

Middle Chesapeake Bay, Virginia (CB5MH-VA)

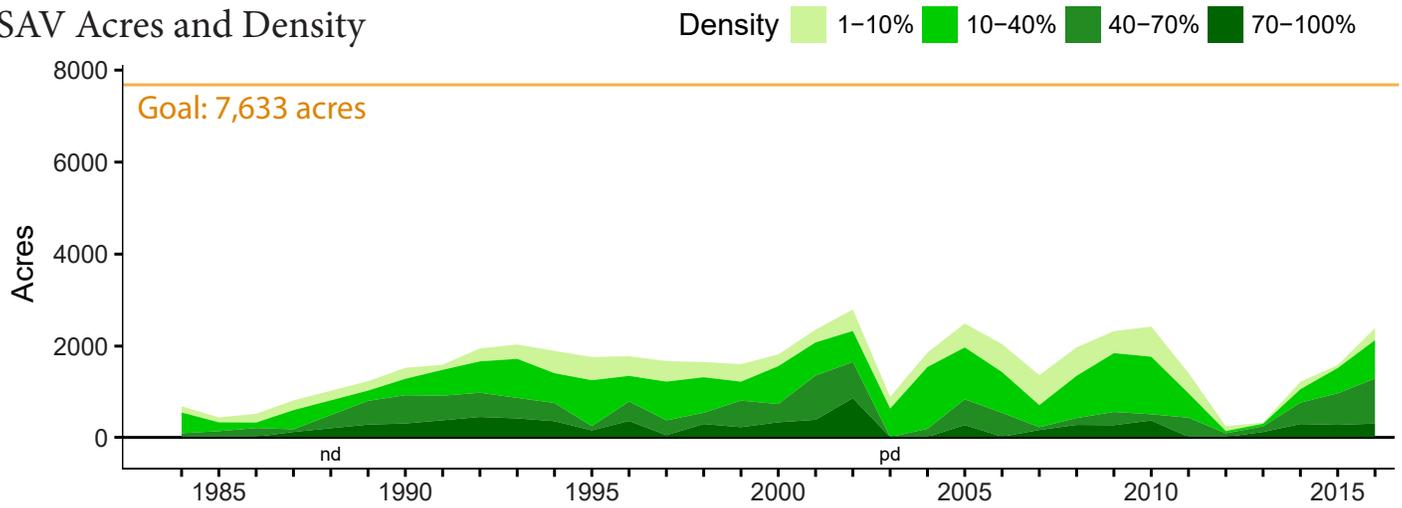


Moderately dense submerged aquatic vegetation (SAV) beds exist along the middle mainstem of the Chesapeake Bay: from Reedville to Windmill Point in Virginia consisting of eelgrass and widgeongrass.

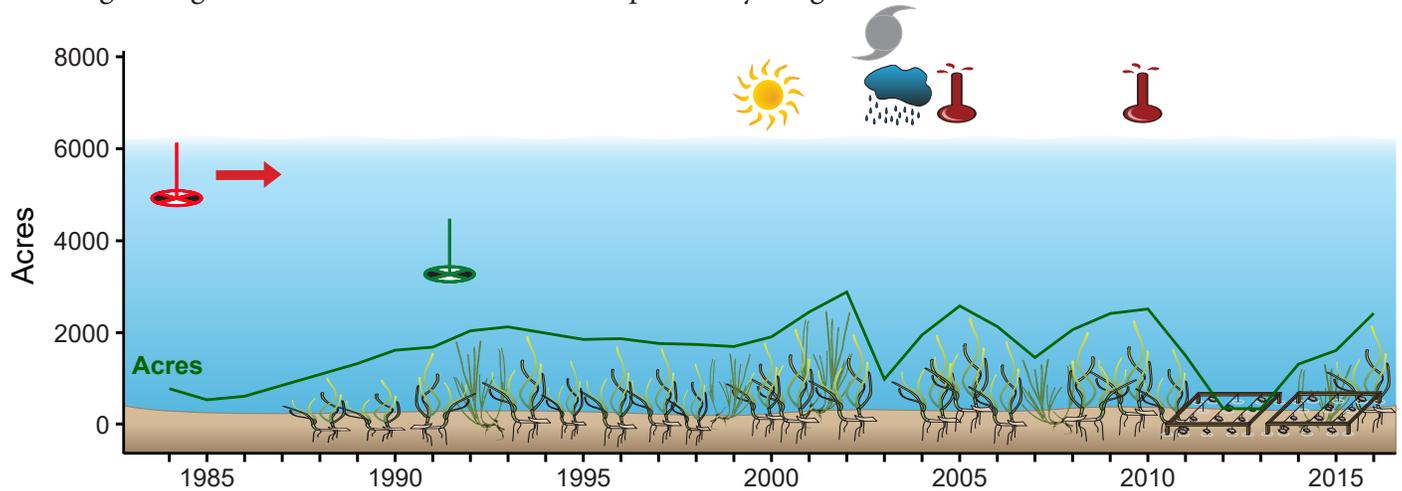
Executive Summary

SAV beds consisting of dense eelgrass and widgeongrass once dominated the extensive shoal areas of the mainstem Bay from Reedville to Windmill Point at the mouth of the Rappahannock River. In the 1960s, SAV achieved maximum historical coverage during the driest period recorded in recent history. Since the annual Bay-wide aerial survey began in the 1980s, SAV abundance has fluctuated but has shown no real trend of increasing or decreasing. The highest acreage was observed in 2002, 2005, 2010 and 2016 with increased abundance driven by water quality and hot summers. The restoration goal of 7,633 acres for this segment has never been attained, but is potentially attainable if water clarity improves. Oyster aquaculture is becoming a significant issue in this region.

SAV Acres and Density



Picturing Change Over Time in the Middle Chesapeake Bay, Virginia



Key

	Drought 1998-2002		Good Water Clarity		Widgeongrass
	Wet Period 2003-2004		Poor Water Clarity		Eelgrass
	Heat Events 2005, 2010		Aquaculture		
	Hurricane Isabel 2003		Ongoing Event		

Goal - Potentially Attainable

The goal of 7,633 acres has never been attained. It is potentially attainable if water clarity improves and the recent expansion of widgeongrass continues.

Historical Coverage

Historical and recent distribution well known

The 1930s saw a dramatic eelgrass decline in the Bay following the eelgrass epidemic. After this, recovery was rapid due to the growth and expansion of the plants that persisted. Historical records indicate that abundance reached peak coverage in the 1960s during an extended dry period. Coverage during the current aerial survey showed growth and expansion of widgeongrass along with a few areas dominated by eelgrass, and reached peak coverage in 2002, 2005, 2010 and 2016.

Key Events

Tropical Storm Agnes

The passage of Tropical Storm Agnes in June 1972 resulted in the loss or reduction of many SAV beds in this segment. SAV remained very sparse in this segment through the 1980s.

Vulnerability/Resilience

Water clarity

Periods of varying rainfall in the 1980s and 1990s influenced water clarity and facilitated the changes noted in SAV distribution.

Eelgrass is susceptible to heat events but widgeongrass dominates here

While eelgrass, a cold-water SAV species, has been present, the beds are dominated by widgeongrass. Some eelgrass beds developed in the 1990s but disappeared or were severely reduced after heat events in 2005 and 2010. Widgeongrass has shown recent increases in this segment and is much more tolerant of high temperatures than eelgrass. However, widgeongrass populations can be highly variable on an annual basis, which could change as the Bay becomes increasingly warmer. They also typically require more light for growth, resulting in an expansion in the shallowest nearshore SAV habitats.

Aquaculture

Oyster aquaculture has been rapidly expanding and could provide a boost to the local economy, help replace declining wild stocks and lead to water clarity improvements through biofiltration. Shellfish aquaculture that occupies shallow water habitat, however, has the potential to limit SAV recovery into those areas.

Management Implications

Nutrient and sediment reductions; aquaculture

Managers will need to focus on improving water clarity by reducing both sediment and nutrient pollution. Managers will be unable to do much about temperature as this is a global issue, but by improving water clarity, plants may be able to tolerate periods of warmer water. In addition, managers will have to deal with new and existing aquaculture requests in areas where SAV is currently present. Existing regulations prevent new leases, and even new cages, in areas of existing SAV.

References

Stevenson and Confer 1978; Orth and Moore 1983, 1984; Moore et al. 1999, 2000, 2004; Orth et al. 2010a, 2010b, 2017; Patrick and Weller 2015; Lefcheck et al. 2017, 2018
www.vims.edu/bio/sav/SegmentAreaChart.htm (abundance data)
www.vims.edu/bio/sav/maps.html (species information)
www.vecos.vims.edu/ (Virginia water quality data)