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Annual Monitoring Finds More Than 91,000 Acres of Underwater Grasses in Chesapeake Bay in 2015

Acreage exceeds 2017 restoration target two years early

Between 2014 and 2015, underwater grass abundance in the Chesapeake Bay rose 21 percent, bringing underwater grasses in the nation's largest estuary to the highest total of the last three decades. Aerial imagery collected between May and November of 2015 revealed a total of 91,621 acres of underwater grasses across the region. While this total is just under half of the 185,000-acre goal to which Chesapeake Bay Program partners committed in the *Chesapeake Bay Watershed Agreement*, it is the highest amount ever recorded by the Virginia Institute of Marine Science (VIMS) aerial survey and surpasses the partnership's 2017 restoration target two years ahead of schedule.

Experts attribute this rise in underwater grass abundance to the recovery of wild celery and other species in the fresher waters of the upper Bay, the continued expansion of widgeon grass in the moderately salty waters of the mid-Bay and a modest recovery of eelgrass in the very salty waters of the lower Bay. In spite of this good news, experts advise cautious optimism: because widgeon grass is known as a "boom and bust" species whose abundance can rise and fall from year to year, the widgeon-dominant spike we have seen is not guaranteed to persist in future seasons. Freshwater grasses, however, are more resilient, and continued improvements in water quality are expected to support the continued expansion of these grass species.

Underwater grass abundance can vary from species to species and river to river. In 2015, local highlights included:

- **The Elk River.** Grass beds in the Elk River suffered a severe crash after Hurricane Irene and Tropical Storm Lee hit the region in 2011. In 2015, grass beds in the river appeared to be on track for a full recovery. While the beds were not as dense as those seen in the river in 2010, some were larger and more diverse than previously observed and surpassed the river's 1,648-acre restoration target. Wild celery, whose seeds pods and roots offer food to migrating waterfowl, was the dominant species detected.
- **The Choptank River.** Between 2011 and 2012, grass beds in the Choptank River declined. In 2014, aerial imagery revealed 4,000 acres of grasses in the waterway. By 2015, this number increased 50 percent to 6,000 acres. Aerial imagery collected in 2015 also revealed a small, never before reported band of underwater grasses in the tidal freshwater portion of the river.
- **The James River.** Grass beds in the James River have increased in different areas at different times. In 2015, grasses surpassed restoration targets in two of the river's five segments. While the Lower James remains devoid of grasses and the headwaters of the river contained just one acre, aerial imagery revealed 61 acres of grass beds in the middle portion of the river—46 acres above this segment's restoration target—and 365 acres at the mouth of the river—65 acres above this segment's restoration target. The Upper James boasted 561 acres of freshwater plants, but remains 439 acres below its restoration target.

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Facts

Between 2014 and 2015, underwater grass abundance in the Chesapeake Bay increased 21 percent from 75,438 acres to 91,621 acres. This surpasses the Chesapeake Bay Program's 2017 restoration target two years ahead of schedule and marks a 49.5 percent achievement of the partnership's 185,000-acre goal.

Tracking Bay Grass Abundance by Salinity Zone:

Between 1984 and 2015:

- Bay grass abundance in the Bay's fresh waters (the **Tidal Fresh Salinity Zone**) has ranged from 6,900 acres (1995) to 25,481 acres (2008), averaging 12,662 acres. Between 2014 and 2015, bay grass abundance in this zone increased 1,959 acres to 17,454 acres, achieving 85 percent of the zone goal.
- Bay grass abundance in the Bay's slightly salty waters (the **Oligohaline Salinity Zone**) has ranged from 653 acres (1984) to 13,919 acres (2005), averaging 6,800 acres. Between 2014 and 2015, bay grass abundance in this zone increased 2,681 acres to 9,881 acres, achieving 96 percent of the zone goal.
- Bay grass abundance in the Bay's moderately salty waters (the **Mesohaline Salinity Zone**) has ranged from 15,636 acres (1984) to 48,444 acres (2005), averaging 28,784 acres. Between 2014 and 2015, bay grass abundance in this zone increased 10,680 acres to 47,728 acres, achieving 40 percent of the zone goal.
- Bay grass abundance in the Bay's very salty waters (the **Polyhaline Salinity Zone**) has ranged from 9,959 acres (2006) to 24,016 acres (1993), averaging 17,772 acres. Between 2014 and 2015, bay grass abundance in this zone increased 862 acres to 16,558 acres, achieving 49 percent of the zone goal.

Issues

Like grasses on land, underwater grasses, also known as submerged aquatic vegetation or SAV, need sunlight to survive. When the waters of the Chesapeake Bay become clouded with algae blooms or suspended sediment, sunlight cannot reach the bottom habitat where grasses grow. While healthy grass beds can trap and absorb some nutrient and sediment pollution—thus improving water clarity where they grow—too much pollution can cause grass beds to die off. Water temperatures, strong storms and drought can also affect the growth and survival of underwater plants. Chesapeake Bay Program partners are working to improve water clarity, protect and restore grass beds, enhance bay grass research and expand education and outreach to restore underwater grasses and boost their habitat benefits in the watershed.

Importance

Underwater grass beds are critical to the Chesapeake Bay ecosystem. They offer food to small invertebrates and migratory waterfowl, and shelter young fish and blue crabs. Bay grasses also keep our waters clear and healthy by absorbing excess nutrients, trapping suspended sediment and slowing wave action and shoreline erosion.

Because bay grasses are sensitive to pollution but quick to respond to water quality improvements, their abundance is a good indicator of Bay health. To support the resurgence of underwater grass beds in the Bay, cities and towns can reduce polluted runoff and upgrade wastewater treatment plants with pollution-reducing

technologies, farmers can use best management practices to keep fertilizers in their fields, boaters can steer clear of bay grass beds that are growing in shallow waters and homeowners can use rain barrels or rain gardens to slow nutrient- and sediment-laden stormwater runoff.

Quotes

"While much of the grass that accounts for the 2015 expansion was widgeon grass—a species that is often described as a boom or bust plant—I think we can take heart in the fact that it boomed last summer—marking three consecutive years of growth. Be it freshwater wild celery or mid-Bay widgeon grass, submerged aquatic vegetation would not expand so rapidly and into areas where it hasn't been mapped before if water quality wasn't improving. This report shows that we are making strides on Bay restoration and truly impacting the amount of nutrient and sediment pollution entering our waterways. As we continue to provide conditions necessary for our natural resources to thrive, their resilience will increase and they'll have a much better chance of persisting through major weather events or other challenges."

> --Brooke Landry, Natural Resources Biologist, Maryland Department of Natural Resources and Chair, Chesapeake Bay Program's Submerged Aquatic Vegetation Workgroup

"It is indeed impressive to observe not just how resilient Bay submerged aquatic vegetation is, but also how quickly SAV can recover, as in the case of the Elk River. Continued emphasis on improving water quality will ensure healthy, vibrant SAV beds, necessary for the many important animals that rely on them, such as the iconic blue crab."

> --Bob Orth, Director of SAV Aerial Survey, Virginia Institute of Marine Science

"The significant increase in bay grasses, when combined with several other recent positive indicators of Bay health – improved water clarity, increased blue crab populations, increased attainment with water quality standards based on actual water quality monitoring data, and reported decreases in estimated nutrient and sediment pollution - all suggest that our sustained efforts to restore the Chesapeake Bay watershed and its ecosystem are working, especially in light of the impacts of climate change and increases in the human population and the development associated with it. Clearly, we are on the right path. And just as clearly, we must continue our efforts if we are to succeed."

> --Nick DiPasquale, Director, Chesapeake Bay Program

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We Recommend:

- ChesapeakeProgress: Submerged Aquatic Vegetation Outcome
- Submerged Aquatic Vegetation (SAV) in Chesapeake Bay and Delmarva Peninsula Coastal Bays (Virginia Institute of Marine Science)
- Learn the Issues: Bay Grasses