



Bay Grass Restoration Partnership Newsletter



Issue 1

Fall 2005

Special points of interest:

- 10 million eelgrass seeds harvested from Tangier Sound this past spring
- 8th season of Bay Grasses in Classes program ends, with over 3,000 students participating
- Harness Creek restoration project adds 0.41 million spat to oyster reef
- Several hundred pounds of water chestnut collected from Sassafras River in June
- Governor Ehrlich announced Maryland's Corsica River Pilot Project



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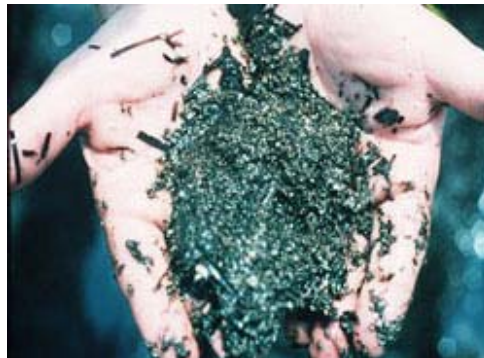
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Bay Grass Restoration Efforts Continue with Eelgrass Seed Collection in Tangier Sound

Maryland DNR completed a third season of eelgrass seed collection in Tangier Sound near Crisfield, MD from May 23 to June 9. The eelgrass seeds were collected as part of a continued effort to plant or seed bay grasses on a large scale in strategic locations to help achieve the state's restoration goals. During 2003, the first year of eelgrass seed collection, 500,000 seeds were collected manually. However, collection of seed material by hand was not sufficient to meet Maryland DNR's restoration goals of 500 acres of bay grasses by 2008.



Maryland DNR crew offloading eelgrass reproductive shoots from mechanical harvester in Tangier Sound



Eelgrass seed material

The introduction of a mechanical harvesting boat dramatically increased the number of seeds collected to about 17 million in 2004. The same mechanical harvester was used again this year, and roughly 10 million eelgrass seeds were harvested from Tangier Sound.

Maryland DNR has long recognized the need for a large-scale restoration approach. There

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Bay Grasses in Classes 2005

Maryland DNR, in partnership with the Chesapeake Bay Foundation (CBF) and funded in part by the Chesapeake Bay Trust, the Chesapeake Bay Program and the National Oceanic and Atmospheric Administration, has completed its eighth season of the Bay Grasses in Classes (BGIC) program. Since its inception in 1998, over 1,269 classes and 32,000 students have been involved in the program.

In 2005, 98 schools with almost 3,000 students participated in one or all phases of this project.

Interested teachers from across the State were trained by Maryland DNR and CBF staff in January. Teachers used the curriculum materials and online resources provided to educate their classes on the importance of bay grasses. Teachers were provided with

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Oyster and Bay Grass Restoration in Harness Creek, South River

Maryland DNR is working to restore oysters and bay grass to Harness Creek on the South River in partnership with the Oyster Recovery Partnership, South River Federation, Chesapeake Bay Foundation, Chesapeake Bay Trust, NOAA, and the National Fish and Wildlife Foundation.

The objective of this project is to demonstrate the effectiveness of native oysters (*Crassostrea virginica*) in improving water quality specifically to support bay grass restoration, growth and survival. Oyster reefs and bay grasses are the two most important habitats in the Chesapeake Bay. In addition to providing all of the same ecosystem services as bay grass beds, oyster reefs also filter algae and sediments from the water column. Reduced light penetration, due to algae and sediment clouding the water column, is a major cause of decline in bay grass populations. It is hypothesized that if the Chesapeake Bay Oyster Restoration Goals set forth in the Chesapeake Agreement (2000) are met, increased numbers of oysters could remove enough suspended material from the water column to increase light penetration to the bottom, a critical step for bay grass survival and resurgence.



Oyster Recovery Project's vessel, Robert Lee, seeding oyster spat in Harness Creek, South River

In 2003, a small oyster reef (0.2 acres) was constructed across the mouth of a small cove in Harness Creek with 3,000 bushels of oyster shells and seeded with 875 bushels of native oysters. Maryland DNR began monitoring water quality conditions in Harness Creek in 2003 and is currently tracking improvements in water quality as a direct result of the oysters, relative to the habitat requirements of bay grasses for future bay grass transplants. The second year of oyster monitoring was completed in September by Maryland DNR staff, who assessed overall oyster health, specifically survival, growth and presence of disease (MSX and Dermo). In early October 2005, Maryland DNR supervised the addition of 0.41 million oyster spat, provided by the Oyster Recovery Partnership, to the existing reef. Once the enlarged oyster reef provides significant increases in water quality, bay grass restoration plantings will take place inshore of the oyster reef.

Water Chestnut Harvesting

Water chestnut (*Trapa natans*) is a floating aquatic plant native to Asia. In the eastern United States, water chestnut is an invasive species known for its aggressive growth habits. One acre of water chestnut can produce enough seeds to cover 100 acres the following year. With four, hard half-inch spines that are sharp enough to penetrate shoe leather and large enough to keep people off beaches, water chestnut seeds are major hazards to water contact recreation. Additionally, water chestnut can wipe out native bay grasses from some areas, prevents nearly all water use where it occurs, creates breeding grounds for mosquitoes, and provides only marginal habitat to native fish and birds.



Water chestnut seed

Water chestnut first appeared in Maryland in the Potomac River near Washington, DC as a two-acre patch in 1923. By 1933, 10,000 acres of dense beds extended from Washington, DC to just south of Quantico, VA. In 1955, water chestnut was recorded in the Bird River in Baltimore County and reappeared in 1965, where an additional 100 acres were discovered in the Sassafras River in Kent County. A combination of removal techniques (herbicides, mechanical harvesting and hand removal) was used, and no plants were noted in vegetation surveys until the summer of 1997.



Water Chestnut Plant

A massive mechanical and volunteer harvesting effort began on both the Sassafras and Bird Rivers in 1999, and resulted in the removal of approximately 400,000 pounds of water chestnut from both rivers. Mechanical and manual harvesting took place again in 2001 and by 2002 there were not enough plants present at any of the location to justify using a mechanical harvester. Since then, control efforts have been performed on both rivers by small teams of Maryland DNR staff using personal watercraft. This past June, several hundred pounds of water chestnut were collected from a small pond on the Sassafras River across from Woodland Creek.

Despite these successes, the threat posed by the remaining small, but still significant populations, requires that removal efforts continue to keep the population in check and prevent any further proliferation of water chestnut populations.

Seed Collection

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are areas of the Bay where water quality has improved sufficiently to support bay grasses, yet a lack of seeds prevents recolonization of these areas. Planting or seeding large beds with seeds collected from healthy beds elsewhere could lead to vigorous natural revegetation in adjoining areas.



Maryland DNR staff unloading eelgrass into holding tanks at Piney Point

In 2003, Maryland began experimenting with large-scale eelgrass restoration projects in the Patuxent and Potomac Rivers, where approximately five acres were seeded in Maryland. Increased collection efforts in 2004 resulted in a total of 36.25 acres being seeded at four sites on the Patuxent River and three sites on the Potomac River.

Using the mechanical harvesting boat, Maryland DNR biologists collected eelgrass reproductive material from Tangier Sound. The harvester “trims” the grass beds, removing seeds while leaving the roots and rest of the grasses intact. Only a small portion of the seeds are removed from each healthy bed allowing them to reproduce and persist at healthy levels.

Some of the harvested material was used to make seed bags for immediate distribution simulating natural seed dispersal. Mesh bags were stuffed with freshly cut reproductive material and deployed allowing for seeds to mature and settle to the bottom in suitable restoration areas. Over 11 acres on the Potomac River and 5 acres on the Little Choptank River were seeded during June 2005.

The remainder of harvested seed material was transported by commercial watermen to Maryland DNR’s Piney Point Aquaculture Facility where it was held through the summer in large tanks to allow for seeds to separate from non-seed material. Seeds will be planted this fall on the Potomac, Patuxent, and Little Choptank Rivers.

Funding for this project was provided by the Keith Campbell Foundation, U.S. Army Corps of Engineers, and the National Oceanic and Atmospheric Administration, with work performed by Maryland DNR and the Virginia Institute of Marine Science.



Typical seed bags



Mechanical seed broadcast machine spraying eelgrass seeds at a bay grass restoration site

Bay Grasses in Classes

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materials necessary to construct growth chambers in their classrooms including, aquarium equipment, sediment, and seeds or adult plants to propagate. Each student had 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.

After 12-16 weeks of caring for their bay grasses, the students disassembled their systems and transported the grasses to restoration sites throughout the state.

Fifty-two classes attended a field trip at the end of the program to plant their classroom-raised grasses at one of the three restoration sites in the Chesapeake Bay watershed. These sites included Duvall Creek, South River (Anne Arundel County), Rocky Point Creek (Baltimore County) and Clopper Lake, Seneca Creek State Park (Montgomery County). There they took part in planting the grasses and other activities designed to reinforce their knowledge of bay grasses. By studying the ecological importance of bay grasses and actively participating in restoration, students also gained a sense of stewardship of the Bay. Students planted more than 100 square meters of bay grasses this year, bringing the total for the project to 2,100 square meters (one half acre).



Students preparing to plant bay grass

Bay Grasses in the News...

Corsica River Pilot Project

On September 27, 2005, Governor Ehrlich announced Maryland's Corsica River Pilot Project. The project is a joint venture between state agencies, local, federal and private partners to fund restoration projects within the Corsica River and its 24,000 acre watershed within Queen Anne's County. The total cost of the project is expected to be \$19.4 million over the next five years. Initial projects include reducing nutrient and sediment pollution into the Corsica River and restoring bay grass acreage and oyster habitat, while the long-term goal is to remove the Corsica River from the Environmental Protection Agency's (EPA) 303(d) list of impaired waters. In the spring of 2005, Maryland DNR biologists tested two areas of the Corsica River, Emory Creek and Earle Cove, as potential bay grass restoration areas. If these areas prove suitable for bay grass restoration, it is hoped that 10 acres of redhead grass (*Potamogeton perfoliatus*), wild celery (*Vallisneria americana*) and sago pondweed (*Stuckenia pectinata*) will be restored in the next five years.



Wild celery bed

Bay Grass Aquaculture Activities

Piney Point Aquaculture Center

Located in St. Mary's County, the Piney Point Aquaculture Center is home to two major Maryland DNR large-scale bay grass restoration efforts:

Eelgrass nursery

In order to annually provide 30,000 eelgrass plants for bay grass mitigation resulting from the Woodrow Wilson Bridge construction, Maryland DNR and St. Mary's College, with funding provided by the State Highway Administration, have designed and constructed a 4000-gallon grow-out system. This semi-closed, temperature-controlled eelgrass grow-out system is capable of producing adult plants from seed in less than five months.



Eelgrass nursery tanks at Piney Point

Eelgrass seed processing center

Maryland DNR has established equipment at its Piney Point Aquaculture Facility to process collected eelgrass seeds. 1800 bags of seed material, with approximately 20 gallons of eelgrass shoots per bag, were harvested this past summer from Tangier Sound and transported to Piney Point by commercial watermen. The reproductive shoots were processed and held in large tanks at the Piney Point facility until the seeds dropped from the reproductive shoots (July to early August). Seeds were separated from shoot material and are being stored in large tubs until they are broadcast into the field this month.



Fort Meade laboratory

Fort Meade Laboratory Activities

Maryland DNR operates a laboratory at the Environmental Protection Agency's Environmental Science Center on the grounds of the Fort George G. Meade Army installation. The bay grass lab at Ft. Meade has been used since 1998 to experiment with indoor growth and propagation techniques and for raising bay grasses. The goal is to develop and improve simple procedures to allow mass production of bay grasses for transplanting and restoration activities. Micropropagation techniques and turion production methods are also being perfected to increase the survival of transplants used in restoration. Currently, research is being conducted on redhead grass (*Potamogeton perfoliatus*), sago pondweed (*Stuckenia pectinata*) and wild celery (*Vallisneria americana*).

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Funding for this newsletter provided by the Maryland Coastal Zone Management Program.

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