2017 Magothy River Index

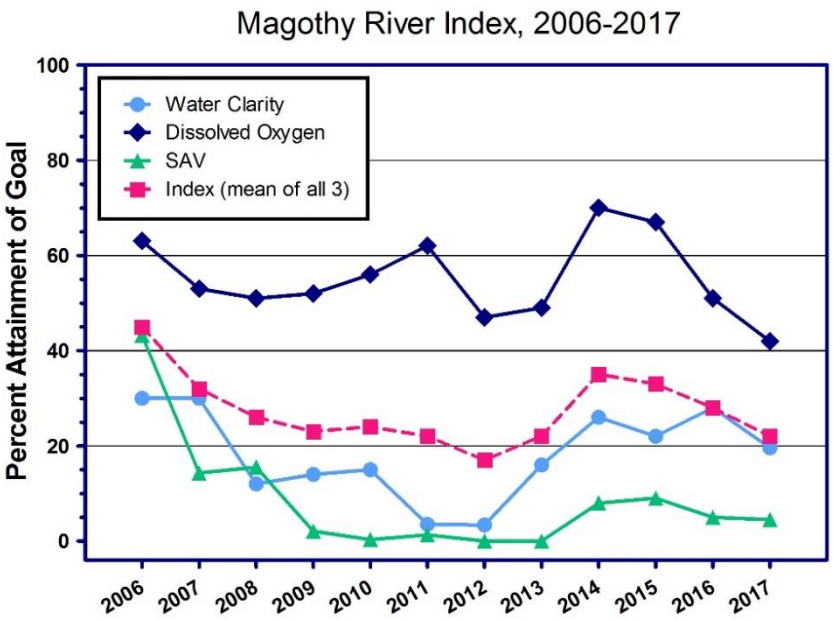
Presented at "State of the Magothy" 2/23/18 by the MRA
Event sponsored by the Environmental Center
at Anne Arundel Community College

Magothy River Assn., Inc.
P. O. Box 550
Severna Park MD 21146

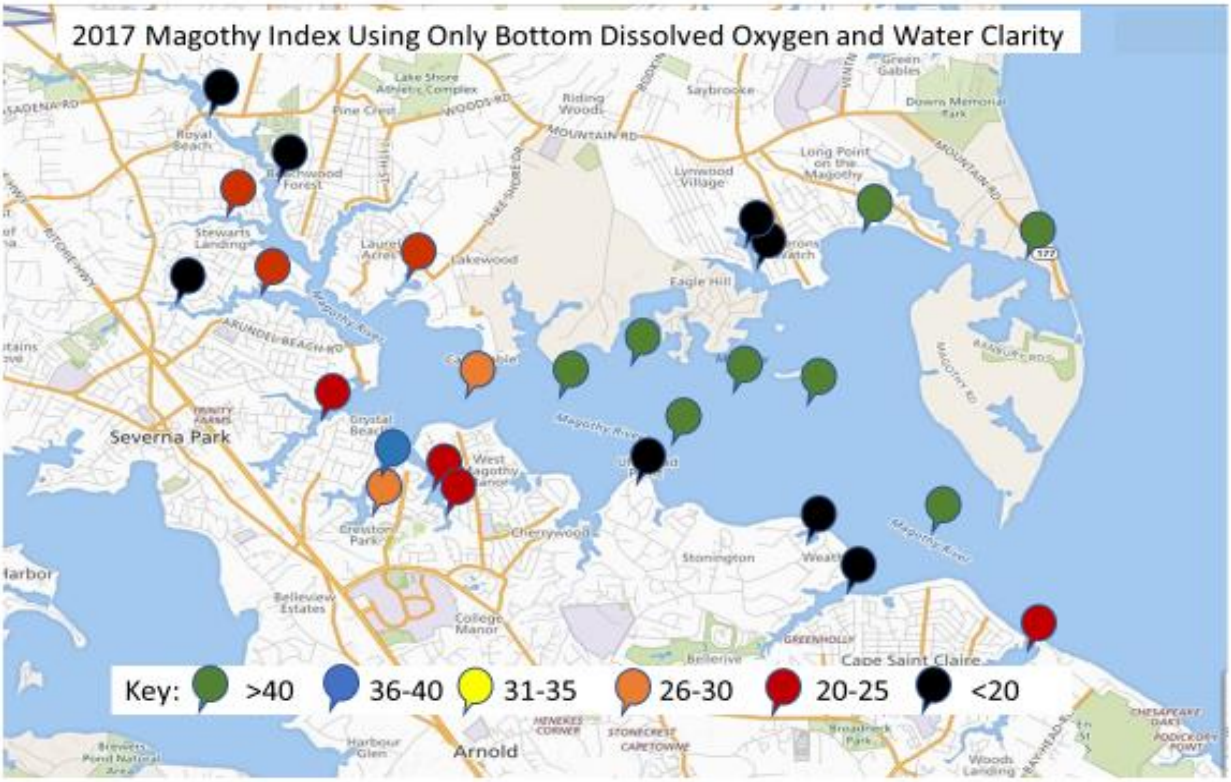
Magothy River health fell to 22% in 2017

The Magothy River Association's annual "Magothy River Index", first presented in 2003, assesses water quality in the tidal river. The Index is based on three criteria established by the Chesapeake Bay Program for ecosystem health, and is expressed as percent attainment of a desirable goal and as a letter grade where 0-20% is an F, 21-40 is a D and 41 to 60 is a C. The criteria are percent attainment of:

- water clarity based on Secchi disk depth of at least 1 meter
- dissolved oxygen of at least 5 mg/L in the deepest water at each station and
- achievement of the Chesapeake Bay Program Goal of 544 acres of submerged aquatic vegetation (SAV) as measured by the Virginia Inst. of Marine Science and BayLand Consultants & Designers, Inc.



SAV requires water clarity for growth and provides dissolved oxygen as well as key food and habitat for fish and crabs while reducing the impact of wave action on the shore. Most fish and aquatic invertebrates require at least 5 mg/L dissolved oxygen in the water column for their growth and reproduction. In 2017, BayLand surveyed only two creeks in the Magothy (Mill and Cockey) and the upper mainstem of the River, finding only 1.3 acres of grasses. Last year Bayland found 21 acres of SAV. VIMS data from 2017 showed 23 acres of SAV primarily in Eagle Cove, Swan Cove and the Little Magothy. We are pleased to report that this amount of SAV coverage is a 44% increase over last year. The total SAV coverage is 24.3 acres which is 4.5% of the desired goal. We are also glad to report that VIMS was able to use footage from our drone video to map the Little Magothy grasses. This year's index is based on data collected by volunteers from ten mainstem sites and twelve creek or cove sites. We did not include the most upstream sites of Cattail Creek or Mill and Dividing Creeks in the final index since we did not have headwater data for any of the other creeks. A rating of 22 is a D-, lower than last year's index of 28, based on both lower levels of dissolved oxygen and decreased water clarity. Water temperature in the mainstem was about the same as last year as was salinity and pH. Salinity typically ranges from 4-5 ppt in the spring to 14-16 in the fall while pH ranges from 7.5 to 9. These salinity and pH values are typical of mesohaline estuarine waters.



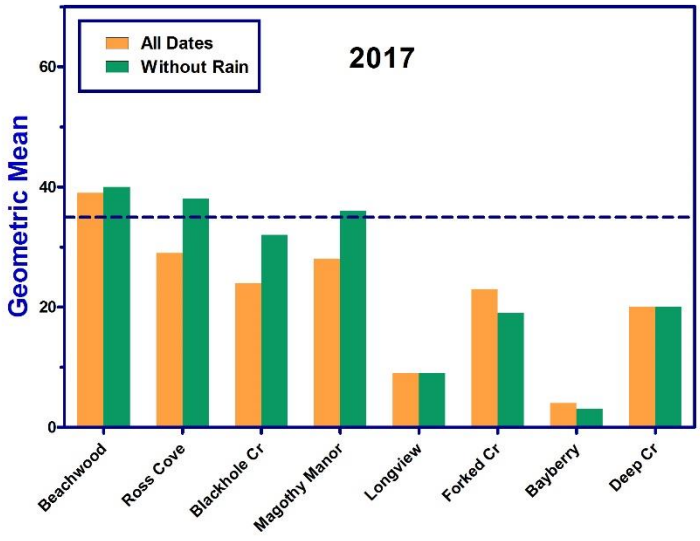
In the figure above, the Magothy Index is calculated for each station using only bottom DO and water clarity data, rather than including SAV coverage. This is because there was so little SAV in the creeks that including SAV data drags down the index, making it impossible to see the differences between them. Colored points on the map represent the percentage of the time that water clarity ≥ 1 m and bottom DO ≥ 5 mg/L. By using only the two indicators of habitat, we can see that some creeks are in better condition than others. Interestingly, we can also see that Cypress, Mill and Dividing Creeks, which are in the most highly developed part of the watershed, are actually in better condition than we might expect. Anne Arundel County Watershed Protection and Restoration Program has installed stream restoration projects in these three creeks and we may be seeing the impact of that work. We can also see that the mainstem of the River and the north shore is, for the most part, in very good condition.

We thank our volunteer monitors for their dedicated work again this year: Steve Troy, Dave Kemp, Mike Lehman, Charles Haslup, Chris Kerchner, Paul Spadaro, Bill Houghton, Bob Royer, Frank Bowne, Margaret Hardy, Dick Carey, Tonya Powell, Tom Caperna and Rachel Watts. We sincerely thank waterfront property owners for access to their piers. Charles Germain and Paul Spadaro took the drone footage of the Little Magothy that helped with SAV coverage. See Youtube MRA Little Magothy River SAV. This is the first time that VIMS has used drone footage for their analyses. MRA volunteers looked for SAV in small boats this year and Richard Youngk and Julia Gaines were able to map grass in the Little Magothy by GPS. No other quantitative mapping could be collected due to the small patches and dark color of the water. We still appreciate knowing where the grasses are seen by kayakers. In 2018 we plan to film more drone footage of early season grass beds. We found horned pondweed (*Zanichellia palustris*) in many of our creeks early in the season and although this grass completes its life cycle by June and floats away, it does provide good early season habitat and food. Kayakers found a good diversity of grasses in the Magothy this summer: healthy beds of Widgeon Grass (*Ruppia maritima*), Sago (*Stukentia pectinata*), Eurasian Watermilfoil (*Myriophyllum spicatum*), and smaller patches of Wild Celery (*Vallisneria americana*) and Redhead (*Potomogenton perfoliatus*) in James Pond and Eagle Cove late in the season. In the

Little Magothy we found extensive Common Waterweed (*Elodea canadensis*) mixed with some watermilfoil. Kayakers found slender pondweed (*Potomogeton pusillus*) along with other grasses in Cypress Creek.

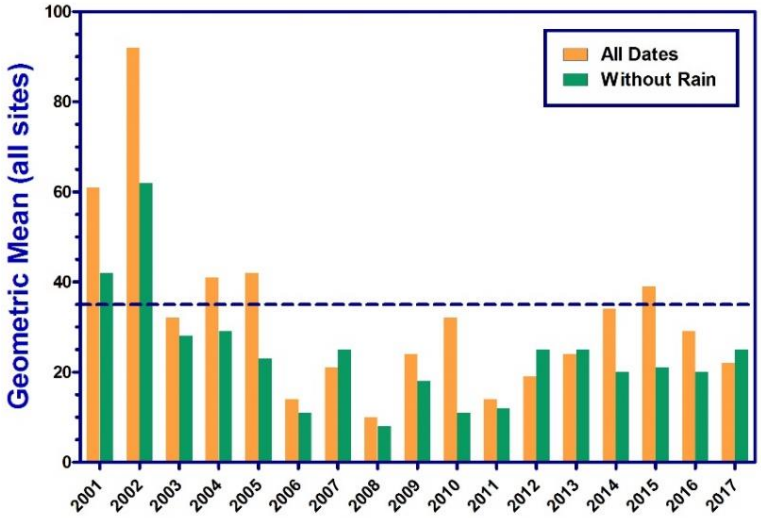
Good Bacterial Water Quality in 2017

Our waterways were safe for recreational use this summer. We monitor the population of enterococci (*Enterococcus faecalis*) in our waterways as this bacterium is an indicator of recent input of fecal waste. Most sites are sampled biweekly by students at AACC in the Magothy Clearwater program. Water samples are collected on Wednesday mornings, processed by filtration at the lab, and results, expressed as colony forming units or CFU/100 ml, are posted on Dr. Tammy Domanski's website (https://ola2.aacc.edu/tldomanski). In the figure to the right, bacterial numbers are expressed as the geometric mean, which enables us to see the summary for each site for the season. The dotted line is drawn at 35 CFU/100 ml, which is the upper limit for safe recreational use. Heavy rains produce stormwater runoff, sweeping pet and wildlife waste into our creeks. Note that this year Forked Creek bacterial water quality was good. Since it had been problematic for several years, the Belvedere Yacht Club sponsored a directed sampling program for summer 2017 yet we were not able to find a fecal bacterial source. Since water quality was good in Forked Creek this year, perhaps the previous source is no longer present.



Enterococci (CFU/100 ml) at Magothy sites

The second figure shows the trend for the last 17 years. The good news is that most of the time most of our waterways are suitable for swimming. It is important to note that bacterial counts are typically higher after rain and swimming in the 48 hours following a heavy rain is not recommended.



MRA Celebrates the Water Trail

We completed the brochure for the water trail in 2016 and worked on designing, constructing and installing two kiosks which were placed at Beechwood Park and Spriggs Farm in 2017. We thank Tom Caperna for the design and construction and many volunteers for the installation and celebration at Spriggs Farm in June. This event

was well-attended by kayakers, MRA members and our elected officials. Member donations funded this work. Brochures are placed in holders in the kiosks. In 2017 our volunteer videographer Charles Germain filmed more Living History vignettes that will be linked to the map in the next printing.

Left: CE Steve Schuh, Paul Spadaro and Councilman Peroutka at June 16 celebration. Center: kiosk at Spriggs Farm. Right: kayakers at Spriggs Farm June 16.

President's Statement:

MRA continued its mission to protect, preserve and restore the river by saving nine acres of wetlands along Cattail Creek from a 32-townhouse project, seeing increased SAV on the north shore, establishing a new partnership with Towson University, and renewing friendships with the County and Anne Arundel Community College.

Congratulations to AACC Student Rachel Watts for Receiving MRA Scholarships.

Photo to the right shows Rachel in action.

MRA Volunteers in Action:

- Waterfront residents can buy floating gardens from the Providence Center. Download copies of The Floating Gardener Newsletter at our website, magothyriver.org. We thank Lise Crafton for this timely information.
- Contact Paul Spadaro at president@mra.org to volunteer for water quality monitoring or to help in circumnavigation of the river.
- Paddle in our creeks and look for SAV. Contact sally.hornor at gmail.com.
- Help with the yellow perch survey this spring; contact Sally Hornor.
- Help monitor construction sites for sediment runoff; contact Randy Bruns at rbbruns at verizon.net.
- Volunteer for oyster gardening; contact Carl Treff at magothyriversavers@yahoo.com.
- Do you have stories about growing up on the Magothy that you would like to share in our Living History project? Contact Andrea Germain at a3germain at gmail.com.
- Help MRA protect our watershed by monitoring County planning, zoning and grading permits on-line.
- Join MRA (MagothyRiver.org); only $20 for individuals and $25 for communities.

This index prepared by Sally Hornor with graphics help from Tom Caperna.