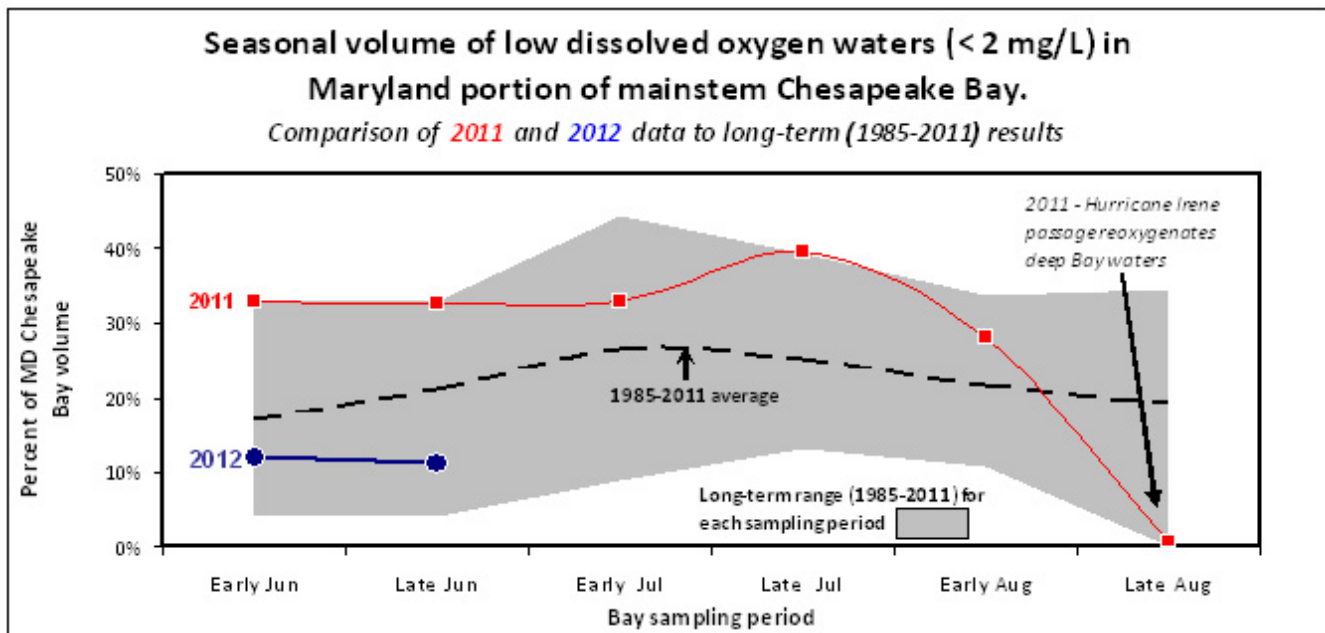


Keeping tabs on Chesapeake Bay's summer *Dead Zone* - late June 2012 update

Through the end of June 2012, oxygen levels in the deep portions of Chesapeake Bay in Maryland remain much better than the historic poor conditions that were observed in 2011. This provides more suitable habitat for fish, shellfish and crabs to live. Water quality data collected by the Maryland Department of Natural Resources' (DNR) Chesapeake Bay Monitoring program in the last week of June 2012, show 11.7 percent of the volume of Maryland portion of Chesapeake Bay has low dissolved oxygen levels (less than 2 milligrams per liter). This is **better** than the long-term (1985-2011) average low oxygen volume in late June (21.2 percent) and is a slight improvement compared to oxygen conditions measured two weeks earlier (Figure 1). **Overall, poor oxygen levels in the Bay in late June were determined to be the 4th best since 1985.** The figure below shows that, on average, the volume of water with oxygen levels too low to support most fish, crabs, clams and worms in the Bay increases during summer to a peak in July.

Figure 1.



The University of Maryland-NOAA EcoCheck partnership recently provided a Chesapeake Bay summer hypoxia forecast in collaboration with researchers from the University of Michigan. Lower than average nitrogen levels flowing into Chesapeake Bay from the Susquehanna River this winter and spring resulted in a forecast prediction that low oxygen (poor) conditions in the Bay in July would be moderate (better than the long-term average) (<http://ian.umces.edu/ecocheck/forecast/chesapeake-bay/2012/>).

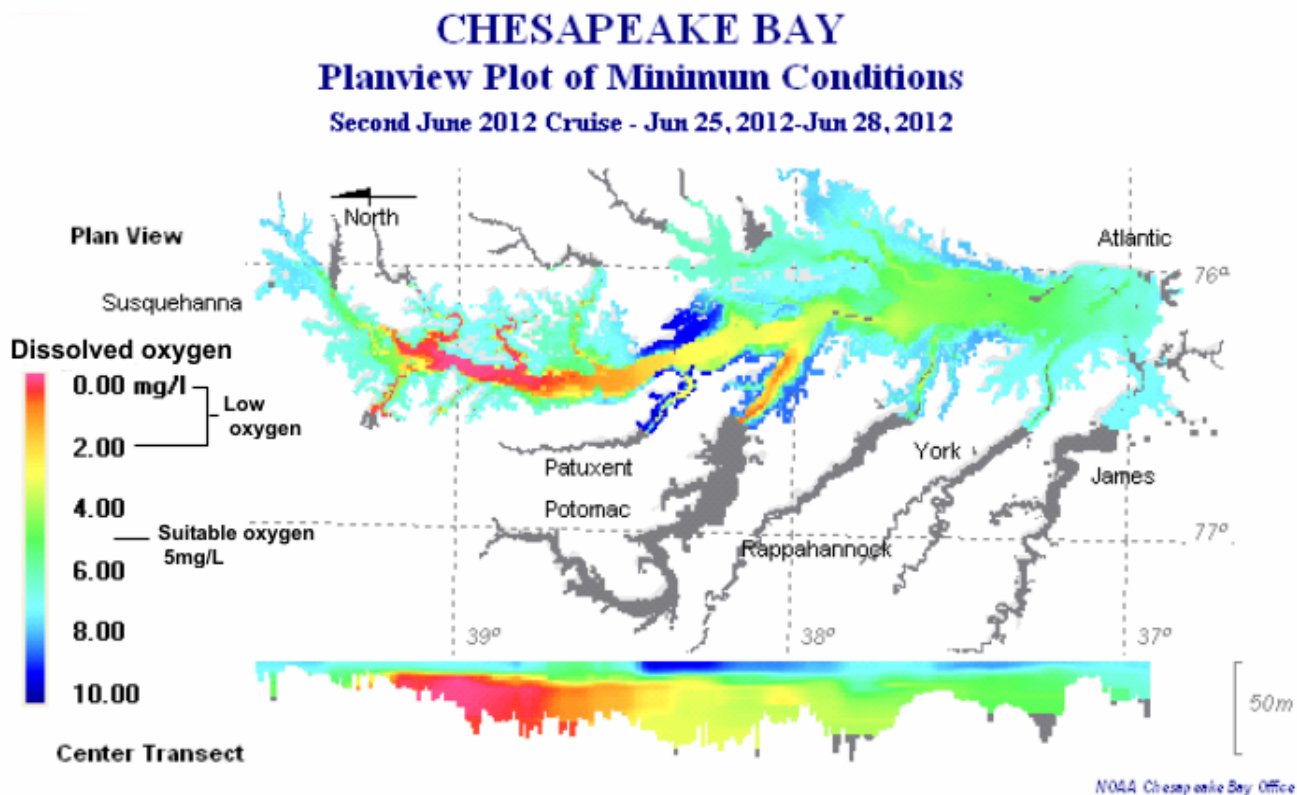
What are Dead Zones?

In the Chesapeake Bay, surface and deep waters are naturally separated each summer as warmer and less salty surface waters float on top of cooler, more salty waters deeper in the Bay. Algae and plants can't create oxygen by photosynthesis in deeper waters and oxygen here is gradually consumed through respiration by animals, plants and bacteria. Oxygen levels in deep areas of the Bay begin to decline in the late spring, sometimes to the point where there is no oxygen (anoxia) and only anaerobic bacteria can survive.

Long-term data show that, as the summer progresses, the volume of the Bay with low oxygen will increase to a peak in July, but can continue into the early fall, when cooler temperatures and fall storms mix the waters. As witnessed last year, strong winds from the nearby passage of a hurricane can mix the surface and deep waters and, at least temporarily, reoxygenate deep waters of the Bay.

Combining Maryland's Bay data with lower Bay data collected for the VA Department of Environmental Quality for the same period can help provide a more complete picture of oxygen conditions throughout the Bay. With the NOAA - Chesapeake Bay Program Office's INTERPOLATOR program and these mainstem Bay datasets, a snapshot of dissolved oxygen conditions and distribution throughout the main Bay can be developed. The distribution of oxygen across the Bay's bottom waters and as a vertical profile from the head of tide to the Bay mouth are shown for late June 2012 (**Figure 2**). Colors from orange to red indicate low oxygen levels. Anoxic conditions (less than 0.2 mg/L) are evident between the Baltimore Harbor entrance and Severn River.

Figure 2.



Maryland DNR will continue to monitor the oxygen conditions of the Bay and lower tidal rivers every two weeks this summer and will provide updates of oxygen conditions on the Eyes On The Bay website. While current dissolved oxygen conditions do not appear to have been impacted by the nutrients, sediments and freshwater from last year's Tropical Storm Lee, DNR will continue to evaluate the potential carryover impacts of this storm on other water quality issues, Bay grasses, fish and shellfish. Implementation of the Baywide TMDL commits Maryland and the other Bay watershed States to accelerate their nutrient and sediment reduction strategies which should reduce the size and duration of the Bay's 'dead zone'.

What you can do:

Responsible Marylanders know that reducing polluted runoff is the key to a healthier Chesapeake Bay. Here's how you can do your part now and make a difference:

- Limit your use of lawn fertilizers
- Maintain your septic system
- Drive less
- Plant a tree

For more information:

- Real-time Maryland Tidal Water Quality Conditions: www.eyesonthebay.net
- Restoring the Chesapeake Bay: Maryland's Actions & Progress: www.baystat.maryland.gov/

- What You Can Do to Help the Bay: www.baystat.maryland.gov/what_you_can_do.html