Potentially Attainable

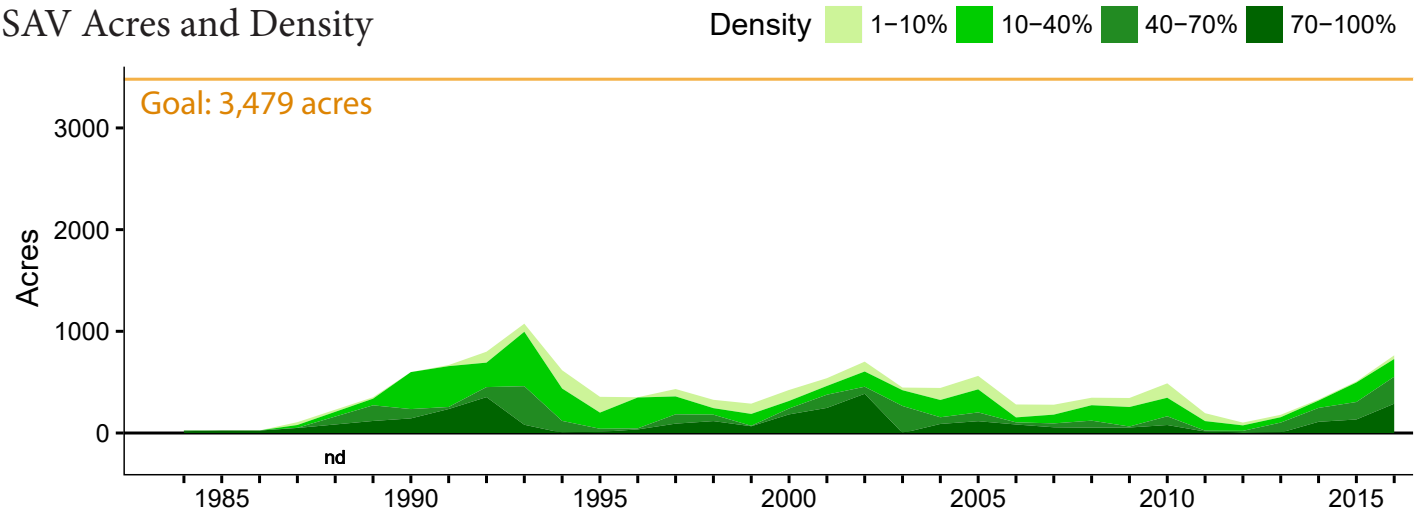
Piankatank River (PIAMH)

Submerged aquatic vegetation (SAV) beds in the lower portion of the Piankatank River are presently dominated by widgeongrass, with upper portions of the river shifting to a variety of freshwater species.

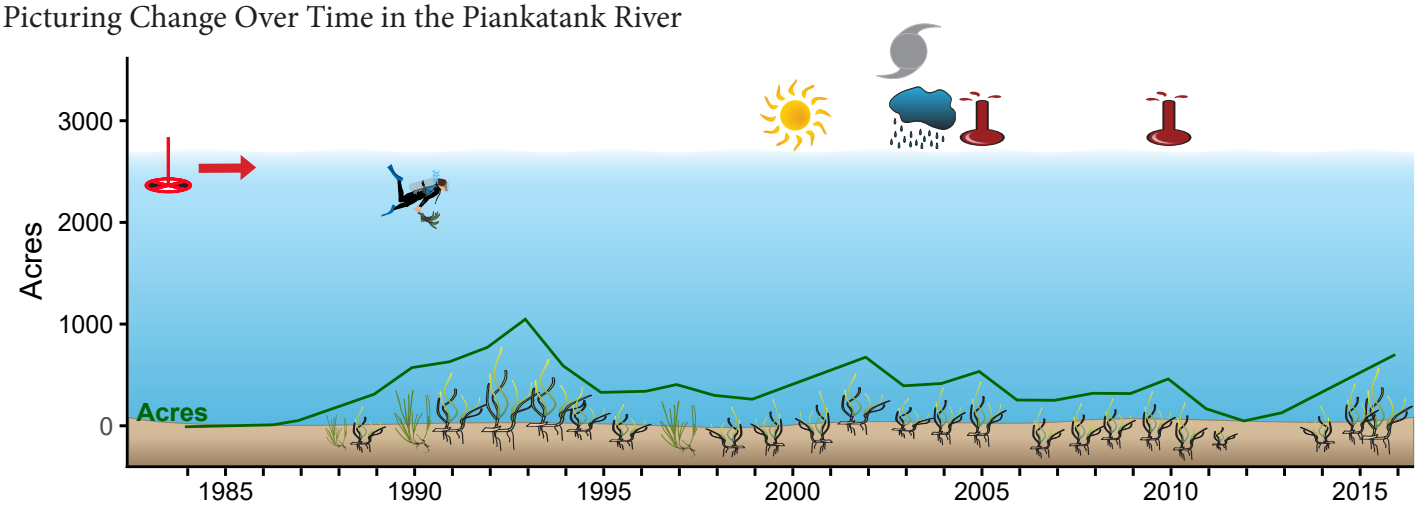
Executive Summary

Areas near the mouth of the Piankatank River achieved maximum SAV coverage in the 1960s, correlated with the driest period recorded in recent history. Eelgrass and widgeongrass codominated this area until 1972, when Tropical Storm Agnes caused a dramatic loss of SAV habitat. Despite repeated restoration efforts, eelgrass never recovered. Widgeongrass, however, did return and may eventually facilitate achievement of the SAV restoration goal for this segment. Unfortunately, little historical information is available for the upper, low-salinity and freshwater areas of the river, but recent Chesapeake Bay-wide aerial surveys do show the presence of modest-sized SAV beds there that may also help facilitate restoration goal achievement with improvements in water clarity.

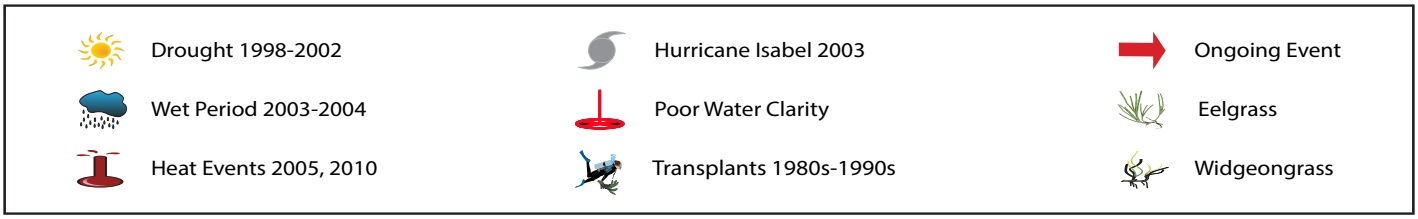
SAV Acres and Density



Picturing Change Over Time in the Piankatank River



Key



Potentially Attainable

Take Home Points

Goal - Potentially Attainable
The goal of 3,479 acres is potentially attainable but will require significant improvements in water clarity.

Historical Coverage
Historical and recent SAV distribution well known for the area near the mouth of the river
Eelgrass was the dominant species near the mouth of the Piankatank River in the early 1900s but was reduced in the 1930s following the eelgrass epidemic. The population recovered and reached peak distribution in the late 1960s, but was again decimated in 1972 with the passage of Tropical Storm Agnes. Despite repeated restoration efforts, eelgrass didn't persist beyond 1992. Widgeongrass, however, has expanded and is now the dominant species near the mouth of the Piankatank River and may eventually facilitate achievement of the SAV restoration goal.

Unfortunately, little historical information is available for the upper, low-salinity and freshwater areas of the river, but recent Bay-wide aerial surveys do show the presence of modest-sized SAV beds there that may also help facilitate restoration goal achievement with further improvements in water clarity.

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

Transplant projects
Eelgrass restoration efforts beginning in the 1980s were initially successful and contributed to a modest resurgence of eelgrass until 1992. Restoration efforts since then have been unsuccessful.

Vulnerability/Resilience
Water clarity
Periods of less rainfall in the late 1980s and early 1990s had some beneficial effect on SAV, especially on restoration efforts during this period, as well as the drier period of 1999-2002. Water clarity, as well as salinity, will be important drivers for freshwater species in the upper portions of this segment.

Eelgrass is susceptible to heat events
Eelgrass is a cold-water SAV species in the Bay near its southern distributional boundary in the mid-Atlantic. Any recovery of eelgrass in the lower portion of this segment will be limited by heat events, as noted in other segments where extreme temperatures impacted eelgrass populations in 2005 and 2010. Widgeongrass, which is also present in this segment, is much more tolerant than eelgrass of temperature extremes, and has recently shown increases here. However, widgeongrass populations can be highly variable on an annual basis and could fluctuate as the Bay becomes 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
The expansion of oyster aquaculture in this region could provide a boost to the local economy, help replace declining wild stocks and help improve water clarity due to biofiltration. However, shellfish aquaculture, which occupies shallow water habitat that is also potential SAV habitat, could limit the recovery of SAV into those regions because cages and nets would preclude the growth of SAV on that same bottom.

Management Implications
Nutrient and sediment reductions
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, eelgrass 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 was once abundant and may begin to recolonize.

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)