Attainable

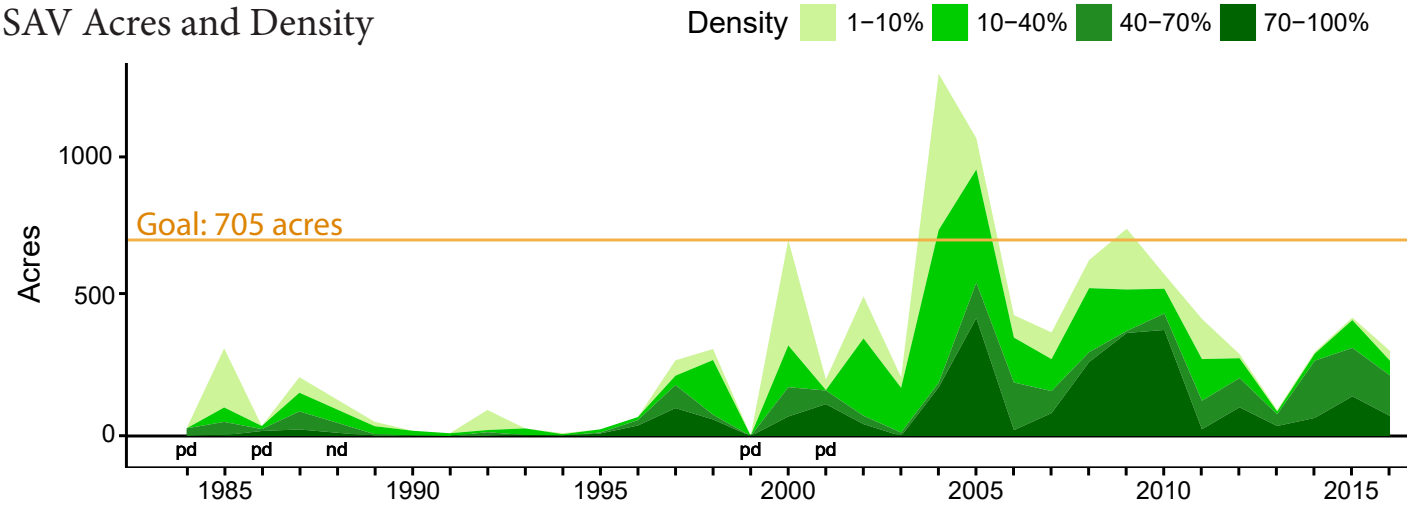
Upper Chesapeake Bay Mainstem (CB2OH)

Sparse to moderately dense submerged aquatic vegetation (SAV) beds are found in the upper Chesapeake Bay mainstem from just below the Susquehanna Flats to just above Eastern Neck Island.

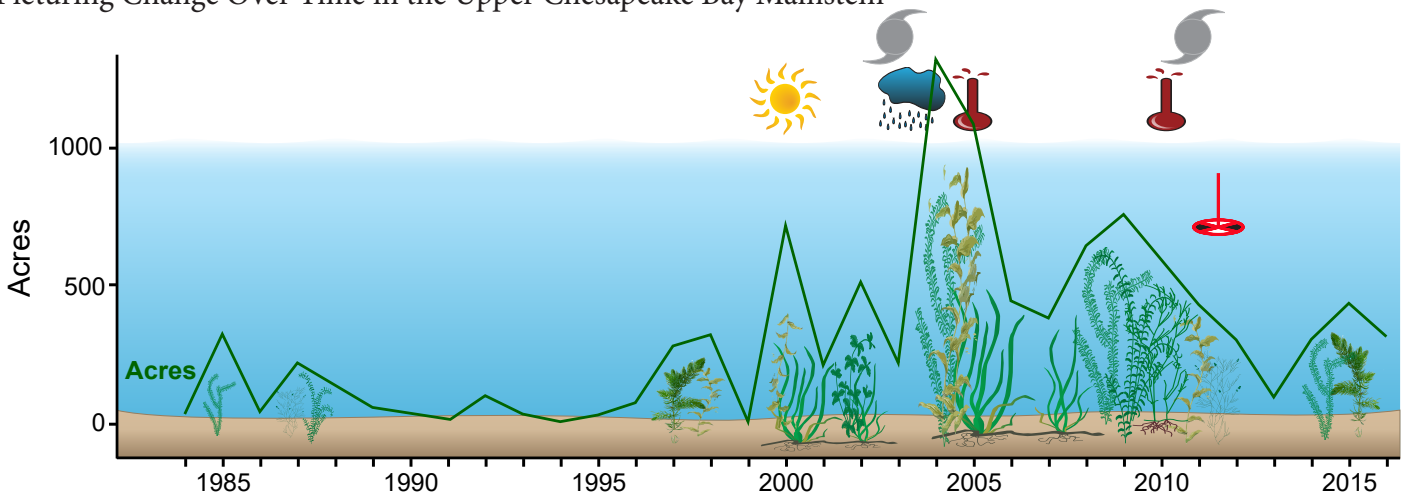
Executive Summary

The oligohaline area of this segment had minimal SAV beds through the late 1990s, when it began to increase. SAV abundance patterns are linked to wet and dry years, including the aftermath of Hurricane Irene and Tropical Storm Lee in 2011. The restoration goal of 705 acres was attained in four years of the Bay-wide aerial survey (2000, 2004, 2005 and 2009). The segment has supported a diverse community of species, including milfoil, wild celery, sago pondweed, redhead grass, common waterweed, curly pondweed, hydrilla and hornwort.

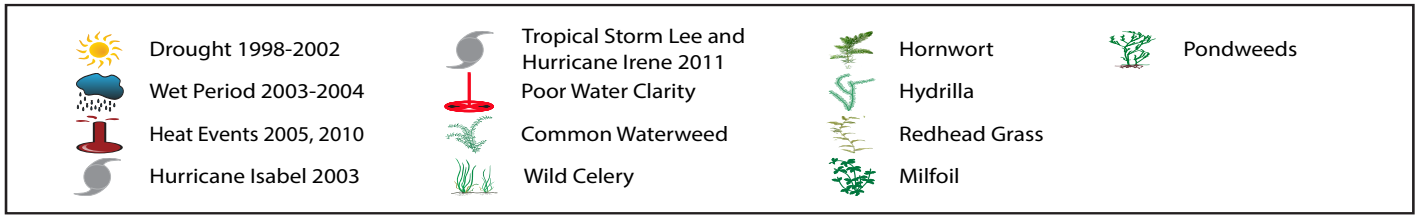
SAV Acres and Density



Picturing Change Over Time in the Upper Chesapeake Bay Mainstem



Key



Attainable

Take Home Points

Goal - Attainable

The goal of 705 acres is attainable and was met in 2000, 2004, 2005 and 2009.

Historical Coverage

SAV not well documented prior to the Bay-wide aerial survey

While little historical documentation of SAV exists for this segment, it is likely that the presence and abundance of SAV populations were similar to those in the Susquehanna Flats and adjacent rivers (e.g., Bush, Gunpowder, Back and Middle rivers). Milfoil most likely surged here in the 1950s, potentially influencing native SAV populations, as described for the Susquehanna Flats and other areas of the upper Bay. The disappearance of milfoil began in the late 1960s, and probably allowed native species to return. Then in June 1972, Tropical Storm Agnes negatively altered the recovery pattern for native SAV species throughout the Bay. Some colonization occurred after Tropical Storm Agnes, but more significant recovery began in the mid-1990s, and SAV acreage in this segment has fluctuated since then. There are eight species now recorded for this area including milfoil, wild celery, sago pondweed, redhead grass, common waterweed, curly pondweed, hydrilla and hornwort.

Key Events

Tropical Storm Agnes

The passage of Tropical Storm Agnes in June 1972 probably resulted in the loss of SAV beds in this region.

Tropical Storm Lee and Hurricane Irene

There was a general upward trend of SAV in the region until Tropical Storm Lee and Hurricane Irene swept over the watershed in late summer 2011 (http://ian.umces.edu/ecocheck/summer-review/chesapeake-bay/2011/indicators/influencing_factors/). The two storms led to a dramatic decline of SAV in areas throughout the upper Bay. The storms caused an immediate impact in the increases of freshwater, scouring events and turbidity, but also provided a longer-term negative impact because their timing coincided with peak biomass and SAV reproduction in the upper Bay. These storms also contributed to persistent turbidity problems associated with the resuspension of fine-grained sediments that were scoured from behind the Conowingo Dam and deposited throughout the Susquehanna Flats and upper Bay during the storms.

Vulnerability/Resilience

Resilient SAV beds

Tropical Storm Lee and Hurricane Irene caused a decline in SAV because of prolonged turbidity from the reuspension of fine-grained sediments. A number of beds proved to be resilient, facilitating some recovery of SAV in the years following those storms.

Management Implications

Potential for sediment release and increased nitrogen loads during major storm events

The two major issues that will influence the continued abundance and diversity of SAV in this region are sediments that may be released from behind the Conowingo Dam during major storms or prolonged wet periods and nitrogen loads coming from the Susquehanna River.

References

Stevenson and Confer 1978; Orth and Moore 1983, 1984; Moore et al. 2000, 2004; 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)