



Bay Grass Restoration Partnership Newsletter



Issue 5

Winter 2006-2007

Special points of interest:

- Bay grasses subjected to numerous meteorological and hydrographic events in 2006
- Eelgrass seeds dispersed over 37.7 acres on the Potomac River and 25.9 acres on the Patuxent River to date
- Bay Grasses in Classes Program kicks off 10th season
- Miike Naylor wins Conservation Award



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Bay Grasses and 2006's Record-Breaking Weather

2006 was a year of several meteorological and hydrographic extremes. Freshwater flows into the Bay were considered near normal for Water Year 2006 (October 2005-September 2006), but flows varied widely. Since record keeping began in 1937, the United States Geological Survey (USGS) ranked January, June, July and September 2006 freshwater flows in the top ten highest, with flows in March, April and May ranked in the lowest ten.

High flows continued into Water Year 2007 (October 2006-September 2007) with November 2006 experiencing flows two times greater than the long-term average.

In late June, the region experienced the remnants of Tropical Storm Alberto, which drenched the Northeast for five days. Some scientists had feared that this deluge would cause bay grass destruction similar to that caused by Hurricane Agnes in June of 1972. While freshwater flows into the Bay were only about one third of what they were following Agnes, turbid conditions were present throughout the Bay following Alberto.

Satellite imagery showed that the upper reaches of the Bay's tributaries were still turbid nearly three weeks after the rain event. This period of high turbidity was a

concern for bay grass researchers because sediment and nutrient run-off can block light from reaching aquatic grasses and lead to their decline.

Field observations and aerial photography indicated that the large-scale impact of the June rain event on bay grasses was most likely minimal. Please read DNR's August 2006 Monitoring Story for more information (http://mddnr.chesapeakebay.net/eyesonthebay/monitoring_stories.cfm).

Bay grass distribution and abundance in the upper Bay, particularly the Susquehanna Flats, was highly variable after the June rain event. Some areas experienced increases in bay grass while others experienced small declines. The full impact in the upper Bay will not be known until this summer.

There seemed to be no apparent effects in the mid-Bay region. Widgeon grass was abundant and eelgrass seemed to rebound in some areas, including the Potomac River.

Dry spring conditions (low freshwater flow and sediment conditions) preceding the June rain event may have enhanced bay grass production, making it more tolerant of the high turbidity conditions and high water tempera-



Sediment runoff four days after the remnants of Tropical Storm Alberto. Turbidity was especially high in the Susquehanna and Potomac Rivers.

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Bay Grass Restoration Efforts Continue with Eelgrass Seed Dispersal in the Patuxent and Potomac Rivers

The Department of Natural Resources (DNR) Resource Assessment Service recently completed a fourth season of eelgrass seed dispersal in the Patuxent and Potomac Rivers. Eelgrass reproductive material was collected from Tangier Sound near Crisfield, MD in the spring of 2006. Most of the seed collection was done using SCUBA. Divers manually picked reproductive shoots instead of using a harvesting boat as in previous years.

Approximately half of the harvested eelgrass seed material (220,000 eelgrass seeds) was utilized for immediate distribution simulating natural eelgrass seed dispersal. The freshly collected seed material was deployed allowing for seeds to mature and settle to the bottom in suitable restoration areas on the Patuxent and Potomac Rivers.



Eelgrass seeds after removal from non-reproductive material.

The remaining eelgrass seed material (approximately 350,000 seeds) was processed at DNR's Piney Point Aquaculture Facility. The eelgrass reproductive material was held through the summer in large tanks to allow for the eelgrass seeds to separate from the non-seed material. After separation, the seeds were stored in re-circulating tanks and set at a constant temperature and salinity. These new storage techniques at the Piney Point Aquaculture Facility have improved eelgrass seed survival from 20% to 80%.

The seeds were broadcast on the Potomac and Patuxent Rivers in November 2006, once water temperatures dropped below 15°C (59°F) (suitable conditions for seed germination). A total of 87,500 seeds were broadcast over 0.1 acres near Jefferson Patterson Park on the Patuxent River, bringing the total number of acres seeded to 25.9 since 2003. In the Potomac River, 262,500 seeds were dispersed across 0.25 acres near St. George Island, with a total of 37.7 acres seeded since 2003. When water temperatures begin to increase in the spring, the eelgrass growing season begins, and DNR divers will survey these areas to quantify the successful recruitment of eelgrass seedlings.

Maryland DNR continues to develop and implement techniques for large-scale bay grass restoration in strategic locations to help achieve Maryland's restoration goals. For more information on Maryland DNR's large-scale eelgrass restoration projects, please visit <http://www.dnr.state.md.us/bay/sav/restoration.asp>.

BGIC Kicks Off its Tenth Season

The Bay Grasses in Classes (BGIC) program is a hands-on, interactive education project that enables students to play a direct role in Chesapeake Bay restoration. Since its inception in 1998, over 1,400 classes and 36,000 students have been involved with Bay Grasses in Classes. During this time, students have planted over 2.75 acres of SAV in the Bay with the 475,000 plants grown in their classrooms. Aerial surveys taken each year by the Virginia Institute of Marine Science (VIMS) have continued to map these healthy grass beds.

Interested teachers from across the State were trained by DNR and CBF staff in January. One hundred and two teachers from 81 schools were provided with all equipment and instructions required to grow bay grasses in their classrooms. In addition, teachers were given an extensive curriculum designed to incorporate bay grass activities into the normal school day. Teachers use the curriculum materials and online resources provided to educate their classes on the importance of bay grasses.



Students examine bay grass grown in their classroom.

During the semester, each student will have an opportunity to plant the seeds or propagate adult plants, monitor growth and record data, as well as participate in lessons and activities designed to educate them on the benefits of bay grass communities. At the end of the semester, students will take part in planting their bay grasses in select areas of the Chesapeake Bay water-

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Weather

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Water stargrass near the Susquehanna Flats in late August 2006.

tures experienced in June and July.

However, some areas of the mid-Bay region experienced reductions in bay grass coverage due to high summer water temperatures and the extreme salinity fluctuations following the rain event.

Following a two month period of below-average precipitation and cooler water temperatures, Tropical Storm Ernesto dumped several inches or rain on the region in early September 2006. USGS stream discharge data for the Susquehanna River at Conowingo indicated that the river received approximately ten times more discharge than the historic daily average during this event. The remnants of Tropical Storm Ernesto also caused a spike in salinity from a storm surge moving up the Bay, as well as increases in turbidity, especially on the Eastern Shore.

Aerial photography and field observations taken after the September rain event indicated that bay grasses were persisting in the Potomac River, including the St. Mary's River, and in the upper Patuxent, Severn and Magothy Rivers. Little to no aquatic grass has been

observed in Eastern Shore tributaries, except in Brannock Bay, Crab Alley Bay and Marshy Creek. Bay grasses in the upper Bay region, including the Elk, Bohemia and Sasfras Rivers and the Susquehanna Flats seem to have maintained 2005 densities.



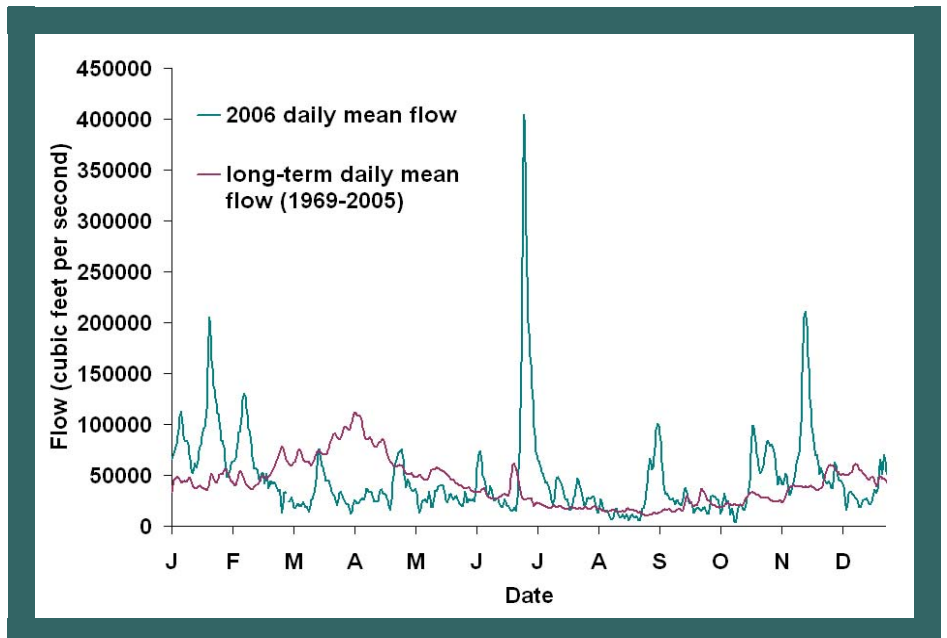
Elgrass (forward) and widgeon grass (background) in the Potomac River in early October 2006.

A heavy rain event in October and the late November Nor'easter contributed to last fall being the wettest on record. These storm events added significant amounts of precipitation to the region and significantly increased river flows into the Bay.

Increased nutrients from the freshwater flows and above-average water temperatures contributed to several persistent algal blooms throughout many Western Shore tributaries this winter. Mahogany tide blooms caused by the dinoflagellate *Prorocentrum minimum* were present in the waters of the Severn, Magothy, South, West and Patapsco Rivers since late November/early December. These algal blooms, along with the late fall storm events, caused significant decreases in water clarity throughout the middle portion of the Chesapeake Bay.

The fall storm events and algal blooms should have a minimal impact on bay grasses since they occurred after the bay grass growing season (April-October). However, the impact of these events on the Chesapeake Bay's aquatic grasses is still being investigated.

The hydrographic events of 2006 illustrate the importance of the timing of storm events on bay grass growth and survival. The dry spring was ideal for bay grass growth and may have jump-started bay grass production, making the plants more tolerant of the high turbidity conditions and high water temperatures experienced in the summer. The fall storm events and subsequent algal blooms trailed the bay grass growing season, allowing for normal seed production and germination.



2006 Average daily flow of Susquehanna River at Conowingo Dam vs. long-term average (data from USGS www.waterdata.usgs.gov).

Noteworthy NEWS

Restore America's Estuaries 2006

Several members of Tidewater Ecosystem Assessment Division staff, Tom Parham, Mike Naylor, Lee Karrh, Katie Preen, Becky Raves Golden and Mark Lewandowski, presented talks and poster presentations on submerged aquatic vegetation restoration efforts in the Chesapeake Bay at the Restore America's Estuaries Conference held in New Orleans on December 9-13, 2006. The presentations demonstrated state-of-the-art restoration techniques developed by DNR staff and their Chesapeake Bay partners, highlighted successful seed and transplant programs and provided an opportunity to exchange ideas with other leading SAV restoration experts. The conference attracted over 1,800 Federal, State and private habitat restoration specialists from across the country.



Mike Naylor, Conservation Award Winner

Mike was awarded the Tidewater Chapter of the American Fisheries Society prestigious Conservation Award in early February 2007. The award is given periodically for important contributions in the field of fisheries or aquatic habitat conservation and restoration activities. Mike was awarded for his hard work and dedication to restoring SAV habitat in the Chesapeake Bay. Way to go Mike!



BGIC

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shed. By studying the ecological importance of bay grasses and actively participating in restoration, students also gain a sense of stewardship of the Bay.

The Bay Grasses in Classes (BGIC) project is a partnership between the Maryland Department of Natural Resources (DNR) and the Chesapeake Bay Foundation (CBF).

BGIC receives funding from the National Oceanic Atmospheric Administration (NOAA).

For more information on the Bay Grasses in Glasses program, contact Mark Lewandowski (mlewandowski@dnr.state.md.us, 410-260-8634) or visit us online at <http://www.dnr.state.md.us/bay/sav/bgic/>.



Student prepare growth chambers for bay grasses in the classroom.

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