

Upper Chesapeake Bay Mainstem (CB3MH)

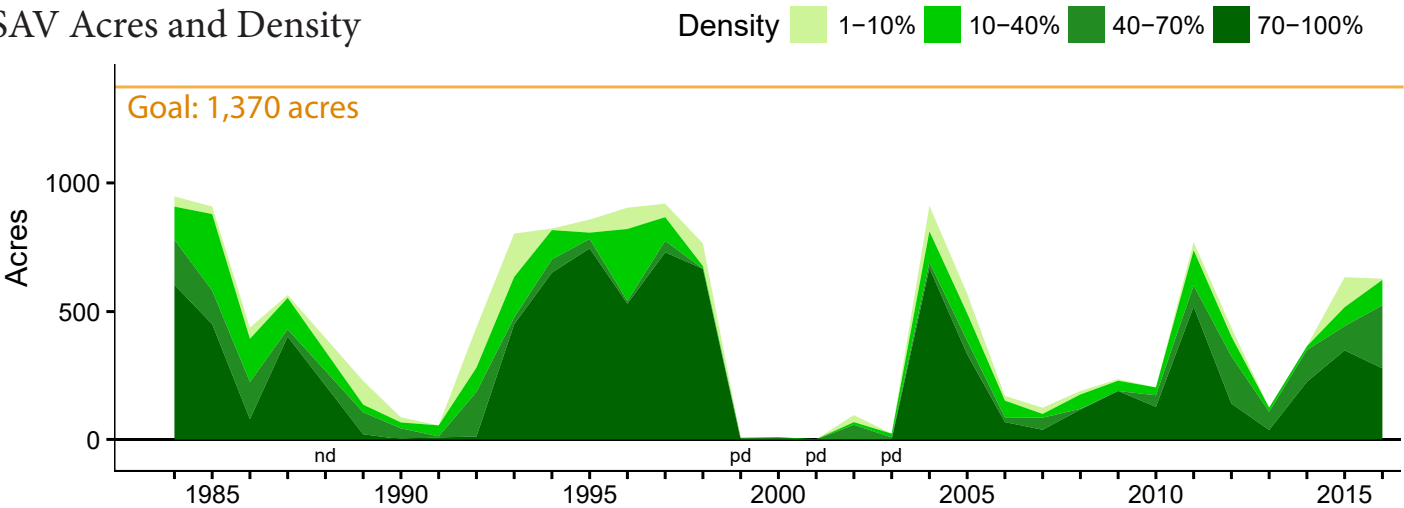


Sparse to moderately dense submerged aquatic vegetation (SAV) beds are found in the upper mainstem of the central Chesapeake Bay: along Eastern Neck on the eastern shore and shoal areas around the mouth of the Patapsco and Magothy rivers on the western shore.

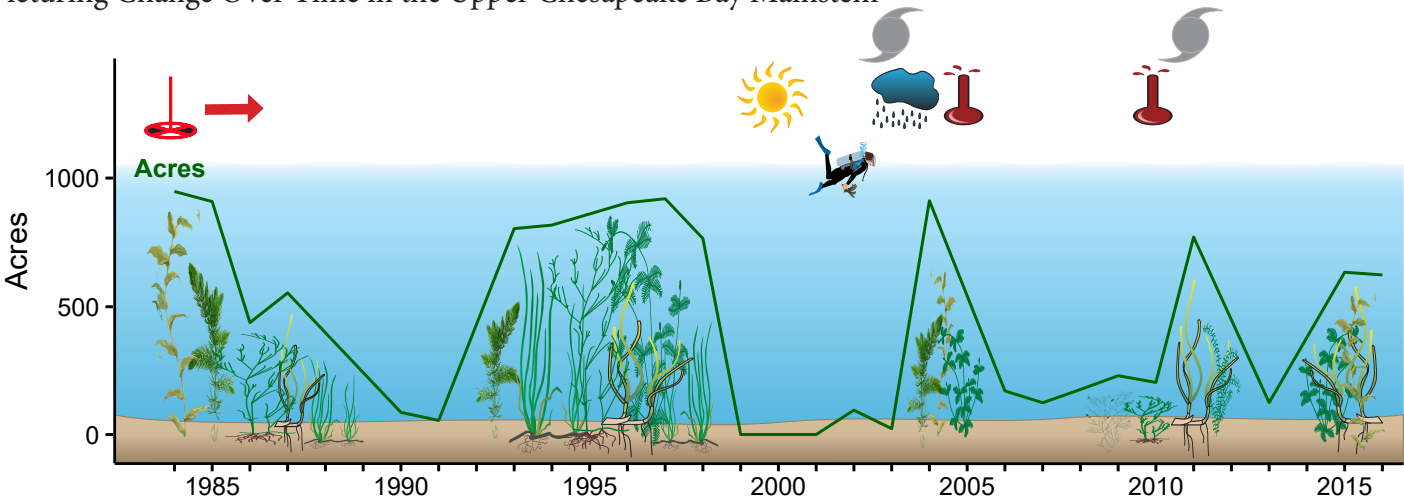
Executive Summary

The mesohaline area of this segment has abundant SAV beds, with the majority located along the eastern side of the Bay. The Bay-wide aerial SAV survey has recorded significant variability in SAV abundance that can be linked to wet and dry years, including those following Hurricane Irene and Tropical Storm Lee in 2011. The restoration goal of 1,370 acres has never been attained, but it is potentially attainable with water clarity improvements. The segment has supported a diverse community of SAV species, including milfoil, wild celery, sago pondweed, redhead grass, common waterweed, curly and slender pondweeds, hornwort and widgeongrass.

SAV Acres and Density



Picturing Change Over Time in the Upper Chesapeake Bay Mainstem



Key

	Drought 1998-2002		Tropical Storm Lee and Hurricane Irene 2011		Wild Celery		Common Waterweed
	Wet Period 2003-2004		Transplants Early 2000s		Hornwort		Milfoil
	Heat Events 2005, 2010		Poor Water Clarity		Widgeongrass		Pondweeds
	Hurricane Isabel 2003		Ongoing Event		Redhead Grass		

Goal - Potentially Attainable

The SAV restoration goal of 1,370 acres has never been attained. It is potentially attainable, however, if water clarity improves.

Historical Coverage

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

While there is little historical SAV documentation for this segment, it is likely that the presence and abundance of SAV populations were similar to those in adjacent rivers (e.g., Patapsco, Magothy and Chester 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 beginning in the late 1960s, however, probably allowed native species to return. In June 1972, Tropical Storm Agnes negatively altered the recovery pattern for native SAV species throughout the Bay, but by 1978, 1,371 acres of SAV were recorded in this segment, indicating that recovery occurred relatively quickly. Since the annual Bay-wide aerial survey began in 1984, cover has fluctuated dramatically. The dynamics of SAV populations are likely a result of wet and dry periods that influenced both clarity and salinity. Ten species have been recorded for this area, including widgeongrass, redhead grass, sago pondweed, horned pondweed, milfoil, wild celery, common waterweed, slender pondweed, curly pondweed and hornwort. The more salt tolerant plants have been observed more frequently in the shoals along the mainstem, while the freshwater species have been more commonly observed in the small creeks and embayments in this segment.

Key Events

Tropical Storm Agnes

Tropical Storm Agnes in June 1972 caused the loss of SAV beds in this region.

Transplant projects

SAV restoration projects (using transplanted SAV) in Shallow Creek at the mouth of the Patapsco River contributed to the resurgence of SAV in the mid-2000s. SAV has persisted since that time and numerous SAV species are now found here.

Hurricane Irene and Tropical Storm Lee

Hurricane Irene and Tropical Storm Lee in August and September 2011, respectively, (http://ian.umces.edu/ecocheck/summer-review/chesapeake-bay/2011/indicators/influencing_factors/), appear to have influenced populations of SAV in this segment, which have rebounded since then.

Vulnerability/Resilience

Water clarity and salinity

This segment generally has poor water clarity during the spring and summer, likely due to nutrient and sediment pollution from runoff. Salinity may also be a factor in this segment, as increased salinity can reduce many of the freshwater species found here, while increased precipitation could have a positive impact on these same species.

Management Implications

Nutrient and sediment reductions; salinity

Managers will need to focus on improving water clarity by reducing both sediments and nutrients and possibly manage for salinity intrusion by influencing the flow of freshwater over the Conowingo Dam.

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)