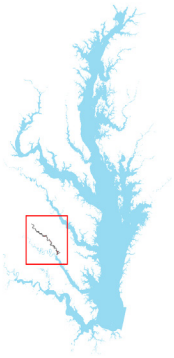
Attainable

Mattaponi River (MPNOH, MPNTF)

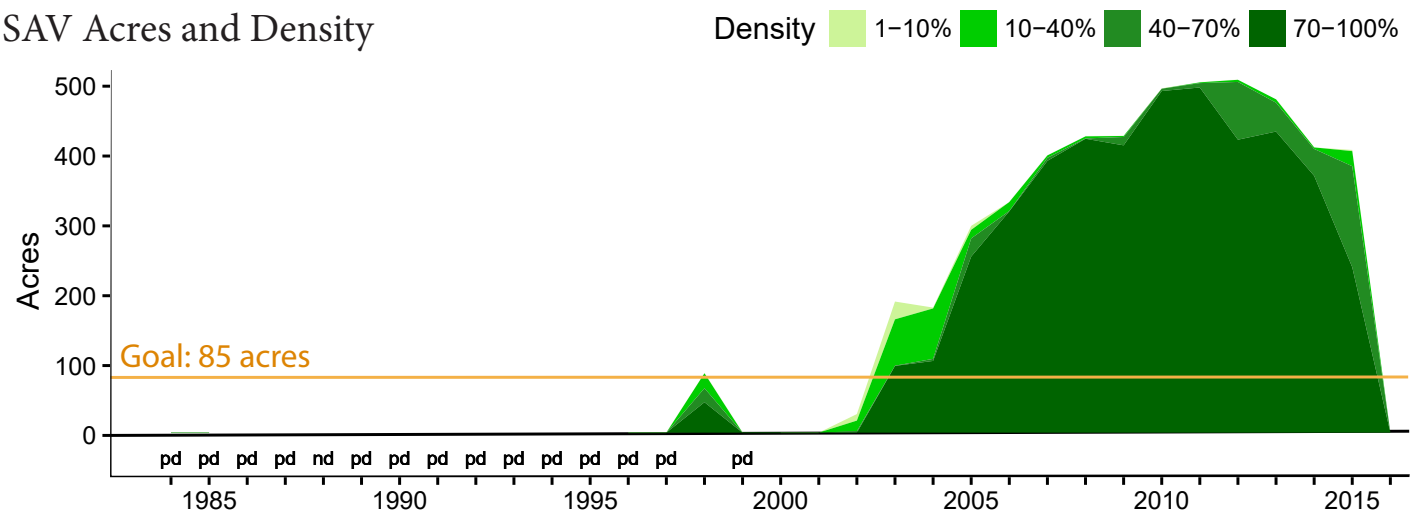


Dense beds of submerged aquatic vegetation (SAV) dominated by hydrilla are found along the shoal areas and in many small tributaries of the Mattaponi River.

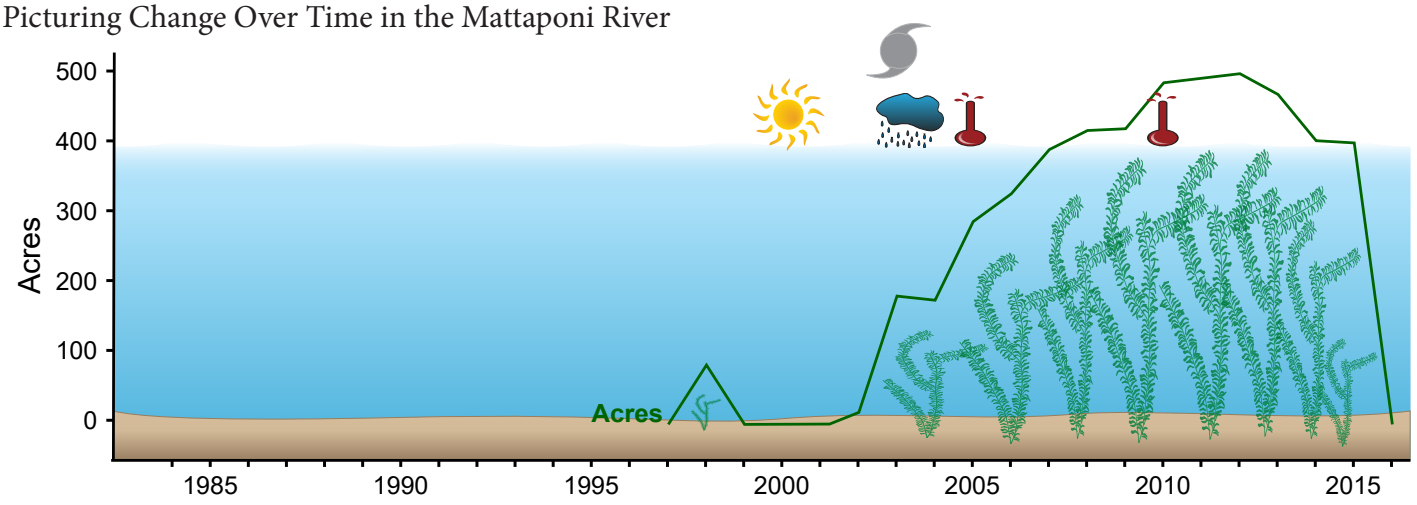
Executive Summary

There is a dearth of information on the historical SAV coverage in the Mattaponi River. Imagery was unavailable until 1998 when the Chesapeake Bay-wide aerial survey to monitor SAV began in this system. The appearance of hydrilla was first noted sometime in the mid-1990s and has contributed to the abundance of SAV, helping to attain and exceed its restoration goal of 85 acres in all but five years from 1998-2016.

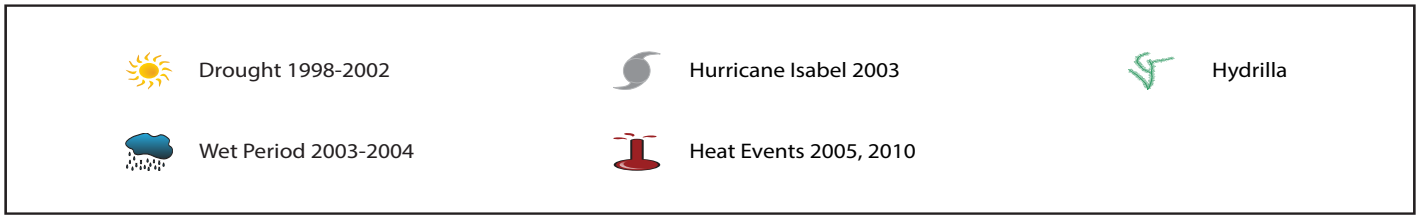
SAV Acres and Density



Picturing Change Over Time in the Mattaponi River



Key



Attainable

Take Home Points

Goal - Attainable

The goal of 85 acres was achieved and exceeded in all but five years from the period 1998-2016.

Historical Coverage

Historical coverage not well known

There is a dearth of information on the historical SAV coverage in the Mattaponi River. A review of aerial photography taken between 1937 and 1971 reveal no evidence of SAV in the tidal fresh and oligohaline segments. However, the aerial photography available at that time was considered not well suited for precisely noting small beds of SAV in these low salinity and tidal freshwater segments; so it is possible that some SAV may have been present. Ground surveys combined with SAV aerial mapping beginning in 1998 quantified a composite total of 85 acres of SAV. Only hydrilla has been regularly reported during this period.

Key Events

Hydrilla introduction

There is no documentation as to when hydrilla was first observed in this region, but it appeared in Washington, D.C. in the 1980s, so it was likely sometime after that. Seed dispersal mechanisms are most likely by human activity or waterfowl.

Vulnerability/Resilience

Salinity

These sections of the Mattaponi River are an important transition area susceptible to salinity changes that could affect the SAV beds, especially during sudden events such as coastal storms. Drought conditions could raise salinity, leading to significant reductions in the hydrilla populations found in the lower tidal fresh segment.

Water clarity

Nutrients and sediment will continue to play a dominant role in influencing SAV populations by altering the amount of sunlight the beds receive. The lack of observable SAV in the oligohaline segment of the Mattaponi River may be related to the high turbidity found here as well as the lack of suitable subtidal habitat.

Management Implications

Nutrient and sediment reductions

Managers should continue to focus on reducing nonpoint source nutrients and sediment to promote SAV growth in creeks. Water diversion for human consumption in upriver areas may increase salinity, which can cause the loss of SAV in these freshwater species.

References

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

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