

2008 PATUXENT RIVER REPORT CARD



This newsletter is the second annual Patuxent River ecosystem health report card. The report card provides grades for the three tidal regions of the Patuxent River estuary. The grades are based on the frequency that the river is able to meet six ecological targets. The results show the river is generally in poor condition despite a small improvement in the health in 2008 (compared to 2007). A narrative description of the non-tidal portion of the river based on the Patuxent Riverkeeper citizen water quality monitoring program is also provided.

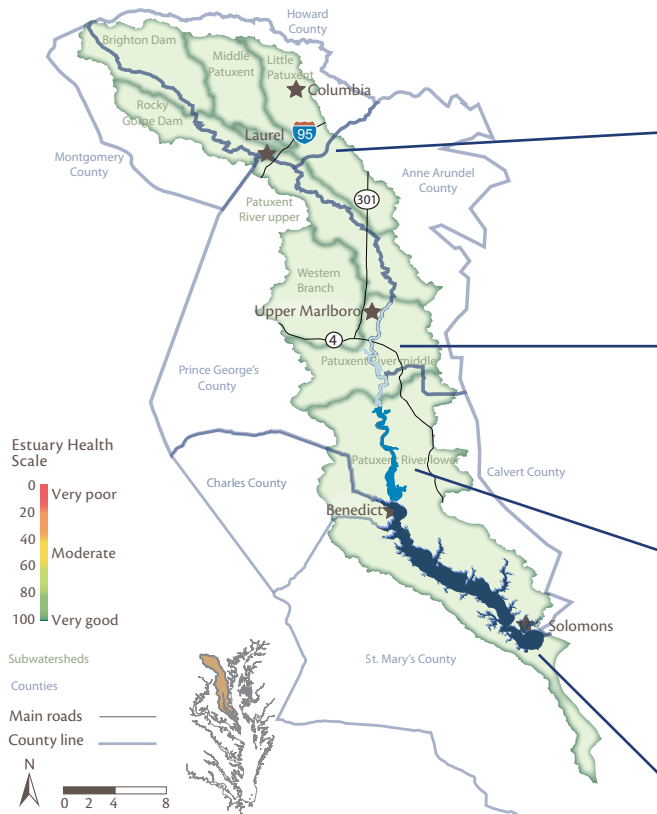


Figure 1: 2008 report card grades for the three estuarine regions of the Patuxent River.

Volunteer sampling of the creeks (non-tidal) and embayments (tidal) indicated that nitrate concentrations and pH levels were higher in the northern half of the Patuxent watershed than in the southern half. In contrast, temperature was higher in the southern portion than in the northern, and turbidity was higher in the northern tidal stations than elsewhere.

C-

The upper estuary grade remained relatively consistent over the past year. The dissolved oxygen and aquatic grasses have increased slightly. This increase was balanced by decreases in the health of the phytoplankton community and the water clarity.

C

The middle estuary grade improved over the past year, largely due to the increased aquatic grass score—an additional 30 hectares recorded, as well as improved dissolved oxygen levels. The increase in the river's overall score can also be largely attributed to these improvements.

F

The lower estuary grade increased slightly due to improvements in the phytoplankton community and chlorophyll *a* level. Minor decreases were seen in the water clarity, dissolved oxygen, and aquatic grasses in the lower estuary.

A

All water quality and biological health indicators meet desired levels. Quality of water in these locations tends to be very good, most often leading to very good habitat conditions for fish and shellfish.

B

Most water quality and biological health indicators meet desired levels. Quality of water in these locations tends to be good, often leading to good habitat conditions for fish and shellfish.

C

There is a mix of healthy and unhealthy water quality and biological health indicators. Quality of water in these locations tends to be fair, leading to fair habitat conditions for fish and shellfish.

D

Some or few water quality and biological health indicators meet desired levels. Quality of water in these locations tends to be poor, often leading to poor habitat conditions for fish and shellfish.

F

Very few or no water quality and biological health indicators meet desired levels. Quality of water in these locations tends to be very poor, most often leading to very poor habitat conditions for fish and shellfish.



HOW DID WE SCORE?

		Overall	Upper Estuary	Middle Estuary	Lower Estuary
		D-	C-	C	F
Water Quality	Health Index	23 ↑	42 ↓	46 ↑	19 ↑
	Dissolved Oxygen	66 =	99 ↑	73 ↑	64 ↓
	Water Clarity	3 ↓	0 ↓	0 =	4 ↓
	Chlorophyll a	19 ↑	57 ↑	45 ↑	14 ↑
Biotic	Aquatic Grasses	12 ↑	64 ↑	88 ↑	0 ↓
	Benthic Community	28 =	- =	50 =	24 =
	Phytoplankton Community	11 ↑	0 ↓	20 =	10 ↑

Figure 2: 2008 report card scores and indicators for the three estuarine regions of the Patuxent River. Red and green arrows represent change from 2007.

An increase in the overall health of the river was seen in 2008, despite the grade (D-) remaining the same. The health of the estuary has remained relatively stable over the past four years. Improvements were seen in two of the three portions of the estuary especially in the middle estuary. The middle estuary, had the best score (46%), largely due to the improved dissolved oxygen and aquatic grass conditions. The lower estuary continues to have the worst score (19%), with all indicators performing poorly relative to the target levels.

The dissolved oxygen score has gradually improved over the past three years, after a record low in 2005. The lower estuary had a minor decrease in dissolved oxygen in 2008, but this was balanced by increases in the middle and upper estuary. Citizen monitoring found that pH and nitrate levels were higher in the northern watershed, while temperatures were higher in the southern portion. Water clarity was consistently poor throughout the estuary (0 to 4%).

The overall scores are area weighted, to see additional data and methods or compare the Patuxent River to other regions of the Chesapeake Bay watershed, visit www.eco-check.org.

PATUXENT TESTERS—ONE YEAR LATER

The Patuxent Water Quality Initiative was begun in March 2008 by Patuxent Riverkeeper. In the program's first year over 50 volunteers have become trained testers. These energized citizens monitor 61 sites for nutrients (nitrates and phosphates), turbidity, dissolved oxygen, and site conditions (water temperature, bank erosion, etc). Patuxent Testers enter their data online at www.pwqi.net, where it is available to the public. Viewers have the ability to see the quality of the stream in their neighborhood and compare it to others in the watershed. Testers Cindy Cameron and husband and wife team Ken and Sandy Hastings are examples of the diverse group of volunteers monitoring the Patuxent waters.



Cindy Cameron and her daughters Kate (9) and Anne (7) work as a team to test the water near their home in Laurel. The Cameron family has lived there for 20 years and is active in boating, hiking, and other outdoor activities. Cindy believes

monitoring is teaching the girls vital lessons of stewardship. In addition to dividing up the monitoring work, the trio looks for turtles and turn over rocks to look for water beetles, fish, and other inhabitants.

Cindy believes citizens play a critical role in collecting evidence, documenting, and doing what must be done to protect the environment.

"Common people can do simple things to protect water by cutting down on fertilizers and pesticides, by recycling, and just getting out into the watershed to find out what's going on with the water nearest you," said Cindy.

For the Camerons, testing the local waters is their link to building a stronger case for change and a better ethic for clean water, not just in their community but in all communities touched by the waters of the Patuxent River.



The Hastings test as a team; Ken takes the samples, they run the tests together, and Sandy notes the results and uploads them. Sandy, Ken, and their family are long time recreational users of the Patuxent. When Ken retired from his job, he started

teaching kids to seine. When water quality started to decline, Ken and Sandy became concerned if it was safe for people to come into contact with it.

According to Ken, "People need to know what's going on out there, the government tests the water in a global sense, but we the public never seem to get the information or the results of the test as it affects where we live. Getting our own information and getting to see what others are posting, keeps us all in the loop."

In the 36 years they have lived on Indian Creek in St. Mary's County, the Hastings have seen lots of changes, for example, the water has become muddier and it no longer freezes as it did in the past. Sandy attributes this not to the temperature but to chemical changes that make it less likely to freeze. Gone are the days of ice skating on Indian Creek! The Hastings believe that with all the development, things are only going to get worse.

THE CUMULATIVE EFFECTS OF OUR ACTIONS

Everything is connected

Any realistic efforts to protect water quality must take into account the many practices on our land, in our homes and in our businesses that eventually affect our waterways. These causes and effects are all related, and we won't fix problems if we work on one source and exclude others. Therefore, every one of us must play a part in the solution (some may play a bigger part than others).

Muddying our water

How we build, how we treat the soils, what we put onto the ground and in storm drains, and even what we put into our toilets shape the future of our fragile water supply and can make the difference between whether the Chesapeake Bay restoration becomes a success story or not. The polluted waters of the Patuxent River are caused largely by inadequately managed stormwater drainage, sediment from disturbed earth at new construction sites, sewage overflows, and other human interactions with nature and the surrounding waterways. This also includes drainage from parking lots, shopping centers, roadways, driveways and other places where natural vegetation that filters and absorbs sediment and nutrients has been replaced with artificial ground cover that changes the rate, amount and composition of the flow into surface waters. Within the Chesapeake Bay watershed, developed land, with its accompanying run-off and partially-treated human waste,



Figure 3: Conceptual diagram of major land use types and key features of the Patuxent River watershed.



A grassy berm and silt fencing prevents stormwater runoff from this construction site.

contributes on average, 14.8 pounds of nitrogen per acre, compared to the 11.7 pounds of an average acre of agricultural land¹. Upstream development and urbanization in the Patuxent River Watershed (see Figure 3), has become the largest single cause of added nutrients to the watershed. Applying these bay wide statistics to the Patuxent River indicates nutrient and sediment loads will increase if they are not offset by increased urban best management practices.

Standards for the future

While growth is inevitable, how we grow is not. The drainage from our communities is choking the life from our waterways. Smart growth means building in ways considerate of natural resources. Think of your community as a partnership and collaboration with nature. We must choose to build while protecting the streams, plants and animals native to the area. Citizens upstream must recognize that the effects of pollution are sometimes experienced less at the point of origin and more keenly downstream. We need to be more vigilant about what goes into our rivers if we intend to leave future generations water that looks, smells, tastes and feels like water.

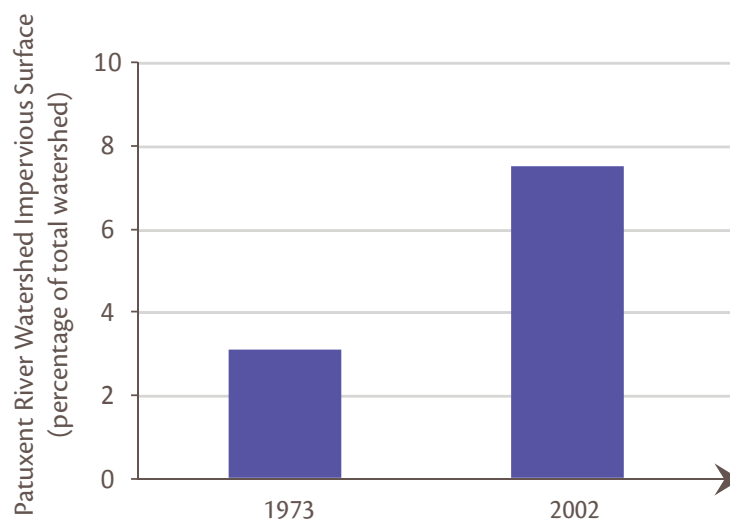


Figure 4: Impervious surface in the Patuxent River watershed over time, based on Maryland Department of Planning data.

THE PATUXENT NEEDS YOU!

What we are doing

- Monitor and influence local comprehensive planning to encourage better protection of water resources.
- Patrol the watershed for bad stormwater and erosion sites.



Goals

Reduce erosion and sediment flowing into the Patuxent watershed



What you can do

- Become familiar with the streams and waterways near you.
- Be attentive to the condition of nearby waterways.
- Encourage and participate in local stewardship preservation and buffer protection.
- Report known problems to the authorities and/or the Riverkeeper.

- Promote stronger legislated protections, stiffer fines, deeper enforcement and increased vigilance by citizens and regulators against polluters.
- Monitor the Patuxent Watershed for point source pollution.



Protect our waterways from nutrients and toxins



- Make your household free of needless poisons and minimize the use of fertilizers and other chemicals bad for the environment.
- Conserve, recycle and reduce waste.

- Organize activities to raise interest and awareness at what has become of our water supply.
- Help citizens get the resources they need to make informed local and systematic changes.



Have an engaged and informed community united to save the Patuxent River



- Vote with your Green conscience.
- Demand government and individual responsiveness to ecological problems.
- Get involved in water testing, cleanups, tree plantings and become an active eco-partner in the drive to protect our waterways.

To contact the Patuxent Riverkeeper:

E mail: info@paxriverkeeper.org

Phone: (301) 249 8200

Website: www.paxriverkeeper.org

Many more ways to reduce your impacts can be found at:

<http://www.chesapeakebay.net>

(Get Involved)

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References:

1. Hanmer R (2006) Food for thought: Save a farm to save the Bay. Action notes from the Director's Chair. *Chesapeake Bay*

Further information at:
www.ian.umces.edu
www.paxriverkeeper.org
www.eco-check.org