Chesapeake Bay Program
Submerged Aquatic Vegetation Workgroup

2021 Annual Meeting

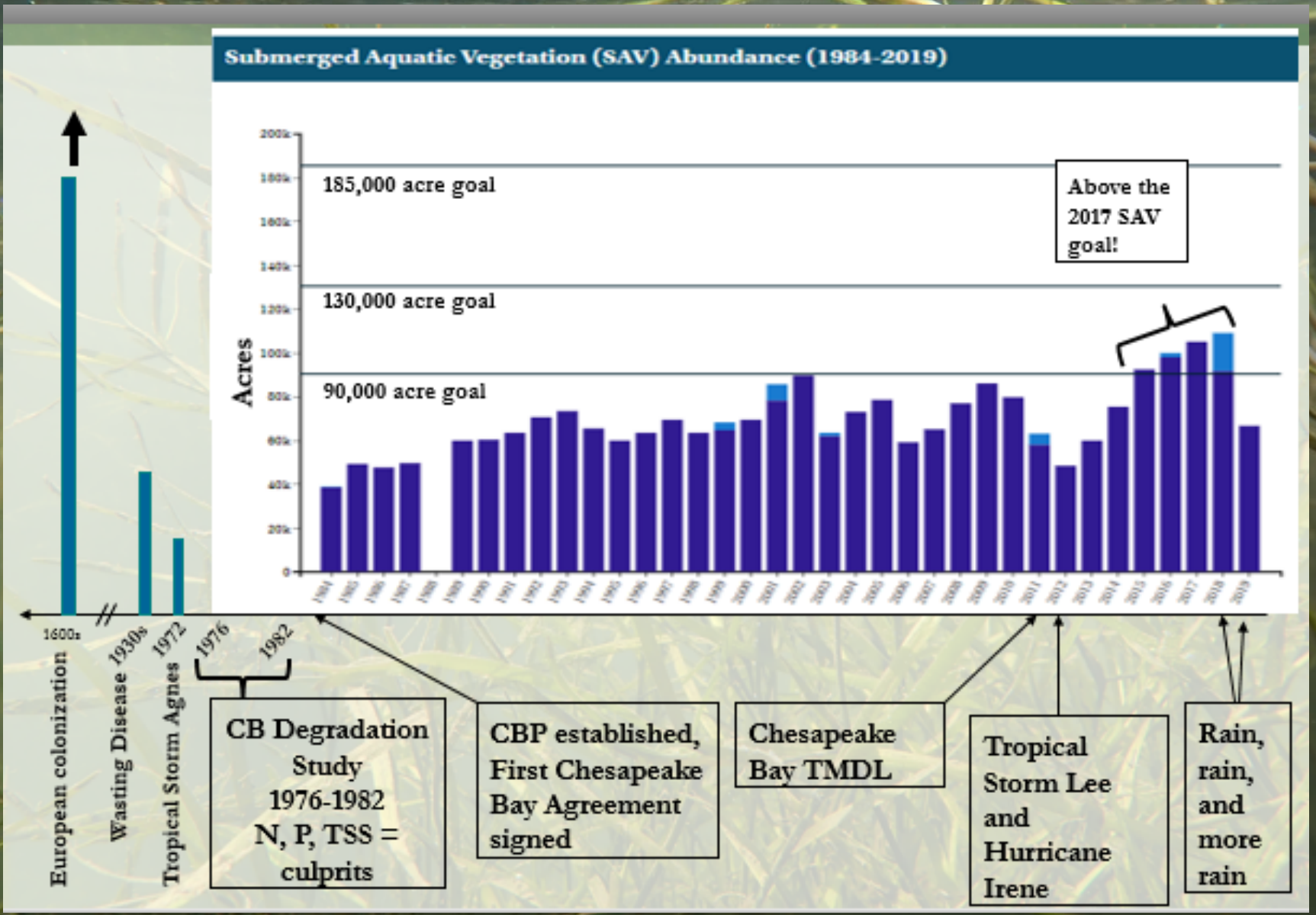
Virtual Meeting Space Only

February 17th, 2021

Note: This meeting will be recorded for internal use to ensure the accuracy of meeting notes.
The recording will not be posted online.

Chesapeake Bay Program
Science. Restoration. Partnership.

2019 SAV#s



66,387 acres of SAV were mapped in 2019 (#s still preliminary)

-This is 51% of the CBP's 2025 restoration target of 130,000 acres and 36% of the partnership's 185,000-acre goal.

-Although the 66,387 acres mapped in 2019 is a 70% increase from the 38,958 acres observed during the first survey in 1984, it is a 17% decrease from the preceding 10-year average of 79,738 acres and a 38% decrease from 2018 when it was estimated that the Bay may have supported up to 108,078 acres of underwater grasses.

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

Chesapeake Bay SAV Watchers

Participating Partners:

ShoreRivers

Havre de Grace Maritime Museum Environmental Center

Severn River Association

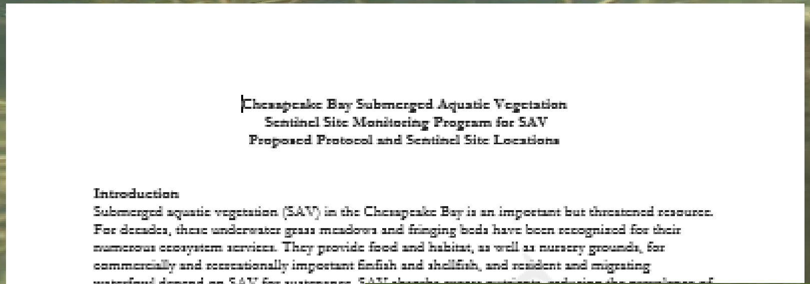
Arundel Rivers Federation

Chesapeake Bay SAV Watchers is a program to provide volunteer scientists with an engaging and educational experience with SAV while also generating useful data for Bay scientists and managers. This is the first official SAV monitoring program for volunteer scientists developed by the Chesapeake Bay Program. 2017/2018 GIT-Funded Project contracted to IAN/UMCES.

www.chesapeakebaysavwatchers.com

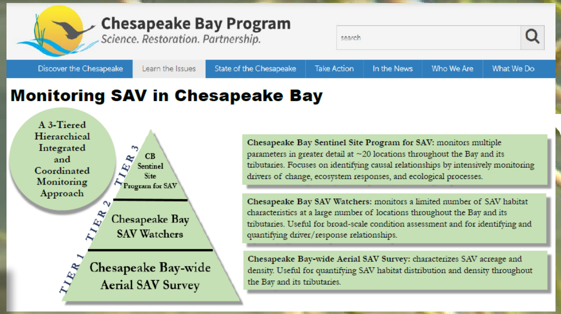
Chesapeake Bay SAV Sentinel Site Program

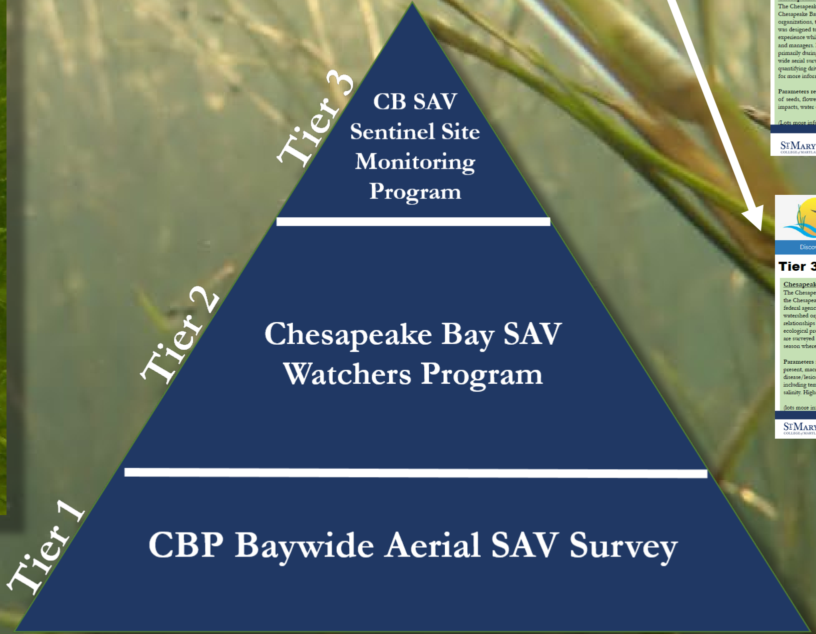
SAV Sentinel Site Program Implementation (summer 2021)


Chesapeake Bay Submerged Aquatic Vegetation
Sentinel Site Monitoring Program for SAV
Proposed Protocol and Sentinel Site Locations

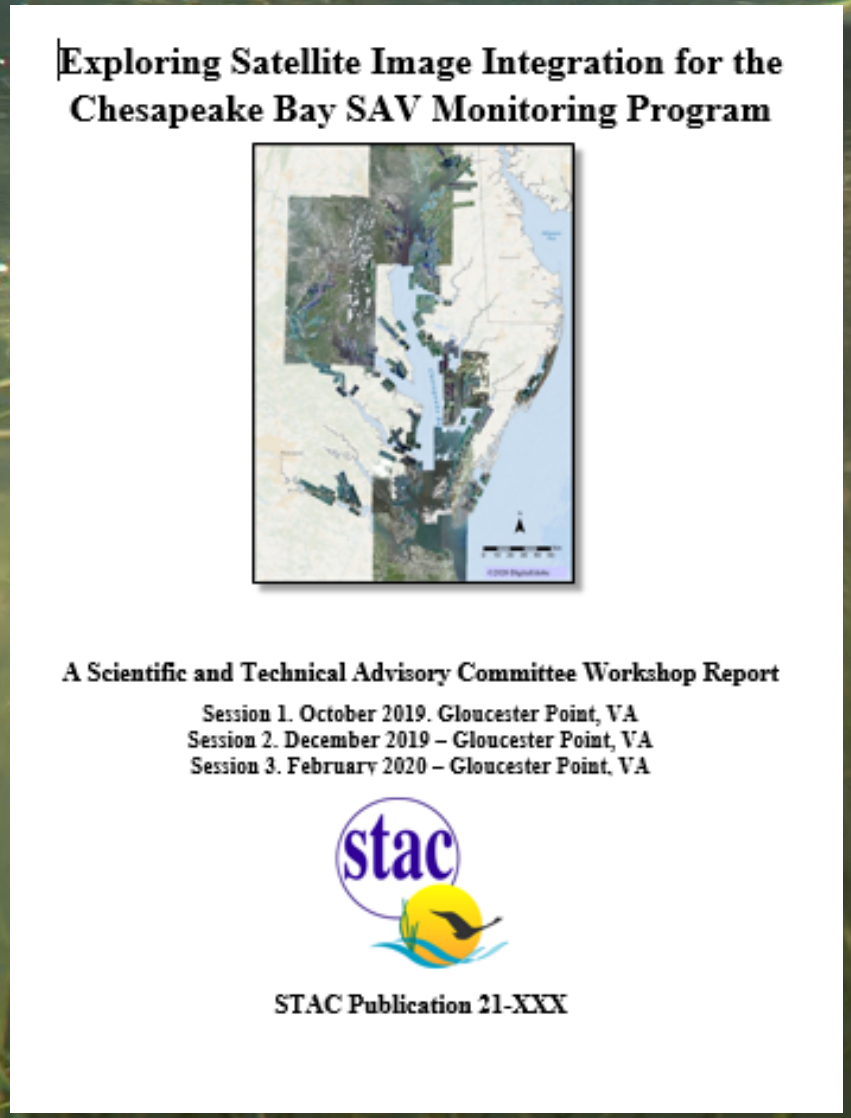
Introduction
Submerged aquatic vegetation (SAV) in the Chesapeake Bay is an important but threatened resource. For decades, these underwater grass meadows and fringing beds have been recognized for their numerous ecosystem services. They provide food and habitat, as well as nursery grounds, for commercially and recreationally important finfish and shellfish, and resident and migrating waterfowl depend on SAV for sustenance.

Project to develop SAV Monitoring Program web pages for the CBP website (EPA Innovation grant funding, contracted to TetraTech/Bob Murphy).





STAC Satellite and SAV Workshop



Results:

Via the NextView License Agreement, federal agencies and their partners can access and task NGA for high resolution satellite imagery. The imagery, if acquired and if obtained during optimal conditions, is comparable to aerial photography and can be used for hand delineation of CB SAV beds. AI will eventually automate the process, but significantly more data and algorithm development is necessary.

Final recommendations:

- **Full-Bay Tasking Exercise**
- **Calibration Exercise**
- **Reconvene to determine final recommendations based on above**
- **Continue SAV detection algorithm development and associated biological data collection**

Report under review in STAC, will be presented at STAC Quarterly meeting in March. 2019/2020 STAC Workshop funding.

Community Based Social Marketing Project

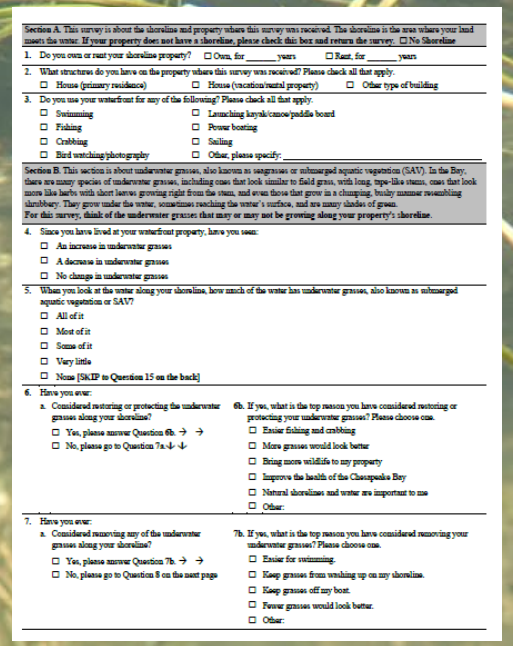
Survey Results – Submerged Aquatic Vegetation: Barriers and Benefits

Chesapeake Bay Program

action RESEARCH

3630 Ocean Ranch Boulevard
Oceanside, CA 92056
40 Exchange Place, Suite 1403
New York, NY 10005

Submitted: Nov 30, 2020

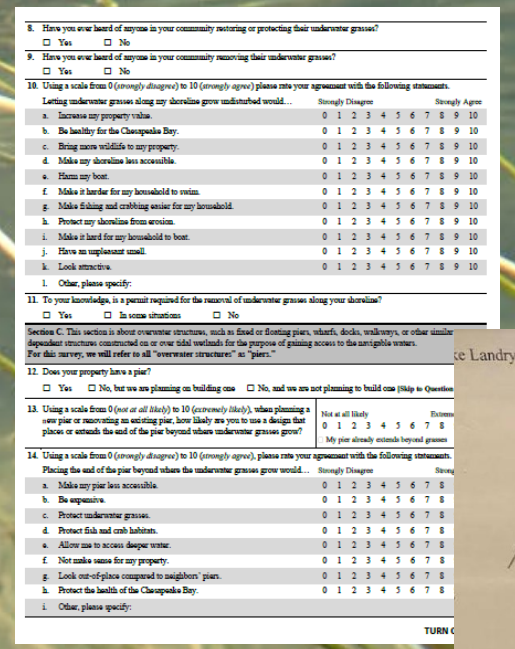


Section A. This survey is about the shoreline and property where this survey was received. The shoreline is the area where your land meets the water. If your property does not have a shoreline, please check this box and return the survey. ☐ No Shoreline

1. Do you own or rent your shoreline property? ☐ Own, for _____ years ☐ Rent, for _____ years
2. What structures do you have on the property where this survey was received? Please check all that apply.
   ☐ House (primary residence) ☐ House (vacation/rental property) ☐ Other type of building
3. Do you use your waterfront for any of the following? Please check all that apply.
   ☐ Swimming ☐ Launching kayak/canoe/paddle board
   ☐ Fishing ☐ Power boating
   ☐ Crabbing ☐ Sailing
   ☐ Bird watching/photography ☐ Other, please specify: _____

Section B. This section is about underwater grasses, also known as seagrasses or submerged aquatic vegetation (SAV). In the Bay, there are many species of underwater grasses, including ones that look similar to field grass, with long, tape-like stems, ones that look more like herbs with short leaves growing right from the stem, and even those that grow in a clumping, bushy manner resembling shrubbery. They grow under the water, sometimes reaching the water's surface, and are many shades of green.
For this survey, think of the underwater grasses that may or may not be growing along your property's shoreline.

4. Since you have lived at your waterfront property, have you seen:
   ☐ An increase in underwater grasses
   ☐ A decrease in underwater grasses
   ☐ No change in underwater grasses
5. When you look at the water along your shoreline, how much of the water has underwater grasses, also known as submerged aquatic vegetation or SAV?
   ☐ All of it
   ☐ Most of it
   ☐ Some of it
   ☐ Very little
   ☐ None [SKIP to Question 15 on the back]
6. Have you ever:
   a. Considered restoring or protecting the underwater grasses along your shoreline?
      ☐ Yes, please answer Question 6b. → →
      ☐ No, please go to Question 7a. ↓ ↓
   6b. If yes, what is the top reason you have considered restoring or protecting your underwater grasses? Please choose one.
      ☐ Easier fishing and crabbing
      ☐ More grasses would look better
      ☐ Bring more wildlife to my property
      ☐ Improve the health of the Chesapeake Bay
      ☐ Natural shorelines and water are important to me
      ☐ Other:
7. Have you ever:
   a. Considered removing any of the underwater grasses along your shoreline?
      ☐ Yes, please answer Question 7b. → →
      ☐ No, please go to Question 8 on the next page
   7b. If yes, what is the top reason you have considered removing your underwater grasses? Please choose one.
      ☐ Easier for swimming.
      ☐ Keep grasses from washing up on my shoreline.
      ☐ Keep grasses off my boat.
      ☐ Fewer grasses would look better.
      ☐ Other:



8. Have you ever heard of anyone in your community restoring or protecting their underwater grasses?
   ☐ Yes ☐ No
9. Have you ever heard of anyone in your community removing their underwater grasses?
   ☐ Yes ☐ No
10. Using a scale from 0 (*strongly disagree*) to 10 (*strongly agree*) please rate your agreement with the following statements.

Letting underwater grasses along my shoreline grow undisturbed would…	Strongly Disagree									Strongly Agree
a. Increase my property value.	0	1	2	3	4	5	6	7	8	9	10
b. Be healthy for the Chesapeake Bay.	0	1	2	3	4	5	6	7	8	9	10
c. Bring more wildlife to my property.	0	1	2	3	4	5	6	7	8	9	10
d. Make my shoreline less accessible.	0	1	2	3	4	5	6	7	8	9	10
e. Harm my boat.	0	1	2	3	4	5	6	7	8	9	10
f. Make it harder for my household to swim.	0	1	2	3	4	5	6	7	8	9	10
g. Make fishing and crabbing easier for my household.	0	1	2	3	4	5	6	7	8	9	10
h. Protect my shoreline from erosion.	0	1	2	3	4	5	6	7	8	9	10
i. Make it hard for my household to boat.	0	1	2	3	4	5	6	7	8	9	10
j. Have an unpleasant smell.	0	1	2	3	4	5	6	7	8	9	10
k. Look attractive.	0	1	2	3	4	5	6	7	8	9	10
l. Other, please specify:											

11. To your knowledge, is a permit required for the removal of underwater grasses along your shoreline?
    ☐ Yes ☐ In some situations ☐ No

Section C. This section is about overwater structures, such as fixed or floating piers, wharfs, docks, walkways, or other similar dependent structures constructed on or over tidal wetlands for the purpose of gaining access to the navigable waters.
For this survey, we will refer to all "overwater structures" as "piers."

12. Does your property have a pier?
    ☐ Yes ☐ No, but we are planning on building one ☐ No, and we are not planning to build one [Skip to Question

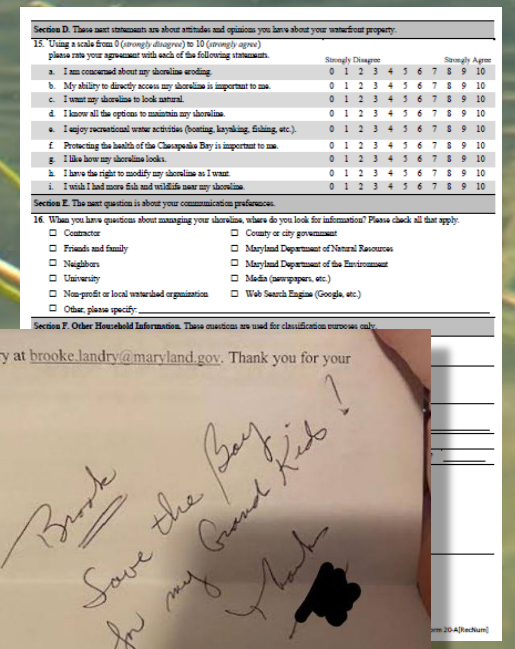
13. Using a scale from 0 (*not at all likely*) to 10 (*extremely likely*), when planning a new pier or renovating an existing pier, how likely are you to use a design that places or extends the end of the pier beyond where underwater grasses grow?

Not at all likely										Extrem
0	1	2	3	4	5	6	7	8		
My pier already extends beyond grasses										

14. Using a scale from 0 (*strongly disagree*) to 10 (*strongly agree*), please rate your agreement with the following statements.

Placing the end of the pier beyond where the underwater grasses grow would…	Strongly Disagree								Strong
a. Make my pier less accessible.	0	1	2	3	4	5	6	7	8
b. Be expensive.	0	1	2	3	4	5	6	7	8
c. Protect underwater grasses.	0	1	2	3	4	5	6	7	8
d. Protect fish and crab habitats.	0	1	2	3	4	5	6	7	8
e. Allow me to access deeper water.	0	1	2	3	4	5	6	7	8
f. Not make sense for my property.	0	1	2	3	4	5	6	7	8
g. Look out-of-place compared to neighbors' piers.	0	1	2	3	4	5	6	7	8
h. Protect the health of the Chesapeake Bay.	0	1	2	3	4	5	6	7	8
i. Other, please specify:									

TURN



Section D. These next statements are about attitudes and opinions you have about your waterfront property.

15. Using a scale from 0 (*strongly disagree*) to 10 (*strongly agree*) please rate your agreement with each of the following statements.

	Strongly Disagree									Strongly Agree
a. I am concerned about my shoreline eroding.	0	1	2	3	4	5	6	7	8	9	10
b. My ability to directly access my shoreline is important to me.	0	1	2	3	4	5	6	7	8	9	10
c. I want my shoreline to look natural.	0	1	2	3	4	5	6	7	8	9	10
d. I know all the options to maintain my shoreline.	0	1	2	3	4	5	6	7	8	9	10
e. I enjoy recreational water activities (boating, kayaking, fishing, etc.).	0	1	2	3	4	5	6	7	8	9	10
f. Protecting the health of the Chesapeake Bay is important to me.	0	1	2	3	4	5	6	7	8	9	10
g. I like how my shoreline looks.	0	1	2	3	4	5	6	7	8	9	10
h. I have the right to modify my shoreline as I want.	0	1	2	3	4	5	6	7	8	9	10
i. I wish I had more fish and wildlife near my shoreline.	0	1	2	3	4	5	6	7	8	9	10

Section E. The next question is about your communication preferences.

16. When you have questions about managing your shoreline, where do you look for information? Please check all that apply.
    ☐ Contractor ☐ County or city government
    ☐ Friends and family ☐ Maryland Department of Natural Resources
    ☐ Neighbors ☐ Maryland Department of the Environment
    ☐ University ☐ Media (newspapers, etc.)
    ☐ Non-profit or local watershed organization ☐ Web Search Engine (Google, etc.)
    ☐ Other, please specify: _____

Section F. Other Household Information. These questions are used for classification purposes only.

Community-Based Social Marketing

Action Research is a national leader in the application of social marketing and community-based social marketing to promote positive behavior change. Community-based social marketing packages basic principles of psychology with applied research methods to effectively promote behavior change across a variety of settings. The process consists of strategic selection of a target behavior followed by identification of barriers and motivators, development of a program strategy, implementation of a pilot, and then evaluation of the program once it has been widely implemented.

2020 GIT Funding; CBP Communications Workgroup/SAV Workgroup collaboration, contracted to Action Research.

Modeling Climate Impacts on Submerged Aquatic Vegetation (SAV) in the Chesapeake Bay

Scope of Work 6: Modeling Climate Impacts on Submerged Aquatic Vegetation (SAV) in the Chesapeake Bay

Goal Implementation Team (GIT)	Scientific, Technical Assessment and Reporting (STAR)
Maximum Bid Amount	$75,000.00
Purpose and Outcomes	Submerged Aquatic Vegetation (SAV) is a vital habitat of the Chesapeake Bay, and achieving and sustaining historical abundance and distribution is an important restoration goal of the Chesapeake Bay Watershed Agreement. Recently, the Chesapeake Bay Program (CBP) supported a multi-institutional effort that synthesized over 30 years of SAV, water quality, and land-use data. Results of the study titled: *Long-Term Nutrient Reductions Lead to the Unprecedented Recovery of a Temperate Coastal Region* by Lefcheck et al. (Proceedings of the National Academy of Sciences Apr 2018, 115 (14) 3658-662; DOI:10.1073/pnas 1715798115) empirically demonstrated that management efforts to reduce nutrient pollution are responsible for the recovery of tens of thousands of acres of SAV in the Bay. While the validation of environmental policy is rewarding and provides necessary incentive to stay the course to ensure additional future recovery, the role of emerging climate stressors was not included or accounted for in this study, and the question of these threats to the Chesapeake Bay ecosystem, and to SAV specifically, still lingers. This project will address the role of climate stressors on Chesapeake Bay SAV, including warming temperatures, rising sea levels, chronic low oxygen concentrations, and increased runoff driven by greater precipitation and more frequent, intense storm activity. Balancing current successful nutrient management strategies with these emerging stressors will be one of the biggest challenges that the Chesapeake Bay management community faces. Complicating this task will be the variety of SAV species in the Bay and their potentially contrasting responses, as was demonstrated during the 2019 Bay-wide SAV survey. The excessive precipitation in 2018 and 2019 increased nutrient loading to the Bay and also affected salinities. This had a dramatic and negative impact on SAV in the southern, saltier portion of the Bay in 2019 where thousands of acres of SAV were lost, but SAV in the upper portion of the Bay and tributaries continued to recover and expand in most areas. This does not suggest that freshwater SAV communities are impervious to poor water quality; rather it highlights the necessity to identify the ecological tipping points or levels of stress these communities can endure before they collapse. Furthermore, these results suggest that it may be beneficial to tailor future management strategies to the various SAV communities present in the Bay. Specifically, the objective of this project will be to model interactions between nutrient loading and emerging climate stressors, including warming temperatures, oxygen minimum zones, sea-level rise, greater precipitation, and reduced water clarity in determining future SAV abundance and recovery potential, and to determine species and community-level

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

Balancing current successful nutrient management strategies with these emerging stressors will be one of the biggest challenges that the Chesapeake Bay management community faces.

(along these same lines, we're also involved with a STAC Workshop Proposal titled ***Rising Watershed and Bay Water Temperatures—Ecological Implications and Management Responses: A Proactive Programmatic CBP STAC Workshop Proposal)***

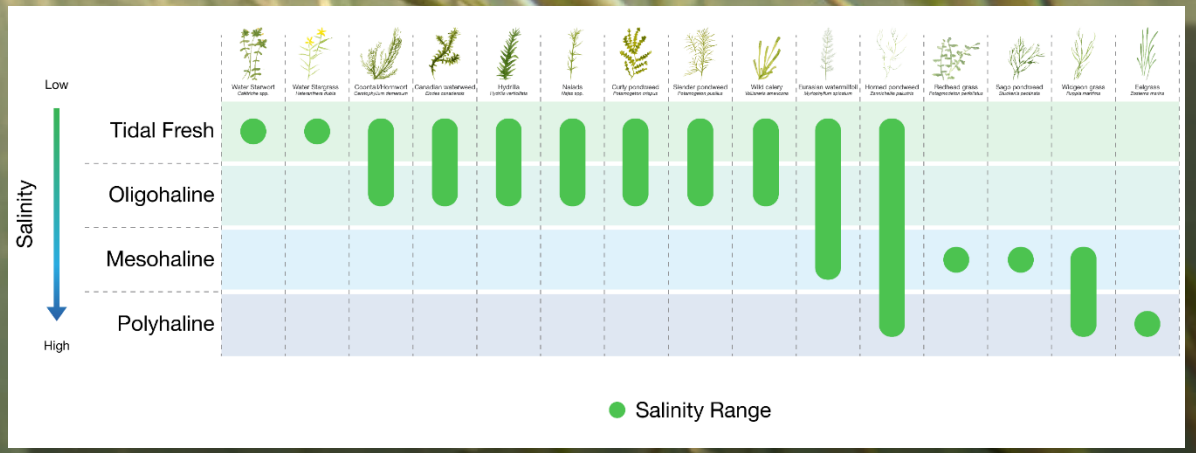
2021 GIT-Funded Project. STAR/SAV Workgroup collaboration. Award recipient will be announced soon.

SAV Restoration Protocol and Technical Guidance Manual

Chesapeake Bay
SAV Restoration Protocol
and Technical Guidance Document

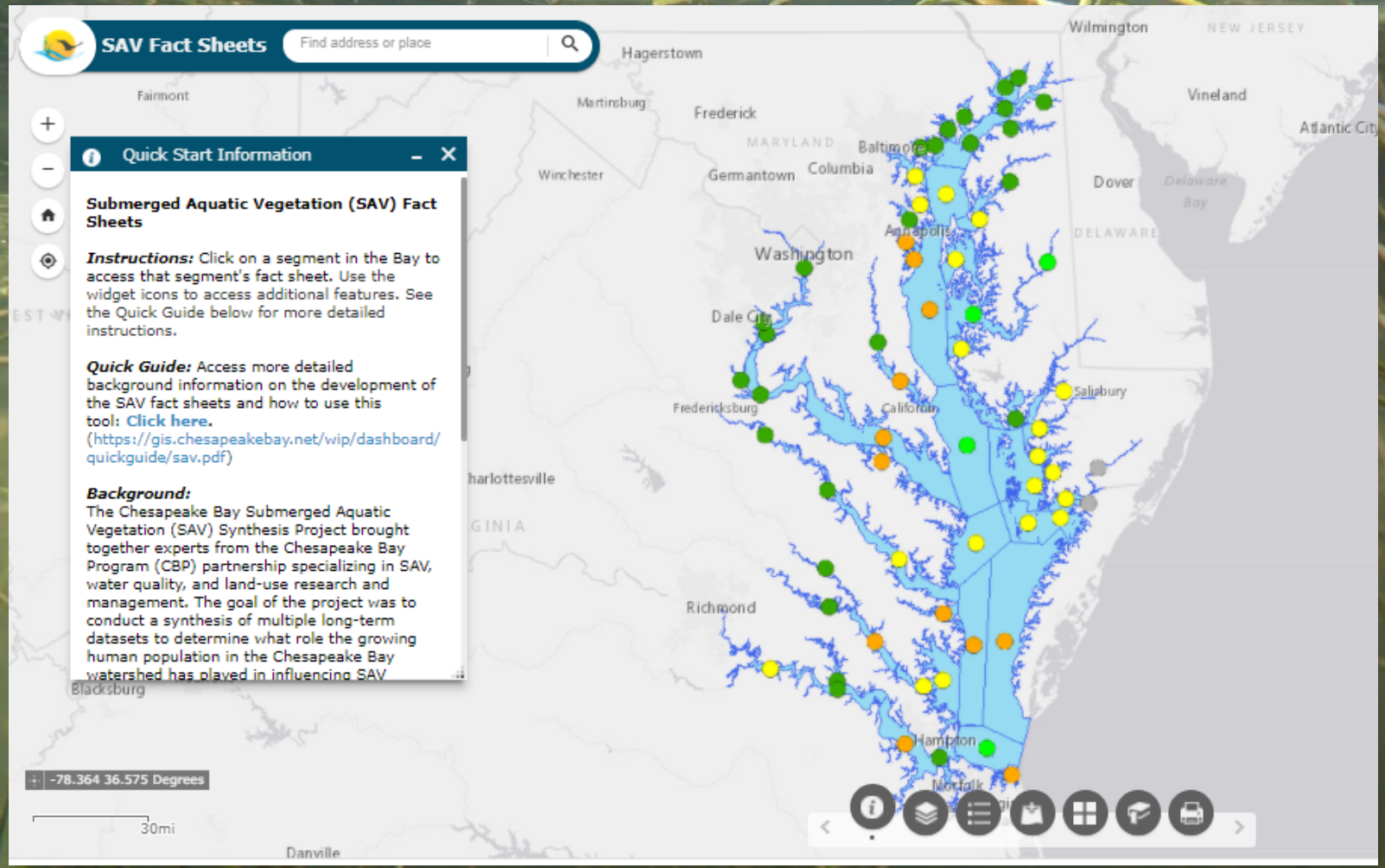
Green Fin Studio

The goal of this project is to develop a technical guidance manual and outreach materials for small-scale (less than one acre) SAV restoration projects. The intended audience for Small-scale SAV Restoration in Chesapeake Bay: A Protocol and Technical Guidance Manual will be federal and state agencies, local jurisdictions, and non-government organizations, such as Riverkeeper and other watershed organizations. The goal of this Scope is to get closer to meeting the Chesapeake Bay Program SAV restoration goal attainment by directly restoring SAV in appropriate areas of their tributaries and waterways while simultaneously providing outreach and educational opportunities for their constituents and volunteers.

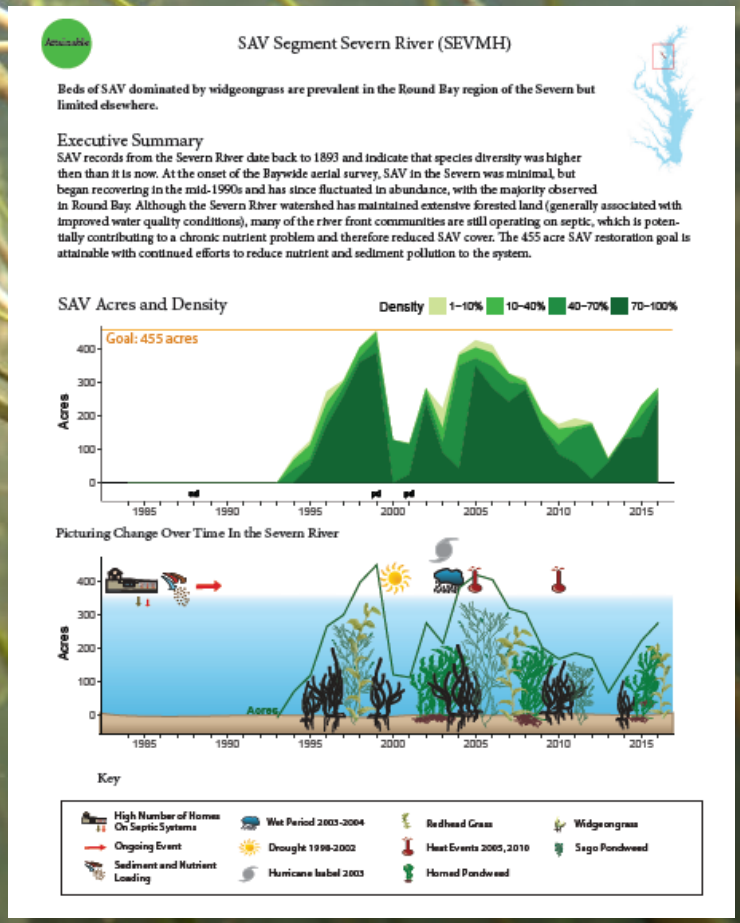


2020 GIT-Funded Project, Contracted to Green Fin Studio (Dave Jasinski is lead) with SAV consultation by Cassie Gurbisz, SMCM.

SAV Syn Segment Description Project



92 CBP Segments were grouped where feasible to reduce total number of right ups to 64



https://gis.chesapeakebay.net/sav/ and https://mobjack.vims.edu/sav/savwabmap/

SAV Management Strategy and 2-Year Workplan

Submerged Aquatic Vegetation Outcome
Management Strategy
2015–2025, v.3

Water stargrass (Heteranthera dubia) in the clear waters of the upper Potomac River, Maryland on July 28th, 2019. (Photo by Brooke Landry/Maryland Department of Natural Resources)

I. Introduction

Submerged aquatic vegetation (SAV), or underwater grasses, provide significant benefits to aquatic life and serve critical functions in the Chesapeake Bay ecosystem. Underwater grasses provide food, habitat and nursery grounds for a number of commercially and ecologically important finfish and shellfish, such as striped bass and blue crabs, and migratory waterfowl. They reduce erosion by slowing currents and softening waves, anchor bottom sediments and help keep the water clear by absorbing nutrients and trapping sediments. Through photosynthesis, underwater grasses act as a carbon sink by taking in carbon dioxide. This contributes to the reduction of greenhouse gas emissions and reduces the potential for climate change impacts. Likewise, underwater grasses also produce oxygen, which helps sustain other aquatic life. Increasing the abundance of underwater grasses in the Bay and its rivers will dramatically improve the entire Bay ecosystem.

BIENNIAL STRATEGY REVIEW SYSTEM
Chesapeake Bay Program

Logic and Action Plan: Post Quarterly Progress Meeting

Submerged Aquatic Vegetation – 2020-2021 *[NOTE: make sure to edit **pre-** or **post-** in the text above, to tell the reader whether this logic and action plan is in preparation for your quarterly progress meeting or has been updated based on discussion at the quarterly progress meeting.]*

Long-term Target: Achieve and sustain the ultimate outcome of 185,000 acres of SAV Bay-wide; 130,000 acres by 2025
Two-year Target: To reach our 2025 goal of 130,000 acres, baywide SAV should increase by 2,000-3,000 acres per year. By 2019, we hope to achieve 109,000 acres of SAV, but a short-term target is not officially defined

Instructions: Before your quarterly progress meeting, provide the status of individual actions in the table below using this color key.
Action has been completed or is moving forward as planned.
Action has encountered minor obstacles.
Action has not been taken or has encountered a serious barrier.

Additional instructions for completing or updating your logic and action plan can be found on ChesapeakeDecisions.

Factor	Current Efforts	Gap	Actions	Metrics	Expected Response and Application	Learn/Adapt
What is impacting our ability to achieve our outcome?	*What current efforts are addressing this factor?*	*What further efforts or information are needed to fully address this factor?*	*What actions are essential (to help fill this gap) to achieve our outcome?*	*What will we measure or observe to determine progress in filling identified gap?*	*How and when do we expect these actions to address the identified gap? How might that affect our work going forward?*	*What did we learn from taking this action? How will this lesson impact our work?*
	The Chesapeake Bay TMDL was established to limit the amount of N, P, and TSS entering the	Although SAV throughout the Bay is responding to improvements in water clarity, there are areas	1.1, 1.2	Acres of SAV mapped	Increased SAV acreage Bay-wide	
			1.3	Recognition and acceptance that we may not be able to reach all shallow	Increased collaboration between groups to assure that each	

Updated June 5, 2020

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https://www.chesapeakebay.net/documents/22042/2020-2021_sav_logic_and_action_plan.pdf
and
https://www.chesapeakebay.net/documents/22042/sav_management_strategy_v3.pdf

ISBW 14 and WSC 2022

World Seagrass Conference 2022 and International Seagrass Biology Workshop 14

Hosted by IAN/UMCES and the SAV Workgroup

Signs of Success

The Graduate Annapolis
Annapolis, MD
August 7th – 12th, 2022

ISBW is the only international meeting specifically tailored to seagrass scientists, professionals and students.

www.isbw14.org

Questions??

SAV Workgroup Business

New Quarterly Meeting Structure

1st Quarter: February (4 hours)

2nd Quarter: May (2 hours)

3rd Quarter: August (All day with filed trip)

4th Quarter: November (2 hours)

Workgroup Google Drive

Clearing house for all SAV Workgroup projects and products.

Questions or Concerns?