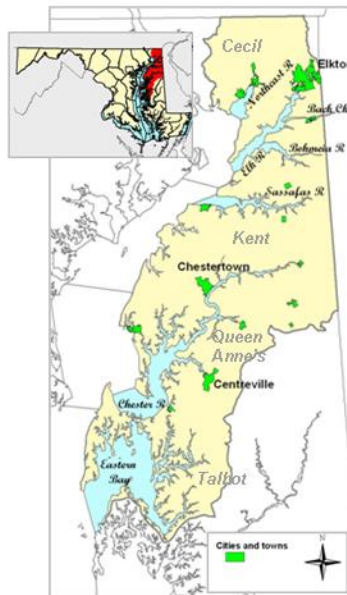


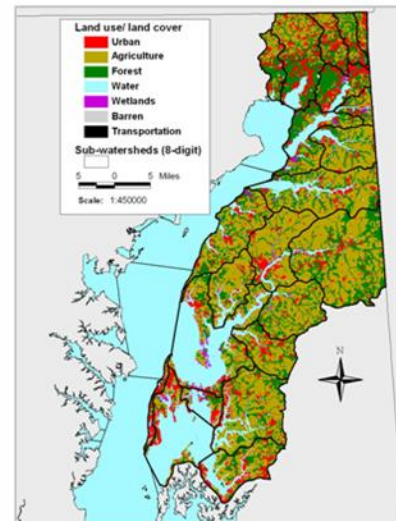
# Upper Eastern Shore Water Quality and Habitat Assessment

## Upper Eastern Shore Basin

Maryland's Upper Eastern Shore basin drains 940 square miles in Kent County and portions of Cecil, Queen Anne's, and Talbot Counties. This basin includes the Northeast, Elk, Bohemia, Sassafras, and Chester Rivers. Back Creek forms the western end of the Chesapeake and Delaware Canal and the basin ends in the south at Eastern Bay. In 2010 there were approximately 150,000 people living in the basin in Maryland and an additional 110,000 in Pennsylvania and Delaware. The dominant land use in the Upper Eastern Shore basin is forest (42%), followed by agriculture (31%) and urban use (24%). Between 2000 and 2010, urban land use increased by 7% and impervious surfaces cover 5% of the overall basin.



## Land Use/Land Cover



## Overall Conditions

### Northeast River

- Fair water quality; improved phosphorus and sediment but high nitrogen levels
- Poor water clarity and high algal densities; underwater grass coverage is 59% of restoration goal
- Summer dissolved oxygen levels are good, but limited sampling for health of bottom dwelling animals

### Bohemia River

- Water quality is fair in open waters, poor in shallow areas with high nitrogen and sediment levels
- Poor water clarity and high algal densities have led to poor underwater grass habitat—grass coverage is 17% of restoration goal

### Chester River

- Poor water quality in upper and middle river, fair in lower
- Moderate nitrogen, phosphorus, sediment, and water clarity levels; low algal densities—underwater grass coverage is 10% of restoration goal
- Poor summer dissolved oxygen levels and harmful algal blooms often occur in higher salinity portions

### Elk River

- Poor water quality with high nitrogen, phosphorus, and sediment levels
- Poor water clarity, but low algal densities; declining underwater grass habitat—grass coverage is 6% of restoration goal
- Summer bottom dissolved oxygen levels are good, but unhealthy bottom dwelling animals

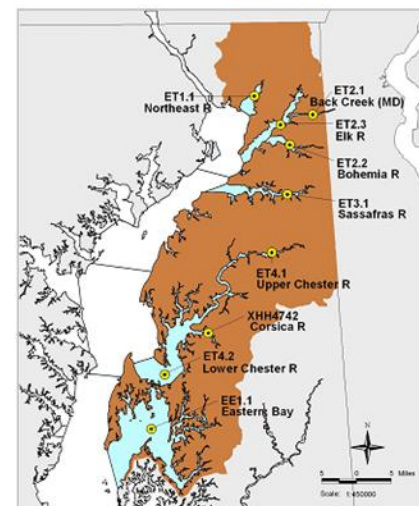
### Back Creek

- Poor water quality due to high phosphorus, nitrogen, and sediment levels
- Poor water clarity has led to poor underwater grass habitat and no grass coverage
- Good summer dissolved oxygen levels

### Eastern Bay

- Good water quality in open waters; improving sediment but high nitrogen levels
- Good water clarity and moderate algal densities have led to good underwater grass habitat, but coverage is only 4% of restoration goal
- Poor summer dissolved oxygen levels

## MD DNR Monitoring Stations



### Sassafras River

- Fair water quality due to high sediment and nitrogen levels
- Poor water clarity and high algal densities have led to poor underwater grass habitat—grass coverage is 23% of restoration goal
- Good summer bottom dissolved oxygen levels and moderately healthy bottom dwelling animals
- Harmful algal blooms in most years have had human health impacts



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

- Upgrades to the largest wastewater treatment plants that discharge into the Northeast, Elk, and Chester Rivers have been implemented or are under construction; previous upgrades reduced nitrogen and phosphorus loadings to or below management goals
- Nearly 300 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, more than 48,000 acres of cover crops were planted between growing seasons to absorb excess nutrients and prevent sediment erosion
- Fencing on almost 700 acres of farmland was used to keep livestock out of streams and prevent streambank erosion and over 22,500 acres of stream buffers are in place to reduce runoff and erosion
- More than 280 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 29,500 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
- Efforts to lower nutrient and sediment loadings from urban and agricultural areas are needed to improve water clarity and algal densities, and reducing nitrogen loadings from septic systems and other point sources should also be a priority
- The full assessment is available through the link: <http://tinyurl.com/a4kc6lm> or by scanning:



*Corsica River near Centreville is a tributary of the Chester River*

## What Can You Do?

There are many things you can do to help improve water and habitat quality on the Upper 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 Upper Eastern Shore are available at:

[www.eyesonthebay.net](http://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](http://www.dnr.maryland.gov)



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