Potentially Attainable

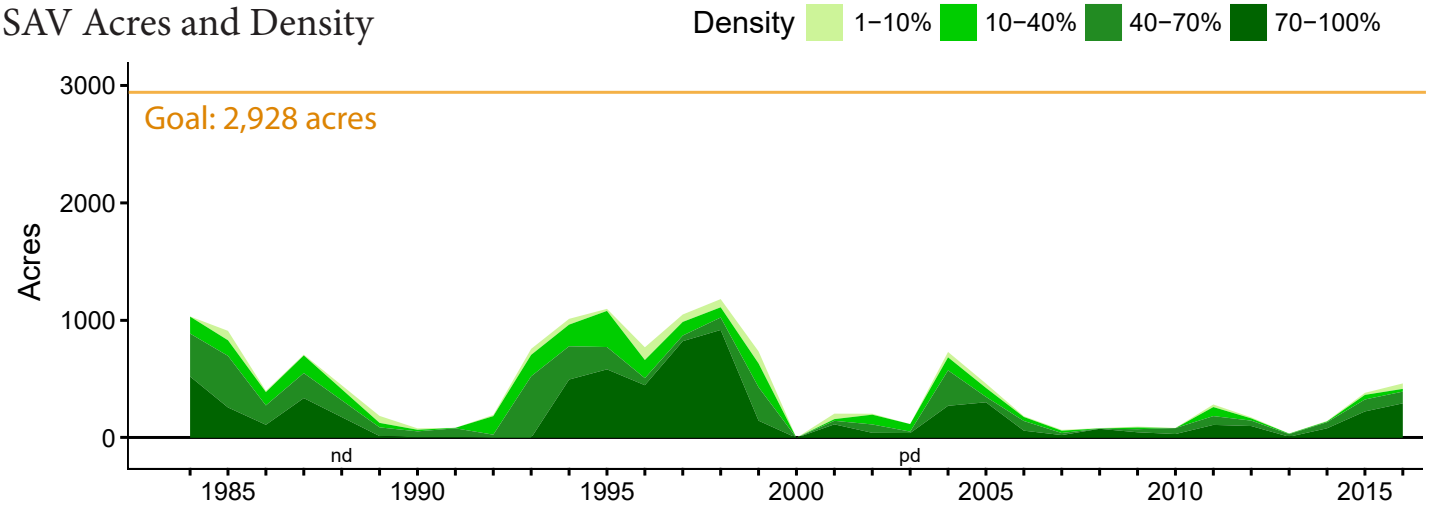
Lower Chester River (CHSMH)

Once diverse and widespread, submerged aquatic vegetation (SAV) has fluctuated in the lower Chester River in recent decades, but has maintained a consistent presence and will likely recover with improvements in water quality.

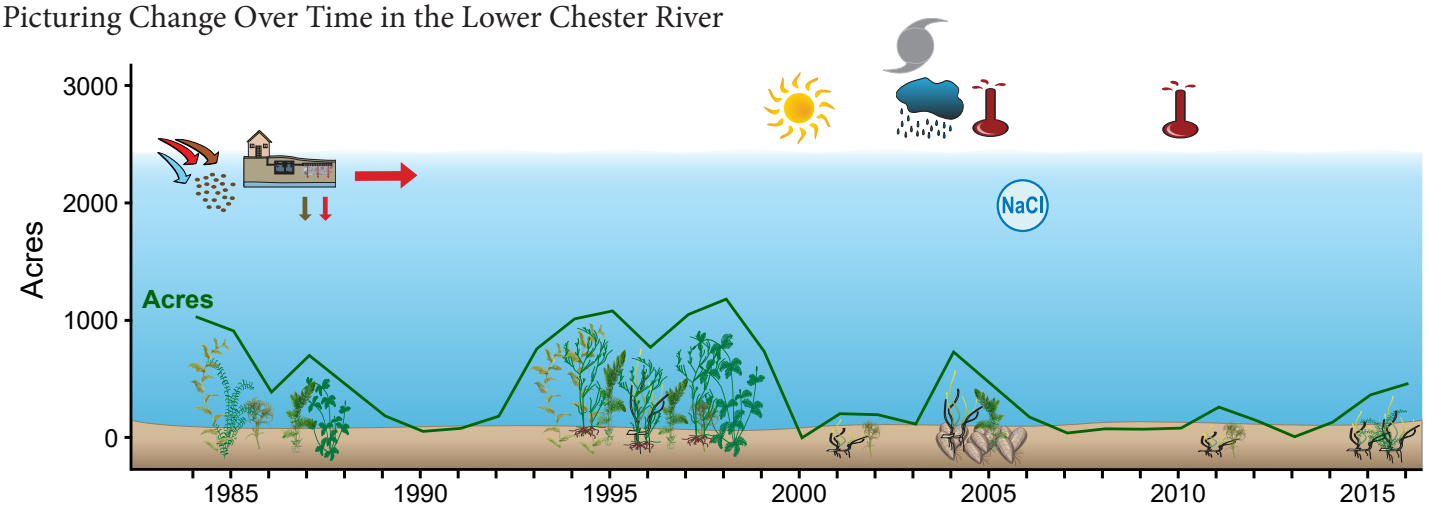
Executive Summary

The lower Chester River sits along the eastern shore of Maryland, and runs through a predominantly rural watershed. Although the SAV restoration goal of 2,928 acres has never been reached, SAV has been persistently observed and documented in this segment and will likely recover with sustained improvements in water quality facilitated by implementation of agricultural best management practices (BMPs).

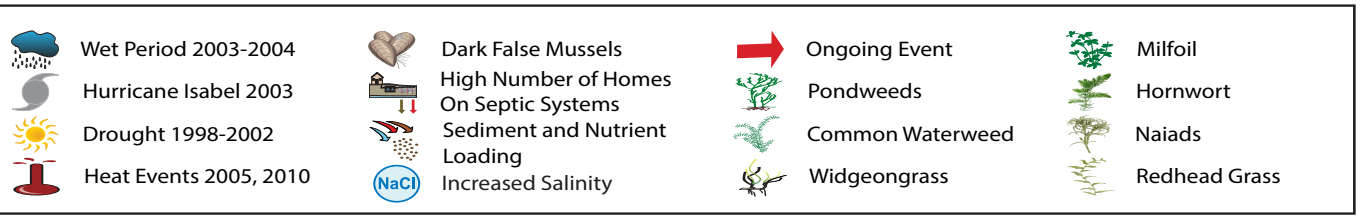
SAV Acres and Density



Picturing Change Over Time in the Lower Chester River



Key



Potentially Attainable

Take Home Points

Goal - Potentially Attainable

The SAV restoration goal of 2,928 acres is based on imagery collected in 1978 and 1979 when SAV was abundant in the lower Chester River. Though it has never been attained, it is considered potentially attainable with improvements in water quality.

Historical Coverage

Abundant SAV during surveys in the 1970s, lower SAV cover since

SAV was likely abundant in the lower Chester River prior to population expansion in the Chesapeake Bay watershed but the first documented evidence of SAV wasn't until 1907, when sago pondweed was collected as an herbarium specimen. Redhead grass and widgeongrass were both observed in the 1940s and 1950s and then in the 1960s and 1970s, several species were documented during multiple surveys. These included redhead grass, widgeongrass, eelgrass, sago pondweed, horned pondweed, common waterweed, milfoil, hornwort, naiads and muskgrass, a freshwater macroalgae. Freshwater species may be commonly observed in this segment as well as mesohaline species due to the freshwater creeks feeding into the river. Aerial imagery collected in the late 1970s indicate that close to 2,600 acres of SAV were present along the shores of the lower Chester River at that time. SAV acreage recorded during the Bay-wide aerial survey that began in 1984, however, has not exceeded the 1,181 acres reached in 1998. Species diversity has remained consistent with what was seen in the 1960s and 1970s but more recently widgeongrass has become very abundant and is the most common species observed.

Key Events

Hurricane Isabel in 2003; dark false mussels 2004-2005; Bay-wide improvements in water quality

In 2003, Hurricane Isabel affected the Bay and its watershed by delivering copious freshwater to the Bay. This allowed for the establishment of dark false mussels in areas where they're not normally abundant and in 2004-2005, dark false mussel increases were noted in the region. These filter feeders contribute to increased water clarity conditions when present in abundance, which may have facilitated the quick expansion of SAV in the lower Chester River in 2004 and 2005. When salinity conditions return to normal after wet years or storm events and the salt content of the water increases again, dark false mussels die back and leave SAV vulnerable to decreased water clarity, as seen in 2006 and beyond.

Vulnerability/Resilience

Agriculture and septic

The lower Chester River is in a predominantly agricultural watershed, leaving it vulnerable to sediment and nutrient pollution from agricultural fields and livestock operations. Furthermore, the small towns and villages in the river's watershed rely on old and potentially failing septic systems, further contributing to nutrient loading to the river. The increasing use of agricultural BMPs, however, will lead to a long-term improvement in water quality and promote SAV recovery and system resilience. Furthermore, Eastern Neck National Wildlife Refuge, as well as other small protected areas on the shores of the lower Chester River, will contribute to long-term protection of areas of the watershed from development.

Management Implications

Nutrient and sediment reductions

Reductions in nutrient and sediment loading would likely lead to a sustained recovery of SAV in the lower Chester River, so all efforts to reduce loading via BMPs that favor SAV recovery are recommended. Additionally, efforts to maintain the rural nature of the watershed should be taken, as sprawl and development are often correlated with decreased water quality and the loss of aquatic habitats. Watershed residents should be encouraged/required to upgrade old septic tanks and leach fields to modern, high-efficiency on-site wastewater treatment systems.

References

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

www.eyesonthebay.org (Maryland water quality data)