Attainable

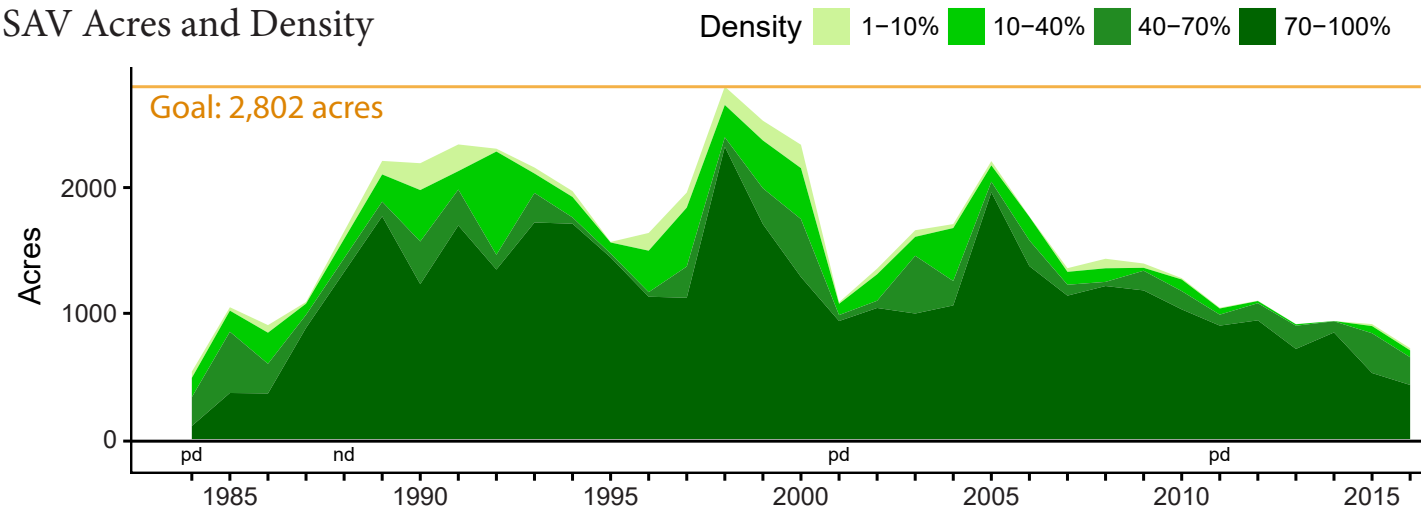
Middle Potomac River, Maryland (POTOH1-MD, POTOH2, POTOH3)

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 from the Route 301 bridge to just above Maryland Point and in Port Tobacco River and Nanjemoy Creek.

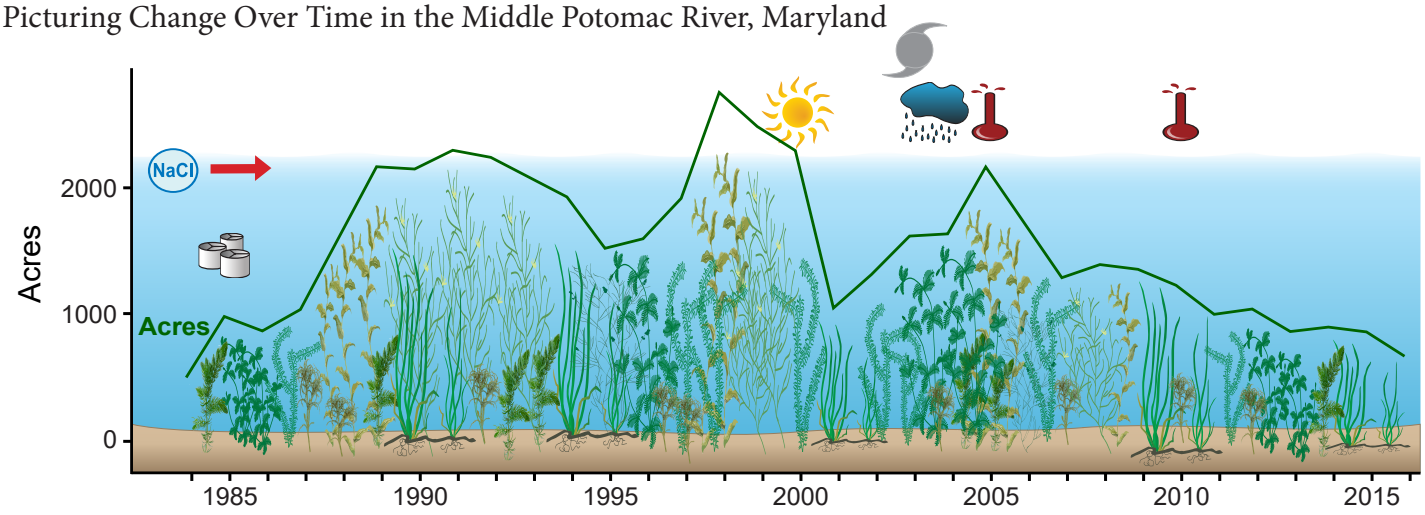
Executive Summary

SAV has been present in this segment throughout the Chesapeake Bay-wide aerial survey, reaching a peak in abundance in the late 1990s and then decreasing in abundance over the last decade. SAV only reached its goal once, in 1998, but has the potential to achieve its goal again if there is an improvement in water quality. The canopy forming species now found in this segment can typically grow to the water's surface and are therefore more resistant to the naturally high turbidities found here.

SAV Acres and Density



Picturing Change Over Time in the Middle Potomac River, Maryland



Key

Attainable

Take Home Points

Goal - Attainable

The goal of 2,802 acres was achieved in one year only, 1998, but is potentially attainable again with improvements in water quality.

Historical Coverage

Historical coverage is generally well known

Freshwater from the Potomac 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 widgeongrass, 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 observed in abundance here in the 1950s. During surveys conducted in the 1960s and 1970s, primarily in the Port Tobacco River and Nanjemoy Creek, several species including widgeongrass, redhead grass, milfoil, sago pondweed, wild celery, common waterweed and hornwort were recorded. 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 beginning in the 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 including dense coverages in the Port Tobacco River and Nanjemoy Creek. SAV has been trending downward in this region in the last decade for unknown reasons.

Key Events

Hydrilla introduction

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