

## NEWS AND INFO

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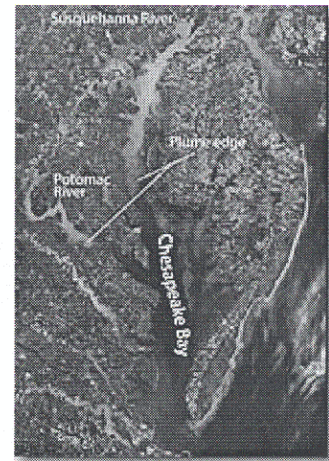
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## Dissolved oxygen forecast

Based on the amount of nutrients -- specifically nitrogen and phosphorous -- that have flowed into the Bay this spring, Bay Program scientists forecast that 2005 summer dissolved oxygen levels will be moderately to severely low in the Bay's deep waters, and could rank among the five worst summers in the past twenty years. [See below for [latest update](#)]

The impact of these low oxygen levels on the Bay's [crabs](#), [oysters](#), [fish](#) and other living resources is difficult to predict at this time, but will be closely monitored as the summer progresses.

The forecast is built upon the correlation between the amount of pollution flowing into the Bay in spring months and the volume of anoxic water, or water with less than 0.2 mg/l oxygen, in the summer. Given that this forecast is based upon average conditions from previous summers, researchers expect that this value may change slightly through the summer from unforeseeable conditions, such as severe weather events.



### What is dissolved oxygen? How does it affect the Bay?

All higher life forms in the Chesapeake Bay--from the worms that inhabit the Bay's muddy bottom to the fish and crabs found in its rivers--need oxygen to survive. While all of these species need oxygen, the amount of dissolved oxygen, or oxygen in the water, that each species needs is quite different. For example, Striped Bass require 5 mg/l, whereas blue crabs need slightly less, about 3mg/l.

It is normal for Bay dissolved oxygen levels to fluctuate throughout the year, but when dissolved oxygen levels drop for a sustained period of time, the organisms in that area have trouble surviving. Oftentimes, mobile organisms inhabiting those areas migrate to areas where there is more dissolved oxygen. Those unable to move to healthier waters--such as [oysters](#) and [benthic worms](#) - may not survive.

### Figures:

- [Figure 1](#) - 1998 Mean Summer Dissolved Oxygen
- [Figure 2](#) - Conceptual Diagram illustrating the environmental conditions that will lead to anoxia
- [Figure 3](#) - (updated June 2005) Historic relationship between nutrient loads and mean summer volume of anoxia water in the Bay's mainstem
- [Figure 4](#) - (updated June 2005) Summer 2005 anoxic volume forecast for Chesapeake Bay mainstem

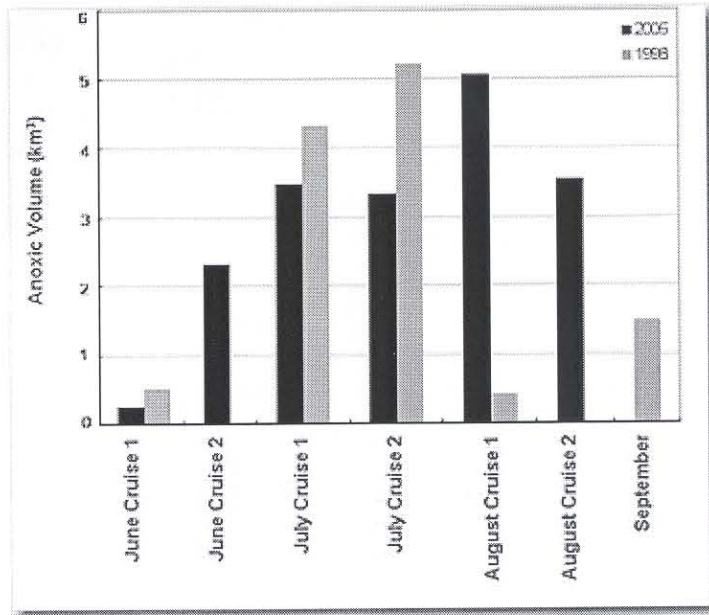
## Current Forecast Update

## August 23-25, 2005

Water quality monitoring data collected August 23 to 25 showed a slight decrease of anoxic - or oxygenless - water in the mainstem of the Chesapeake Bay since August's first monitoring cruise. Although the anoxic volume decreased, it did not improve as much as Bay Program scientists would have expected. Scientists believe that the lack of wind in August limited the number of mixing events in the Bay, thus reducing the amount of oxygen absorbed by the water.

Late August cruise data showed:

- About 3.5 km<sup>3</sup> or about 7% of the Bay's mainstem is anoxic.
- About 14.7 km<sup>3</sup> or 28% of the mainstem had oxygen levels less than 5.0 mg/l.



## How Current Conditions Compare to the Summer 2005 Forecast

While the dissolved oxygen levels are lower than expected, August water quality conditions are similar to those forecasted in the Bay Program's summer ecological forecast issued in May. In the forecast, Bay scientists hypothesized that this summer's conditions would be comparable to those seen in 1998, the year with the most similar nutrient pollution loads and freshwater flow into the Bay.

In June and July 2005, oxygen levels were slightly better than those monitored in 1998. However, August 2005 data showed a spike in the level of oxygen deprived water in the Bay. As typical, the lowest dissolved oxygen levels are observed in the deeper waters of the Bay, while upper parts of the Bay's water column retain enough oxygen to support resident fish and shellfish.

- [Plot of water temperature](#) (August 23-25, 2005) - Deeper waters remain above 68 degrees Fahrenheit (20 degrees Celsius)
- [Plot of dissolved oxygen](#) (August 23-25, 2005) - Areas with colors ranging from yellow to pink do not have sufficient oxygen to support most living resources

## Low Dissolved Oxygen in the Bay

Low dissolved oxygen levels stress aquatic life by degrading their habitat. When oxygen levels drop, species requiring higher oxygen intake must move to other areas of the Bay, or they may suffocate due to lack of oxygen.

Bay scientists will be on the water from August 23 to 25 to continue track conditions. Updated data will be posted once available.