



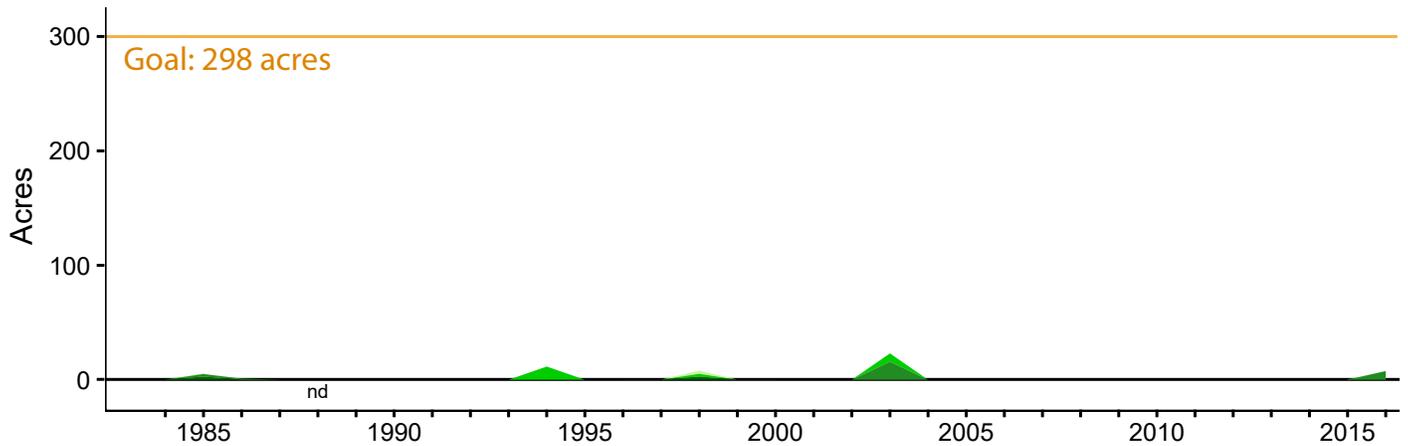
Horned pondweed gives hope that with improvements in summertime water clarity, submerged aquatic vegetation (SAV) recovery in these rivers is feasible.

Executive Summary

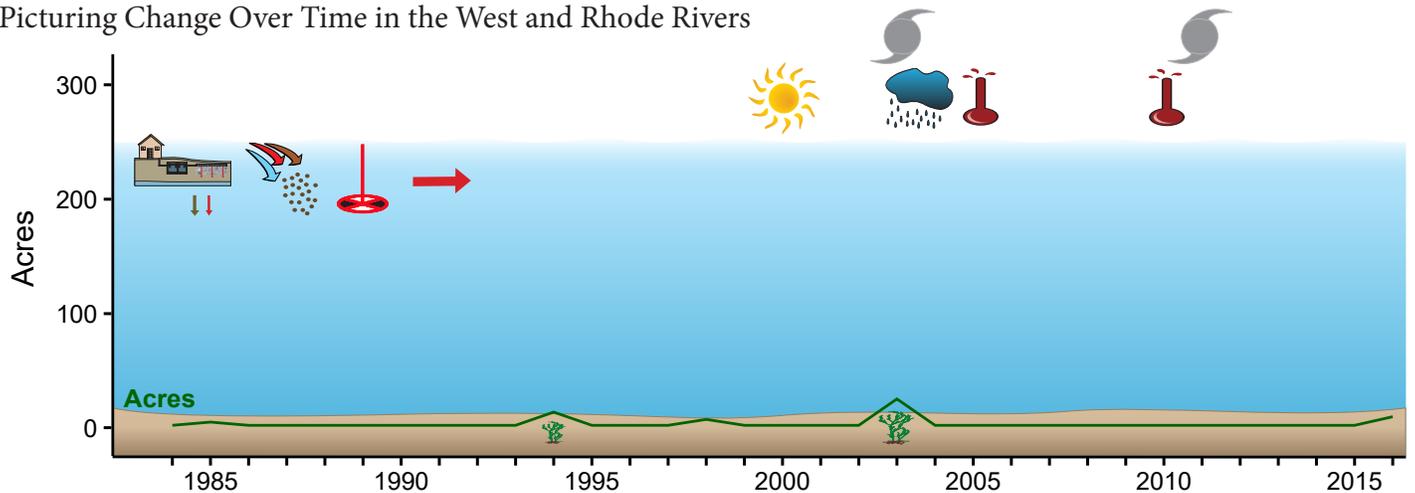
Although once relatively abundant, SAV in the West and Rhode rivers has been minimal or non-existent during the Chesapeake Bay-wide aerial survey. Horned pondweed, however, is observed frequently in the spring and early summer, indicating that with improvements in summertime water clarity, SAV habitat is available and recovery is feasible.

SAV Acres and Density

Density ■ 1-10% ■ 10-40% ■ 40-70% ■ 70-100%



Picturing Change Over Time in the West and Rhode Rivers



Key

	Drought 1998-2002		Tropical Storm Lee and Hurricane Irene 2011		Ongoing Event
	Wet Period 2003-2004		Poor Water Clarity		Horned Pondweed
	Heat Events 2005, 2010		High Number of Homes On Septic Systems Sediment and Nutrient Loading		
	Hurricane Isabel 2003				

Goal - Potentially Attainable

The West and Rhode rivers have a combined SAV restoration goal of 298 acres which has never been attained. Significant improvements in water quality will be necessary to facilitate SAV recovery in these rivers.

Historical Coverage

Although horned pondweed is commonly observed in the spring, minimal SAV exists otherwise

SAV was most likely abundant in the West and Rhode rivers prior to population expansion in the Bay watershed. Surveys that took place in the 1960s and 1970s indicated that several species of SAV were present in varying abundance, including milfoil, redhead grass, common waterweed, sago pondweed, horned pondweed and widgeongrass. In 1978, an aerial survey of the region found 115 acres of SAV in the West River and 15 acres in the Rhode River, but that SAV disappeared by the time the Bay-wide aerial survey began in 1984. SAV has been observed in the West River during the Bay-wide aerial survey on a few occasions since then, but SAV has never been observed during the aerial survey of the Rhode River. This is not to say, however, that there is no SAV in either river. Horned pondweed has been observed throughout both rivers during ground surveys—usually in the spring or early summer. This indicates that with improvements in summertime water clarity, SAV may be able to recover in these rivers.

Key Events

SAV declined late 1960s

There is insufficient data to determine why SAV declined in the late 1960s and then rebounded for one year in 1978. Without additional SAV data, it's impossible to say if there were key events that affected its abundance.

Vulnerability/Resilience

Development is a threat but horned pondweed indicates recovery is feasible

The area of southern Anne Arundel County in which the West and Rhode rivers sit is somewhat developed but not urbanized and there is still an abundance of forested land and open space. The north and east sides of the Rhode River are primarily on sewer while the south and west sides of the river are on septic. For the West River, there is a mix of sewer and septic on both sides of the river. Septic leakage and stormwater runoff likely contribute to nutrient and sediment loading to the system that is preventing the recovery of SAV.

Anecdotal reports as well as ground surveys do, however, show that horned pondweed is relatively abundant in these rivers in the spring and early summer. This indicates that with improvements in summertime water clarity, it is feasible for SAV to recover here.

Management Implications

Nutrient and sediment reductions

Without intervention, nutrient and sediment loading to the West and Rhode rivers will continue to hamper SAV recovery. Reductions in nutrient and sediment loading would most likely lead to recovery, so all efforts to reduce loading via best management practices that promote water clarity improvements are recommended. Watershed residents should be encouraged to upgrade old septic tanks and leach fields to modern, high-efficiency on-site wastewater treatment systems and county planners should strive to maintain forested area in the watershed. When water clarity is adequately improved, active restoration efforts may be necessary due to the lack of a viable seed bank.

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)

www.aacounty.org (Anne Arundel County sewer and septic information)