Attainable

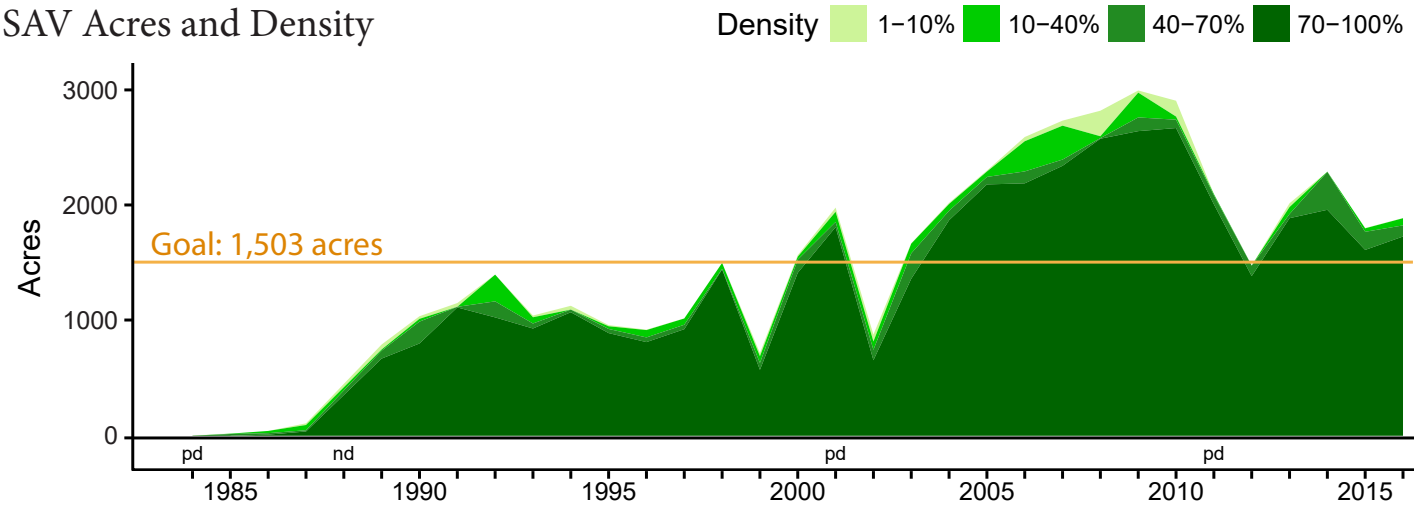
Middle Potomac River, Virginia (POTOH-VA)

Moderately dense beds of submerged aquatic vegetation (SAV) dominated by multiple freshwater species including hornwort, naiads, hydrilla, wild celery and redhead grass have been observed along the shorelines and in the Aquia and Potomac creeks from the Route 301 bridge to just below Quantico.

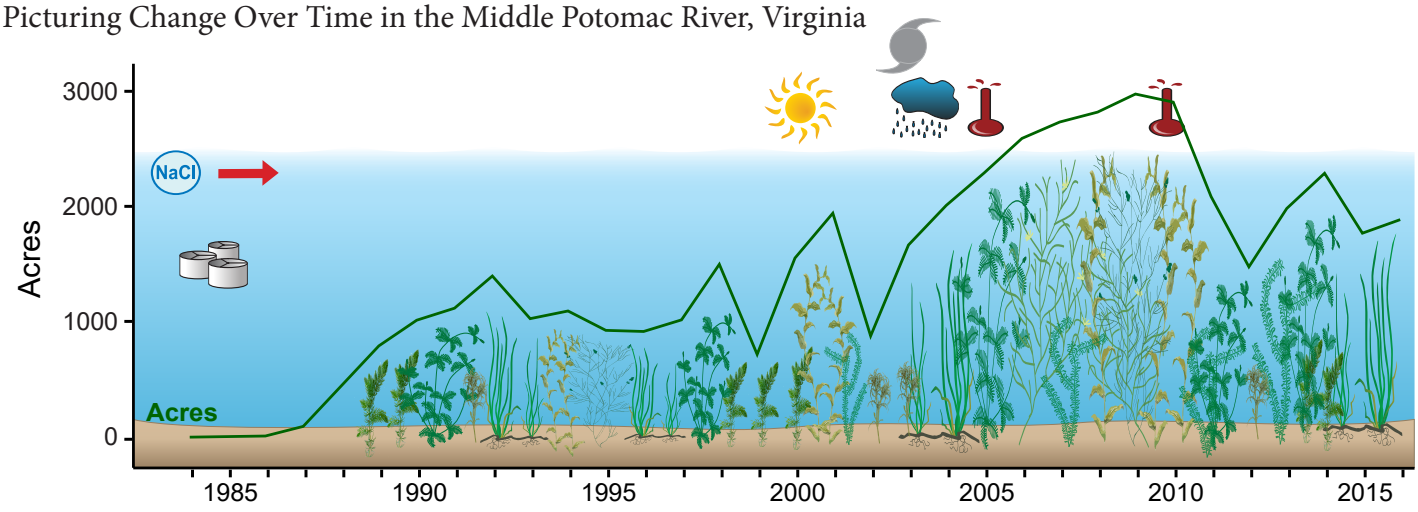
Executive Summary

Records indicate a historically diverse SAV community in this segment with SAV present throughout the Chesapeake Bay-wide aerial survey. Abundance peaked in 2009 and immediately decreased, but it has continued to exceed the restoration target. Canopy forming SAV species found in this segment typically grow to the water's surface and are therefore more resistant to the naturally high turbidities found here, so unless major deterioration of water quality is observed, the segment goal should continue to be achieved.

SAV Acres and Density



Picturing Change Over Time in the Middle Potomac River, Virginia



Key

Attainable

Take Home Points

Goal - Attainable

The goal of 1,503 acres was achieved in 1998, 2000, 2001 and from 2003-2016, except in 2012.

Historical Coverage

Historical records indicate a diverse SAV community

Freshwater from the river's headwaters and saltier waters from the Bay mix in this segment, so both fresh and saltwater tolerant species of SAV are observed here. Herbarium specimens from the 1910s through 1950s indicate that widgeon-grass, sago pondweed, redhead grass, wild celery and naiads were all present in the middle Potomac River during that time frame. As in the lower Potomac River, milfoil was also observed in abundance in the 1950s. During surveys conducted in the 1960s and 1970s, several species were recorded, including widgeongrass, redhead grass, milfoil, sago pondweed, wild celery, common waterweed and hornwort. Tropical Storm Agnes reduced SAV here, as elsewhere throughout the Bay, in 1972.

More recently, the Bay-wide aerial survey documented a resurgence of SAV in this segment beginning in the late 1980s, possibly due to wastewater treatment plant upgrades further upriver. Additionally, hydrilla was introduced into the upper Potomac River during this timeframe and it spread downriver into this segment from there. Wild celery, naiads, milfoil, hornwort, water stargrass, redhead grass and sago pondweed have also been present along the entire shoreline. SAV is not as abundant in this segment as it was in the early 2000s, but it continues to surpass the 1,503-acre restoration target.

Key Events

Hydrilla introduction

Hydrilla was introduced into the upper Potomac River in the early 1980s and likely spread downriver into this segment. Although it reached nuisance levels of abundance in some areas, hydrilla provided valuable ecosystem services in the absence of native species and ultimately contributed to the recovery of native SAV species in this region of the Potomac River.

Vulnerability/Resilience

Salinity

This section of the middle Potomac River is in an important transition area susceptible to salinity changes which could affect the composition of SAV beds here. Significant drought could cause a shift to more salt tolerant species assemblage or excessive rain could cause a shift to more freshwater species. Excessively wet years also tend to reduce water clarity, so conditions may favor canopy formers and species with lower light requirements, such as hydrilla.

Water clarity

Nutrients and suspended sediments will continue to play a dominant role in influencing SAV populations by altering light availability. Naturally high turbidities, as this is the turbidity maximum zone, will limit SAV growth to favor canopy formers and species with low light requirements.

Management Implications

Nutrient and sediment reductions; salinity

Managers should continue to focus on reducing nonpoint source nutrients and sediments to promote SAV growth in creeks and along mainstem shorelines where shallow water habitat is available. Water diversion for human consumption in upriver areas may increase salinities causing periodic SAV losses to these principally freshwater species.

References

Stevenson and Confer 1978; Orth and Moore 1983, 1984; Moore et al. 2000, 2004; Rybicki and Landwehr 2007; Orth et al. 2010a, 2017; Patrick and Weller 2015; Lefcheck et al. 2018

www.vims.edu/bio/sav/SegmentAreaChart.htm (abundance data)

www.vims.edu/bio/sav/maps.html (species information)

www.eyesonthebay.org (Maryland water quality data)

http://vecos.vims.edu/ (Virginia water quality data)