Potentially Attainable

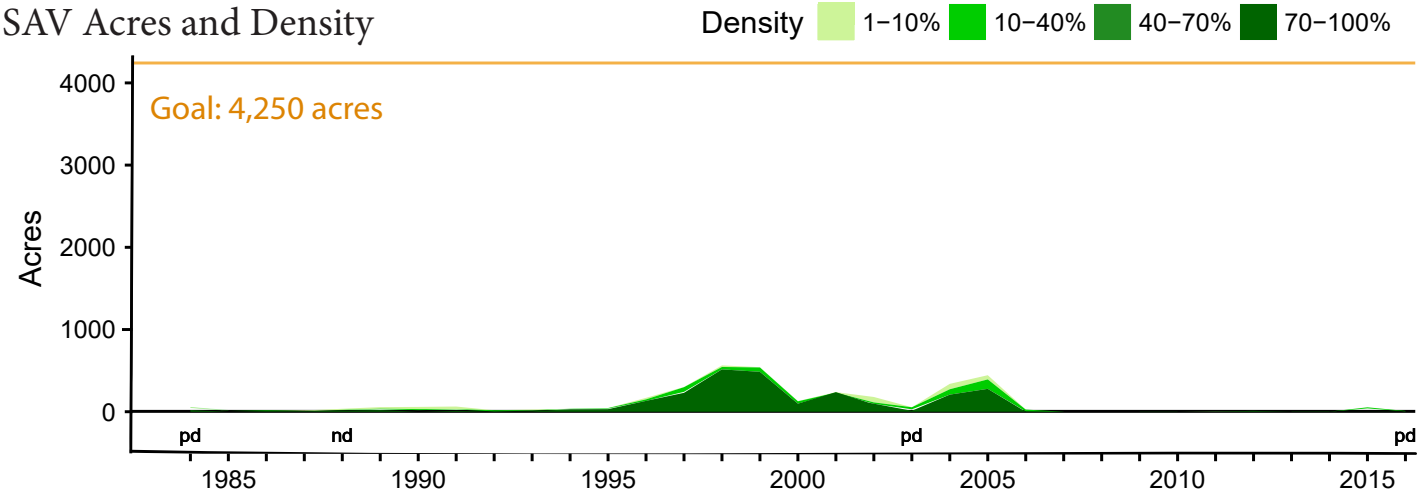
Lower Potomac River, Virginia (POTMH-VA)

Very sparse submerged aquatic vegetation (SAV) has been found in this segment. Patchy beds of lower salinity species are found in the upper portions of this segment, while widgeongrass has been found in the lower portions.

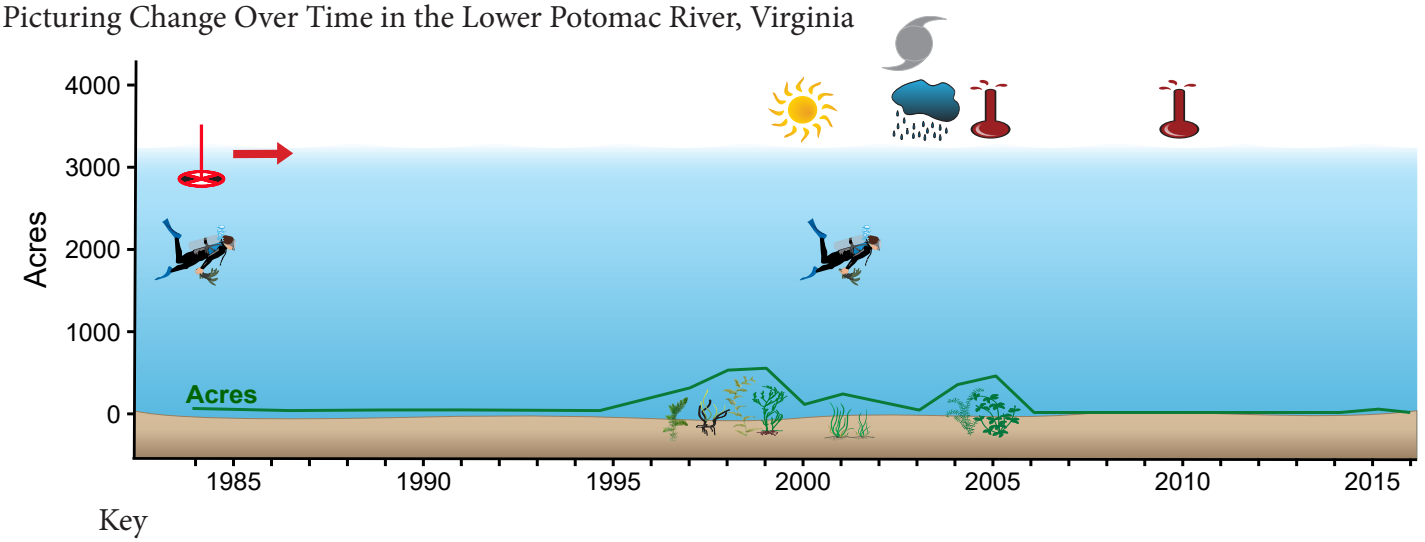
Executive Summary

Eelgrass and widgeongrass likely dominated the shoal areas of the Virginia portion of the lower mesohaline (higher salinity) Potomac River, where acreage probably achieved maximum coverage in the 1950s and 1960s, during the driest period recorded in recent history. The upper mesohaline, however, supported a variety of freshwater and low salinity tolerant species. A significant expansion of the non-native milfoil occurred in the 1950s but the plant disappeared in the mid- to late 1960s. Although other freshwater species were noted in the 1960s, Tropical Storm Agnes in 1972 triggered a general decline of SAV in this segment. Beginning in the late 1990s, however, there was a modest resurgence of SAV, especially in the headwaters of many of the Potomac River's tributaries. This resurgence peaked again in 2004-2005 and then declined. Recent SAV coverage has been very low, occurring primarily as small patchy beds in the lower Potomac River's numerous tributaries. The only opportunity for reaching the goal of 4,250 acres of SAV for this segment is a major improvement in water clarity during the spring and summer when turbidity levels are highest. With improvements in water clarity, widgeongrass may recover in the shallow, saltier areas of this segment, and both native and non-native species may rebound in the fresh waters of the upper mesohaline. Physical constraints including highly variable salinity and turbidity during the growing season are also limiting to SAV growth.

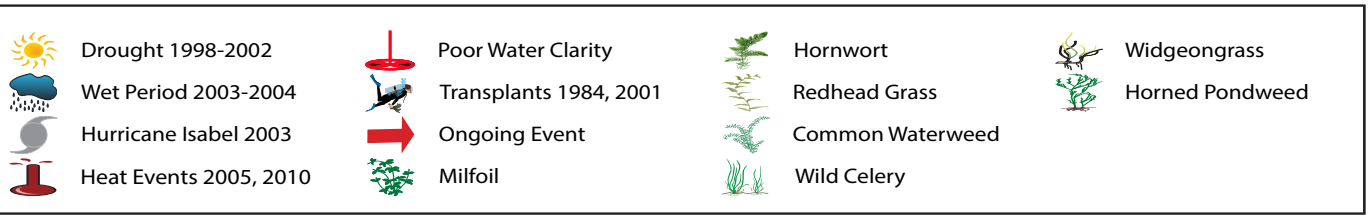
SAV Acres and Density



Picturing Change Over Time in the Lower Potomac River, Virginia



Key



Potentially Attainable

Take Home Points

Goal - Potentially Attainable

The goal of 4,250 acres has never been achieved. It is potentially attainable if water clarity is significantly improved, especially in the smaller tributaries.

Historical Coverage

Historical coverage somewhat well known

Herbarium specimens from the 1890s and 1920s indicate that both widgeongrass and redhead grass were present in the lower portion of the Potomac River during those time periods. In the 1950s, non-native milfoil expanded rapidly and covered large areas of shallow water in the middle, fresher areas of this segment, but ultimately, milfoil disappeared in the mid- to late 1960s. Additional species information from surveys that took place in the 1960s show that both high and moderate salinity species were present in areas throughout the lower Potomac River as well, with eelgrass found as far north as the Route 301 bridge along with redhead grass, widgeongrass and sago pondweed. Most SAV, however, disappeared in the wake of Tropical Storm Agnes in 1972.

The most recent Chesapeake Bay-wide aerial surveys revealed a modest resurgence of SAV in the upper sections of the lower Potomac River in the late-1990s. Multiple species were recorded, including hornwort, milfoil, common waterweed, redhead grass, wild celery and horned pondweed. Beginning in the 1990s, small beds of widgeongrass and horned pondweed also appeared in some of the lower river tributaries (Coan River and Hull Creek). Since 2006, however, almost no SAV has been reported from this segment.

Key Events

Milfoil expansion in the 1950s and 1960s

Milfoil expanded rapidly in the middle of this segment in the late 1950s through the early 1960s, but it disappeared by the middle of the decade. Milfoil made a modest reappearance in the mid-1990s but it eventually died out again. The expansion may have led to the temporary exclusion of some native species but may have also contributed to the subsequent recovery of native species by improving water clarity, stabilizing sediment and trapping seeds.

Tropical Storm Agnes

In June 1972, Tropical Storm Agnes resulted in the loss of any remaining eelgrass beds, as well as most other SAV beds in this segment.

Transplant projects

Restoration efforts were attempted using transplanted eelgrass in the Coan River in 1984 and in Judith Sound in 2001. Neither project was successful.

Vulnerability/Resilience

Water clarity

High turbidity and poor water clarity persist in the lower Potomac River during the spring and summer due to nutrient and sediment pollution, especially in the upper portion of this segment. In the lower portion, summertime phytoplankton blooms can occur.

Salinity

The lower Potomac River is in an important transition area that is susceptible to fluctuations in salinity which could affect the composition of SAV beds in this segment.

Eelgrass is susceptible to heat events

Eelgrass is a cold-water SAV species and in the Bay, it is near its southern distributional boundary in the mid-Atlantic. Widgeongrass, however, is much more tolerant of temperature extremes than eelgrass, and if it can colonize some of the shallower areas in this portion of the Potomac River, it may be a suitable replacement in habitats previously dominated by eelgrass. Widgeongrass populations can be highly variable on an annual basis, however, and are expected to fluctuate in an increasingly warmer Bay. Widgeongrass also typically requires more light for growth than eelgrass and therefore its expansion may be most evident in the shallowest nearshore SAV habitats.

Management Implications

Nutrient and sediment reductions; salinity

Managers will need to focus on improving water clarity by reducing sediment and nutrient pollution in both the mainstem and tributaries of the Bay. Managers will be unable to do much about temperature as this is a global issue. By improving water clarity, however, eelgrass may be able to tolerate periods of warmer water or variability in salinity.

References

Pfitzenmeyer and Drobeck 1963; Bayley et al. 1978; 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)

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