Patapsco River
2023 Report Card

Patapsco Heritage Greenway (PHG) is a non-profit organization dedicated to preserving, protecting, interpreting, and restoring the environment, history, and culture of the Patapsco River Valley. The Patapsco Valley Heritage Area is one of one of thirteen state-certified Maryland Heritage Areas, a designation by the Maryland Historical Trust that supports collaboration between individuals, nonprofits, businesses, and governments to protect the region's environmental and historical value.

In 2021, PHG started a volunteer-assisted water quality monitoring program on the Patapsco River in partnership with the Chesapeake Monitoring Cooperative (CMC). PHG adopted the methodologies and quality assurance procedures of the CMC, thereby joining a large regional network of programs collecting similar data of known quality. Since that time, the program has grown in number of volunteers engaged, parameters measured, sites assessed, types of monitoring performed, and users of data.

Currently, PHG monitors conditions monthly at 11 stations from Woodbine to Elkridge. We measure a variety of chemical and physical factors including temperature, dissolved oxygen, pH, conductivity, nitrite, phosphorus, clarity, and *E. coli* bacteria. Twice a year, we supplement our water quality information with biological assessment of the benthic macroinvertebrate community in accordance with the procedures of the Izaak Walton League.

University of Maryland Center for Environmental Science Integration and Application Network

ALLIANCE for the Chesapeake Bay

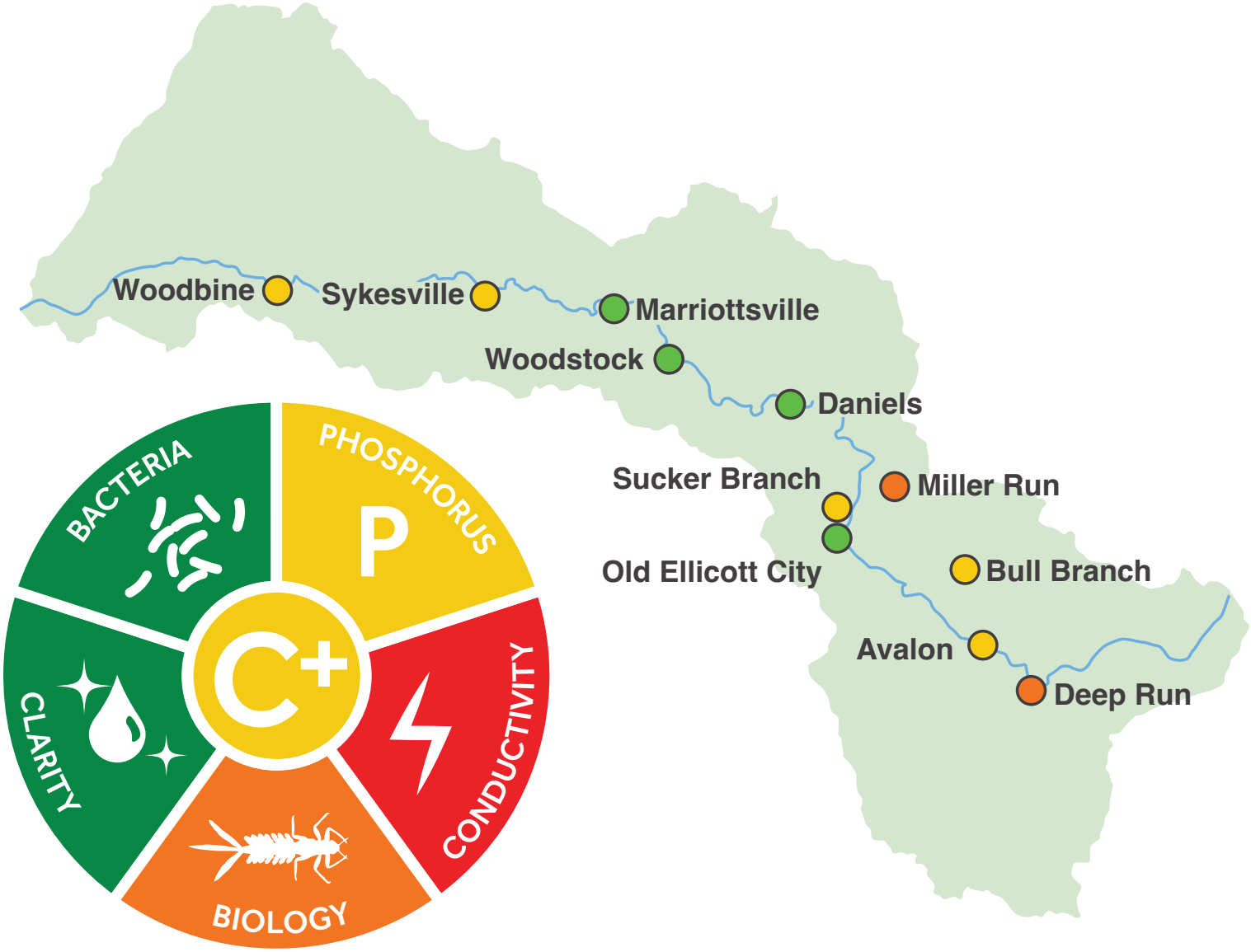
LIVE GREEN HOWARD

PATAPSCO HERITAGE GREENWAY

THE IZAAK WALTON LEAGUE OF AMERICA

CMC Chesapeake Monitoring Cooperative

Patapsco River: Getting better all the time



This report card represents data collected from May 2022 to April 2023. The Patapsco River earned an overall C+ grade, reflecting moderate health in the Patapsco for the 2022–2023 year. This is a slight improvement over last year's grade. For the second year in a row, clarity was very good at nearly every site year-round, which is important for the organisms that inhabit the river. Bacteria scores improved significantly from the previous report card, with most sites earning a good score (low bacteria).

Phosphorus was added as a new indicator in the report card this year. We see fluctuations in our phosphorus data, so adding it to the report card is an important part of understanding water quality. Many sites had moderate phosphorus scores for 2022-2023. Biological data are also an important indicator of river health. Sites were assessed in Fall 2022 and Spring 2023 and declined from the previous report card. Data by site is variable, with some sites in better condition, and others worse.

Conductivity is still the lowest-scoring indicator. All of the sites score poor or very poor year-round. The low scores are likely due to decades of application of salt to our roads in the winter. Data confirms that the tributaries score worse than the main stem, but all of our water bodies are affected.

A Very Good 100–80%	B Good 79–60%	C Moderate 59–40%	D Poor 39–20%	F Very Poor 19–0%

What do the indicators tell us?

Conductivity

Conductivity is the ability of the water to conduct electricity and is based on the number of charged particles in the water column. Excessive conductivity causes organisms stress and can affect their ability to regulate their internal chemistry.

Phosphorus

Phosphorus is a critical nutrient in our aquatic food web, but too much can be a problem. Even a modest increase can cause a chain of undesirable events including accelerated plant growth, algae blooms, low dissolved oxygen, and the death of some aquatic animals.

Bacteria

Bacteria are everywhere in our environment, but some bacteria can make water unsafe for contact. We measure *E. coli* bacteria in the water because some kinds of *E. coli* are pathogenic, and high numbers of *E. coli* represent an increased risk to humans of becoming sick after coming in contact with the water.

Clarity

Particles in the water cause it to appear cloudy, and when they collect on the bottom of the stream, they can smother aquatic plants and animals. Particles can come from various sources of erosion and runoff.

Biology

A diverse and pollution sensitive benthic macroinvertebrate community is an indicator of a healthy stream. Conversely, finding only organisms that are tolerant to pollution tells a different story. All these organisms (dragonfly nymphs, worms, snails, fly larvae) are also an important foundation for a healthy aquatic food web.

And what can we do?

SaltWatch

Since conductivity has continued to be high, this year we added a Salt Watch program. Salt Watch is an Izaak Walton League community science program for monitoring chloride year-round in local waterways. Chloride is not the only culprit of high conductivity, but it is likely the biggest part of a high conductivity reading. After a simple assessment using a test strip, chloride readings are uploaded to the Clean Water Hub. We are developing a picture of chloride levels in the region which will help us understand our conductivity data.

To help reduce chloride and conductivity, be a Smart Salter: use only what you need. A 12 ounce mug is enough to treat a 20 foot driveway. Sweep up excess salt and reuse. Report spills to local authorities.

Phosphorus Sources

There are many sources of phosphorus including wastewater treatment plants, runoff from fertilized lawns and cropland, failing septic systems, and runoff from animal manure storage areas. Since phosphorus is the limiting nutrient in streams, a slight increase can set off a eutrophic chain of events that can result in low dissolved oxygen and death of aquatic organisms.

What can you do to help reduce phosphorus in local waterways? If you must fertilize your yard, test soil chemistry beforehand so you can only add what is needed, avoid fertilizing right before a rain event, and report any sewage leaks or obvious pollution sources.

You can report pollution in the area to Blue Water Baltimore by calling 443-908-0696 or submitting a form online at *bluewaterbaltimore.org/report-pollution*.

Thank you for doing your part to protect the watershed!

What can you do to protect the Patapsco?

With 18 million residents in the Chesapeake Bay watershed and nearly as many lawns, our choices collectively can make a difference. If we all took a small section of our yard and changed it from lawn to native plants, or attempted to decrease stormwater runoff by installing a rain garden or rain barrel, those changes would add up quickly. Native plants need less water and supplemental nutrients and generally have more rigorous root systems which keep soil in place. Additionally, they support native insects, which are a critical food source for the birds and other organisms in the food web.

We can all do our part to improve the health of the watershed where we live. Start with some of the suggestions below, or check out more resources at ***patapsco.org/stewardship/environmental-programs***.

- **Install native plants in your garden**
- **Minimize salt use on driveways and walkways**
- **Reduce or avoid fertilizer use on your lawn**
- **Collect stormwater in a rain barrel**
- **Volunteer with PHG**
- **Research local environmental issues**

Acknowledgments

Report card released in June 2024 by Patapsco Heritage Greenway with funding support from the Howard County Office of Community Sustainability. The report card was designed by the Integration & Application Network, University of Maryland Center for Environmental Science. The data collected for this report card are the collective effort of PHG staff in conjunction with many dedicated volunteers who spent countless hours monitoring streams and collecting samples. Technical support and guidance for this project was provided by the Alliance for the Chesapeake Bay, the Chesapeake Monitoring Cooperative, and the Izaak Walton League Save Our Streams. Images courtesy of Patapsco Heritage Greenway and the UMCES IAN Image Library. Pictures are from a Choose Clean Water Coalition Conference at Maryland's Turf Valley Resort in May 2024. Photos include participants in a PHG-led field trip using a kick seine net to collect macroinvertebrates from the stream, a field biologist holding a recently hatched mud turtle and a young-of-year crayfish.

For more information about Patapsco Heritage Greenway or to volunteer, visit *www.patapsco.org* or reach out via email at *coordinator@patapsco.org*.