

Magothy River Index

for 2011



Presented at "State of the Magothy," Wed. 2/15/12, by the Magothy River Association

Magothy health was 22% in 2011 (Grade: D-)

The Magothy River Association's "Magothy River Index" assesses the ecosystem health of the tidal river, produced annually by the MRA since 2003. Status is expressed as a percent (%) of a desirable goal (more is better), and also as a letter grade (20-40% is D, 80-100% is A).

We assessed ecosystem health based on three factors: water clarity (Apr-Oct Secchi depth >=1 m) and dissolved oxygen (DO, Jun-Sep water column DO > 5 mg/l), both from MRA volunteers, and submerged aquatic vegetation (SAV) area from the Virginia Institute of Marine Science (VIMS). SAV need adequate water clarity to grow, and fish and shellfish need adequate DO to survive.

The 2011 grade, 22% or D-, was the same grade as last year, but down from 45% (C) in 2006 (Fig. 1). DO and SAV status rose but clarity status fell in 2011, leaving the mean status about the same as last year. The increase in SAV was good news: it was a bed on the west shore of Gibson Island, last mapped in 2008.

2011 had record low salinity

We have not included salinity data in recent report cards, since it is not part of the health score. However, salinity was at record lows in 2011, low enough to impact some living resources:

- Low spring salinity was blamed for high oyster mortality (76%) found in Nov. 2011 in the Bay mainstem just off Downs Park; we don't know yet if Magothy oysters had any similar die-offs.
- We may see more dark false mussels (DFM) in the Magothy in 2012, since we think the sudden drop in salinity in 2003 triggered the irruption of DFM in 2004.

Magothy River Ecosystem Health, 2006-2011

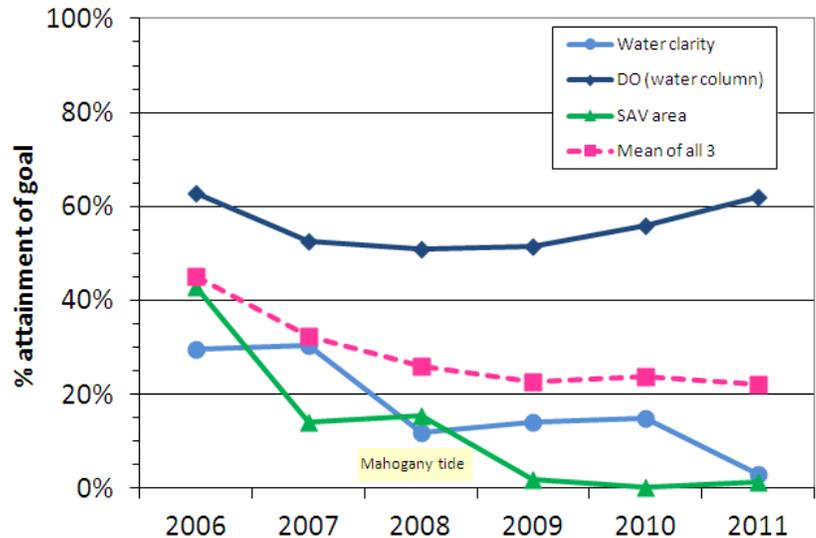


Fig. 1. Magothy ecosystem health status by year, 2006-2011.

Magothy mainstem salinity, all depths

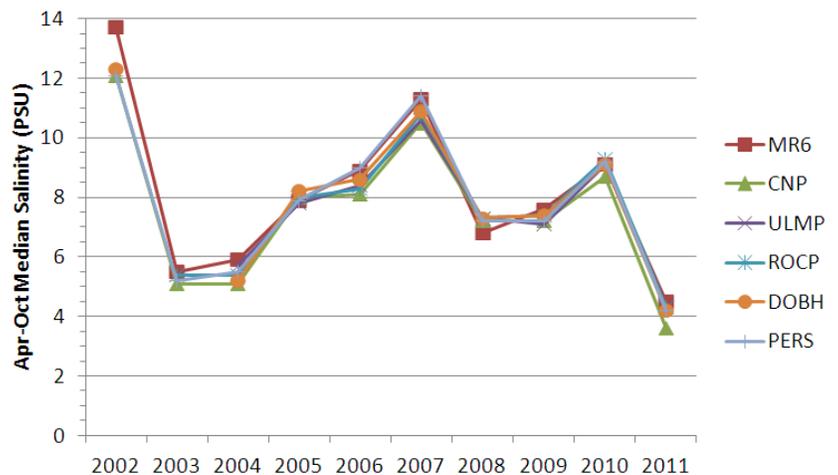


Fig. 2. Magothy River 2002-2011 median mainstem salinity over all depths by sampling site. Years start in 2002 rather than 2006 to show more variability, and creek data are not shown.

DO and clarity status trends varied among groups of sites

Our report card last year (for 2010) showed that low surface DO was a problem that varied greatly among different sampling sites. Low surface DO was seen less often in 2011, which is a good sign, and it is not graphed here. However, both water column DO (from all depths) and water clarity status had trends over time that varied among groups of sites.

For water column DO (Fig. 3), the mainstem status declined gradually, from over 80% to over 60%. In the two groups of creeks, DO status was much lower than in the mainstem through 2009, even though the creek sites are shallower than the mainstem sites, and deeper water generally has less DO. However, in 2010 and 2011, the creek DO status increased enough to almost tie the mainstem DO status. We don't know why DO conditions improved in the creeks and not in the mainstem.

For water clarity (Fig. 4), creek status was low for the whole period, rising a bit in 2009-2010 and falling again in 2011. In contrast, mainstem status started near 60% in 2006-2007, high enough to support SAV growth, and then fell to 6-25% in 2008-2011, with the lowest status in 2011. Since all of the Magothy SAV was on the mainstem, this explains why our SAV area fell to near zero in 2009-2011 (Fig. 1).

Wild celery planted in June

MRA volunteers, led by Alexanna Page for her Girl Scout Gold project (in the green shirt in Fig. 5), grew and planted wild celery in upper Mill Creek in June 2011. While the planting was challenging due to mucky sediments, a few of the plants survived through October, which was impressive given the very low water clarity. Staff from Anne Arundel Community College and the MD Department of Natural Resources also helped with the planting; expenses were paid by Anne Arundel County.

Magothy water column DO status by groups of sites

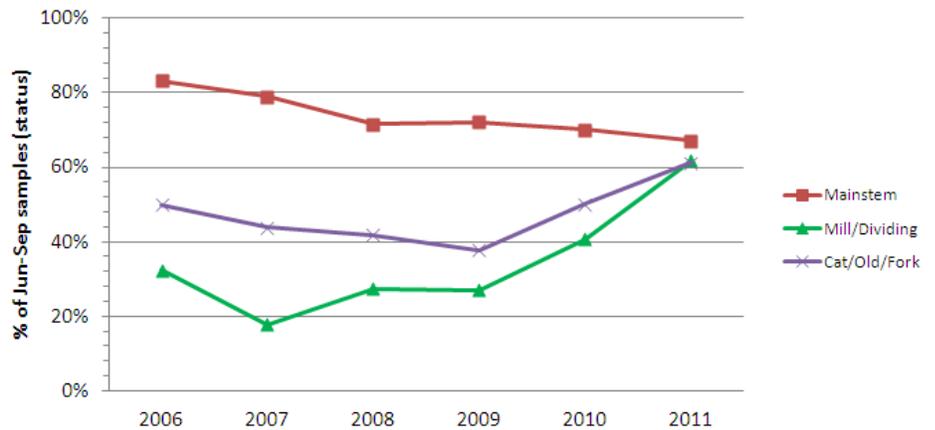


Fig. 3. Magothy water column DO status by year and group, 2006-2011.

Magothy water clarity status by groups of sites

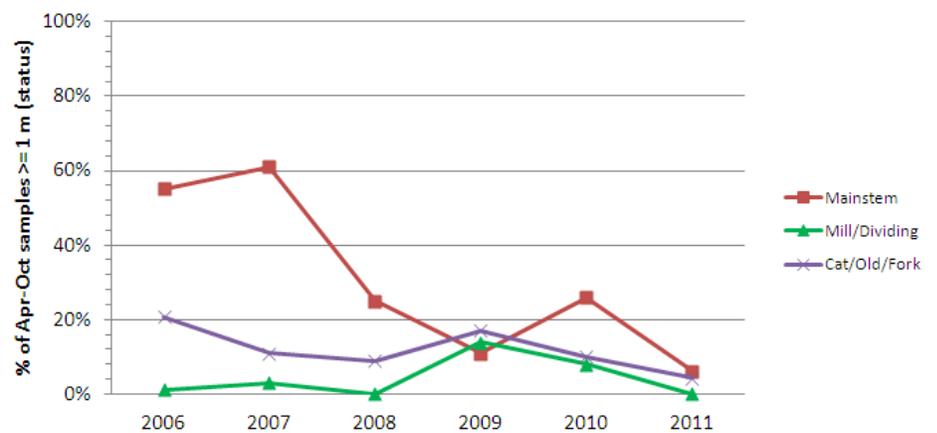


Fig. 4. Magothy water clarity status by year and group, 2006-2011.



Photo: Peter Bergstrom

Fig. 5. Volunteers planting SAV in Mill Creek, June 2011.

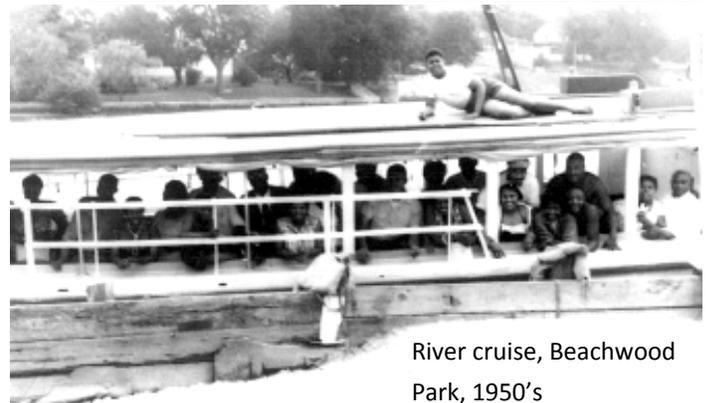
Improving Beachwood Park

As you may know, public access to the Magothy's tidal shoreline is very limited. Downs Park has tidal shoreline on the Bay mainstem and on Bodkin Creek on the Patapsco, and the Magothy is nontidal in Lake Waterford Park. The county has owned about 71 waterfront acres at Beachwood Park, on the north shore of the upper tidal Magothy, since 2002 (see map). It was operated as a beach resort and amusement facility from 1948 to the early 1960's, primarily serving the African American community but open to all. It offered swimming, fishing, pavilions, and piers for excursion boats that went down the river.

The MRA is working closely with county Recreation and Parks and Eagle Cove School to revitalize the park for public use. MRA volunteers, led by Kelly Kalinowski, are working with the county on several projects which will be completed as volunteers, funding, and permits allow. The MRA has received \$1,150 in donations for this, but more donations are needed to complete these planned projects:

- Clearing fallen trees blocking the proposed canoe/kayak launching trail (see map). This trail will be a few hundred feet long, but will be fairly level. It will not be open to vehicles.
- Clearing a nature trail and hiking trails, providing better access to fishing areas
- Removing invasive plants
- Planning, funding, and installing interpretive signs about the history of the park
- Working with the county and other partners to create a master plan for the park

Contact Kelly at kellyjkalinowski@gmail.com to help, and look for announcements of future volunteer work days at the park.



" Improving public access to Beachwood Park is critical to increasing community interest and support in restoring the Magothy River." — MRA President Paul Spadaro

The MRA is proud to honor Alicia Fisher's commitment to our watershed by awarding her the 2011 E. Gordon Riley MRA Scholarship of \$1,000 towards her studies in Environmental Science at Anne Arundel Community College. Alicia has volunteered with Dick Carey on his weekly sampling trips to oyster restoration sites for more than a year, recording water quality data and collecting phytoplankton. Contact the AACC Science office (Dragun 238, 410-777-2260) to apply for MRA's 2012 scholarships. *(Photo by John Green)*



Get involved!

Action	Result (or details)
Join the Magothy River Association: see www.magothyriver.org and click "Join Us."	Contact President Paul Spadaro at 410-647-8772 or president@magothyriver.org .
Volunteer to help with oyster gardening, and with monitoring of both oyster and SAV habitats (via diving and in canoes/kayaks respectively). We may also be growing SAV to plant in upper Mill Creek in 2012.	Contact Carl Treff to sign up for oyster gardening at magothyriver.savers@yahoo.com , Dick Carey to help with oyster monitoring at magothyriverdiver@gmail.com , or Peter Bergstrom for SAV surveys or planting at pwbergstrom@gmail.com .
Plant more native trees. Cut trees down <i>only</i> when they pose an imminent threat to people or property.	Trees absorb nitrogen, reduce air pollution, provide food and habitat to animals, shade houses, etc.
Install rain gardens and stormwater retrofits in your yard and neighborhood.	Reduces the quantity of stormwater runoff, and improve its quality, as was done in Manhattan Beach.
Replace some of your lawn with native flowers and shrubs; fertilize it only in the fall (if needed). See http://www.dnr.state.md.us/criticalarea/pdfs/BackyardMakeover.pdf	Reduces your use of fertilizer, lawn chemicals, water, and gas for mowing; increase habitat and food for animals, reduce harmful effects of runoff.
If you have a septic system, maintain it on schedule. Consider upgrading to a nitrogen removing system (priority is failing septic systems in the Critical Area).	Reduces nitrogen runoff into ground water and nearby streams. To learn how to apply for upgrades see: http://www.ahealth.org/programs/env-hlth/well-septic-systems/brf/senate-bill
Reduce energy use and air pollution. Buy energy efficient cars and appliances and electric-powered yard tools, and use them in ways that minimize energy use.	Reduces greenhouse gas and nitrogen emissions; slows global climate change; saves you money.

On June 12, 2011 (Magothy River Day), the MRA deployed a time capsule at the Rock Point oyster reef. It will document for future generations what people are doing today to make the Magothy healthier for their generation to enjoy. More than 185 students contributed letters. Magothy River Day will be on Saturday, June 9 in 2012. (photo by Tom Hampton)



Oyster delivery day, Eagle Cove School, 2011.

Photo by Carl Treff



Thanks to:

- The MRA volunteers who helped with MRA events, did water monitoring, grew and planted oysters and SAV, and monitored oysters and SAV.
- Dr. Peter Bergstrom, NOAA Chesapeake Bay Office & MRA (writing, layout, data analysis,

- graphs, and the Fig. 5 photo).
- Chesapeake Bay Trust for support for MRA projects.
- Dr. Bob Orth and Dave Wilcox at VIMS for SAV data.
- Everyone who gave comments.



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