Fall QUARTERLY MEETING – November 13th, 2024

Chesapeake Bay Program

Submerged Aquatic Vegetation Workgroup Updates

Brooke Landry
Maryland DNR and
Chair, SAV Workgroup

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

Goal: ***Vital Habitats***

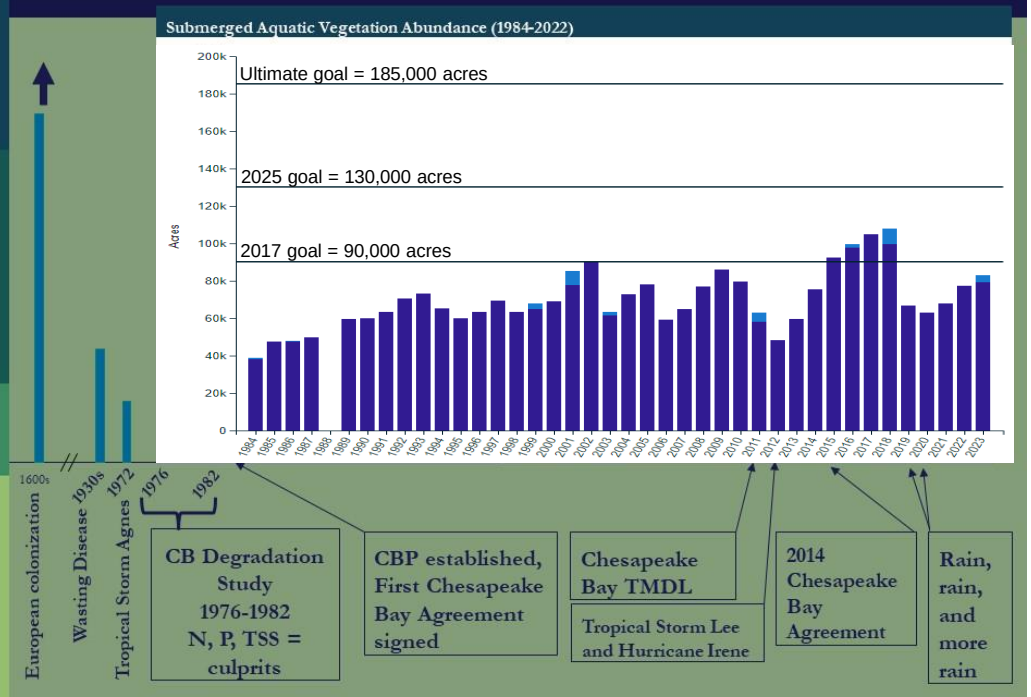
Outcome:

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.

2023 SAV #s

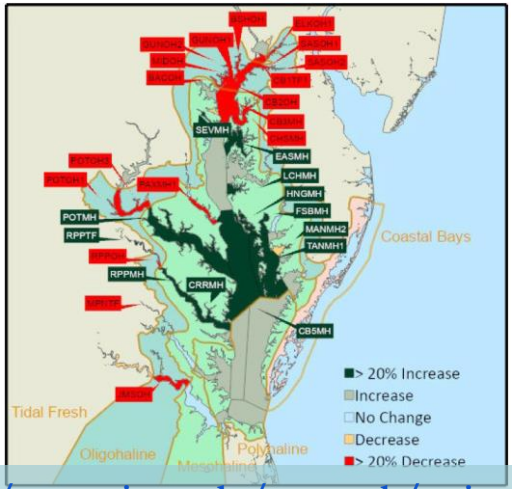
What is our Progress?

Progress towards the Bay-wide SAV goal



Final SAV #s were up in 2023:

- 79,234 acres were mapped in 2023.
- 3,703 additional acres of SAV are estimated for a portion of the Potomac that was not mapped.
- 82,937 total acres of SAV estimated for 2023(+7%).
- This is 61% of the 2025 target and 45% of the ultimate 185,000-acre outcome.



https://www.vims.edu/research/units/programs/sav/access/maps/index.php

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

Shallow Water Habitat Sentinel Site Program Development ; GIT-Funded Project Schedule:

Proposed EPA GIT Path Forward and Draft Schedule:

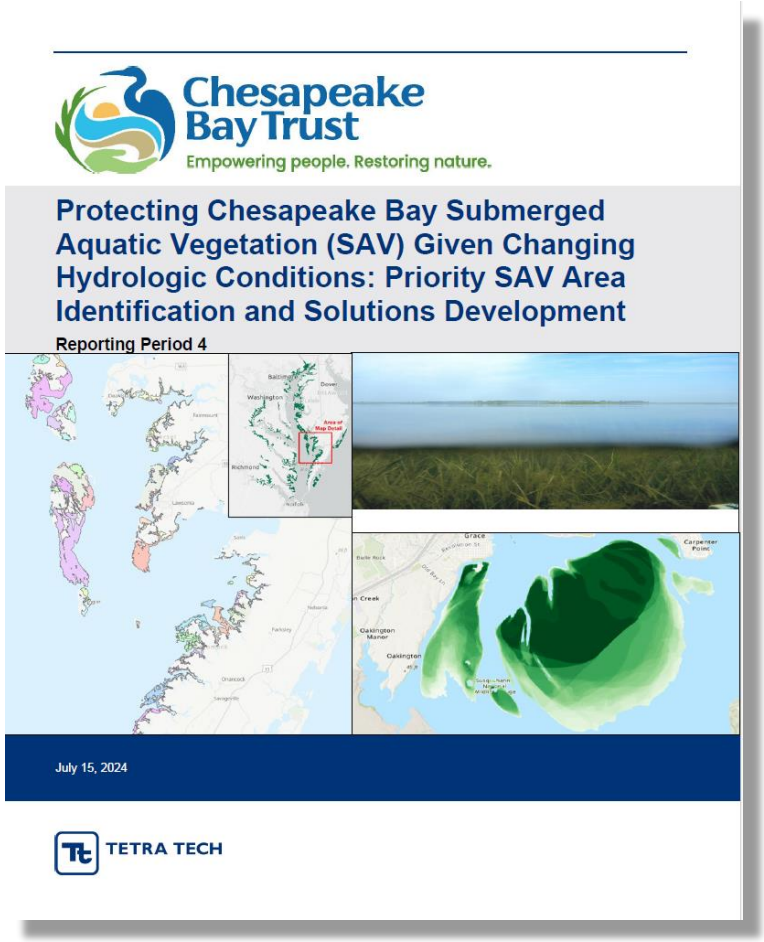
- Mid-August to Mid-September 2024: Trust work with GIT Leads and coordinate with QA coordinator; Trust to receive EPA Award for Year 4 of GIT projects.
- Mid-September 2024: Release RFP with seven Scopes of Work
- Mid-October 2024: close RFP (RFP open for 30 days).
- November 2024: Review applications and make recommendations for awards
- December 2024: Write and send Contract Awards
- January 2025: Contractors begin work!

2022 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.



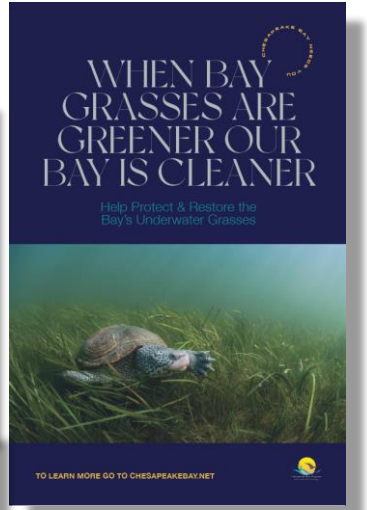
UPDATE: Tetra Tech presenting today!

2022 GIT-Funded Project
Lead: Comms Workgroup

Advancing Social Marketing Through Two Pilot Programs – Steve told us about their progress on this earlier….

Proposed Project Outcomes

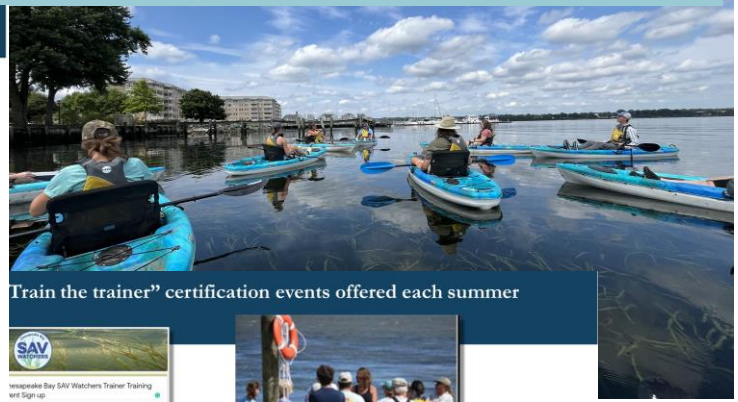
This project will develop pilot programs for existing community-based social marketing (CBSM) campaigns that have been developed over the past few years, SAV being one.



Contracted to: OpinionWorks
No new updates since OW presented at last meeting…

Chesapeake Bay SAV Watchers Program

FOUR SAV Watcher Trainer Certification Events in 2024:
Accokeek Foundation at Port Tobacco,
Havre de Grace Maritime Museum Environmental Center,
The Nature Conservancy Virginia Chapter at VCU's Rice Rivers Center
Maryland Conservation Corps at Gunpowder Falls State Park

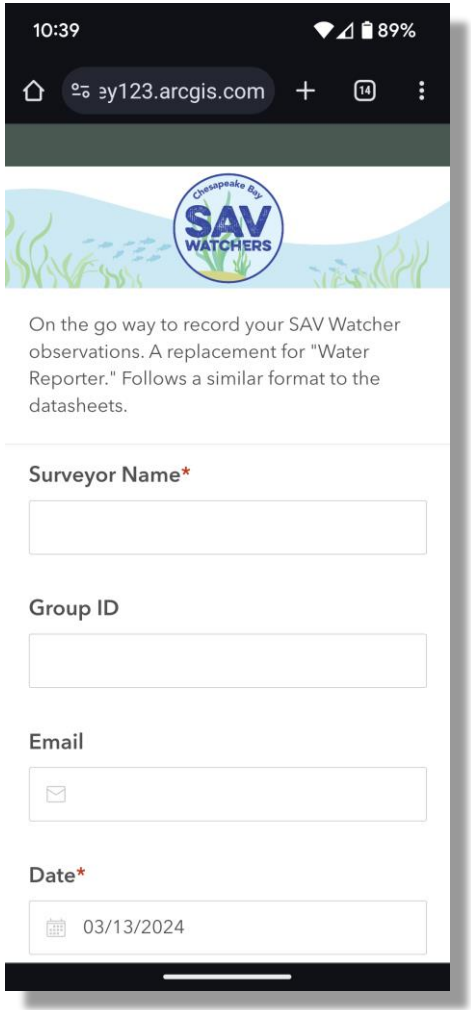


SHORERIVERS
Havre de Grace MARITIME MUSEUM and Environmental Center
James River ASSOCIATION
SRA Severn River Association
America's Oldest River Group
Magothy River Association
Saving our river for future generations
THE GUNSTON SCHOOL 1911 CENTREVILLE, MD
TEAM BCPS Baltimore County Public Schools
Raising the bar. Closing gaps. Preparing for our future.
MARSHY POINT NATURE CENTER
Arundel Rivers FEDERATION
Chesapeake Bay National Estuarine Research Reserve Maryland
Using Sound Science...Finding Solutions...Promoting Wise Decisions
ACCOKEEK FOUNDATION
Accokeek Foundation at Piscataway Park
The Nature Conservancy
MARYLAND CONSERVATION CORPS

www.chesapeakebaysavwatchers.com OR https://www.chesapeakebay.net/what/programs/monitoring/sav-monitoring-program

New app: ArcGIS Survey123

We would LOVE SAV Workgroup members to participate using ArcGIS Survey123!!!



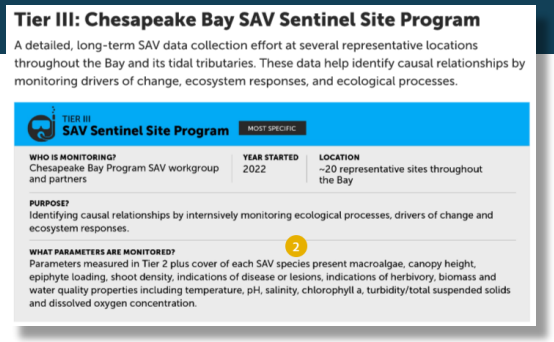
www.chesapeakebaysavwatchers.com OR https://www.chesapeakebay.net/what/programs/monitoring/sav-monitoring-program

SAV Watchers Newsletter

Subscribe to our Newsletter here:
https://forms.gle/yYwkDPShvBjFCiby5

www.chesapeakebaysavwatchers.com OR https://www.chesapeakebay.net/what/programs/monitoring/sav-monitoring-program

SAV Sentinel Site Program – continuing in 2024!



Tier III: Chesapeake Bay SAV Sentinel Site Program

A detailed, long-term SAV data collection effort at several representative locations throughout the Bay and its tidal tributaries. These data help identify causal relationships by monitoring drivers of change, ecosystem responses, and ecological processes.

TIER III
SAV Sentinel Site Program MOST SPECIFIC

WHO IS MONITORING?
Chesapeake Bay Program SAV workgroup and partners

YEAR STARTED
2022

LOCATION
~20 representative sites throughout the Bay

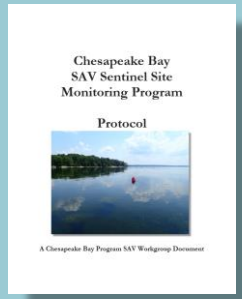
PURPOSE?
Identifying causal relationships by intensively monitoring ecological processes, drivers of change and ecosystem responses.

2

WHAT PARAMETERS ARE MONITORED?
Parameters measured in Tier 2 plus cover of each SAV species present macroalgae, canopy height, epiphyte loading, shoot density, indications of disease or lesions, indications of herbivory, biomass and water quality properties including temperature, pH, salinity, chlorophyll a, turbidity/total suspended solids and dissolved oxygen concentration.

Sites that will be installed and monitored in 2024:

- Severn River ✓
- Susquehanna Flats ✓
- Smith Island ✗
- Marshy Creek ✓
- Dundee Creek ✓
- St. Mary's ✗
- VIMS sites ✓
- CB- NERR sites ✓



Chesapeake Bay
SAV Sentinel Site
Monitoring Program

Protocol

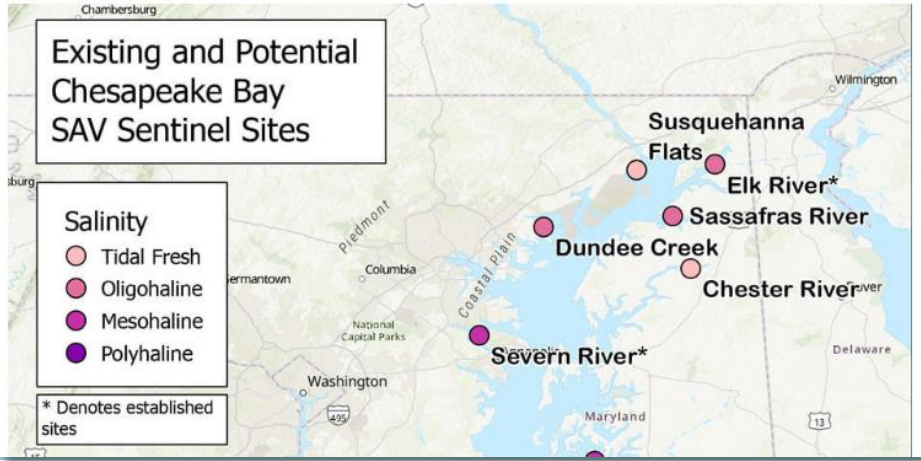
A Chesapeake Bay Program SAV Workgroup Document

Tier III: SAV Sentinel Site Program

The SAV Sentinel Site Program is a monitoring effort conducted by Bay scientists

What is the Chesapeake Bay SAV Sentinel Site Program?

The Chesapeake Bay SAV Sentinel Site Program forms the third tier of the Chesapeake Bay SAV Monitoring effort. SAV sentinel sites are located in each of the Bay's four salinity zones (tidal fresh, oligohaline, mesohaline and polyhaline) and are monitored using a standardized, in-depth data collection protocol. These sentinel sites are a combination of existing, long-term sites and new sites where Bay scientists monitor changes in SAV habitat characteristics and resilience indicators. This program is coordinated by the Bay Program's SAV Workgroup. If you are interested in adopting and managing an SAV Sentinel Site, contact the program coordinator at brooke.landry@maryland.gov.



https://www.chesapeakebay.net/what/programs/monitoring/sav-monitoring-program

Trapa bispinosa update

Short-term risk assessment for a newly introduced water chestnut, Trapa bispinosa Roxb., entering Virginia rivers

Nancy Rybicki & Ian Pfingsten, USGS

A new species of water chestnut (*Trapa bispinosa* Roxb.) was discovered in the Potomac River basin in 2014. By 2024, over 100 colonies were verified in lakes and ponds in five counties of northeast Virginia, one in southeast Virginia, and one in Maryland.

We assessed the short-term risk of *T. bispinosa* enteringthe Potomac River. We identified three potential vectors for dispersal of *T. bispinosa*: primarily epizoochory on waterfowl plumage, followed by hydrochory into downstream waterways and potentially hitchhiking on recreational boats and boat trailers.

We identified over 1,000 at-risk waterbodies (mostly private ponds) from Maryland, Virginia, and the District of Columbia. Twenty public boat launches were within 30 km of the epicenter. Our results identify the number and locations of at-
risk waterbodies and boat launches that state and local managers can prioritize outreach, management, signage, and monitoring efforts for early detection and rapid response of *T. bispinosa*.

USGS
science for a changing world

Short-term risk assessment for a newly introduced species, waterchestnut, *Trapa bispinosa* Roxb., entering Virginia rivers

Ian Pfingsten[a] and Nancy Rybicki[b] U.S. Geological Survey, [a]Wetland and Aquatic Research Center Gainesville, FL (ipfingsten@usgs.gov) & [b](emerita) Reston, VA

October 2024

- A new species of waterchestnut (*Trapa* L.) was discovered in the Potomac River in 2014 by the USGS and Virginia Department of Wildlife Resources officials.
- By 2024, a total of 116 introductions were verified in lakes and ponds in 8 counties of Virginia, 2 counties of Maryland, and in Pohick Bay on the tidal Potomac River and on the non-tidal reservoir of the Occoquan River. All introductions were in the Potomac watershed until 2023. By 2024 it was in the Roanoke and Rappahannock watershed.
- Our results identify the number and locations of at-risk waterbodies and boat launches that state and local managers can prioritize outreach, management, signage, and monitoring efforts for early detection and rapid response of *T. bispinosa* in the U.S.

Introduction

In 1874, four-horned waterchestnut (*Trapa natans* L.) was introduced to North America from Asia as ornamental plantings in rivers. Its range expanded in North America rivers from Washington D.C. to Canada. Fortunately, it was eradicated from the Potomac River by the 1970s where it was known to have obstructed navigation and shaded out the native bay grasses that are preferred wildlife habitat.

Four-horned waterchestnut (*Trapa natans*) on the Tidal Potomac River in 1941

In 2014, two-horned waterchestnut (*T. bispinosa* Roxb.) was discovered in Virginia. It was also introduced from Asia. In 1995 it was reported in Westmoreland and Stafford counties in the Potomac River watershed. As of 2023 it had established in numerous ponds, lakes and wetlands, especially in Fairfax and Prince William counties in Virginia. Without prevention measures, waterchestnut will continue spreading through these watersheds and beyond.

Two-horned waterchestnut (*Trapa bispinosa*) on a pond in Springfield, VA in 2014

Similar to the four-horned waterchestnut, the newly introduced species is a freshwater tolerant, annual, rooted, floating plant with one-inch-wide leaves and spined fruits. Floating plants spread downstream by flowing water and to disjunct water bodies and rivers by hitchhiking on waterfowl and other wildlife. It may disperse long distances when plants and seeds attach to boat trailers or anchor ropes and thus may be transported unintentionally by humans.

Two-horned waterchestnut (*Trapa bispinosa*) seeds hitchhikers on geese feathers

Since four-horned waterchestnut was eradicated in the past from the Potomac watershed it is likely this other waterchestnut could be eradicated as well if an early detection and rapid response (EDRR) plan is established. To develop EDRR plans, managers need to know its distribution and to forecast where it may likely spread.

Aquatic vegetation hitchhikers on trailers

In this study we provide managers the location and abundance of water bodies most at risk of colonization by two-horned waterchestnut based on proximity of a water body to known colonies. We also map the location of boat launches where signage may be placed to encourage the public to report sightings of Trapa and stop aquatic hitchhikers.

Two-horned waterchestnut (*Trapa bispinosa*)

Methods & Results

During the study period, 2014 – 2023, we documented and verified 100 introductions within the Potomac River basin from seven counties in Virginia (Charlotte, Fairfax, Fauquier, Loudoun, Prince William, Stafford, and Westmoreland) and one in Maryland (Prince George's)

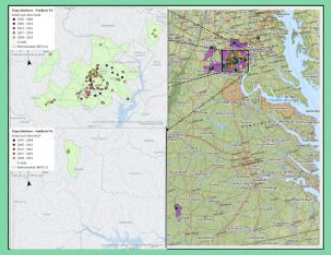


Figure 1. Location and initial year of waterchestnut introductions from 1995 to 2023. The symbol color indicates the initial year. Purple and lime green polygons are subwatersheds. Insets on the left show northern and southern sites. Top inset shows sites in northern VA and MD, in the Potomac River watershed. Bottom inset shows sites in southern VA in the Roanoke River watershed.

Dispersal distances among sites:

- We determined the epicenter and oldest and most centrally located of all the current populations was at a golf course, in Clifton, VA, Fairfax County.
- From 2000 to 2021, introductions were within **30 km** from this location, but by fall 2022 several farm ponds were reported in Charlotte Co., Cullen, VA (218 km from the epicenter in northern VA) and Greenbelt Lake in Prince George's Co., MD (49 km from the epicenter in northern VA.
- The population at Greenbelt Lake, MD is about 33 km from the nearest known population in VA, suggesting dispersal from northern VA via waterfowl.
- The Charlotte Co., VA population substantially increased the perimeter of at-risk waterbodies to southern VA

Results & Discussion

Figure 2. Waterbodies at risk of introduction within 15 km and 30 km of the epicenter in the Potomac watershed.
National Hydrography Dataset (NHD)

Figure 3. Waterbodies at risk of introduction within 15 km and 30 km of the epicenter in the Roanoke watershed. National Hydrography Dataset (NHD)

Nearest waterbodies at risk in northern VA

- **3,745** waterbodies are within 30 km and **1,063** are within 15 km
- **23** public boat launches are within 30 km and **2** launches are within 15 km.

Nearest waterbodies at risk in southern VA

- **2,598** waterbodies are within 30 km and **633** are within 15 km
- **6** public boat launches are within 30 km while no public launches are within 15 km

Two-horned waterchestnut has multiple disjunct introductions clustered in a pattern that suggests a high short-distance dispersal probability (< 15 km) and a low long-distance dispersal probability (> 30 km). Efforts to detect and manage introductions could be prioritized by the distance from known populations.

In 2023 and 2024, the Virginia Department of Agriculture and Consumer Services (VDACS) and Northern Virginia Soil and Water Conservation District (VSWCD) obtained funds to manage *Trapa bispinosa* in Virginia on private and public properties at no cost to pond owners. The agencies used the USGS Nonindigenous Aquatic Species (NAS) distribution map and this assessment to target management and monitoring plans for *Trapa bispinosa*. Unfortunately, in October 2024 it was found in Orange county VA and Montgomery county MD. However, we estimate 60 to 80% of the known sites are now managed!

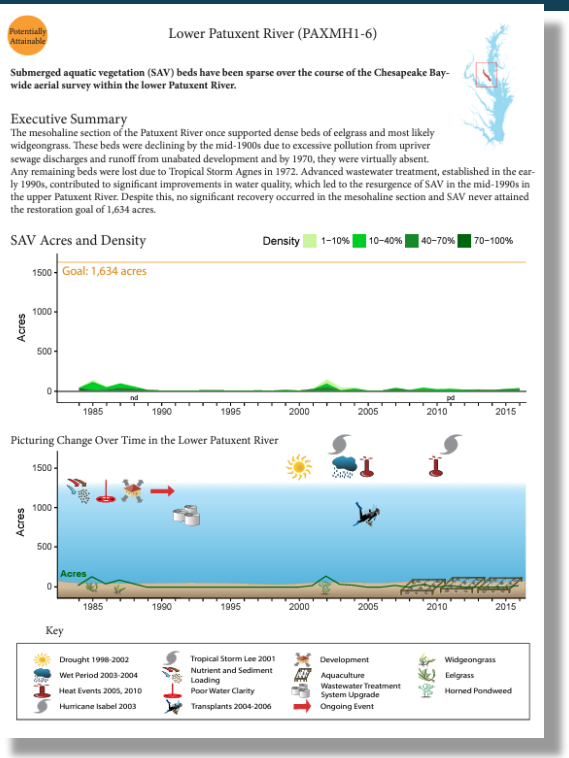
Acknowledgments

We'd like to acknowledge many private landowners, volunteers and scientists who helped with this research, monitor and manage waterchestnut including; John Odenkirk of VA Dept. of Wildlife Resources, Sara Tangren of National Capital PRISM, Mike Naylor and Mark Lewandowski of Maryland Department of Natural Resources & Lynde Dodd of U.S. Army Corps of Engineers

U.S. Department of the Interior
U.S. Geological Survey

Scan the QR code to report *Trapa bispinosa* or any invasive species to the USGS. The distribution map for *Trapa bispinosa*: https://nas.er.usgs.gov/viewer/omap.aspx?id=f3a647f4-6906-4928-b5b4-1421cd95a211

SAV Data Dashboard is getting updated!



Potentially Attainable

Lower Patuxent River (PAXMH1-6)

Submerged aquatic vegetation (SAV) beds have been sparse over the course of the Chesapeake Bay-wide aerial survey within the lower Patuxent River.

Executive Summary

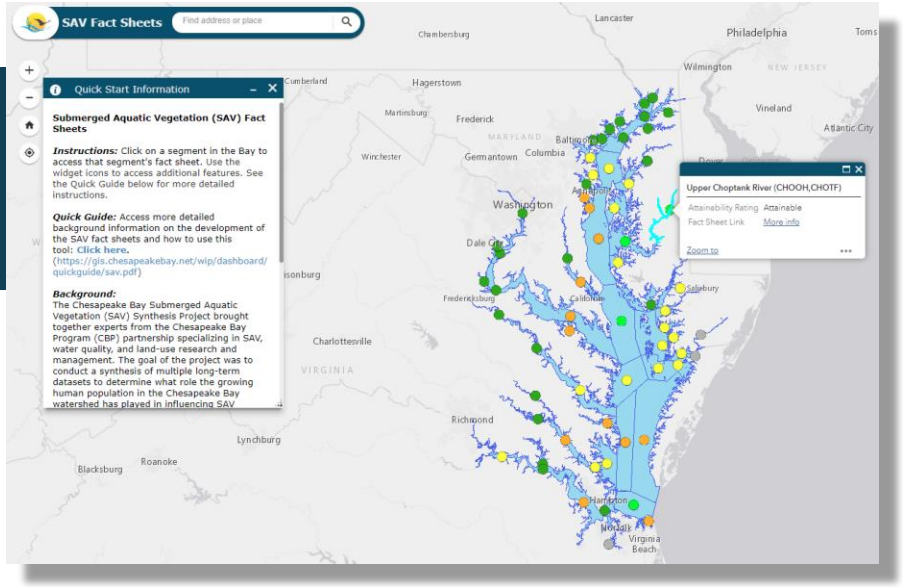
The mesohaline section of the Patuxent River once supported dense beds of eelgrass and most likely widgeongrass. These beds were declining by the mid-1900s due to excessive pollution from upriver sewage discharges and runoff from unabated development and by 1970, they were virtually absent. Any remaining beds were lost due to Tropical Storm Agnes in 1972. Advanced wastewater treatment, established in the early 1990s, contributed to significant improvements in water quality, which led to the resurgence of SAV in the mid-1990s in the upper Patuxent River. Despite this, no significant recovery occurred in the mesohaline section and SAV never attained the restoration goal of 1,634 acres.

SAV Acres and Density

Density 1–10% 10–40% 40–70% 70–100%

Picturing Change Over Time in the Lower Patuxent River

Key



Kaylyn and Ruth are presenting on this later today!

Data Dashboard: https://gis.chesapeakebay.net/wdd

SRS Update

It's an off year for the SAV Workgroup to go through the system, but the SAV Workgroup is presenting basic updates at the Quarterly Management Board Meeting.

-Dry Run Nov. 19th
-MB QPM December 12th

About the Strategy Review System

The Strategy Review System (SRS) runs on two-year cycles. Each cycle begins with a two-day Biennial Review Meeting and includes eight Quarterly Progress Meetings (QPMs). The QPMs provide regular opportunities for pre-defined cohorts of workgroups and Goal Implementation Teams to report their progress to the Management Board, explain their challenges and request action or assistance. In turn, the Management Board reviews progress toward each of the outcomes of the *Chesapeake Bay Watershed Agreement* and supports necessary adaptations to the partnership's work.

The Chesapeake Bay Program relies on documenting the Strategy Review System process through two mandatory documents, the Outcome Review Summary and the Work Plan and an optional Presentation. These documents inform QPMs and summarize specific commitments, short-term actions and resources required for success. Each outcome also has a Management Strategy, which is kept up-to-date based on lessons learned through the SRS process.

While developing documents for their QPM, cohorts are encouraged to identify the science needs that, if addressed, will advance the Chesapeake Bay Program's efforts to achieve each outcome. These needs are documented in the Bay Program's Science Needs Database, which supports the Strategic Science and Research Framework (SSRF).

Action Item Updates

Chesapeake Bay Program
Science. Restoration. Partnership.

Submerged Aquatic Vegetation
SAV Workgroup Action Plan
2024-2025

- Progressing as planned
- Progressing, but facing barriers
- No action taken

Management Approach 1: Support Efforts to Conserve and Restore Current and Future SAV Habitat and SAV Habitat Conditions.

1.a Support WQ GIT in their efforts to improve water quality through the Bay TMDL and achieve water clarity/SAV standards in areas designated for SAV use.

1.b Determine the local effect of flow/stormwater runoff on SAV density and acreage and options for targeting BMPs that would protect priority SAV areas. This is a current SAV Workgroup GIT-funded project contracted to Tetra Tech for completion.

Management Approach 2: Protect Existing and Recovering SAV.

2.a Work with jurisdictional leadership in Maryland, Virginia and D.C. to implement select recommendations from "Existing Chesapeake Bay Watershed Statutes and Regulations Affecting Submerged Aquatic Vegetation," a GIT-funded project report produced in 2019 by the Chesapeake Legal Alliance (CLA) at the request of the CBP and SAV Workgroup.

2.b Support efforts by local, state and federal partners in Virginia, DC and Maryland to reduce or eradicate water chestnut (*Trapa natans* and *T. bispinosa*) in Chesapeake Bay and other local water bodies.

Management Approach 3: Restore SAV

3.a Continue SAV restoration efforts through direct plantings of seeds or propagules to establish viable SAV beds where they are not recovering naturally with improvements in water quality or where diversity is low.

3. b Work with permitting agencies to ensure SAV restoration activities are permitted during appropriate growing conditions and over-harvesting from donor beds does not occur.

Action Item Updates

Chesapeake Bay Program
Science. Restoration. Partnership.

Submerged Aquatic Vegetation
SAV Workgroup Action Plan
2024-2025

- Progressing as planned
- Progressing, but facing barriers
- No action taken

Management Approach 4: Enhance SAV Research and Monitoring

4.a Identify and prioritize an updated list of SAV science and research needs, initiate workgroup efforts and/or broader partnership efforts to advance SAV research and provide support for research in the form of funding, steering committee participation, MTAG participation, letters of support for research funding, provide subject matter expert support, etc.

4.b Continue the annual Bay-wide SAV Survey to track progress towards SAV restoration outcomes and water-clarity standards attainment.

4.c Work with the Bay Program partners to continue the exploration of satellite imagery and the development of algorithms and work flows to automate SAV detection and quantification. This effort is being conducted to potentially update the Bay-wide aerial survey and increase its long-term programmatic sustainability. This is a currently funded project contracted to partners at Old Dominion University.

4.d Continue implementation of the SAV Watchers Program, build improved data portal and management system, and work to ensure allocated funding is used to contract long-term support of the Program. [This action is cross-referenced with Action 5.c.]

4.e Continue implementation of the SAV Sentinel Site Monitoring Program. Identify and establish commitment from site adopters. Identify funding to ensure long-term sustainability. If it is determined that a CBP Shallow Water Habitat Sentinel Site program will be developed and implemented, fold the SAV Sentinel Site Program into the Shallow Water Habitat Sentinel Site Program.

Action Item Updates

Chesapeake Bay Program
Science. Restoration. Partnership.

Submerged Aquatic Vegetation
SAV Workgroup Action Plan
2024-2025

- Progressing as planned
- Progressing, but facing barriers
- No action taken

Management Approach 5: Enhance community involvement, education, and outreach.

5.a Develop a communication strategy that enhances the public's knowledge of and appreciation for SAV in Chesapeake Bay.

5.b Work with the CBP Comms team and contracted partner (Opinion Works) to implement Community-Based Social Marketing (CBSM) strategy previously developed through a GIT-funded social science effort.

5.c Continue implementation of the SAV Watchers Program, build improved data portal and management system, and work to ensure allocated funding is used to contract long-term support of the Program. [This action is cross-referenced with Action 4.d.]

5.d The SAV Workgroup will convene in-person and/or virtually quarterly with supplemental meetings with appropriate sub-groups taking place as needed to discuss priorities, share ideas for collaborations, review status updates, update the SAV Management Strategy and implement the SAV Workplan, etc. SAV Workgroup leadership and staffers will meet monthly.

STAC – Science Synthesis Project RFP

All proposals are DUE to STAC by **Monday, December 2, 2024**. If you have any questions, please contact STAC Coordinator, Meg Cole (colem@chesapeake.org) or STAC Chair Larry Sanford (lsanford@umces.edu).

The Chesapeake Bay Program's Scientific and Technical Advisory Committee (STAC) and the Chesapeake Research Consortium (CRC) are **now accepting proposals to support a science synthesis project** related to effectively managing for climate change at the intersection of impacts to water quality, people, and living resources within the Chesapeake Bay Watershed and Estuary. Appropriate topics for a STAC-sponsored science synthesis project are those where a thoughtful analysis and synthesis of available data and/or previously published results would identify, characterize, and suggest means of addressing important knowledge gaps, inform additional research, and place scientific information into a management-relevant context.

Proposals submitted under this RFP may request funding up to $125,000 in total costs, including any indirect or overhead. Allowable expenses may include salary (post-doc and/or PI), domestic travel (post-doc and Steering Committee/Advisory Committee), supplies, and page charges.

The project must be completed by May 31, 2027 and duration must be aligned with availability of funds. Funding will be available in three phases:

- Phase 1 funds of $73,285 become available on 6/1/2024;
- Phase 2 funds of $29,800 become available on 6/1/2025;
- Phase 3 funds of $22,642 become available on 6/1/2026.

SAV Workgroup represented at the RAE Summit 2024

We planned and hosted a dedicated session aimed to explore and discuss the significance, challenges, and innovative approaches related to SAV restoration and management within the broader context of many of the Coastal and Estuarine Summit's focus areas. The session explored how management and restoration communities within the Chesapeake Bay and beyond work to protect and restore SAV, offering transferable lessons for coastal communities nationwide.

Becky Golden, Marine Habitat Resource Specialist at NOAA Fisheries, and Vice-Chair of the Chesapeake Bay Program's SAV Workgroup will serve as the session lead.

Speakers:

- Brooke Landry discussed the decades-long effort to restore Chesapeake Bay SAV, progress made, and continuing challenges.
- Victoria Hill presented the use of high-resolution satellite imagery for SAV and carbon storage assessments and the potential of automation and workflows to streamline the process.
- Bob Murphy discussed best management practices (BMPs) and solutions development for protecting SAV locally given changing hydrologic conditions.
- Elle Bassett discussed the role of community volunteers in SAV monitoring and restoration as a means of impactful outreach, stewardship development, and data collection.
- Elizabeth Lacey discussed communities of practice and the importance of collaboration in SAV protection and restoration from the regional to global scale.

East Coast SAV Collaborative

~

Co-chairs:
Brooke Landry, Md DNR
Jessie Jarvis, UNCW
Elizabeth Lacey, Stockton U.

The goal for this collaborative is to bring together experts in SAV research and management from each of the U.S. East Coast states from NC to ME to share ideas and information, provide training and resources, and collaborate on efforts that bring actionable science to the forefront of our SAV management strategies.

Past East Coast SAV Collaborative Meeting:

- **SAV and Living Shorelines:** October 30th, 9am-Noon
- www.eastcoastsavcollaborative.com
- Minutes and report will be posted soon.

Upcoming East Coast SAV Collaborative Meetings:

- **Next meeting: January 31st , 2025**
- **Time: TBD**
- **Topic: Defining a Seagrass Meadow**

2025 Meeting Schedule

Mark Your Calendars*

Winter Meeting: February 26th, 12-5pm

Spring Meeting: May 7th, 12-5pm

Summer Meeting: August 20th , 12-5pm

Fall Meeting: November 12th, 9-5pm

*Dede will send calendar invites for all of these meetings within the next few days, so you don't really have to mark your calendars…

HAPPY BIRTHDAY KAITLIN!!!

Questions?