Attainable

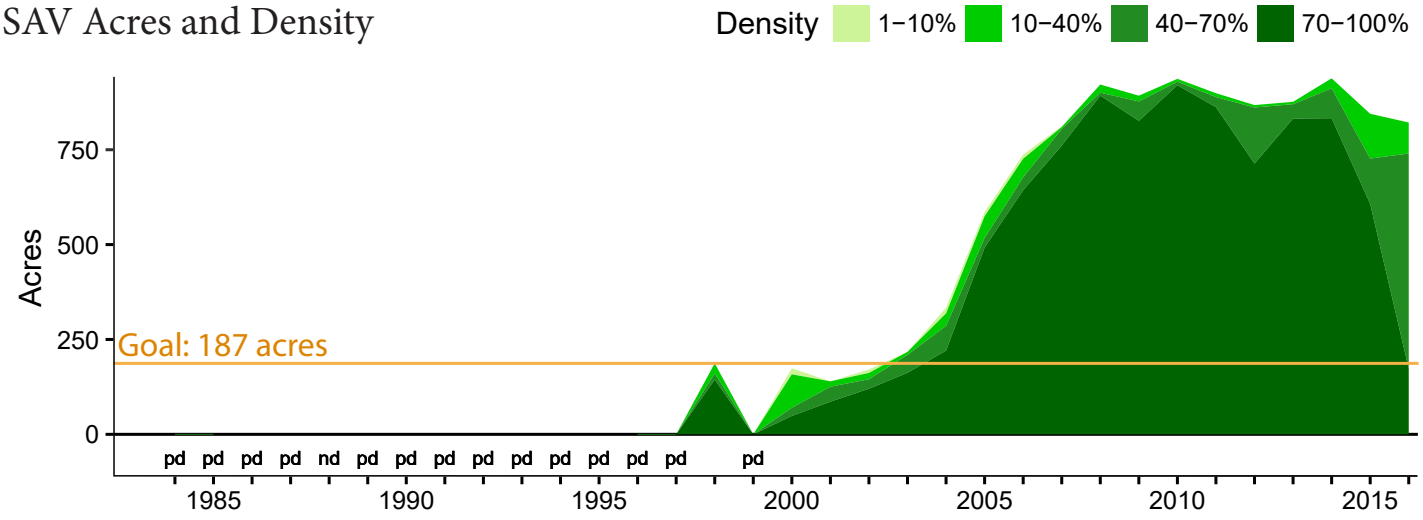
Pamunkey River (PMKOH, PMKTF)

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

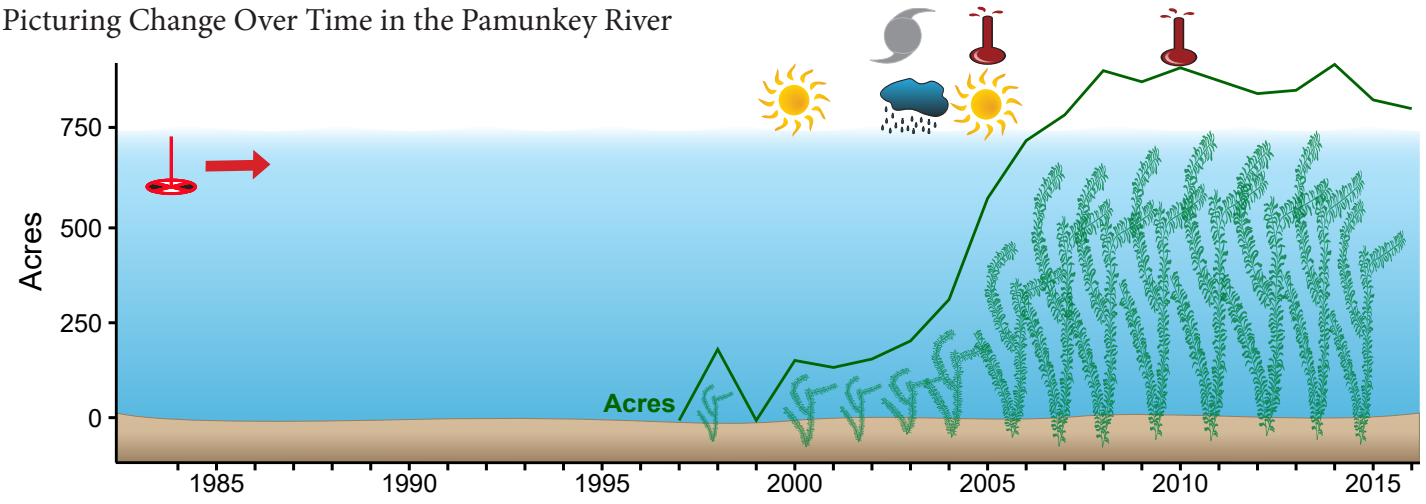
Executive Summary

There is a dearth of information regarding the historical coverage of SAV here. Imagery was unavailable until 1998 when the Chesapeake Bay-wide aerial survey began to monitor SAV in this system. The appearance of hydrilla, likely sometime in the mid-1990s, contributed to the abundance of SAV, attaining and exceeding its restoration goal of 187 acres in all but three years.

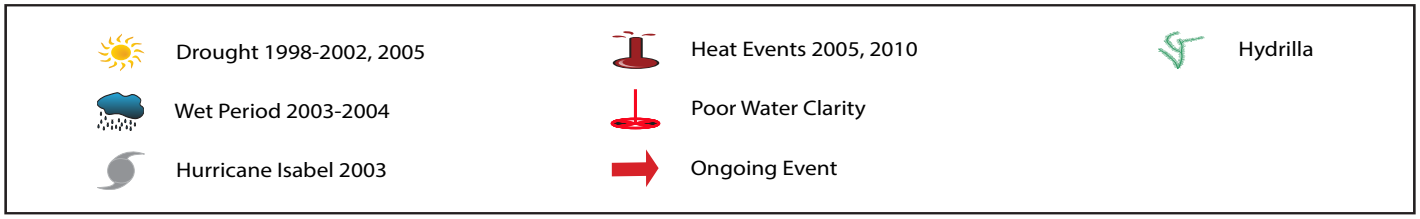
SAV Acres and Density



Picturing Change Over Time in the Pamunkey River



Key



Attainable

Take Home Points

Goal - Attainable

The goal of 187 acres was achieved and exceeded in all but three years from 1998-2016.

Historical Coverage

No historical infromation

There is a dearth of information regarding the historical SAV coverage here. Review of aerial photography taken between 1937 and 1971 revealed no evidence of SAV. The aerial photography available, however, was considered ill-suited for delineating small beds of SAV in these low salinity and tidal freshwater segments, so it is possible that some SAV was present. Ground surveys combined with the Bay-wide aerial survey data from the mid- to late 1990s quantified a composite total of 187 acres of SAV, which is the basis of the segment's 187-acre restoration goal. By 2014, 938 acres of SAV–all hydrilla–were growing in the tidal fresh and oligohaline portions of the Pamunkey River, though most SAV was found in the tidal fresh.

Key Events

Hydrilla introduction

Hydrilla was likely introduced to the Pamunkey–via human activity or waterfowl–sometime after it first appeared in Washington, D.C. in the 1980s.

Vulnerability/Resilience

Salinity

These sections of the Pamunkey River are an important transition area susceptible to salinity changes that could affect the SAV beds, especially pulsed events such as coastal storms. Likewise, drought conditions could raise salinities and lead to significant reductions in the hydrilla populations found here, especially in the lower reaches of the tidal fresh and oligohaline areas of the river.

Water clarity

Nutrients and sediments will continue to play a dominant role in influencing SAV populations by altering light conditions. The lack of observable SAV in the oligohaline portion of the Pamunkey River may be related to the typically high turbidities found here as well as a lack of suitable subtidal habitat.

Management Implications

Nutrient and sediment reductions; salinity

Managers should continue to focus on reducing nonpoint source nutrients and sediments to promote SAV growth in creeks. Water diversion for human consumption in upriver areas may increase salinities causing SAV losses to these freshwater species.

References

Stevenson and Confer 1978; Orth and Moore 1983, 1984; Moore et al. 2000, 2001, 2004; Orth et al. 2010a, 2017; Shields et al. 2012; 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)