Submerged Aquatic Vegetation

Principles for Phase III Watershed Implementation Plans

Protecting Submerged Aquatic Vegetation for the Benefit of Watershed Residents

SAV, also known as underwater grass, is a biologically and economically valuable resource and an important component of the Chesapeake Bay due to the ecosystem services it provides. Found throughout the shallow waters of the Bay, the presence of SAV has long been used as an indicator of bay health due to its need for clean, clear water. SAV is integral to the life cycle of many bay creatures; it provides food and shelter for blue crabs and juvenile rockfish, supporting the health of valuable commercial and recreational fisheries. When it thrives, SAV traps and filters sediment and nutrients, and through photosynthesis, supplies the surrounding water with oxygen necessary to support other aquatic life. Studies show that SAV also protects infrastructure by reducing the impacts of shoreline erosion, saving adjacent property owners money on potential storm damage.

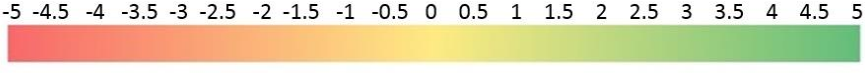
SAV is sensitive to changes in water quality, particularly clarity. Large sediment and nutrient loads lead to impaired conditions under which SAV cannot thrive. SAV relies on sunlight to grow – sediment clouds the water column and nutrients cause algae growth that shades SAV. Sediment and nutrient loads can be particularly heavy in areas with high amounts of impervious surface cover and during times of substantial precipitation. Changes in salinity, temperature, and sea level may affect the future distribution of SAV in the Bay.

We can work to mitigate the impact from these stressors by reducing activities that are known to negatively impact SAV, such as shoreline hardening. Natural shorelines (i.e., free from rip rap and bulkheads) also allow for inland migration of SAV over time and the maintenance of the ecosystem services that SAV provides. Taking measures to reduce human and climate stressors can improve water quality for SAV, bay fish and waterfowl, and humans alike.

Best Management Practices with SAV in Mind

Incorporating the protection of SAV into project design does not necessarily require additional or substantial investments. The chart below highlights current BMPs that experts have rated based on the value a BMP provides to several Chesapeake Bay Program (CBP) outcomes. However, case-by-case evaluation of co-benefits is recommended. Nutrient management plans, wetland and streamside wetland restoration, agricultural stream restoration and advanced gray infrastructure nutrient discovery programs are all regarded as BMPs that would positively benefit SAV habitat and recovery by improving water quality and clarity.

Best Management Practice	SAV	Additional Co-Benefits						
		Wetlands	Blue Crab Abundance	Oyster	Stream Health	Fish Habitat	Forage Fish	Drinking Water Protection/Security
Nutrient Management Plan	**3**	2	3	3	2	2	3	2.5
Wetland and Streamside Wetland Restoration	**3**	5	2.5	2.5	1	3.5	1.5	1
Ag Stream Restoration	**3**	3	2.5	1.5	5	3	3	1
Advanced Grey Infrastructure Nutrient Discovery Program	**3**	1	2.5	2.5	1.5	2	2	3.5



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*Values were taken from the Quantification of BMP Impact on the Chesapeake Bay Program Management Strategies study by Tetra Tech and are based on the best professional judgment of subject matter experts. Appendix E. Final Impact Scores evaluates BMP effects on outcomes on a scale of +5 (very beneficial) to -5 (very harmful). **This table shows select BMPs that scored a 3 and higher for the SAV Outcome, however, not all of these BMPs would merit the score of +3 for all projects. Closer evaluation of project site designs, including those from BMPs shown in the above table, is warranted when interpreting these scores.**

Guiding Principles for Phase III Watershed Implementation Plan

WIP Development

- Know if and where SAV exists in your area.
- Recognize and consider existing stressors: Poor water quality, hardened shorelines, areas of increased development and impervious surface, sea level rise.
- Capitalize on co-benefits: Choose BMPs that protect SAV, wetlands, stream health and fish habitat.
- Engage partners: Collaborate with state agencies and elected officials to share resources and incorporate conservation efforts into your WIPs.

WIP Implementation

- Reduce vulnerability: Design BMPs to reduce impervious surface/runoff and allow for inland migration of SAV. Consider converting bulkheads and rip rapped shorelines into natural shorelines. Avoid BMPs that may increase nutrient or sediment loading and/or negatively affect SAV.
- Build in flexibility and adaptability: Allow for adjustments in BMP implementation in order to consider a wider range of potential uncertainties and a richer set of response options.
- Adaptively manage: Allow for changes over-time as new data regarding SAV habitat vulnerability becomes available and as more SAV becomes restored.

Tools and Resources

- Virginia Institute of Marine Science – SAV Portal
- Maryland Department of Natural Resources – SAV Page

Contacts for More Information

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