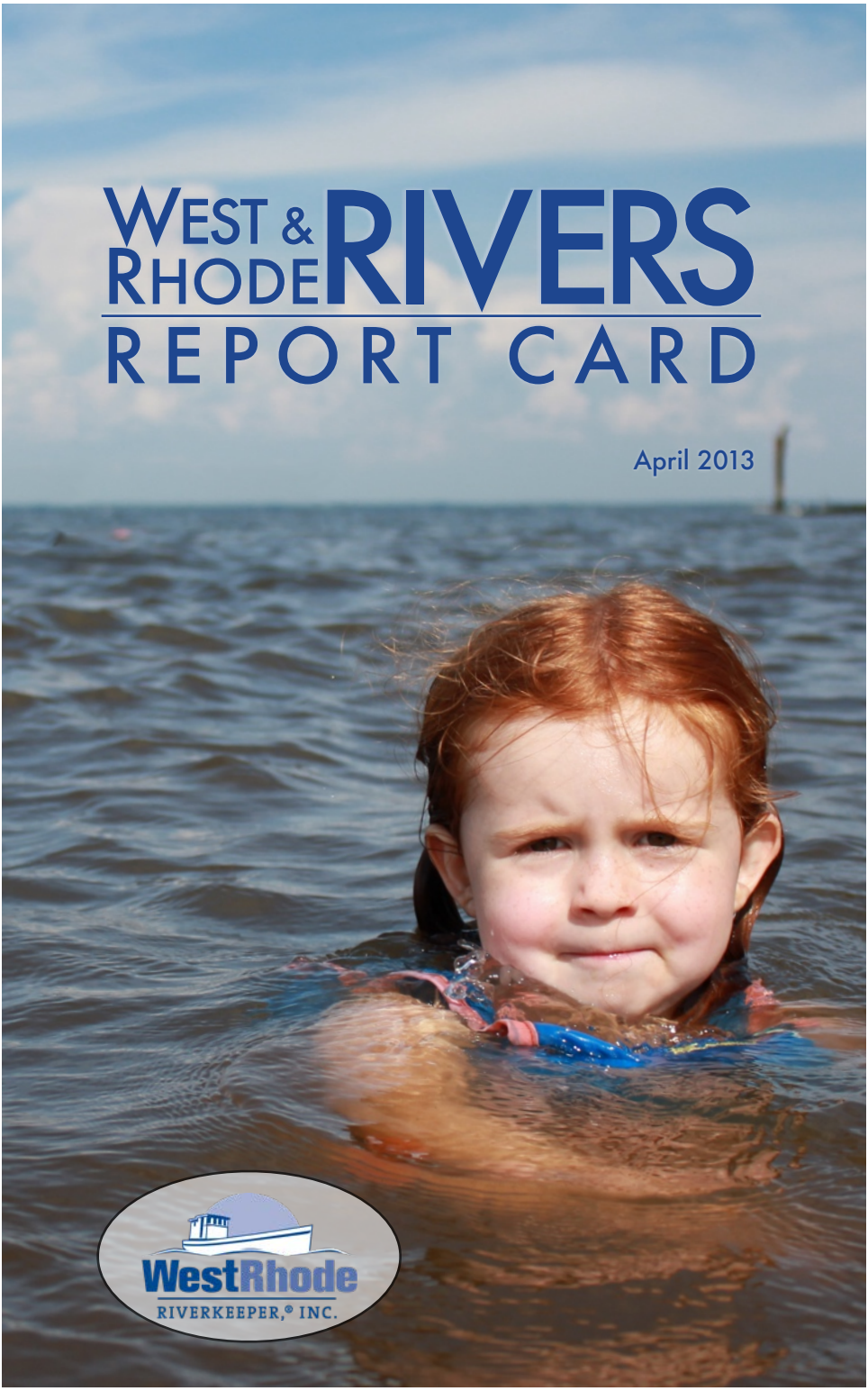
WEST & RHODE RIVERS REPORT CARD

April 2013



WestRhode
RIVERKEEPER,® INC.

MESSAGE FROM THE RIVERKEEPER

What do you love about the West and Rhode Rivers? I love the sounds of the osprey in the Spring, as they build their nests within view of our office. I love the sight of the little sailboats scurrying around during the West River Sailing Club Junior Regatta. I love the sight of a commercial waterman heading out of Parish Creek in the early morning mist.

There are so many things to love about the Rivers, yet it is so easy to take them for granted. What would our community be without vibrant waterways? We are working hard so that we never have to find out.

This year we are pleased to report a modest improvement in our scores. Certainly, the dry Spring (less runoff) helped achieve that, but I believe we are also beginning to see a change in the momentum. For decades we have watched a constant decline in our rivers' health. Now, with greater awareness, stronger environmental policies, and a renewed effort to meet our Bay Pollution Diet goals, we may be witnessing a turn of the tide.

Many factors continue to threaten our rivers. Increasingly, West/Rhode Riverkeeper is acting to counter those threats. Whether fighting for good policy in the General Assembly, monitoring our rivers' water quality, or building restoration projects in our community, we are the one true voice for our Rivers.

Thank you for your support, and let's keep up the fight!

Chris Trumbauer, West/Rhode Riverkeeper, with his son Johnny

2012 Grades

Indicator	West River	Rhode River	Grade	Notes
Water Clarity	31%	31%	D	Same grade as 2010 and 2011. Clarity not good enough to support underwater grasses.
Dissolved Oxygen	77%	79%	B+	Slightly better than 2011, but still pockets of low oxygen during summer months - especially in the shallow creeks.
Nutrients	55%	45%	C	Improvement this year, possibly due to less runoff from a dry spring. Nitrogen scored better than phosphorus.
Chlorophyll (algae)	38%	31%	D	Slightly better than 2011. Spring algae bloom occurred in April, and was more severe in Rhode River.
Underwater Grasses	0%	0%	F	Once again, no robust grass beds mapped in annual flyover study. Bad year overall for grasses in the Bay.
Average Scores	**40%**	**37%**	**D+**	**Modest improvements in Oxygen and Nutrients results in a slight improvement from a D in 2011**
Bacteria	96%	86%	A	Good bacteria results overall, but one site on the Rhode was only in safe swimming range 40% of the samples.

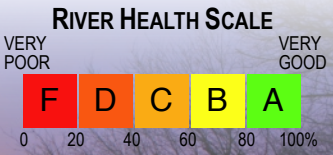
Note: Bacteria is unlike the other indicators and was not used to calculate the average grade above.

Methodology

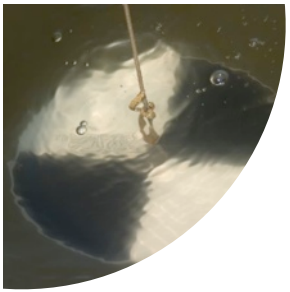
Data was collected by West/Rhode Riverkeeper, along with various partners (acknowledged on back page).

Indicators were assessed only when a credible data source was available. Data was compared to thresholds established by the Mid-Atlantic Tributary Assessment Coalition. Scores are reported as the percentage of data meeting attainment.

For additional information, see the Report Card section on our website: www.westrhoderiverkeeper.org.



MTAC Mid-Atlantic Tributary Assessment Coalition



Water Clarity

Why is monitoring Water Clarity important?

Underwater grasses need sunlight to grow. Murky or cloudy water can block or absorb light, which prevents the grasses from growing. Sediment (dirt) in the water can also cause the "silting in"of creeks and streams.

What is the status?

Water clarity in both the West and Rhode Rivers is poor. After a heavy rainfall, the rivers may look murky due to sediment runoff from agricultural and residential areas. Algae blooms resulting from nutrient pollution also cloud the water.

What affects Water Clarity?

Stormwater runoff delivers sediment to our rivers. The sediment can settle at the bottom, but then get stirred up from wind and waves. Algae blooms from too much nutrient pollution also block the light. To make a difference, West/Rhode Riverkeeper is engaged in living shoreline projects to stabilize eroding riverbanks, and stormwater restoration projects to capture runoff before it reaches our rivers. **You can help by leading efforts in your community to manage runoff.**

Sediment pollution clouds our waterways and also carries with it harmful nutrient pollution. We are working to reduce this pollution by designing and constructing projects to capture stormwater runoff.

At right is sediment pollution in the Rhode River after a rainfall. At far right is a restoration project at YMCA Camp Letts designed to prevent runoff from reaching the river.

B+ Dissolved Oxygen

Why is monitoring Dissolved Oxygen important?

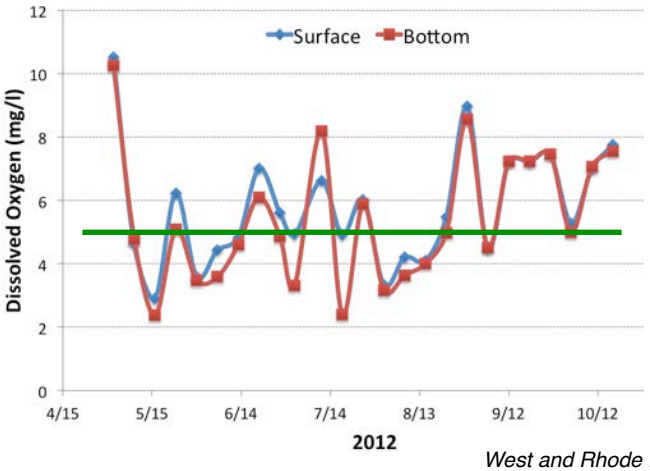
Fish, crabs, and other aquatic life need oxygen to breathe, just as we do. Without enough oxygen in the water, these species can become stressed or even die.

What is the status?

Most of the time, dissolved oxygen levels in our rivers are adequate. However, during periods of the summer, many locations exhibited low levels. The poorest readings were generally in the shallow creeks where water can become stagnant in the warm summer months. Fortunately, no sustained "dead zones" were recorded last year, nor were any major fish kills observed.

What affects Dissolved Oxygen?

Dissolved oxygen is generated from plant life, such as algae or underwater grass, during daylight hours through photosynthesis. Oxygen also enters the water through wind and wave action. At nighttime, algae switches from producing oxygen to consuming it. When algal blooms die off, the decomposition process also uses up oxygen. Too much algae in the water will cause low levels of oxygen. **You can help by reducing fertilizer use, so less gets in our rivers to feed algae.**



Fish and other aquatic life depend on oxygen to live. When the oxygen level gets below 5 mg/l, fish can get stressed or even die.

At left is a graph of the oxygen levels for 2012 at our monitoring station near Shady Oaks in the West River. Oxygen was above 5 mg/l (green line) less than 50% of the time we sampled. Not good for the fish!


Image courtesy NOAA

Nutrients

Why is monitoring Nutrients important?

Nutrients are a form of pollution. Nitrogen and phosphorus are the two most prominent nutrients, which are the active ingredients in fertilizer. Nutrients are an important part of natural ecosystems, but excessive levels cause algal blooms, which block sunlight and consume oxygen.

What is the status?

In 2012, nutrient levels showed a modest improvement in both rivers. A dry spring contributed to reduced runoff pollution. If our natural resources like grass beds and oyster bars can recover, they will also help control nutrient levels. An emerging oyster aquaculture fishery in the Rhode River shows some promise.

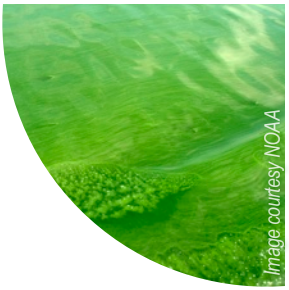
What affects Nutrients?

Most of the nutrient pollution from our watershed comes from runoff from residential areas and farm fields. However, nutrients from septic systems and the Mayo wastewater treatment plant are a significant portion - especially nitrogen. The County intends to upgrade the Mayo plant and tie the effluent into the existing Annapolis treatment plant. This could reduce the total amount of nitrogen in our rivers by 10%. **Waterfront homeowners can help by growing oysters off their docks with the Marylanders Grow Oysters program. Contact us for info.**


Photo by Jennifer Carr

Volunteers carry bags of oysters to be grown off of a community dock. Oyster aquaculture is also increasing in the Rhode River. Oysters can filter nutrients out of the water, but are at historically low levels. Restoring the oyster population will help water quality.

D Chlorophyll (Algae)



Why is monitoring Chlorophyll important?

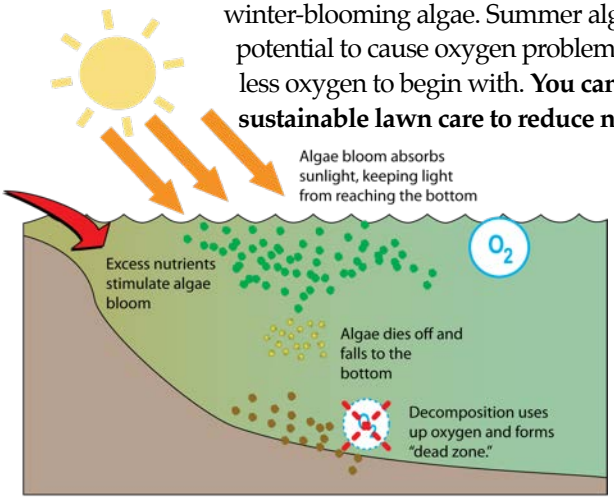
Algae are a vital part of our rivers' ecosystem. Algae are the primary food source for many types of fish and other marine life, like shrimp and shellfish. However, excess nutrients may stimulate the algae population to grow out of control—a situation referred to as an algal bloom. These blooms can result in low-oxygen "dead zones,"and some algae species are even harmful to humans.

What is the status?

The level of algae is determined by the level of chlorophyll *a*, a green pigment found in plant life. Chlorophyll levels in the West and Rhode Rivers in 2012 were similar to 2011. We must reduce nutrient pollution to reduce the algae blooms.

What affects Chlorophyll?

Nutrient pollution acts as fertilizer for algae. When a waterway has too much nutrient pollution, the conditions are ripe for algal blooms to occur. Warm water is generally more favorable to algae growth, although there are some winter-blooming algae. Summer algae blooms have more potential to cause oxygen problems because warm water holds less oxygen to begin with. **You can help by practicing sustainable lawn care to reduce nutrient runoff.**



Dense algal blooms block sunlight from reaching the bottom. They also consume oxygen at night.

Algae eventually dies, falls to the bottom, and decomposes, exhausting available oxygen. This can create a "dead zone."


Image courtesy Jim Cammilleri

Underwater Grasses

Why is monitoring Underwater Grasses important?

Underwater grasses are an important natural resource. Grasses provide habitat for marine life. They also generate oxygen. Grass beds can also serve to protect shorelines by dampening wave energy and thereby preventing shoreline erosion.

What is the status?

The state goal for the West and Rhode Rivers is 298 acres of underwater grasses. Yet for the 8th year in a row, no robust grass beds were mapped in 2012. In both the West and the Rhode Rivers, some horned pondweed is frequently found during late spring, but these beds die off by early summer. Grass beds of more robust species like redhead grass or widgeon grass need to be established.

What affects Underwater Grasses?

There is too much dirt and algae in the water during the summer months. Sunlight cannot penetrate the water column and reach the bottom, so grasses cannot survive. Too much nutrient pollution can also limit growth by forming a layer of biological growth on the leaves and stems. **You can help by participating in the Bay Grasses in Classes program, in which school children (and others) grow grasses to be planted in local waterways. Contact us for details**.

Grass beds provide shelter and protection for a variety of aquatic life. Fish, crabs, and even sea horses can be found in these important shallow water habitats.


Image courtesy of NOAA

Restoring our Grass Beds

Several decades ago, the West and Rhode Rivers were filled with lush beds of underwater grasses. We look forward to a future when grass beds will once again thrive in our rivers.

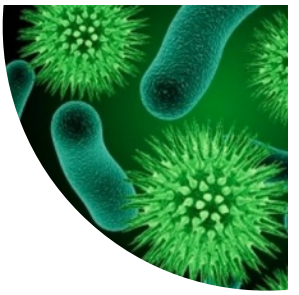
While no robust grass beds have been identified in the West or Rhode since 2003, there are pockets of a less hardy species - horned pondweed. This species tends to die off in early summer, as water temperatures heat up and water clarity declines. Working with scientists from Maryland Department of Natural Resources (DNR), Restoration Coordinator Joe Ports has initiated a pilot program to grow native redhead grass and plant it in the existing beds of horned pondweed.

Restoration Coordinator Joe Ports tends to his redhead grass growing operation.

With help from DNR and others, Joe set up a growing operation in the basement of our offices in Discovery Village. Plastic tanks filled with sand and water are planted with redhead grass, sustainably harvested from the Severn River. These grasses will then be planted in the West River, in a sheltered cove among existing horned pondweed.

We hope the existing horned pondweed will protect the new redhead grass, and allow it to establish itself before the pondweed dies off. If this planting is successful and the redhead grass survives, then we will continue the program in the following years and work to return more thriving native grass beds to our rivers.

A Bacteria



Why is monitoring Bacteria important?

Harmful bacteria can cause sickness in humans and animals. The risk of sickness is higher as bacteria levels increase. Swimming in—or coming into contact with—water containing high levels of bacteria can lead to infections or other illness.

What is the status?

Of the 14 sites we monitor each summer, six sites never recorded a high bacteria reading in 2012. Most of the others were in the safe swimming range over 90% of the time. However, one site - Holly Hills - was within the safe swimming range only 40% of the time. Stormwater runoff and resident geese are the likely culprits.

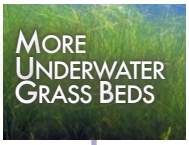
What affects Bacteria?

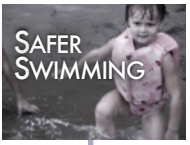
Harmful bacteria come from the intestines of warm-blooded animals (including people) and survive longer in warmer water. Bacteria sources include failing septic systems, sewer leaks or overflows, illegal boat discharge, pet waste, and wildlife waste. Something as simple as a community "scoop-the-poop" program can help keep bacteria levels low at your local swimming hole. **You can help by picking up your pet's waste and pumping out your boat's holding tank.**

In 2012, West/Rhode Riverkeeper launched the free Swim Guide application for smartphones. Using Swim Guide, you can get the weekly bacteria data right on your phone, so that you can make informed decisions about the risks associated with swimming in our rivers. Look up Swim Guide in the app store and download it for free today!

Path to Clean & Healthy Rivers

Goals We Strive to Achieve





Associated Indicator(s) We Monitor

- Water Clarity & Nutrients
- Nutrients & Chlorophyll (Algae)
- Bacteria
- Underwater Grasses & Dissolved O_2
- All Indicators

Things You Can Do to Help Achieve These Goals

Reduce Stormwater Runoff Pollution

- Install a Rain Barrel
- Create a Rain Garden
- Stabilize Soil by Planting Trees and Plants

Prevent Excess Nutrient Runoff

- Eliminate or Reduce Fertilizer Use
  - Test Your Soil and Use ONLY the Amount of Fertilizer Required (if any)
- Practice Sustainable Lawn Care
- Upgrade to a Nitrogen-Reducing Septic System

Reduce Harmful Bacteria in our Waterways

- Clean Up After Pets
- Don't Feed Waterfowl
- Service Septic Systems Every 3-5 Years
- Pump Out Boat Waste

Promote a Natural Ecosystem

- Convert to a "Living Shoreline" (Grants Help)
- Grow Oysters Off Your Dock
- Plant Native Trees and Plants

Get Involved

- Support a Local Watershed Organization (like W/RR)
  - Find Volunteer Opportunities
  - Find Stewardship Programs
  - Find Other Ways to Improve the Rivers
- Advocate for Clean Water
  - Contact Elected Representatives

Every little bit helps! Together we can make a real difference.

WestRhode RIVERKEEPER,® INC.

WestRhode
RIVERKEEPER,® INC.
4800 Atwell Road • Suite 6
Shady Side, MD 20764
www.westrhoderiverkeeper.org
410.867.7171

West/Rhode Riverkeeper works to protect families and communities by stopping pollution. We strive for healthy and safe rivers and streams. We work together with communities to enforce environmental law, promote restoration, and advocate for better environmental policy.

Join West/Rhode Riverkeeper in protecting the right of our families and communities to enjoy clean and safe water.

WATERKEEPER® ALLIANCE MEMBER

ACKNOWLEDGMENTS

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MARYLAND CBTRUST.ORG Chesapeake Bay Trust

A copy of this report can be found on our website.

Content and data analysis by Chris Trumbauer and Joe Ports. Design template by Kelly Myers.

Special thanks to our West/Rhode Riverkeeper volunteer water quality monitoring team and Dr. Sally Hornor, who conducted bacteria analysis at Anne Arundel County Community College.

Other data courtesy of Maryland Department of Natural Resources, the Virginia Institute of Marine Science, and Drs. Charles Gallegos and Thomas Jordan of the Smithsonian Environmental Research Center.

Smithsonian Environmental Research Center

MARYLAND DEPARTMENT OF NATURAL RESOURCES

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