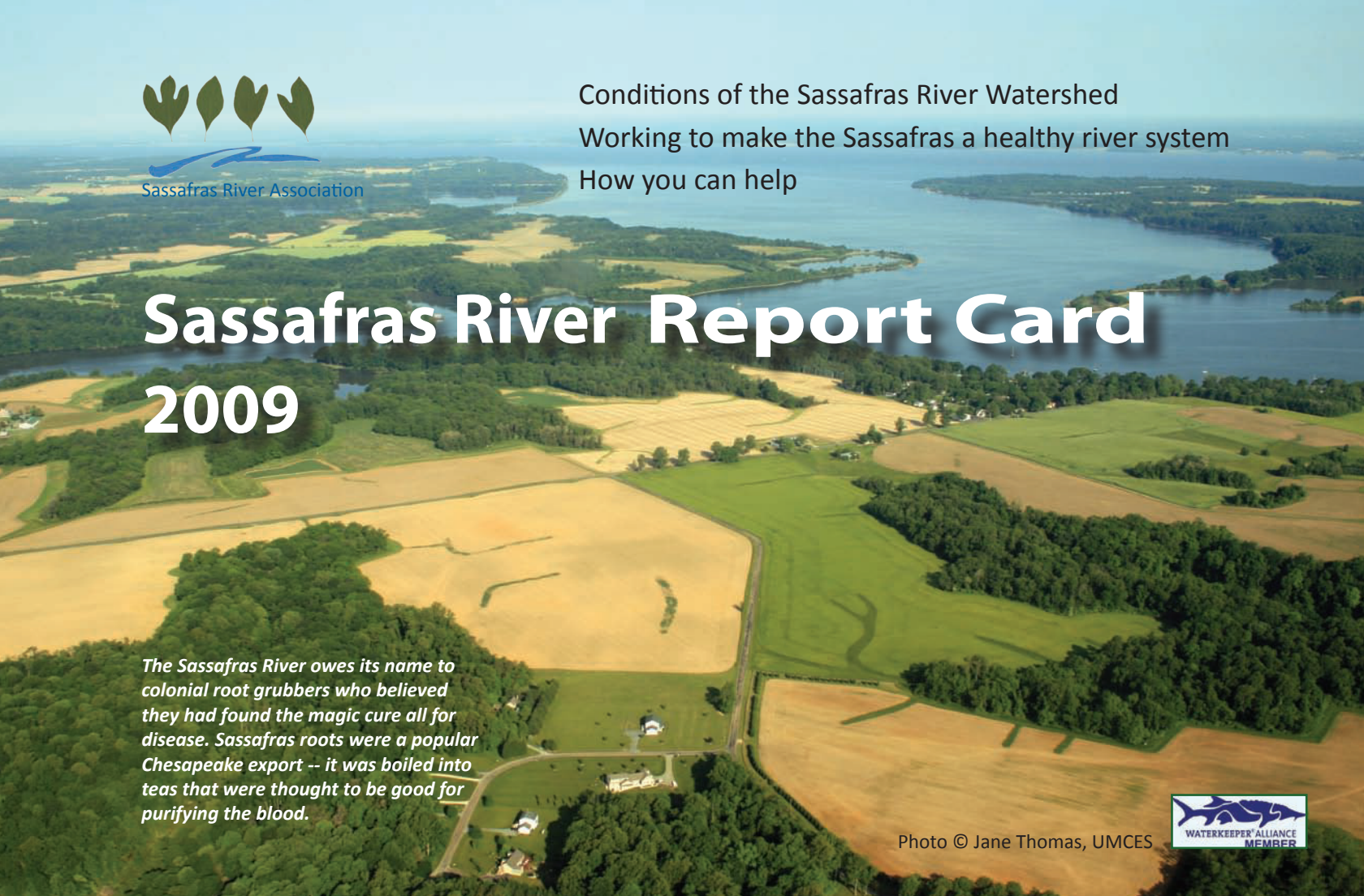
Sassafras River Association

Conditions of the Sassafras River Watershed
Working to make the Sassafras a healthy river system
How you can help

Sassafras River Report Card 2009



The Sassafras River owes its name to colonial root grubbers who believed they had found the magic cure all for disease. Sassafras roots were a popular Chesapeake export -- it was boiled into teas that were thought to be good for purifying the blood.

Photo © Jane Thomas, UMCES

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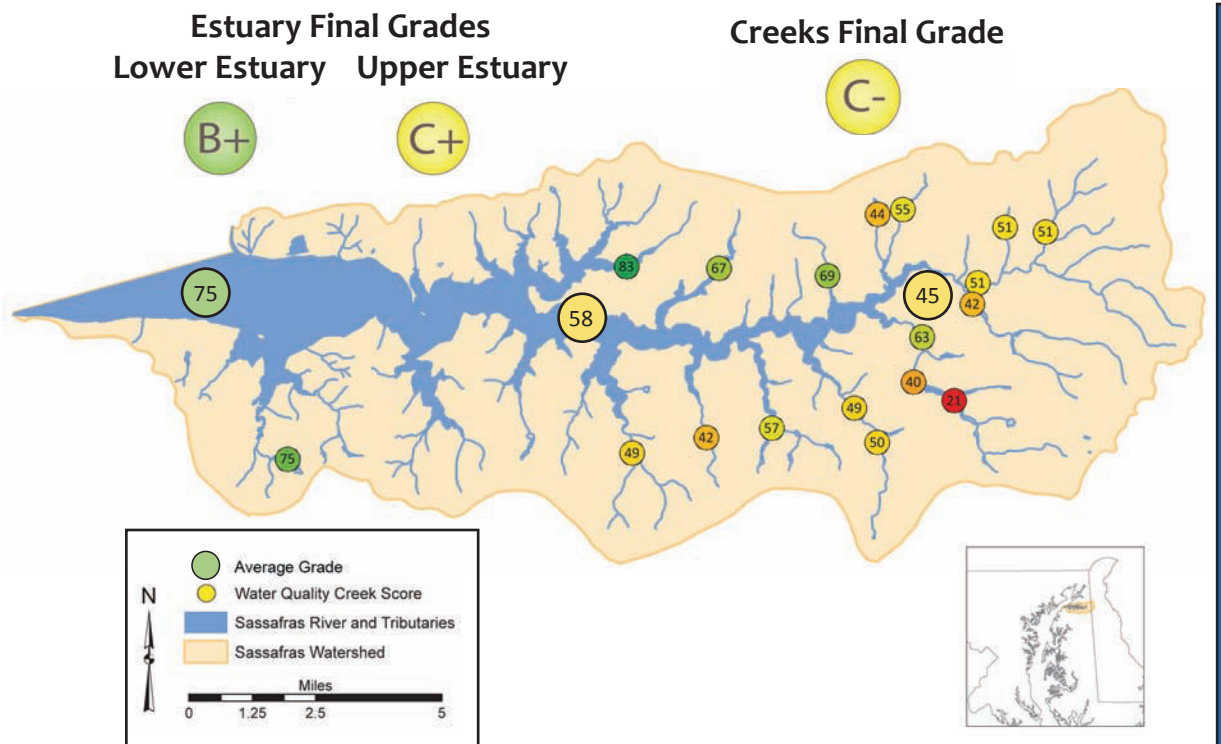
This publication marks the first annual Sassafras River Report Card, a report on ecosystem health within the Sassafras River Watershed. This report summarizes water quality of the estuary (tidal) and creeks (non-tidal) within the Sassafras ecosystem during 2009. These grades are an attempt to put a number on what local citizens have known for years -- that the Sassafras River is not what it used to be. This report introduces you to the special qualities of the Sassafras River. It is also a call to action. Learn how you can help make the Sassafras River healthy at all times for fishing, swimming, crabbing and simply enjoying its natural beauty.



The overall water quality in the Sassafras River creeks (non-tidal) was unhealthy, scoring 45% out of a possible 100%. Scores of individual creeks ranged from 21% to 83%.

Sassafras estuary water quality was better but still barely passing with a score of 68% out of a possible 100%.

Data were collected by the Sassafras River Association (SRA), the Riverkeeper and the Sassafras Samplers (citizen scientist volunteers) and the Maryland Department of Natural Resources.

Sassafras Health Scores

The health of the Sassafras River is measured with seven indicators:

- Water Clarity (level of turbidity)
- Dissolved Oxygen
- Nutrients (Nitrogen & Phosphorus)
- Chlorophyll (indicates algae growth)
- Stream Health (stream bed organisms)
- Ammonium

Up river sites scored lower than down river sites. The creeks showed high levels of nutrients and low levels of the important microorganisms that live on the bottom of stream beds. The "bugs" indicate a healthy ecosystem. These findings suggest that agricultural land use, septic systems and stormwater are adversely impacting water quality in the upper portion of the watershed, and the Bay serves to dilute this pollution in the lower reaches.

In the tidal areas, water clarity, phosphate, and chlorophyll were the three problems of most concern in 2009. Poor water clarity may be caused in part by wave action that churns up sediment. Phosphate sources include sewage treatment plants and agricultural operations.

The Sassafras River is a complex ecosystem. Indicators are influenced by many factors, such as weather patterns, flows coming from the Susquehanna River, and changing land uses. Grades should not be taken at face value but rather weighed in connection with other indicators to arrive at a professional judgment of what may be happening in different parts of the river system.

Percent of Sites Rated Above Passing Threshold

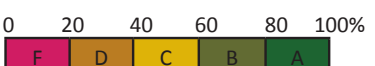
Indicator	Lower Estuary	Upper Estuary	Creek Sites	Average Grade
Water Clarity				
-- Secchi depth	21%	4%	NA	F
-- Turbidity	97%	44%	73%	B+
Dissolved Oxygen	96%	95%	83%	A
Nutrients				
-- Nitrate	100%	95%	42%	B
-- Phosphate	21%	71%	10%	D
Chlorophyll	97%	1%	NA	C
Stream health	NA	NA	0%	F
Ammonium	93%	95%	59%	B+
Average Grade	**75%**	**58%**	**45%**	
	B+	**C+**	**C-**	

Grades were awarded based on the percentage of measurements passing standard thresholds used throughout the Chesapeake Bay.

Sampling data were collected April - December, 2009. Sampling took place at 7 weekly tidal sites, 5 monthly tidal sites, and 16 monthly non-tidal sites.

See www.eco-check.org for information on methods.

Water Quality Grading Scale



Getting to Know the Sassafras River Community

The Sassafras River community is a blend of quaint historic towns, agricultural lands, country living and an active summer recreational waterfront in the farthest northeastern reach of the Chesapeake Bay. The land that drains into the Sassafras River (its watershed) starts in Delaware and stretches west to the Bay; the river serves as the natural boundary between Cecil and Kent counties in Maryland.

The watershed is mostly rural -- 57% is in agricultural production and 24% is forested. Only about 5% of the watershed is developed with low to medium density residential areas and towns, most notably Betterton, Cecilton and Galena.

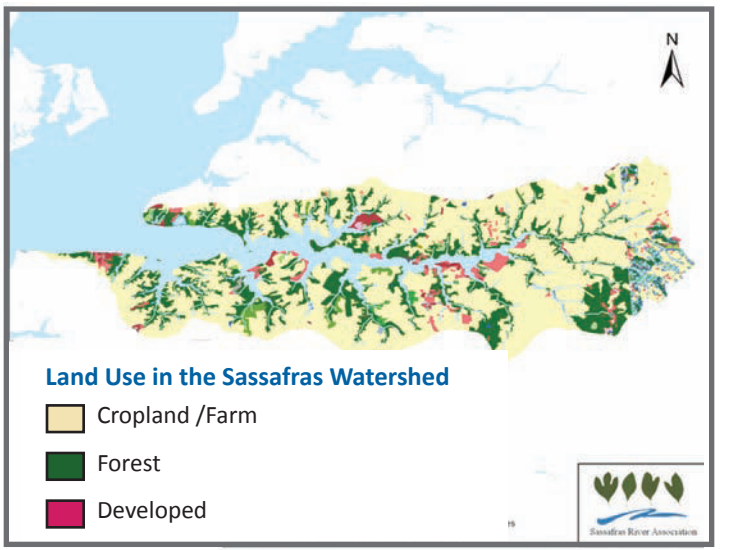
Birding enthusiasts enjoy the variety found at the Sassafras River —geese, ducks, herons, osprey, many species of song birds and the once-endangered Bald Eagle.

Recreational boaters explore the river's coves and channels, and fishermen seek out bass, chain pickerel, crappie, catfish, sunfish, and perch. Striped bass and perch are among the fish that return each year to the same location to spawn. (Drops in dissolved oxygen and water clarity can affect their ability to spawn.)

The watershed boasts a diversity of freshwater and estuarine wetland communities, unlike any other region in the Chesapeake Bay region. Also characteristic of the river are its steep slopes, meandering shorelines and fertile soil deposits along these shores. The eroding sandy cliffs surrounding the Sassafras are home to the threatened Puritan Tiger Beetle.

Sassafras River Facts

- 20 navigable miles
- 97 square mile watershed (total drainage area)
- 7 subwatersheds; 19 tributaries; more than 100 stream miles
- 4,318 population (52 people/square mile)
- Home to seven marinas and two boat yards; 1,800 boat slips/year
- Channel depth: deepest portion (> 50 ft.) about mid-river; 10 feet deep from Chesapeake Bay shipping channel to Georgetown
- Groundwater is the sole source of drinking water
- 1/2 the water in tidal Sassafras is from the Susquehanna and the Bay



A Closer Look at the Landscape

Despite its pastoral charm, land use surrounding the Sassafras River has put the Sassafras River on the "impaired" waters list issued by Maryland, Delaware and the US EPA. PCB's have also been found in the tidal portions of the river.

With each significant rainfall, water moves over the land, picks up pollutants and carries them to the tributaries — a type of impairment called nonpoint source pollution that accounts for about half of the river's problems. Over-fertilized lawns and crop fields, eroding streambanks, and poorly managed construction sites send nutrients (nitrogen and phosphorus) and sediment into the river system.

Septic systems are another source of nitrogen. The Chesapeake Bay Program estimates that almost 80 percent of nitrogen from conventional septic systems reaches surface water (septic systems were not designed to remove nitrogen, now the worst pollutant in the Bay). In the Sassafras River Watershed, there are approximately 1,718 homes that use private septics for wastewater treatment and roughly 824 of these homes are located in the critical area (within 1,000 feet of tidal shoreline).

Two waste water treatment plants -- considered point sources of pollution -- account for the other half of the nutrient problem in the Sassafras Watershed. The plants in Betterton and Galena continue to operate using aging technology that is unable to remove nutrients to acceptable levels for optimal River health.

Photo credits: Jane Thomas, IAN Image Library (ian.umces.edu/imagelibrary/)

The Trouble with Nutrients & Sediment

Too much nitrogen and phosphorus fuel algae growth that blocks sunlight from underwater grasses and displaces healthy plankton that are critical food for aquatic life. As algae die and decompose they can create "dead zones" where little oxygen is available to support aquatic life.

Sediment likewise blocks sunlight. It settles on streambeds where it buries aquatic life, disrupts the food chain and affects boating and recreation.

Some types of algae can become toxic to aquatic life and even to humans. The Sassafras River has consistently been subject to various algal blooms over the years, and in many instances Microcystis (a toxic algal species) has been observed.

Numerous beach advisories and four beach closings (between 2004 and 2008) were due to algal blooms or excessive bacteria counts. Sources of bacteria include urban runoff, pet waste, wildlife, failing septic systems, and improper disposal of boat waste.

Wetlands and forests act as nature's kidneys in filtering and cleansing runoff. The Sassafras watershed has lost more than 11,000 acres of wetlands that have been drained or filled for farming and development; approximately 4,000 acres of wetlands remain. The loss of forests along our smaller streams also means more pollutants are reaching the waterways.

A Plan to Fix Things

The people of the Sassafras care deeply about the watershed. Nearly 24% of the watershed is protected from development through land easements and purchases in an effort to keep land available for farming, wildlife, and future generations. Since 1995, farmers have protected streams by installing 227 acres of grass buffers, 50 acres of forest buffers, and miles of stream fencing to keep livestock from fouling the river. Some residents have invested in new septic systems that are designed to remove nutrients.

But much more work remains. The Sassafras River is one of more than 50 rivers and innumerable smaller tributaries that send fresh water into the Chesapeake Bay, and every river system is under increasing pressure to meet pollutant reduction goals that have grown more stringent over the years.

Under previous Bay clean up plans, there was no consequence for failing to meet goals. That is changing with the Bay Total Maximum Daily Load (TMDL), which is a legally required pollution cleanup plan for water bodies that fail to achieve their water quality standards. States that fail to meet periodic milestones may be looking at tougher permit requirements for wastewater treatment plants, stormwater management, and certain animal operations. It's important that subwatersheds, like the Sassafras River, do their part to help restore the Chesapeake Bay.

Even if you aren't living on the water, you are living in a watershed and everything that is done on land affects the water quality in its given watershed.

We need your help. The Sassafras River Association (SRA) encourages everyone to become a steward of the Sassafras River watershed by implementing or supporting actions outlined in the Sassafras River Watershed Action Plan (SWAP). Sponsored by SRA, this plan was approved by EPA in January 2010.

The SWAP charts a clear course toward watershed improvements. In short, the plan outlines 30 specific recommendations that are estimated to reduce nitrogen pollution by 9 percent, phosphorus pollution by 34 percent, and sediment pollution by nearly 15 percent. It's a "doable" plan...but we need everyone to do THEIR part.

What's at Stake? If we continue to manage our land without respect for what it does to our water resources, we can expect to see more beach closings, more fish advisories, fewer crabs and lost tourism. The good news is we know how to fix the problem. The challenge is engaging enough people to make a difference.

What You Can Do

Residents...Easy Things First

- ✓ Get a soil test to optimize fertilizer usage for your lawn and garden.
- ✓ Support the preservation of important farmland and forest land.

Residents...Things that Take a Little Planning

- ✓ Fix failing septic systems or upgrade to a septic system that removes nutrients more efficiently.
- ✓ Reduce runoff from your property by collecting and utilizing rain water, planting native trees and vegetation, starting a living shoreline, and/or directing water from gutters into vegetated areas.

If you have waterfront property, leave marsh grasses and natural vegetation in place and install grasses and natural plantings for protection against shoreline erosion. Hardscaping like rip-rap, bulkheads and jetties are expensive, require permits, and block habitat in the critical area of the water's edge.

Marinas and Boaters

- ✓ Pump out boat sewage at a pump out station; do not dump overboard.
- ✓ Marinas - Participate in the Clean Marina Program.

Farmers

- ✓ Implement best management practices such as cover crops, no-till farming methods, nutrient management, grassed waterways, vegetative buffers and proper manure storage.
- ✓ Work with the Conservation District or SRA to identify opportunities for wetland creation and wildlife habitat creation and restoration.

Local Government

- ✓ Upgrade sewage treatment plants to remove N & P
- ✓ Implement land use ordinances that direct growth around existing towns and away from productive farmland and forest land.

Everyone

- ✓ Spend time outside in the Sassafras River watershed. Get to know your watershed and recognize its importance in your life.

Who should people call when they see a problem? Call the Sassafras RIVERKEEPER at 410-708-3303 or go to www.sassafrasriver.org and report a concern on line. Examples include violations of the Critical Area buffer requirements or illegal boat dumping.

Support the Sassafras River Association

Sassafras Sampler and SRA Board Member Ted Carski retrieves a water sample for testing.

The Sassafras Samplers are citizen scientists that help monitor the health of the Sassafras River and its tributaries. These dedicated volunteers test monthly water samples at more than 20 sites around the watershed. By helping SRA keep a close eye on water quality parameters, the Sassafras Samplers have assisted in providing data for this report card and identifying potential problem areas. The Sassafras Samplers are an intergral part of SRA's mission to improve the water quality of Sassafras River.

Thank you for your time and efforts. If you are interested in volunteering to be a Sassafras Sampler for 2011 let us know at riverkeeper@sassafrasriver.org

SRA has been hard at work implementing the watershed action plan's recommendations. Outreach to local schools, residents and farmers has been a top priority. SRA is in communication with local officials to promote wastewater treatment plant upgrades and a ban on the use of phosphorus in residential fertilizers. SRA is working with marinas to encourage participation in the Maryland Clean Marina Program.

Without SRA, there would be no action plan or report card. We appreciate your support.

- ▲ Donate or become a member of the SRA
- ▲ Volunteer your time as a Sassafras Sampler
- ▲ Alert the SRA of problems to be investigated, such as algal blooms and fish kills

Residents learned how to assemble and use rain barrels at a SRA workshop .

SRA Contact Information

Email: mail@sassafrasriver.org
riverkeeper@sassafrasriver.org (to report pollution issues)
Phone: (410) 275-1400
Website: www.sassafrasriver.org

The Sassafras River Association (SRA) would like to thank the Chesapeake Bay Trust for funding this report card and the following persons and organizations for their past and continued support.