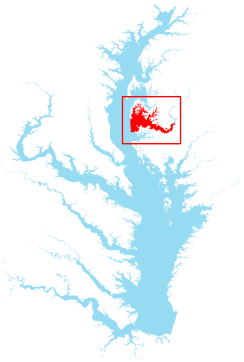
Attainable

Lower Choptank River (CHOMH1, CHOMH2)

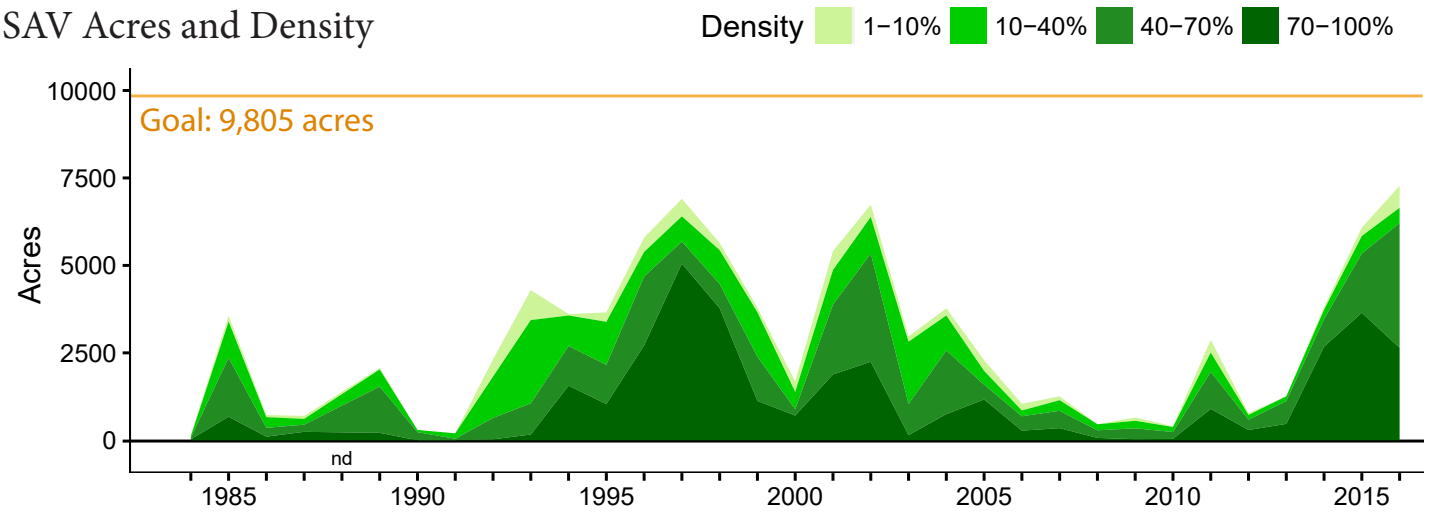


The lower Choptank River supports a fluctuating expanse of widgeongrass that may fully recover with appropriate stewardship of the river's shallow-water and shoreline habitats.

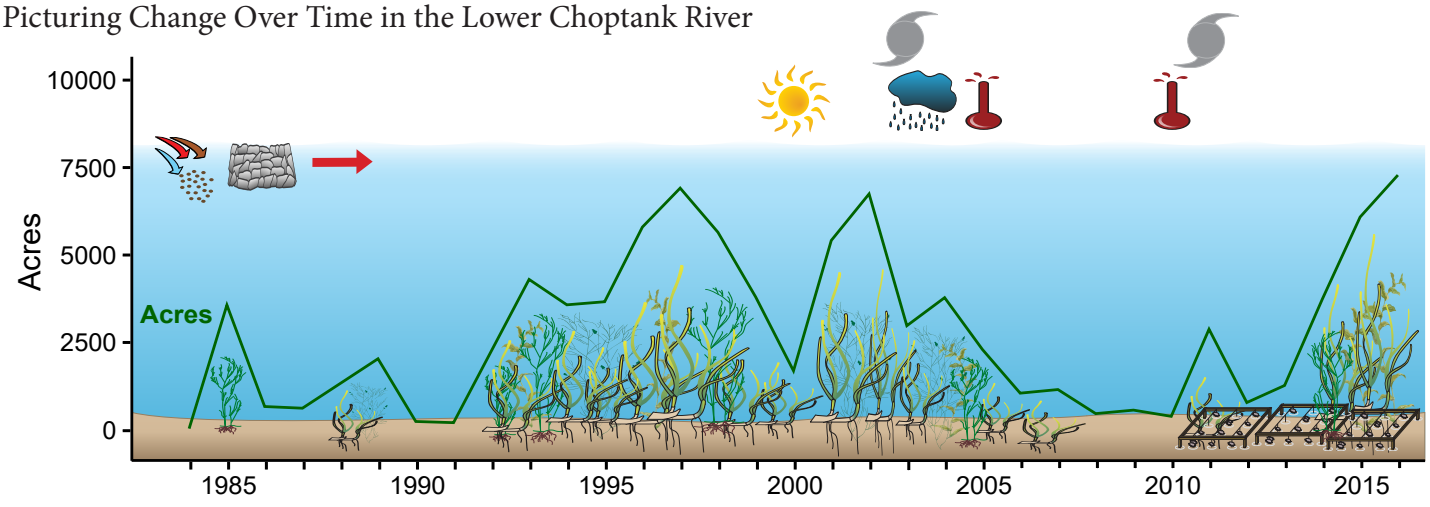
Executive Summary

The expansive shoal areas of the lower Choptank River could support approximately 9,800 acres of submerged aquatic vegetation (SAV) and historically, likely did so. Over the last several decades, however, SAV expanse has fluctuated extensively–twice in response to extreme weather events–and has not yet met that milestone. In 2016 acreage reached almost 7,300 acres, suggesting that the lower Choptank River's SAV restoration goal of 9,805 acres is attainable if improvements in water quality and clarity continue and other stressors are reduced. Although the recovery of SAV in this system has been primarily due to the recovery of a single species, widgeongrass, other species including horned pondweed, sago pondweed and redhead grass are also occasionally observed.

SAV Acres and Density



Picturing Change Over Time in the Lower Choptank River



Key

Attainable

Take Home Points

Goal - Attainable

The goal of 9,805 acres has never been met but is attainable if water quality conditions in the lower Choptank River continue to improve.

Historical Coverage

Historical and recent distribution well known

SAV was likely abundant in the shoal areas of the lower Choptank River prior to development of the Chesapeake Bay watershed. The first evidence of SAV in the lower Choptank River, however, are herbarium specimens from the 1930s. At that time, eelgrass, widgeongrass and redhead grass were collected and preserved. Later, eelgrass, widgeongrass and sago pondweed were observed during a waterfowl survey in the 1950s. Additional surveys in the 1960s and 1970s recorded eelgrass, widgeongrass, redhead grass, sago pondweed, horned pondweed, common waterweed and milfoil. Since the onset of the Bay-wide aerial survey in 1984, SAV abundance in the lower Choptank River has fluctuated, with peak abundance and cover observed in the late 1990s, early 2000s and again in 2016. The recent large expanse of SAV here has been due to the rapid spread of widgeongrass throughout the mid-Bay tributaries.

Key Events

1990s resurgence

Generally improving Bay-wide water quality conditions led to a resurgence of SAV throughout the lower Choptank River in the late 1990s. This resurgence was primarily composed of widgeongrass.

Hurricanes

Hurricane Isabel negatively impacted SAV throughout the Bay when it swept through the region in 2003, including in the lower Choptank River. Likewise, though the SAV hadn't made a substantial recovery yet, Hurricane Irene again impacted SAV abundance and distribution when it passed through in late 2011. Both hurricanes immediately impacted SAV through burial and scour, but also longer-term through decreased water clarity.

Vulnerability/Resilience

Oyster aquaculture and restoration

Oyster aquaculture has expanded rapidly in the lower Choptank River and will most likely continue to do so. There may be positive benefits for SAV through increases in water clarity from oyster filtration, but the expanse of aquaculture may also lead to shallow-water use conflicts. Likewise, a large-scale oyster reef restoration project was initiated in Harris Creek in 2011. The project's goal is to develop large, viable and productive oyster sanctuaries. A secondary effect would be for the oysters to positively influence water clarity and improve conditions for SAV through filtration.

Shoreline hardening

Much of the lower Choptank River's shoreline is armored with riprap revetments, which have been shown to reduce SAV habitat quality and recovery potential. Riprap and other forms of shoreline hardening also impede the ability of SAV to migrate inland as sea levels rise, reducing future SAV habitat availability.

Extensive shoals

Although there is abundant shoreline hardening and the potential for shallow-water use conflicts in this river, there are extensive shoal areas and plenty of available habitat for SAV recovery.

Management Implications

Nutrient and sediment reductions

Management actions should focus on the installation and implementation of best management practices (BMPs) that reduce nutrient and sediment pollution from nearby agricultural lands and other SAV stressors like shoreline armoring. Where possible, hardened shorelines should be converted back to living or fully natural shorelines. Additional water clarity improvements may mitigate shoreline impacts and facilitate SAV recovery, but shallow-water use conflicts with aquaculture operations may prohibit full recovery if not managed properly.

References

Stevenson and Confer 1978; Orth and Moore 1983, 1984; Moore et al. 2000, 2004; Orth et al. 2010a, 2010b, 2017; Landry and Golden 2018; Patrick et al. 2014, 2016; 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)