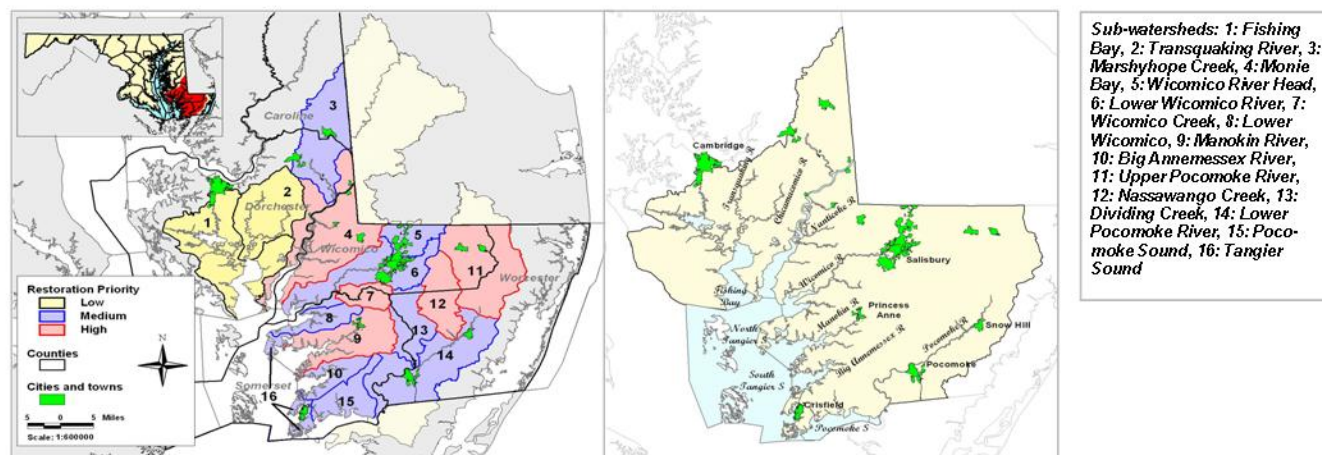


Lower Eastern Shore Water Quality and Habitat Assessment

Lower Eastern Shore Basin

Maryland's Lower Eastern Shore basin drains 1,400 square miles in Wicomico County and portions of Caroline, Dorchester, Somerset, and Worcester Counties. This basin includes the Nanticoke, Wicomico, Manokin, Big Annemessex, Pocomoke, Transquaking, and Chicamacomico Rivers. The basin also includes Fishing Bay, Tangier Sound, and Pocomoke Sound. In 2010 there were approximately 160,000 people living in the basin in Maryland, 80,000 in Delaware, and 14,000 in Virginia. The dominant land use in the Lower Eastern Shore basin is forest (40%), followed by agriculture (31%), wetlands (14%), and urban use (9%). Between 2000 and 2010, urban land use increased by 3% and impervious surfaces cover 2% of the overall basin.



Overall Conditions

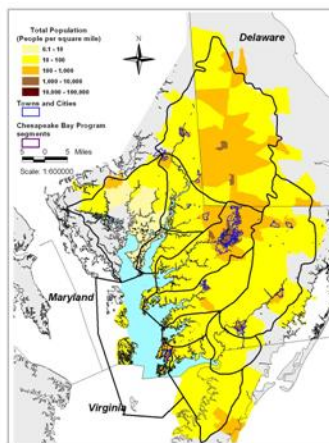
Transquaking/Chicamacomico

- Fair water quality with high and degrading sediment levels, but improving phosphorus levels
- Poor water clarity and high algal densities have led to impaired underwater grass habitat
- Good habitat for bottom dwelling animals

Fishing Bay

- Good water quality; moderate nitrogen and sediment and low phosphorus levels
- Poor water clarity and moderate algal densities but fair underwater grass habitat—grass coverage is 33% of restoration goal
- Good bottom dissolved oxygen levels but degraded habitat for bottom dwelling animals

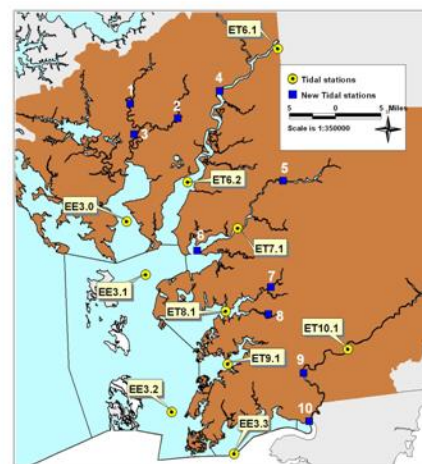
Population



Tangier Sound

- Good water quality with improved nitrogen levels
- Fair underwater grass habitat and poor water clarity in the north; good habitat in the south—grass coverage sound-wide is 42% of restoration goal
- Low algal densities and good bottom dissolved oxygen levels with healthy bottom dwelling animals

MD DNR Monitoring Stations



Big Annemessex River

- Good and improving water quality due to improving nitrogen levels
- Low water clarity and fair underwater grass habitat—grass coverage is 38% of restoration goal
- Good bottom dissolved oxygen levels and healthy bottom dwelling animals

Overall Conditions (continued)

Nanticoke River

- Poor water quality in upper river with high but improving nitrogen and sediment levels; fair in middle river with high but improving sediment levels
- Poor but improving water clarity and increased algal densities have led to impaired underwater grass habitat and no grass coverage
- Good bottom dissolved oxygen levels but degraded habitat for bottom dwelling animals

Pocomoke River/Sound

- Poor water quality in river with high nitrogen, phosphorus, and sediment levels; good water quality in sound
- Poor water clarity and increasing algal densities have led to impaired underwater grass habitat in river; fair habitat in sound —grass coverage is >100% of restoration goal
- Low algal densities and fair to good bottom dissolved oxygen levels

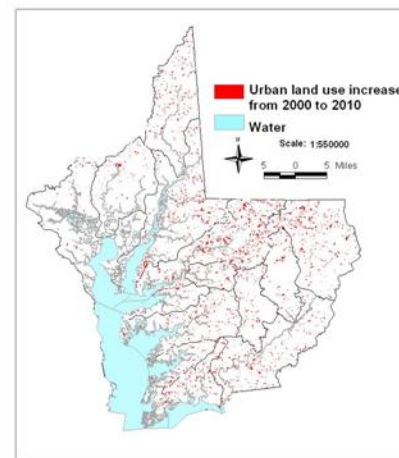
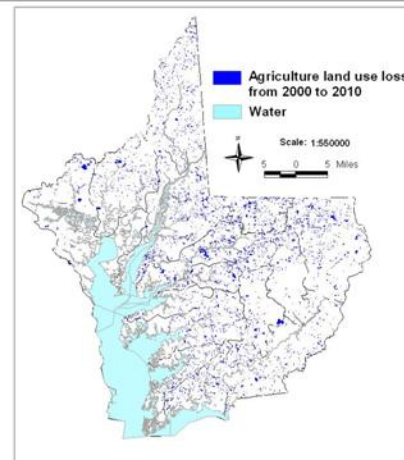
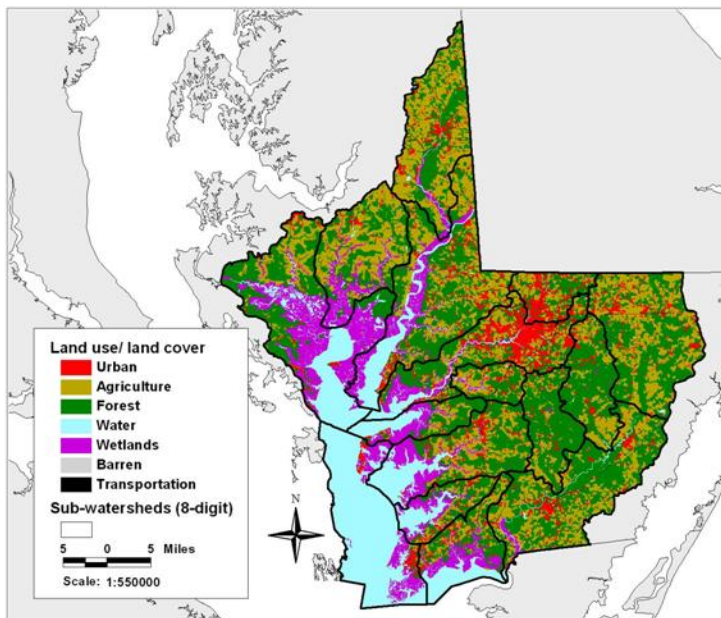
Wicomico River

- Poor water quality in upper river with high nitrogen and sediment levels; fair in middle river with high sediment levels; good in lower river
- Impaired underwater grass habitat in upper and middle river due to poor water clarity and high algal densities; fair habitat in lower river—no grass coverage in entire river
- Good bottom dissolved oxygen levels, but widespread areas of unhealthy habitat for bottom dwelling animals

Manokin River

- Poor water quality in upper river, good in lower; improved nitrogen and sediment but high phosphorus levels in creeks
- Poor underwater grass habitat in upper river, fair in lower river with improved water clarity—grass coverage river-wide is 14% of restoration goal
- Good bottom dissolved oxygen levels and healthy bottom dwelling animals

Land Use/Land Cover



Improving Water & Habitat Quality: What's been done and what needs to be done?

- Upgrades to the largest wastewater treatment plants in the basin have been implemented or are under construction
- 780 septic system retrofits were completed between 2008 and 2010, and stormwater retrofits have reduced nitrogen loadings and prevented 2,500 pounds of nitrogen from entering the rivers since 2003
- In 2010, almost 38,000 acres of cover crops were planted between growing seasons to absorb excess nutrients and prevent sediment erosion
- Fencing on 70 acres of farmland was used to keep livestock out of streams and prevent streambank erosion and over 30,000 acres of stream buffers are in place to reduce runoff and erosion
- More than 1,000 containment structures have been built to store animal wastes and allow these nutrients to be applied to the land in the manner most effective to reduce runoff
- Over 41,500 acres have been protected and preserved through various programs such as Program Open Space, the Rural Legacy Program, the Maryland Environmental Trust, and the Maryland Agricultural Land Preservation Program
- Reductions in nutrient and sediment runoff from agricultural lands should be a priority, and septic system upgrades to reduce nitrogen should also be considered
- Reducing pollution from urban areas, particularly in the Wicomico and Manokin watersheds, can be accomplished with alternatives to conventional building materials and methods that reduce the amount of impervious surfaces
- The full assessment is available through the link: <http://tinyurl.com/k5q7grb> or by scanning:



Blackwater National Wildlife Refuge near Cambridge

What Can You Do?

There are many things you can do to help improve water and habitat quality on the Lower Eastern Shore.

- **Plant trees along streamside property.** Tree roots will slow erosion and absorb the flow of nutrient runoff.
- **Pump out septic tanks regularly (every 3-5 years).** A failing system can contaminate groundwater.
- **Conserve water.** Use rainwater for plants, take shorter showers, and turn off the faucet when brushing your teeth.
- **Drain gutter spouts into rain barrels or grassy areas.** This will reduce erosion, which adds sediment to rivers.
- **Carpool, or try biking or walking.** Exhaust fumes contain nitrogen oxides, which can end up in rivers and bay.
- **Dispose of household chemicals properly.** Toxic chemicals poured down the drain could end up in rivers.
- **Use fertilizer sparingly.** If you must fertilize, try doing it in autumn, when it will have less of an impact on rivers.
- **Support land protection initiatives.** Preserving existing green space is much easier than restoring degraded areas.
- **Get involved.** Let county, state, and local officials know that water and habitat quality is important to you.

Water quality data from the Lower Eastern Shore are available at: www.eyesonthebay.net

Please report fish kills, algal blooms, or any other events or problems to the toll-free Chesapeake Bay Safety and Environmental Hotline at **1-877-224-7229**

Martin O'Malley, Governor

Joseph P. Gill, DNR Secretary



Maryland Department of Natural Resources; Taves State Office Building; 580 Taylor Avenue; Annapolis, Maryland 21401
 Toll free : 1-(877)-620-8DNR(8638) in Maryland Out of state call: 410-260-8638 TTY users call via the Maryland Relay
www.dnr.maryland.gov



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This document prepared by members of the DNR Tidewater Ecosystem Assessment Division
 POC: Brian Smith
 Program Manager, Monitoring Integration
 410-260-8630; brsmith@dnr.state.md.us