



2008 SEVERN RIVER REPORT CARD

The Capital River of the State of Maryland



This newsletter introduces the first Severn River ecosystem health report card. The report card summarizes 2008 water quality results, which are based on data collected by the Severn Riverkeeper Program. This report card helps to clarify the Severn's health, and provides instructions on what individuals can do to improve its condition.

Overall health index score: 45%

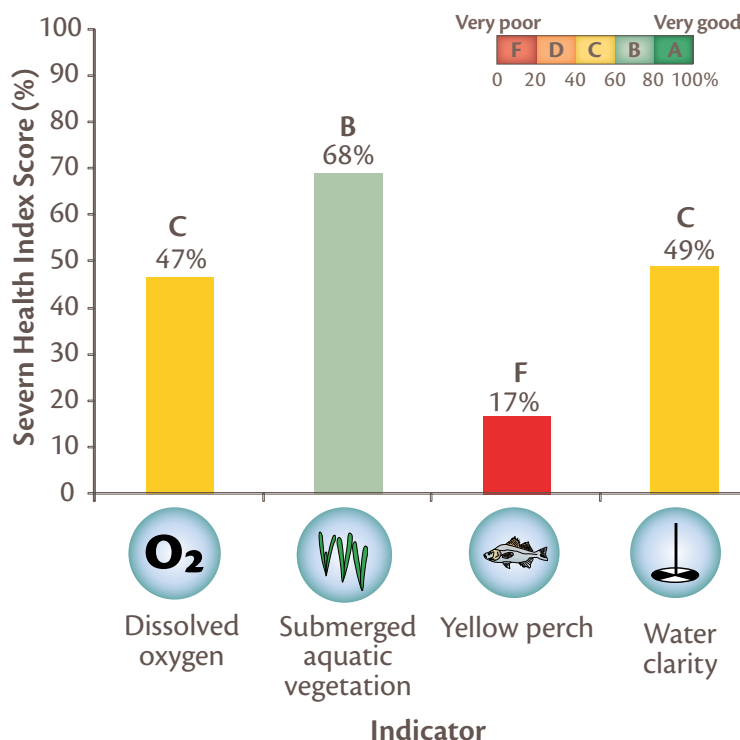
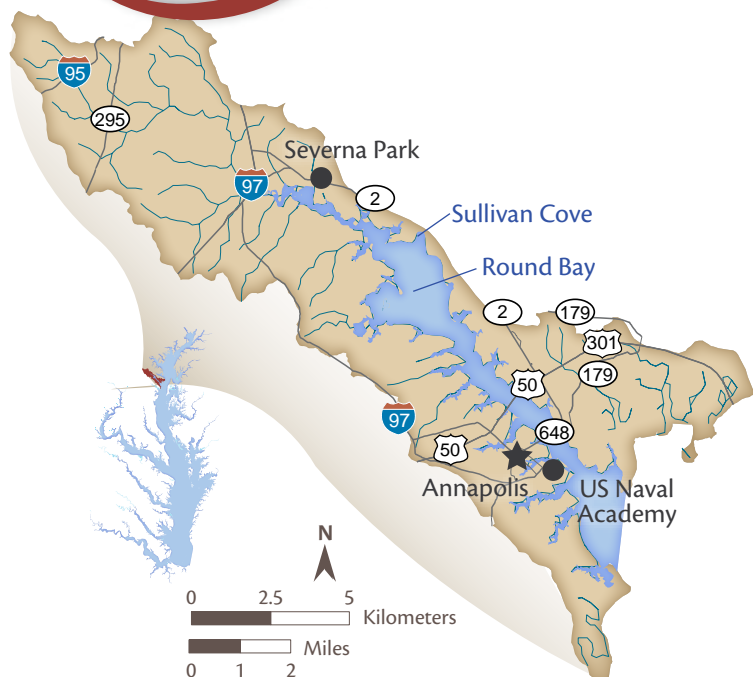


Figure 1. The four indicators used to determine the health of the Severn River.

Overall, water quality in the Severn River in 2008 was moderate, receiving a grade of C- (45 out of a possible 100 points). The overall health index score is based on the four indicators presented in the graph above. There is a wide range of ecological, health-based scores among the indicators, from a 17 for yellow perch to 68 for submerged aquatic vegetation (SAV). The large differences between the indicator scores are explored in the stories on the next page.

The low scores for the indicators illustrate the need for management actions that support more research and restoration. These actions are needed to improve the health of

the river. Without more extensive efforts to improve the health of the river, natural resources that have defined the Severn River in the past will be lost for future generations.

"The report card results show poor health in the Severn River and are representative of the natural resources we are losing. One example is the yellow perch fishery—which, sadly, has declined dramatically since I was a boy."

-Fred Kelly, Severn Riverkeeper



CONTRAST IN ROUND BAY

Shallow water dead zone

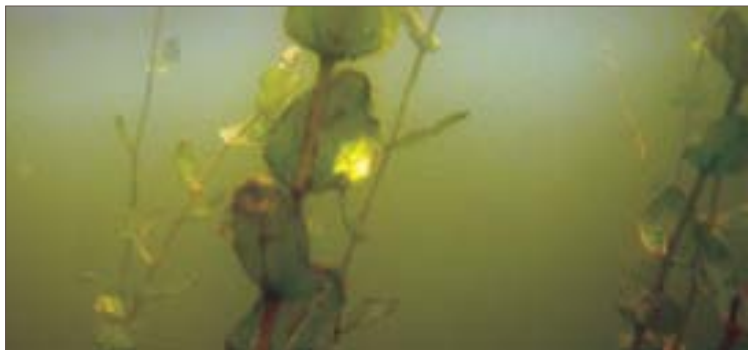
Monitoring by the Severn Riverkeeper has revealed a large dead zone (i.e., an area with very low dissolved oxygen levels) in the Severn River. The low dissolved oxygen levels have been observed in relatively shallow (20-25 feet) bottom waters of Round Bay during summer (Figures 2 and 3). While not unusual in deeper portions of Chesapeake Bay, it is unusual to have persistent, low dissolved oxygen in relatively shallow water such as in the mainstem of the Severn River. Low dissolved oxygen typically occurs due to rapid bacterial breakdown of organic matter (e.g., algae) in areas where oxygen production cannot keep pace with oxygen use. While the exact cause of the Severn River's low dissolved oxygen has yet to be determined, a likely major contributor are micro-algal blooms (e.g., phytoplankton), caused by excess nutrient availability. As all animal life depends on dissolved oxygen to survive, low dissolved oxygen restricts available habitat within the Severn River for species such as blue crab, striped bass, and even worms.

“With the great SAV, the hypoxic water column, and the dead bottom, we really have the good, the bad, and the ugly in Round Bay.”

-Pierre Henkart, Scientific Advisor

Better water clarity, prolific grass beds

Analysis of water clarity data shows that the survival of submerged aquatic vegetation (SAV) in Round Bay is probably due to relatively clearer water in this region (Figure 3). In 2008, 311 acres of SAV were recorded in the Severn River, with the majority located within Round Bay. Three species of SAV dominate in the river: Sago pondweed, Widgeon grass, and Redhead grass. The Severn River has healthy and persistent medium salinity SAV beds along the Maryland western shore. Analysis of water clarity data shows that survival of SAV in Round Bay is probably due to relatively clearer water in this region, enabling sufficient sunlight to reach the SAV to survive. For SAV to start recovering in other regions of the Severn River, water clarity needs to improve substantially. This means that the amount of sediment and nutrients entering the river needs to be significantly reduced.



Redhead grass in Sullivan Cove.

Peter Bergstrom

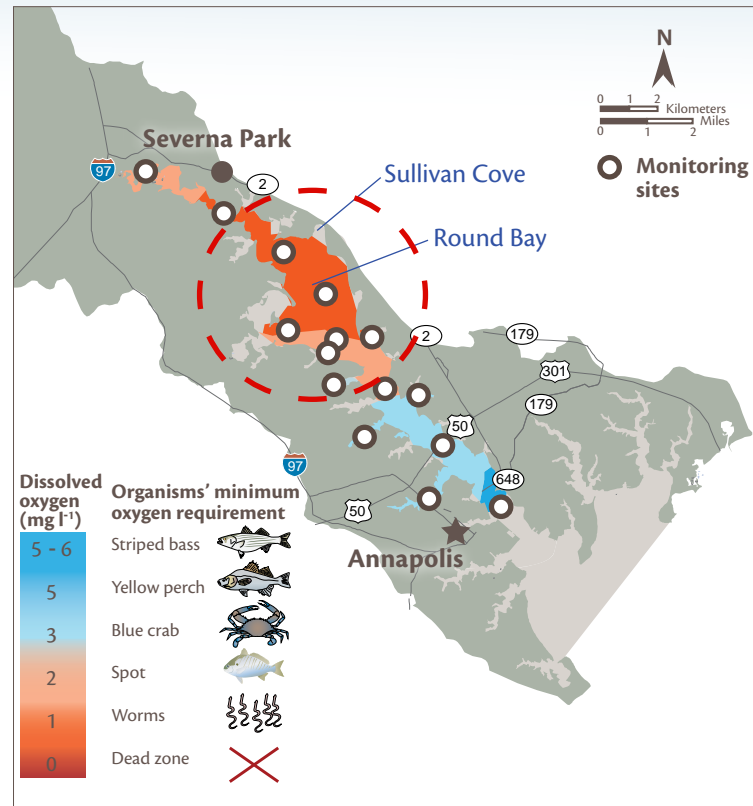


Figure 2. Dissolved oxygen levels in the Severn River and associated organisms' oxygen requirements. Organisms' oxygen requirements adapted from United States Environmental Protection Agency (EPA).

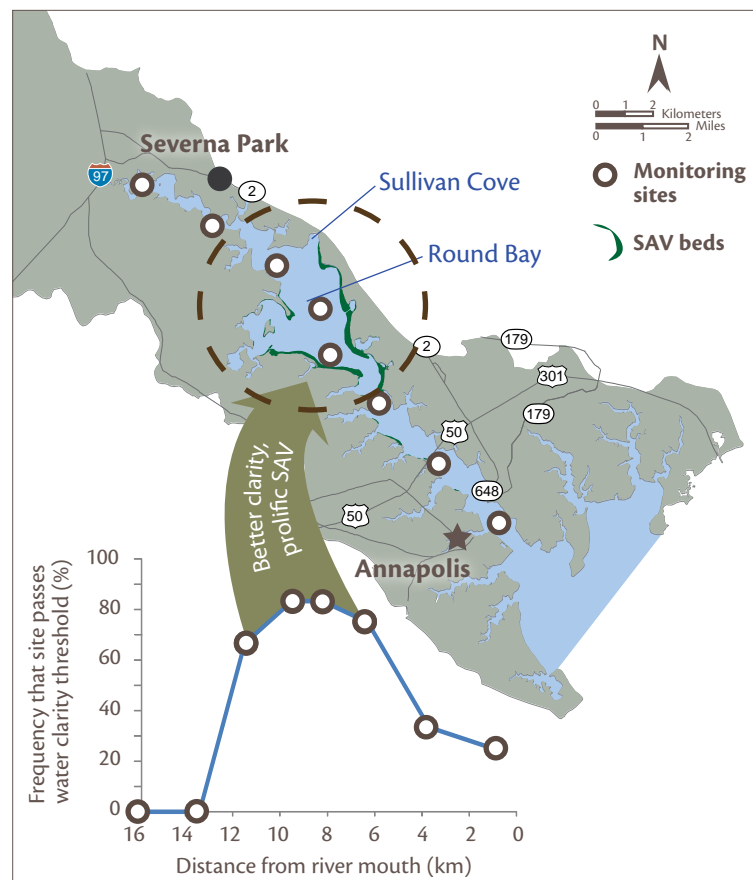


Figure 3. Submerged aquatic vegetation beds in the Severn River (despite the poor water quality shown in Figure 2).

IS IT SAFE TO SWIM?

Testing waters for enterococci bacteria concentration is recommended by the US Environmental Protection Agency (EPA) as an indicator of recent pollution from sewage or animal droppings at beach recreation areas. Higher bacteria concentrations are thought to reflect higher illness risk to swimmers. Bacteria concentrations are generally expected to increase after rainfall; in the Severn River, research has shown that rainfall higher than ½ inch is required to cause substantial increases in enterococci concentration, which can be seen in the 2008 data (Figure 4).

Although the highest bacteria levels followed high rainfall in 2008, bacteria levels were also relatively high on some days when

there was little or no preceding rainfall. This suggests that there are processes other than rainfall that can influence bacteria levels. Based on previous analysis in the Severn River, it appears that pet waste may be the source of the bacteria washed into the river from rainfall, and that high bacteria on days with little preceding rainfall are probably from wild birds. The highest levels of enterococci are seen following rainfall; efforts to reduce pet waste may have the most positive effects on the reduction of bacteria levels in the Severn River.



Allison Albert

SRK staff and interns take a dip in Weems Creek for relief from the hot summer sun.

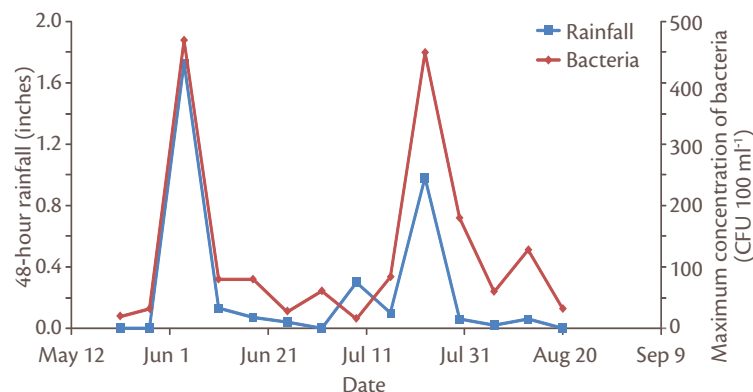


Figure 4. Bacteria levels and rainfall over a 48-hour time period in 2008 in the Severn River. Data: S. Hornor.

SULLIVAN COVE IN TROUBLE: NOTES FROM THE RIVERKEEPER

Although the Severn was designated as a Maryland Scenic River in 1971, it remains classified by the EPA as an impaired waterway. Conditions have remained poor despite this regulatory protection, and defense against further ecosystem degradation has been taken up by the local community.

The potential development of the wetlands at Sullivan Cove is a perfect example. The cove is located at the northern end of Round Bay, adjacent to Cedar Point. Its tidal pond is recognized as a pristine area where wildlife thrives and wetlands filter. Riparian rights to this area were thought to be held by The Olde Severna Park Improvement Association (OSPIA), which owns much of the land bordering the cove.

These rights came into question in 2004 when a couple sought to build a walkway and pier across the tidal pond. Community leaders believed the request would be denied based on similar attempts by previous owners, but were dismayed when permission was given. The leaders committed to fighting the decision. Several years, countless court hearings, and hundreds of thousands of dollars later, the property owners successfully established their right to apply for permits. Soon after, two neighboring homeowners sought approvals for piers too.

Officials at the Maryland Department of the Environment (MDE) have reviewed the plans and are now set to issue permits for the piers in Sullivan Cove. The OSPIA is planning

on appealing this decision. The Severn Riverkeeper Program applauds the OSPIA for making a commitment to protect Sullivan Cove.

“The loss of any more marshes or wetlands in the Severn is unacceptable.”
-Allison Albert, Program Director



Scenic Sullivan's Cove.

Pierre Henkart

SOLUTIONS FROM THE RIVERKEEPER

The Severn Riverkeeper Program is your vehicle to bring about positive change in the Severn's water quality. The bad news is... we have serious problems to deal with. The good news is... we know the solutions and are already working to implement them! And, most of the solutions are things you can do in your own backyard for little cost. Together we can save the Severn!

PROBLEMS



Pierre Henkart

Water quality and habitat in the Severn River are degraded. Protection and restoration are needed so the Severn can be removed from EPA's impaired waterway list.



Bob Whitcomb

Join the Severn Riverkeeper Program, the voice of the Severn and the most effective advocate for protection and restoration of the river. Visit our website for more information: severnriverkeeper.org, or call (410) 849-8540.



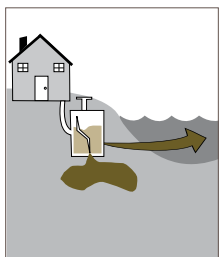
Dave Wallace

Polluted stormwater carries excessive nutrients and sediment into the river and reduces life-sustaining oxygen, creates dead zones, and buries oysters and submerged aquatic vegetation.

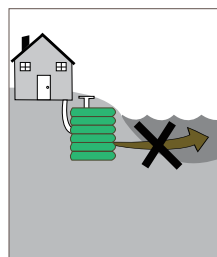


www.lakecountytill.gov

Reduce stormwater runoff on your property with rain barrels and rain gardens, and push for the use of Regenerative Stormwater Conveyance systems on all poorly designed developments. Go to RainScaping.org for more information.



Leaking septic systems allow nutrient-filled waste to creep into the Severn River and surrounding watershed. Nitrogen-removal devices are needed.



Apply for a grant from the Bay Restoration Fund to have nitrogen-reducing pre-treatment units installed on your septic system. To learn more and apply, call the AAC Department of Health at (410) 222-7193, or visit their website aahealth.org, click on the heading "Environmental Health" and sub-heading, "Bay Restoration Fund."



Pierre Henkart

Pollution buffer zones and animal habitats are being disturbed and removed with the construction of bulkheading and riprap, resulting in the destruction of wetlands and critical land/water boundaries.



Pierre Henkart

Install a living shoreline to protect from erosion. Living shorelines preserve the habitat of fish, turtles, and other important organisms, as well as reduce wave action and hold soil in place. Go to severnriverkeeper.org, click on the heading "Issues" and sub-heading "Living Shorelines" for more information.

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Verna Harrison



Sally Hornor

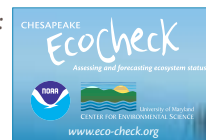


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Further information at:
www.severnriverkeeper.org,
www.eco-check.org