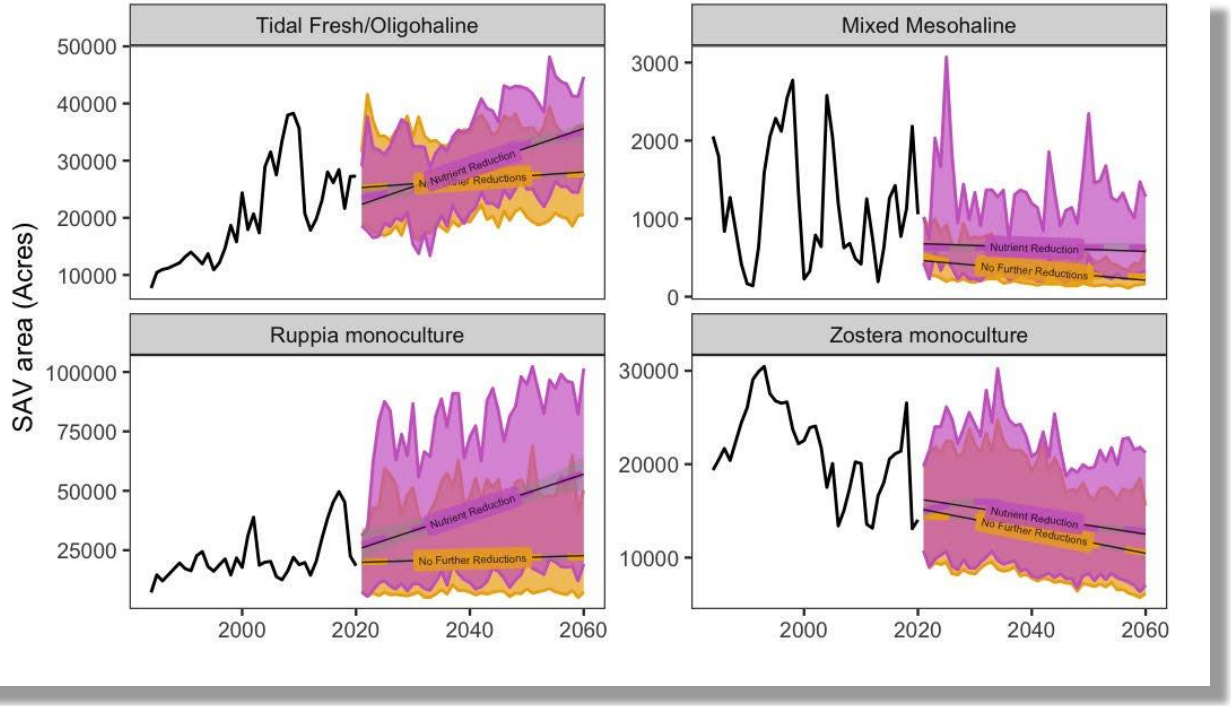
Modeling Climate Impacts on SAV in Chesapeake Bay

For analytical purposes, the project team identified FOUR communities that are somewhat different than the three communities described earlier.



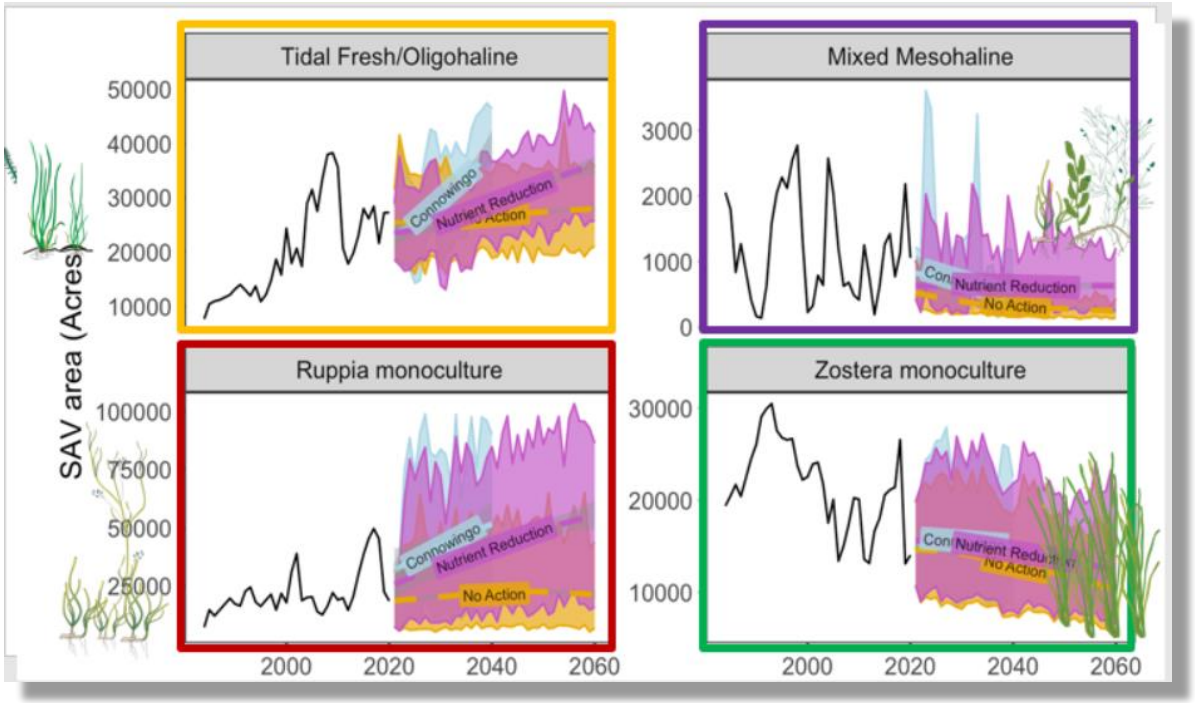
Modeling Climate Impacts on SAV in Chesapeake Bay

New dominants respond most positively to nutrient reductions! And not only that, but the effect of Nutrient Reductions will non-linearly benefit SAV as temperatures rise!



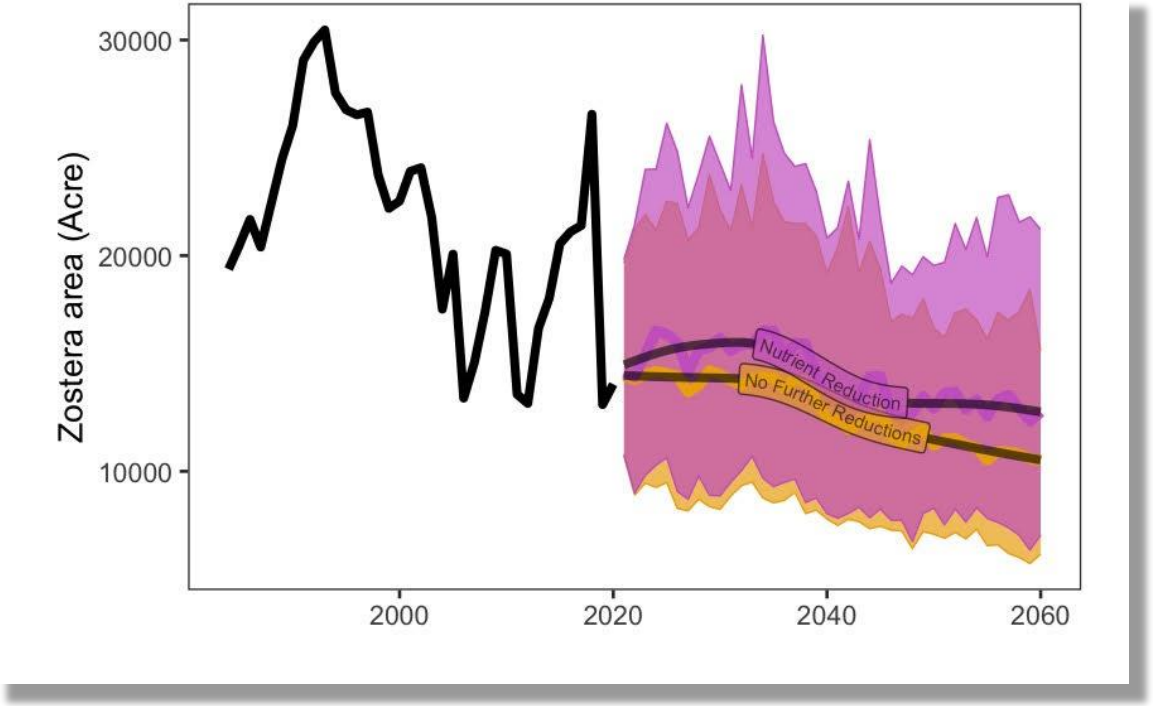
Modeling Climate Impacts on SAV in Chesapeake Bay

Conowingo infill scenario (increased nutrient reductions) leads to greater SAV expansion faster!



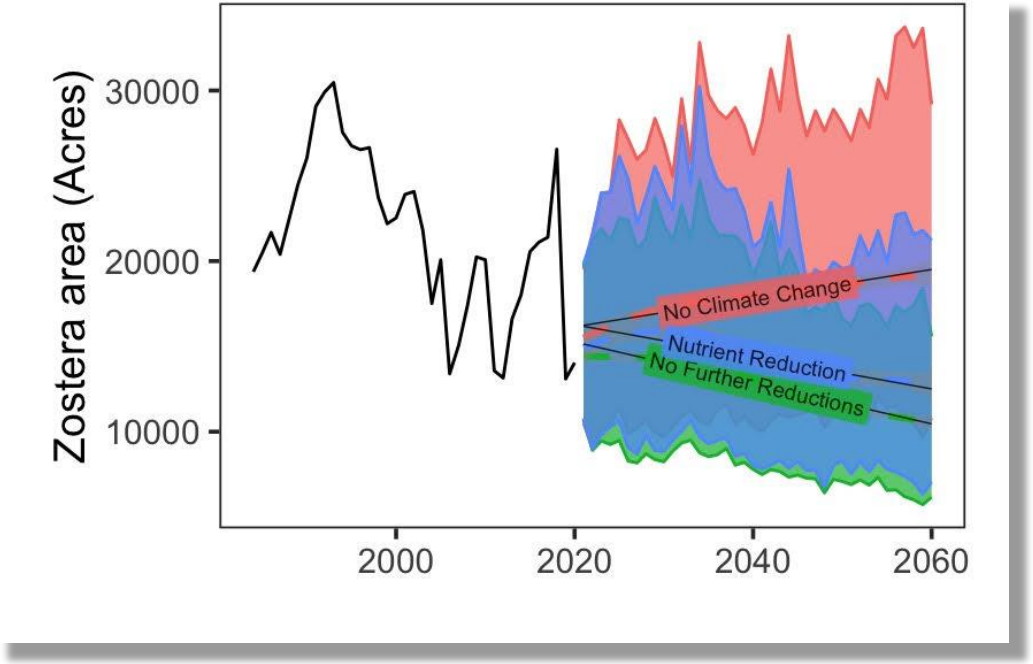
Modeling Climate Impacts on SAV in Chesapeake Bay

With climate change, unless novel restoration techniques are discovered and employed, the future of *Zostera* in Chesapeake Bay appears to be bleak.



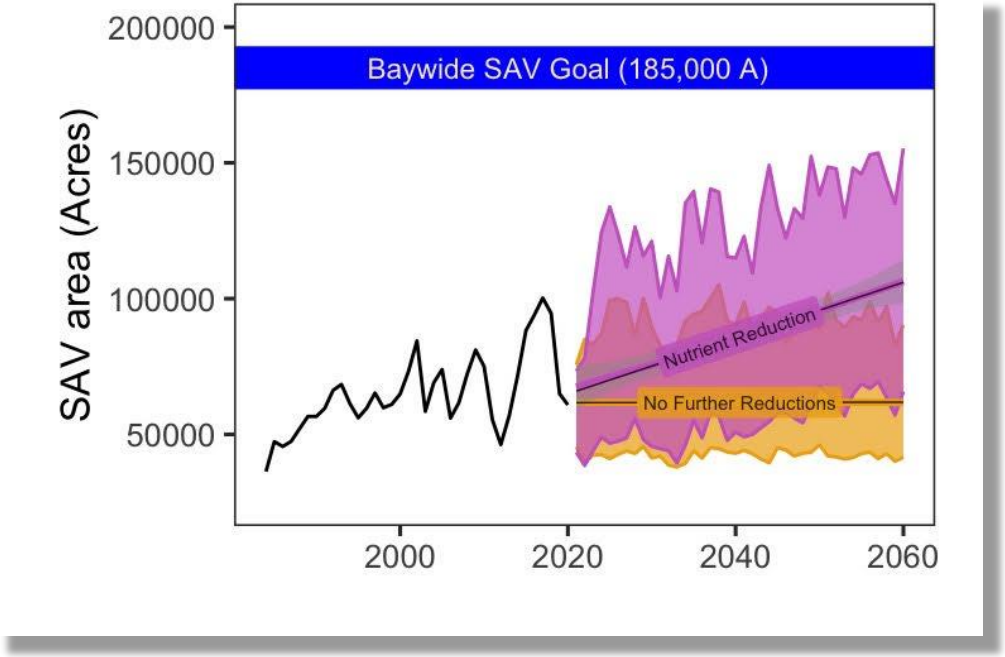
Modeling Climate Impacts on SAV in Chesapeake Bay

A miraculous end to climate change could theoretically save *Zostera*.



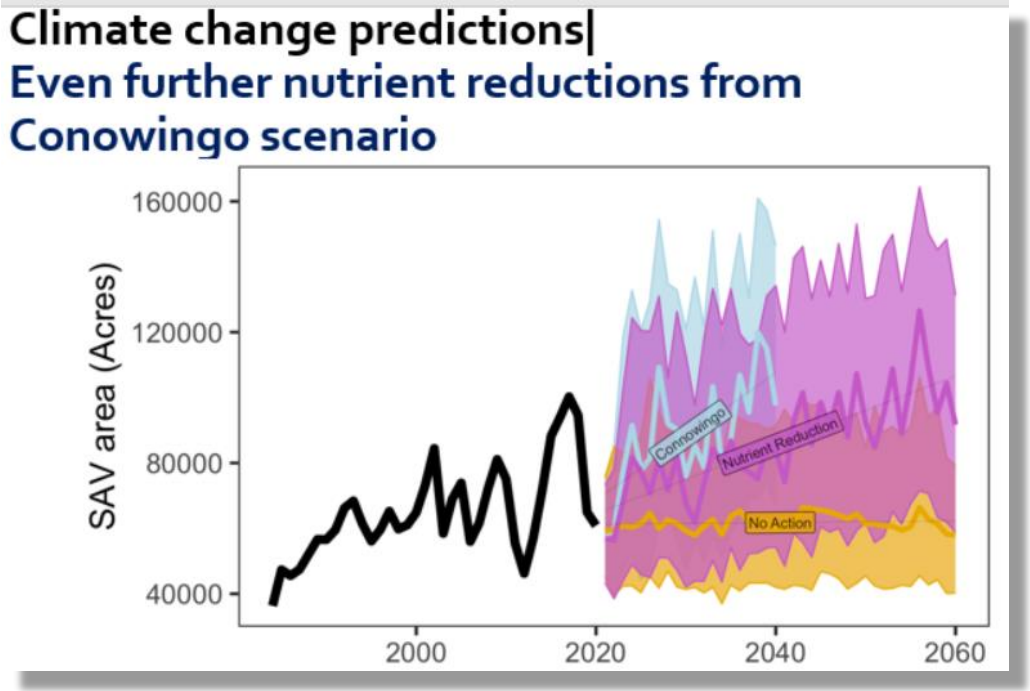
Modeling Climate Impacts on SAV in Chesapeake Bay

Continued nutrient reductions will mitigate climate impacts, but not to the extent we reach our restoration targets for a very, very long time.



Modeling Climate Impacts on SAV in Chesapeake Bay

If we increase our nutrient reductions, however, we could accelerate our SAV recovery.



Modeling Climate Impacts on SAV in Chesapeake Bay

- Temperature increases will widen the shift in dominant species, and management must adjust accordingly.

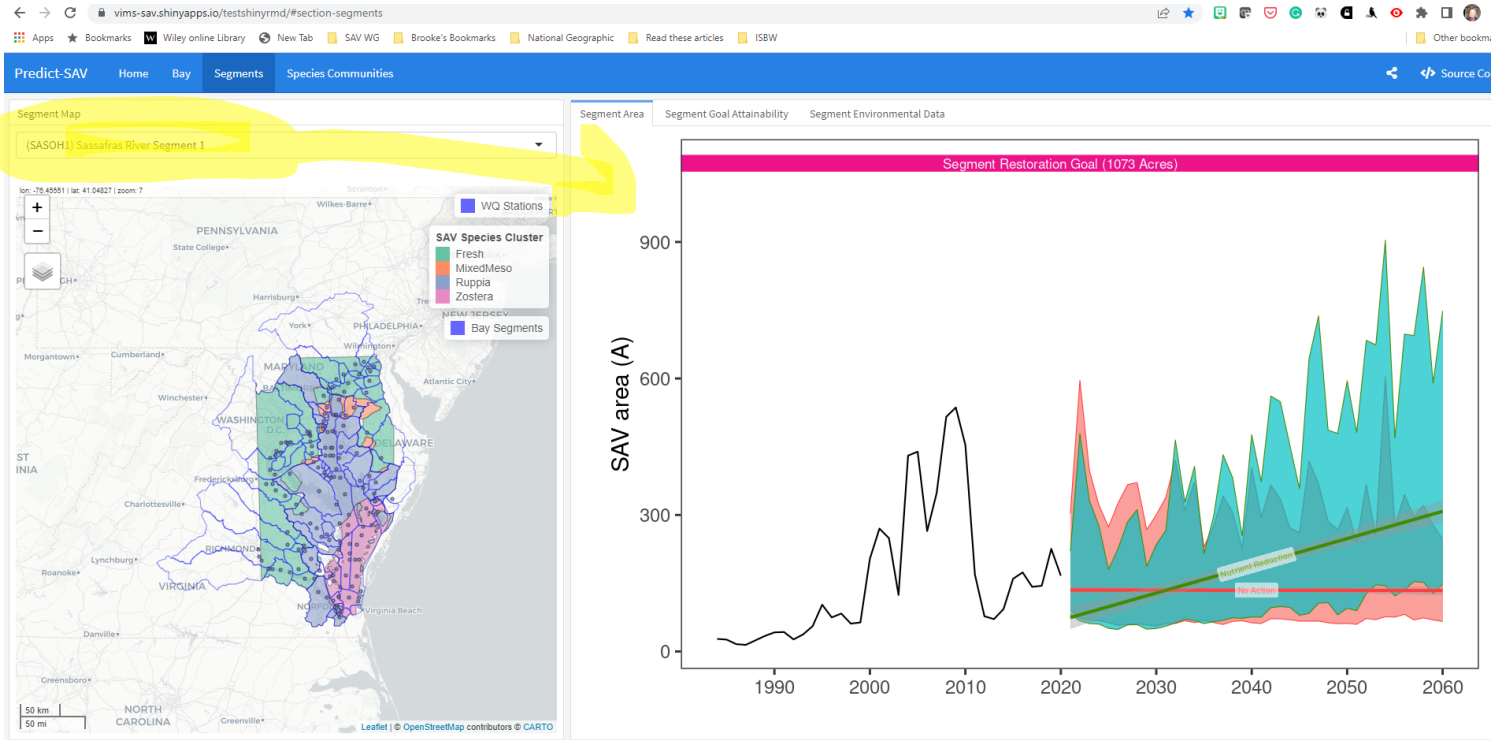
- Nutrient reductions in the tidal fresh/oligohaline & *Ruppia* zones are essential, especially because these new dominants respond well to nutrient management

- Local/regional actions offset and prevent the effects of global climate change (!!)

Modeling Climate Impacts on SAV in Chesapeake Bay

Predicting Chesapeake Bay Shiny App

https://vims-sav.shinyapps.io/testshinyrmd/#section-segments



Questions?