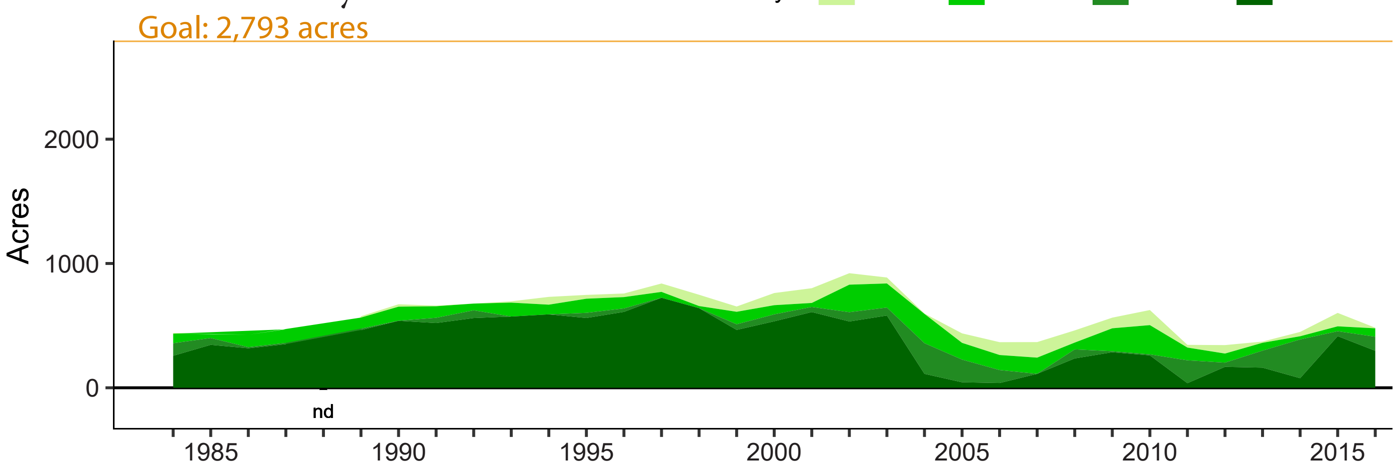
Lower York River (YRKPH)

Current Lower York River eelgrass and widgeongrass submerged aquatic vegetation (SAV) beds are limited in distribution compared to historical levels.

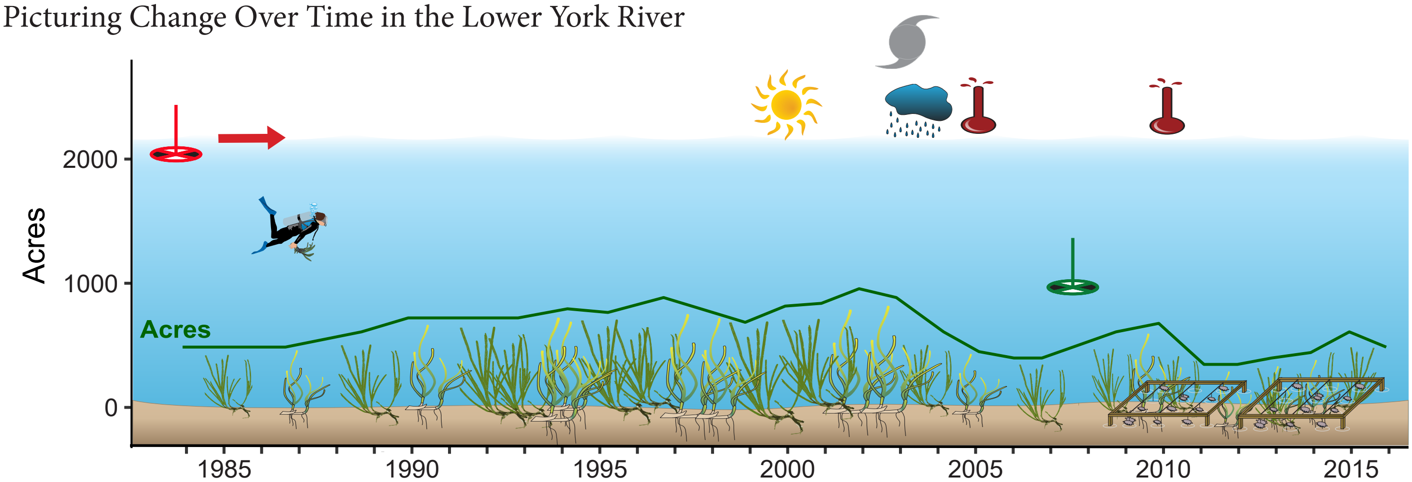
Executive Summary

In the 1960s, SAV achieved maximum historical coverage during the driest period recorded in recent history. In 1972, Tropical Storm Agnes triggered a dramatic decline in SAV in this segment. SAV began a slow recovery in the 1980s through the early 2000s, thanks to consistently improving water clarity, but declined again when the water clarity began to worsen. Heat events in 2005 and 2010 contributed to significant declines of eelgrass in 2006 and 2011. The goal of 2,793 acres is potentially attainable depending on water clarity improvements and the resurgence of widgeongrass. However, evidence of a warming climate in recent decades suggests that summertime heat events here may become more frequent, requiring even greater water clarity to enhance SAV resilience.

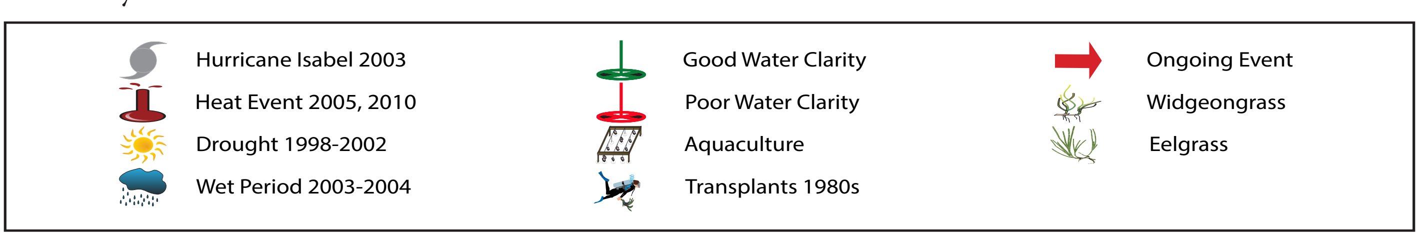
SAV Acres and Density



Picturing Change Over Time in the Lower York River



Key



Potentially Attainable

Take Home Points

Goal - Potentially Attainable

The goal of 2,793 acres has never been achieved. It is potentially attainable if water clarity can be improved and the recent expansion of widgeongrass continues.

Historical Coverage

Historical and recent distribution well known

There is good historical information for this segment. Eelgrass has been the dominant species and was present in the early 1900s. Distribution and abundance were reduced in 1930s following the eelgrass epidemic, but recovered through the 1960s, reaching peak distribution along both shores of the lower York River. Distribution and abundance have varied over the last few decades and remain principally from Gloucester Point downriver to the mouth of the York River.

Key Events

Tropical Storm Agnes

Tropical Storm Agnes in June 1972 resulted in the loss or reduction of many eelgrass beds in this segment. Eelgrass persisted in downriver areas and contributed to its recovery through the 1990s.

Transplant projects

Small-scale restoration efforts beginning in the upriver sections in the 1980s were generally successful and contributed to the resurgence of eelgrass during this time period.

Vulnerability/Resilience

Water clarity

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

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. Extreme summertime temperatures in August 2005 and June 2010 led to significant losses of eelgrass, especially in upriver areas of historical SAV distribution where turbidity is the highest. However, populations did persist, especially near the mouth of the York River, and vegetative regrowth within these beds contributed to its recovery in this region, along with seed input from residual populations. Widgeongrass is much more tolerant than eelgrass of temperature extremes, and has shown recent increases here. However, widgeongrass populations can be highly variable on an annual basis, and may fluctuate more as the Bay grows increasingly warmer. They also typically require more light for growth than eelgrass, and therefore their expansion would likely be most evident 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 due to biofiltration. Shellfish aquaculture that occupies shallow water habitat, however, could reduce SAV recovery potential in those areas.

Management Implications

Nutrient and sediment reductions; quaculture

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 more global issue. However, by improving water clarity, SAV may be able to tolerate periods of warmer water. In addition, managers will have to deal with new and existing aquaculture requests where SAV is currently present and in unvegetated areas where SAV once was abundant and may begin recolonizing in future years.

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)