Potentially Attainable

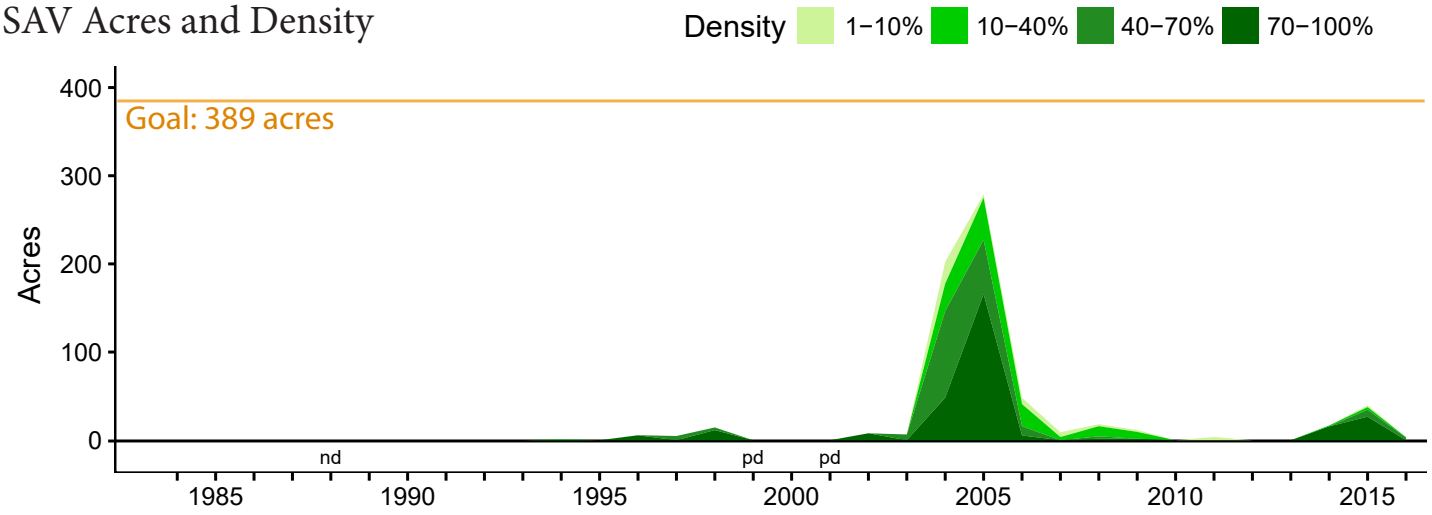
Patapsco River (PATMH)

The Patapsco River is in a heavily developed watershed, but submerged aquatic vegetation (SAV) recovery is possible here with improvements in water quality conditions.

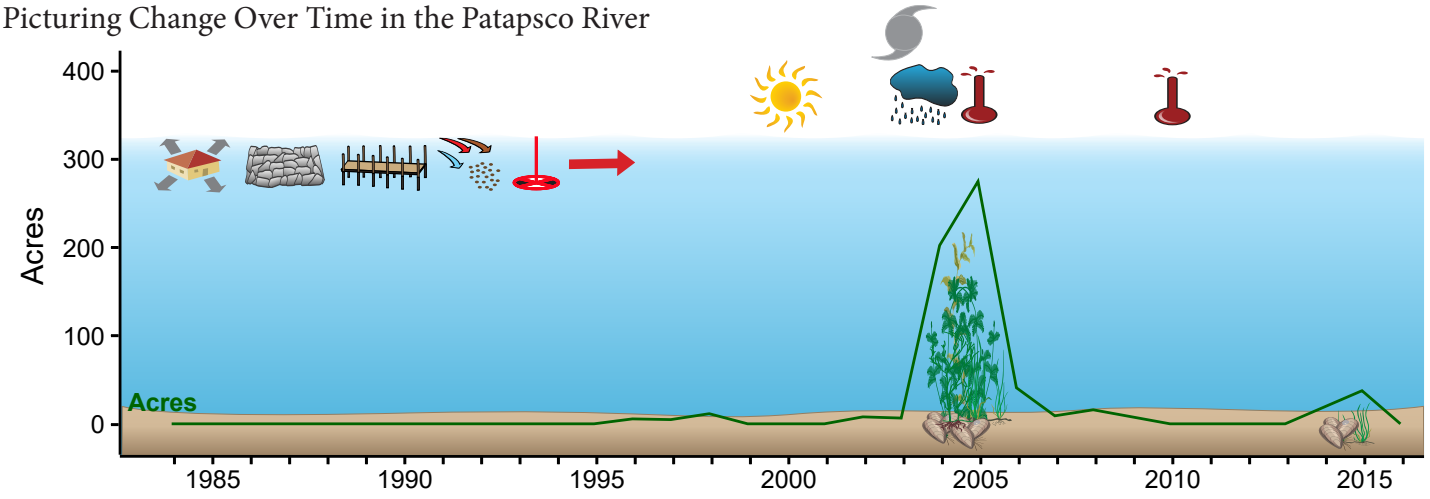
Executive Summary

The Patapsco River is a heavily developed tributary that leads to Baltimore City and the Port of Baltimore. SAV recovery will be difficult here, but with Best Management Practices (BMPs) that reduce sediment and nutrient pollution, improved water clarity may facilitate the resurgence of SAV in the creeks and coves close to the river's mouth.

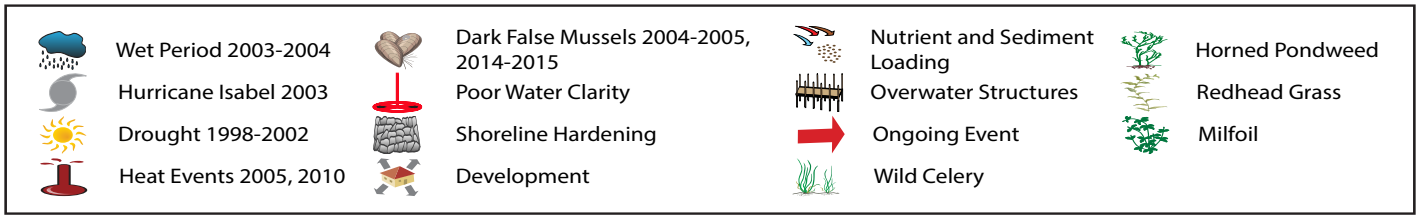
SAV Acres and Density



Picturing Change Over Time in the Patapsco River



Key



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Take Home Points

Goal - Potentially Attainable

The 389-acre SAV restoration goal for the Patapsco River has never been reached but is potentially attainable with improvements in water clarity.

Historical Coverage

Minimal SAV; locally abundant in small creeks

SAV was likely once abundant in the shallow creeks and coves of the Patapsco River, but little evidence suggests that SAV was prevalent at any time after Baltimore became a major port city more than 300 years ago. Herbarium specimens of widgeongrass and common waterweed indicate that at least some SAV was present in the 1950s, but surveys from the 1960s suggest that common waterweed was no longer present. Milfoil, redhead grass and wild celery were observed and locally abundant in several creeks, however, in the 1960s and 1970s. Since the Chesapeake Bay-wide aerial survey began, very little SAV has been documented in the Patapsco River, but a spike in abundance in 2004-2005 suggests that if water quality conditions improve, SAV could recover quickly, particularly in Bodkin, Main and Back creeks.

Key Events

Hurricane Isabel; dark false mussel expansion

In 2003, Hurricane Isabel affected the Bay and its watershed by delivering copious freshwater. This allowed for the establishment of dark false mussels in areas where they're not normally abundant and in 2004-2005, increases in dark false mussel populations were noted in several upper-Bay rivers. These filter feeders contributed to increased water clarity conditions that facilitated a rapid, albeit brief, resurgence of SAV. Dark false mussels were noted again in the region in 2014 and 2015 when there was a slight increase in SAV abundance, but not in the quantities needed to dramatically improve water clarity and promote substantial SAV recovery.

Vulnerability/Resilience

Development; species diversity

Patapsco River is a heavily developed tributary that leads to the Port of Baltimore, one of the largest and busiest ports in the country, so port-related stressors as well as land use related stressors make the system vulnerable to degradation in a number of ways. Nutrient and sediment pollution from sewer overflows and stormwater runoff, in particular, impede the recovery of SAV here and available habitat is limited to the creeks and coves as the mainstem is routinely dredged to accommodate container ships. It should be noted, however, that the shoreline along the creeks and coves of the Patapsco is heavily armored and has extensive overwater structures, such as docks and piers, that can fragment SAV beds. Regardless, recovery is most likely in the shallow creeks near the mouth of the river where clearer water from the open Bay comes into the system.

Management Implications

Nutrient and sediment reductions

Like all other systems with SAV, recovery can be facilitated, at least in part, through reductions in nutrient and sediment loading. In the absence of clear water to mitigate the effects of development stressors, SAV will be more difficult to restore. With reduced nutrient pollution to the river, however, water clarity may improve and allow SAV to recover in the creeks, particularly near the river's mouth, indicated by the rapid recovery of SAV in 2004-2005. Because of the long-term absence of SAV, a viable seed bank may not be present, so direct seeding may be necessary to facilitate recovery. Because Patapsco River is in the upper, freshwater portion of the Bay, restoration should focus on both acreage and diversity to increase future resilience.

References

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

www.eyesonthebay.org (Maryland water quality data)