

Magothy River Index

for 2009



Presented at "State of the Magothy," Wed. 2/17/10, by the Magothy River Association

Aquatic health fell to 28% in 2009 (Grade: D)

The Magothy River Association's "Magothy River Index" is an assessment of the aquatic health of the tidal river, produced annually by the MRA since 2003. It reports the status of vital habitats and water quality in the Magothy in the previous year. Status is expressed as a percent (%) of a desirable goal (more is better), and also as a letter grade. See Fig. 3 for the grading scale used.

We assessed aquatic health based on three factors: water clarity (Secchi depth) and dissolved oxygen (DO) data collected by MRA volunteers, and Submerged Aquatic Vegetation (SAV) data collected by the Virginia Institute of Marine Science (VIMS). SAV need adequate water clarity to grow, and fish and shellfish need adequate DO to survive. The 2009 status (28%) was the lowest value we've measured, down from 30% last year (Fig. 1), both a D. The river's grade was C- from 2002-2003, peaked at B- in 2004 when dark false mussels were abundant, and fell to C or C- in 2005-2007.

Magothy River Aquatic Health Status

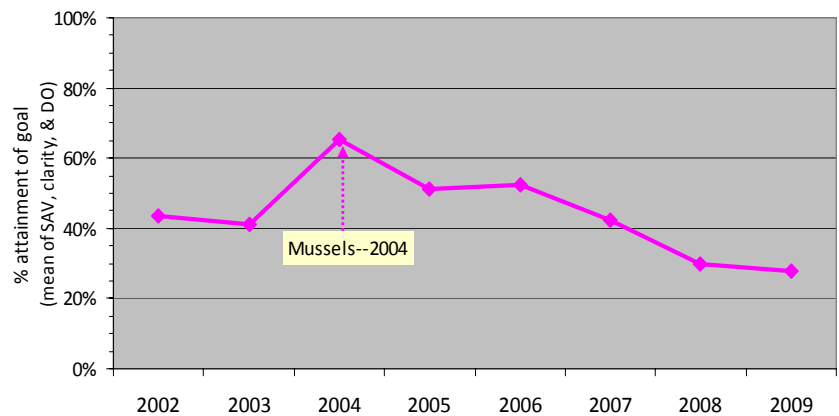


Fig. 1. Magothy aquatic health status by year, 2002-2009.

A "D" grade doesn't mean that the Magothy River is "Doomed." If we implement a strategy that builds on personal stewardship and community restoration, and demands legal and political actions to enforce environmental regulations and control development, we can clean up our river. Therefore I feel that a "D" stands for "Our Determination" to restore the Magothy for generations to enjoy.
(MRA President Paul Spadaro)

SAV status rose and fell with water clarity status

A graph of the three components of aquatic health (Fig. 2) shows that two peaked in 2004 and SAV peaked in 2005. While DO status was fairly steady at 46-79% of the goal, SAV status rose and fell with water clarity status (as expected, since SAV need clear water to get enough light to grow).

The sharp declines in SAV and clarity status that started in 2006 may soon lead to the loss of all mapped SAV beds in the Magothy. For this reason, in 2010, we will suspend the SAV plantings that Carl Treff has organized each year since 2003. We hope to get many people out in small boats in summer 2010 to survey the few SAV beds we have left.

Magothy Aquatic Health Components, 2002-2009

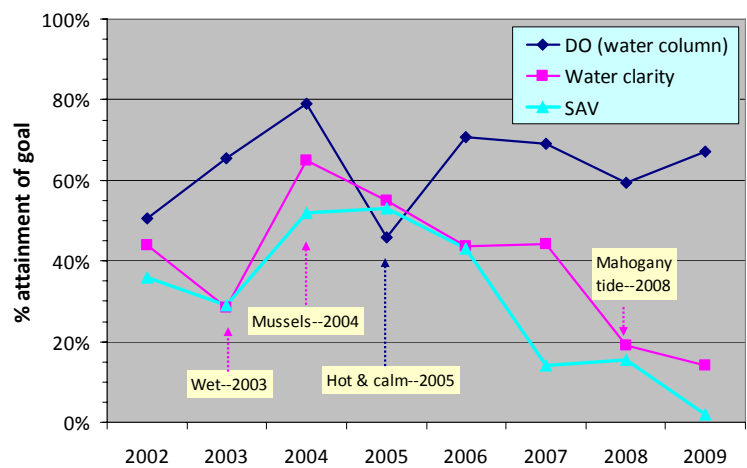


Fig. 2. Graph of aquatic health components by year, 2002-2009.

DO status varied along the river more than clarity in 2009

In addition to looking at how status changed over time (Figs. 1 and 2 on the previous page), it's also valuable to look at how status varied along the river. Fig. 3 shows the 2009 status by monitoring site for DO status (upper map) and water clarity status (lower map), using 5 status categories (with the same ranges as the letter grades).

The upper DO map shows a clear spatial pattern, with better status downriver and worse status upriver, with the worst status (red symbol) in upper Cattail Creek. This suggests that the usual causes of poor DO status, such as reduced flushing and more algae that die and decompose, get worse as you move upriver.

For water clarity, the lower map shows much less spatial pattern (most symbols were red, 2 purple); the status was low everywhere we sampled (range 0-31%). In past years, before water clarity declined so much (as recently as 2007), clarity status showed a spatial pattern more similar to that seen here for DO, with symbols in most colors. See the longer, online version of this report for maps of DO & clarity status from previous years, at www.magothyriver.org/ then choose "Magothy River Index" in "Quick Links."

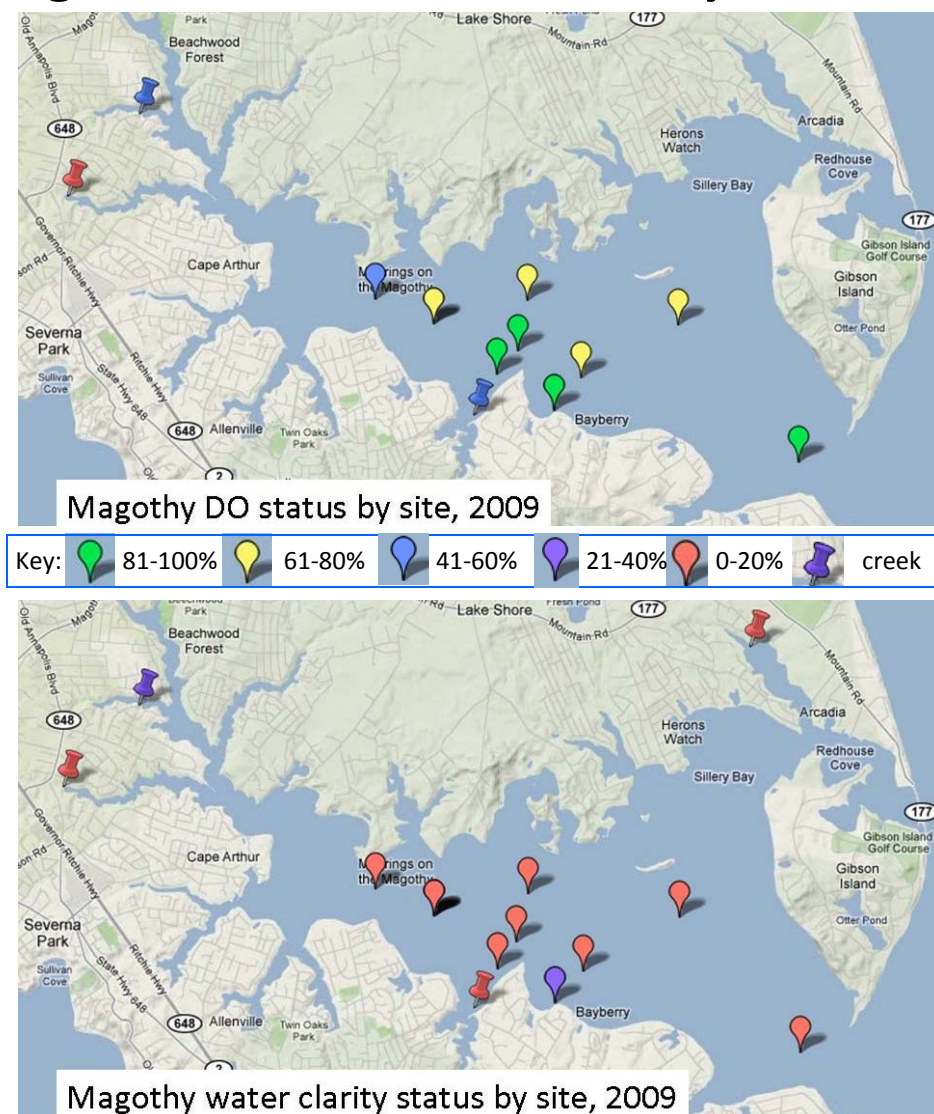


Fig. 3. Maps of Magothy DO and water clarity status by site, 2009.

Magothy River Day celebrated, June 14, 2009

Magothy River Day was celebrated again on June 14, 2009 with a raft-up near Dobbins Island with over 500 boats. The weather was perfect, the music by the Nautical Wheelers was relaxing, and a record number of people (283) took part in the annual Wade-In to measure water clarity (Fig. 4). Unfortunately, the wade-in results (how deep we could see our feet) were poor (only 19", and 39" is the goal). The weekend also included a watershed clean-up.



Fig. 4. The wade-in gave poor clarity results, but it was fun.

Magothy oyster restoration makes progress

The Magothy River Association has worked closely with the MD Department of Natural Resources (DNR), the Oyster Recovery Partnership (ORP), and the US Army Corps of Engineers to restore native oysters in the Magothy. These efforts have been led by MRA volunteer Dick Carey, who also coordinates Team Diver and the oyster and water monitoring done at the oyster restoration sites. Dick and his volunteer divers work closely with Dr. Ken Paynter of the University of Maryland to monitor the restored oysters.

The Magothy is near the northern limit of oysters in Chesapeake Bay. Our salinity is too low for them to spawn, except in drought years, but lower salinity means that one of the two oyster diseases, MSX, is not found here, and the other (Dermo) is rare. The Magothy has been closed to oyster harvest as a managed reserve for several years, but it was recently proposed as a sanctuary by MD DNR to give the oysters more protection.

The five major Magothy oyster restoration sites or reefs are shown in green in Fig. 5. Chest Neck Point (CNP, 1.6 ac) is the farthest upriver. Next are Rock Point (ROCP, 4.7 ac) and Ulmstead Point (ULMP, 2.0 ac), on the north and south shores respectively. Dobbins Hill (DOBH, 3.2 ac) is south of Dobbins Island, and Persimmon Point (PERS, 2.2 ac) is near the mouth of the river. Planting of baby oysters (called "spat on shell") on these reefs started in 1998 and continues each year depending on availability. MRA requested planting by ORP at ROCP and PERS in 2010. The water monitoring coordinated by Dick Carey found good DO conditions for oyster growth at four of the five sites in 2009 (see Fig. 3, upper map).

Oyster restoration has also been done on a smaller scale by Magothy volunteers for a number of years, by running oyster nurseries and hanging oyster cages off docks. The MRA operated 4 nurseries in 2009 that grew 60,000 oysters, which were planted at ROCP. In 2009, Magothy volunteers grew oysters in almost 800 cages through the Marylanders Grow Oysters (MGO) program run by MD DNR (Fig. 5, blue symbols). Carl Treff coordinated their involvement for the MRA. The oysters they grow will be planted on one of our five reefs in 2010.

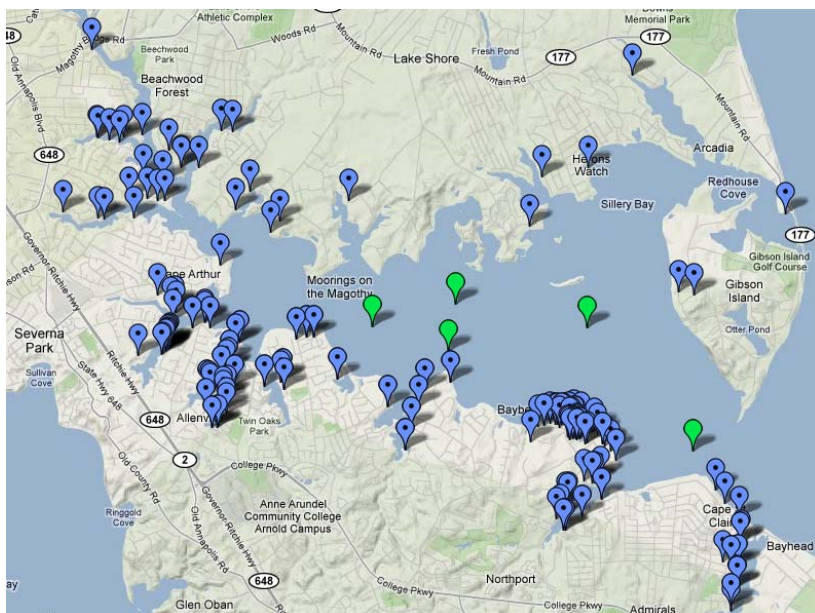


Fig. 5. The five major Magothy oyster restoration sites (green) plus the Marylanders Grow Oyster sites (blue), 2009.



Magothy oyster monitoring (2007).
Photos by Scott Hagedorn, Team Diver

In 2009, the MRA continued having a float in the Severna Park 4th of July Parade. This year the float showed a "100% runoff-free home" with a green roof, and MRA President Paul Spadaro was Grand Marshal of the parade. Thanks to all of the MRA volunteers who made the float possible. (photo by Dick Carey)



Our homework

Action	Result
Volunteer to help with MRA oyster restoration projects, and with monitoring of both oyster and SAV habitats (via diving and in canoes/kayaks respectively).	We improve some of our vital habitats and track them over time. Contact Dick Carey to help with oysters and/or diving at diver@magothyriver.org , or Peter Bergstrom to help with SAV surveys at sav2@magothyriver.org .
Volunteer to be an MRA "Creek Watcher," especially on the Surf Team (doing water monitoring).	We get a better picture of the river's problem areas. Please write to MRACreekWatchers@yahoo.com to find out how you can help.
Join the Magothy River Association: see www.magothyriver.org and click "Join Us"	Or, contact President Paul Spadaro at 410-647-8772 or president@magothyriver.org .
Plant more native trees (available from Tree-mendous MD). Cut trees down <i>only</i> when dead and/or dangerous.	Trees absorb nitrogen, reduce air pollution, provide food and habitat to animals, shade houses, etc.
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	Reduce 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 (grant applications currently on hold in AA County).	Reduce nitrogen runoff into ground water and nearby streams. To learn how to get on a waiting list for upgrades see: http://www.aqhealth.org/a2z.asp?id=208
Reduce your energy usage. Buy energy efficient cars and appliances, and use them to minimize energy use.	Reduces greenhouse gas and nitrogen emissions; slows global climate change; saves you money.

Magothy River Watershed Conference held

The first Magothy watershed-wide conference was held at Gibson Island Country School on January 24-25, 2009, with over 110 people attending. The speakers and presentations were outstanding and a number of watershed problems and solutions were discussed. Three new MRA committees were formed: Education/Action, Stormwater Management, and Government Affairs. Thanks to MRA member Dorothy Leonard for organizing the conference, to CBT for funding it, and to all the MRA volunteers who made it a success.



Magothy River Day, 2009

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, for writing, layout, data analysis,

graphs, and most of the photos. Paul Spadaro and Dick Carey also provided text, and Carl Treff provided MGO locations.

- Chesapeake Bay Trust for support for MRA projects.
- Dr. Bob Orth and Dave Wilcox at VIMS for SAV maps and data.
- Several people for comments.



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