

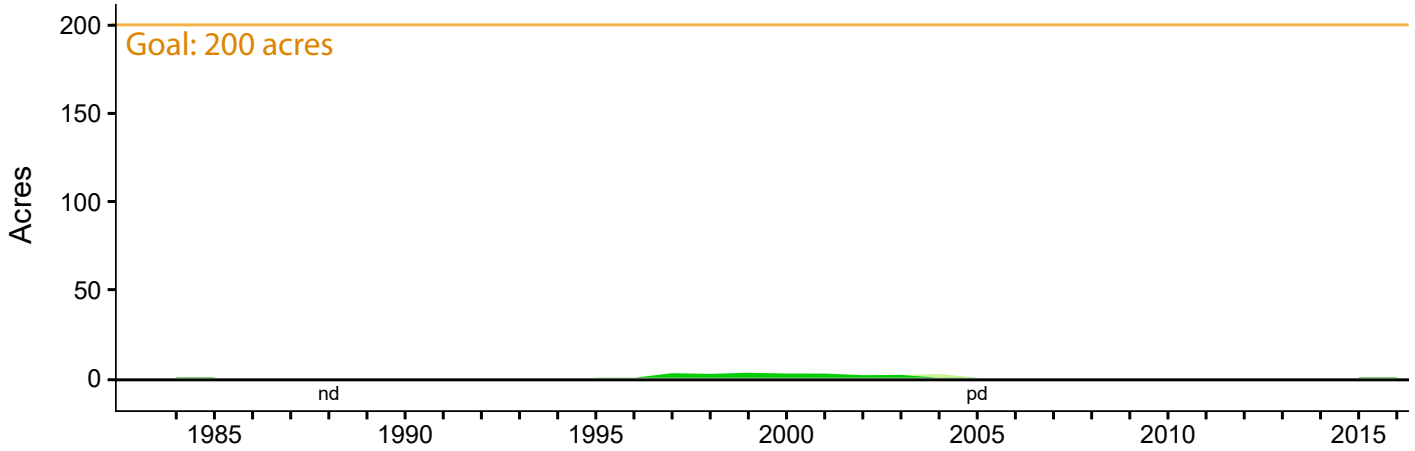
Submerged aquatic vegetation (SAV) beds once present in the lower reaches and smaller tributary creeks of this segment prior to 1972 are now absent.

Executive Summary

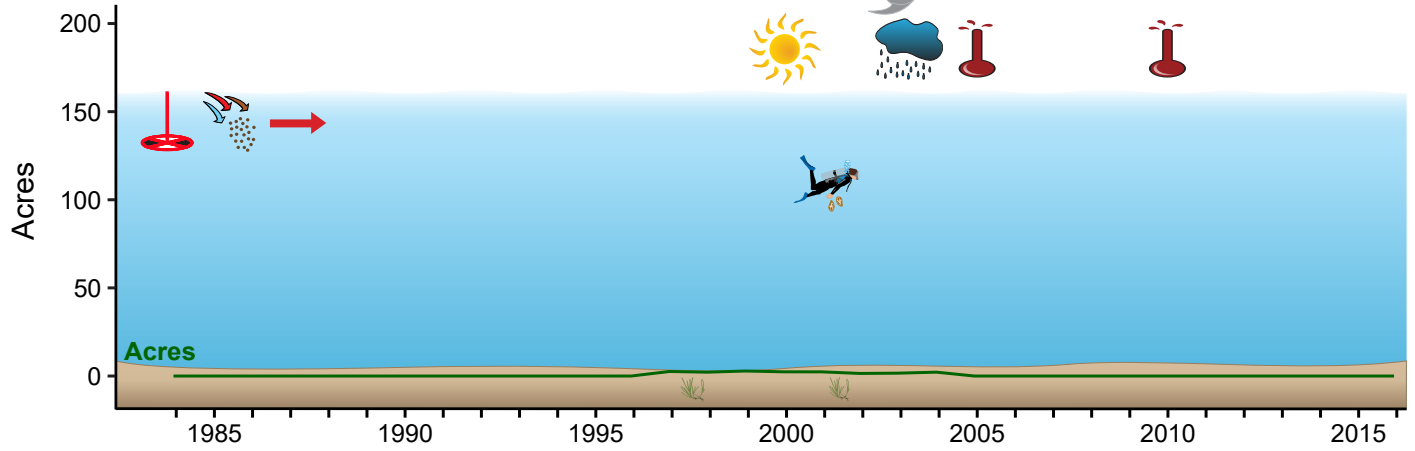
SAV beds most likely consisting of eelgrass once dominated the shoal areas of the lower mesohaline James River. In the 1950s and 1960s, SAV achieved maximum coverage during the driest period recorded in recent history. Tropical Storm Agnes in 1972 triggered a dramatic decline in any remaining SAV in this segment and it never recovered after. The only opportunity for reaching the goal of 200 acres of SAV for this segment would be a major improvement in water clarity during the spring and summer when turbidity levels are highest, and a possible resurgence of widgeongrass into the shallow areas along Mulberry Island, as well as several of the smaller tributaries where SAV was historically found.

SAV Acres and Density

Density ■ 1-10% ■ 10-40% ■ 40-70% ■ 70-100%



Picturing Change Over Time in the Lower James River



Key

	Drought 1998-2002		Poor Water Clarity		Eelgrass
	Wet Period 2003-2004		Seeding Efforts Early 2000s		
	Hurricane Isabel 2003		Nutrient and Sediment Loading		
	Heat Events 2005, 2010		Ongoing Event		

Goal - Potentially Attainable

The goal of 200 acres has never been achieved. It is potentially attainable if water clarity can be significantly improved and eelgrass can once again colonize this segment. Expansion of widgeongrass could also facilitate meeting the goal.

Historical Coverage

Eelgrass has been the dominant species in this segment

Eelgrass has been the dominant species and was likely present in the early 1900s. Distribution and abundance were probably reduced in the 1930s following the eelgrass epidemic, but recovered through the 1950s and 1960s, reaching peak distribution along both shores of the lower James River and in several of the smaller tributaries. No eelgrass has been found in this segment since 1973, except for one small area in the lower reaches adjacent to the Newport News Shipbuilding factory.

Key Events

Tropical Storm Agnes

In June 1972, Tropical Storm Agnes resulted in the loss of any remaining eelgrass beds in this segment.

Seeding efforts

Small-scale seeding efforts were conducted in the early 2000s just below the James River Bridge but were not successful.

Vulnerability/Resilience

Water clarity

This segment has had persistently poor water clarity during the spring and summer. Nutrients and sediments are the likely causes of the high turbidity as suspended sediment levels are high during the spring and summer, especially in the upper portion of this segment. Summertime phytoplankton blooms can occur in the lower portion of this segment.

Eelgrass is susceptible to heat events

Eelgrass is a cold-water SAV species in the Chesapeake Bay near its southern distributional boundary in the mid-Atlantic. Widgeongrass is much more tolerant than eelgrass of temperature extremes, and if it can colonize some of the shallower areas of this segment, it may indicate an improvement in water quality. However, widgeongrass populations can be highly variable on an annual basis, and may become more so in an increasingly warmer Bay. They also typically require more light for growth than eelgrass, and therefore their expansion would likely be most evident in the shallowest nearshore areas.

Management Implications

Nutrient and sediment reductions

Managers will need to focus on improving water clarity by reducing both sediments and nutrients. Managers will be unable to do much about temperature as this is a more global issue. However, by improving water clarity, plants may be able to tolerate periods of warmer water.

References

Stevenson and Confer 1978; Orth and Moore 1983, 1984; Moore et al. 2000, 2001, 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)

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