

# Big Annemessex River (BIGMH1, BIGMH2)

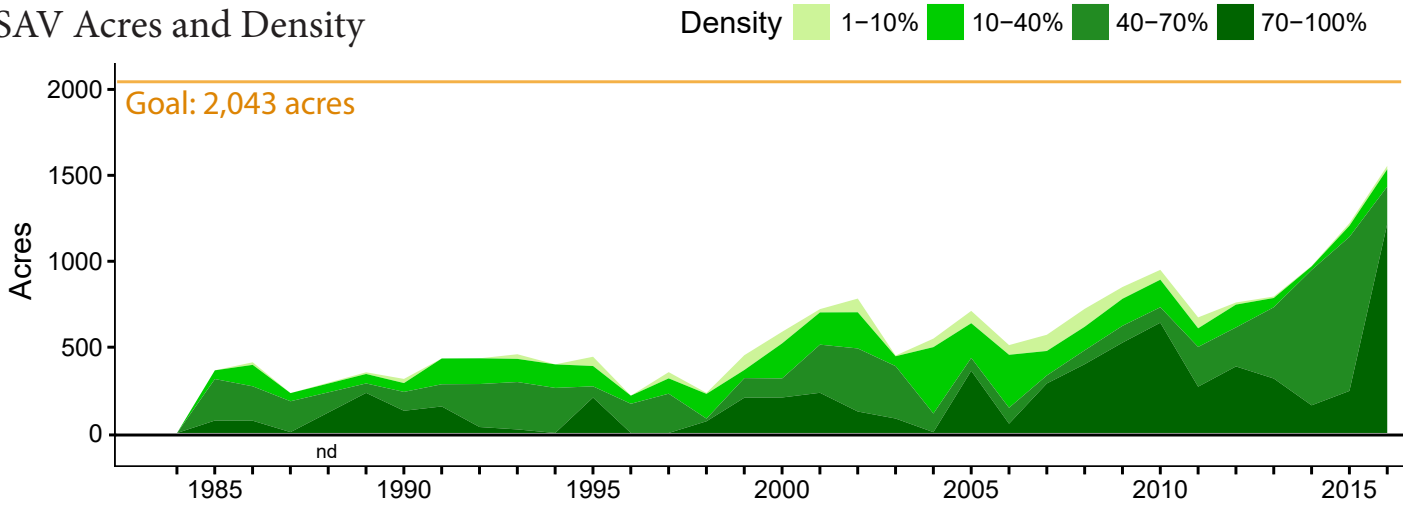


Moderately dense submerged aquatic vegetation (SAV) beds of both eelgrass and widgeongrass are found along both shores of the Big Annemessex River.

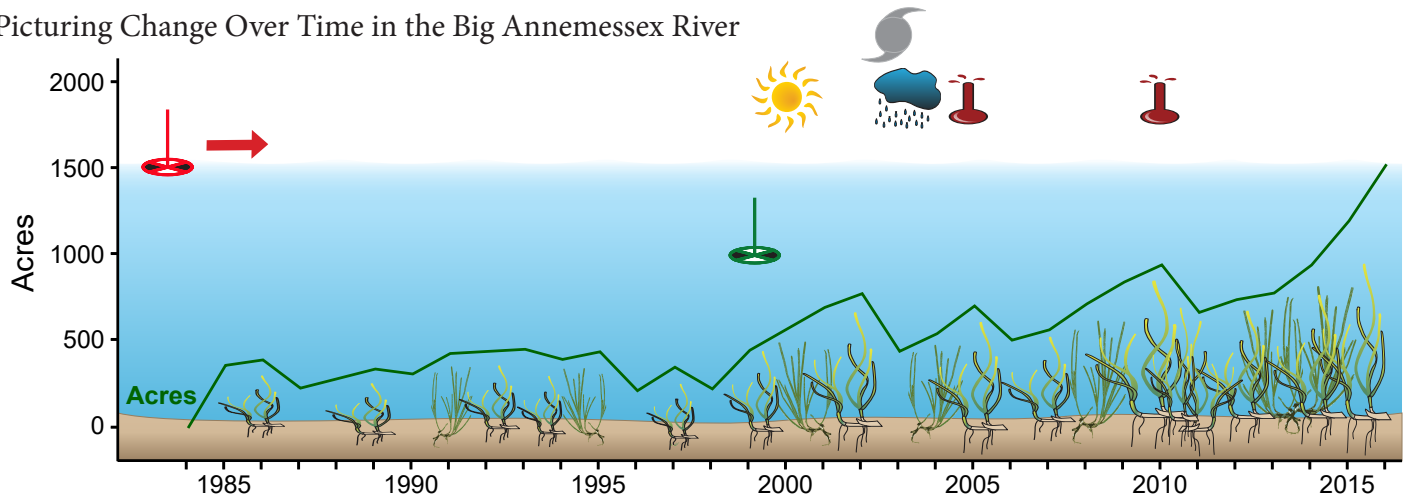
## Executive Summary

SAV beds consisting of dense eelgrass and widgeongrass once dominated the extensive shoal areas of the Big Annemessex River. In the 1960s, SAV achieved maximum historical coverage during the driest period recorded in recent history. Since the annual Chesapeake Bay-wide aerial survey began, SAV has fluctuated but shown an overall increasing trend, reaching its highest levels in 2016. Fluctuations in SAV abundance were driven by improvements in water quality, hot summers and a resurgence of widgeongrass. The restoration goal of 2,043 acres of SAV for this segment has never been reached, but is potentially attainable if water clarity improves.

## SAV Acres and Density



## Picturing Change Over Time in the Big Annemessex River



### Key

	Drought 1998-2002		Heat Events 2005, 2010		Ongoing Event
	Wet Period 2003-2004		Good Water Clarity		Eelgrass
	Hurricane Isabel 2003		Poor Water Clarity		Widgeongrass

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**Goal - Potentially Attainable**

The goal of 2,043 acres has never been reached, but is potentially attainable if water clarity improves and the recent expansion of widgeongrass continues.

**Historical Coverage**

*Historical and recent distribution well known*

Distribution and abundance were reduced in 1930s following the eelgrass epidemic but recovered to reach peak coverages after an extended dry period in the 1960s. Following the loss of SAV in the early 1970s, the annual Bay-wide aerial survey showed the growth and expansion of widgeongrass along with a few areas dominated by eelgrass near the mouth of the river. SAV distribution reached peak coverage in 2016.

**Key Events**

*Tropical Storm Agnes*

In June 1972, Tropical Storm Agnes resulted in the loss or reduction of almost all SAV beds in this segment. SAV remained very sparse in this segment through the 1980s.

**Vulnerability/Resilience**

*Water clarity*

Varying periods of rainfall in the 1980s and 1990s, influenced water clarity, facilitating the changes noted in SAV distribution.

*Eelgrass is susceptible to heat events but widgeongrass dominates here*

Eelgrass is a cold-water SAV species in the Bay, usually found near its southern distributional boundary in the mid-Atlantic. However, while eelgrass is present in this segment, most SAV beds are dominated by widgeongrass. Some eelgrass beds developed in the 1990s but disappeared or were severely reduced after extreme heat in 2005 and 2010. Widgeongrass has shown recent increases in this segment, and as a codominant species, is much more tolerant than eelgrass of temperature extremes. However, widgeongrass populations can be highly variable on an annual basis, which could change as the Bay becomes increasingly warmer. They also typically require more light for growth, resulting in an expansion in the shallowest nearshore SAV habitats.

**Management Implications**

*Nutrient and sediment reductions; aquaculture*

Managers will need to focus on improving water clarity by reducing both sediment and nutrient pollution. Managers will be unable to do much about temperature as this is a global issue, but by improving water clarity, plants may be able to tolerate periods of warmer water. In addition, managers may have to address the emerging issues of oyster aquaculture in this region.

**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](http://www.vims.edu/bio/sav/SegmentAreaChart.htm) (abundance data)

[www.vims.edu/bio/sav/maps.html](http://www.vims.edu/bio/sav/maps.html) (species information)

[www.eyesonthebay.org](http://www.eyesonthebay.org) (Maryland water quality data)