

# Background



**Chesapeake Bay Program**  
A Watershed Partnership

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Like their terrestrial counterparts, all aquatic life — from worms burrowing in the Bay's bottom to striped bass swimming along the surface — needs oxygen to survive. The amount of oxygen needed varies with time of year and species. Oxygen needs vary even with the life stage of a species; young species tend to be more sensitive to low oxygen conditions than adults. Also important is the duration of periods with low oxygen. Most species can survive short periods of reduced oxygen, but suffer during longer periods.

## New Chesapeake Bay Water Quality Criteria: Dissolved Oxygen

### Migratory Fish Spawning & Nursery Use

6 mg/l averaged over 7 days with a 5 mg/l 1-day minimum from February through May.

From June through January, the shallow-water/open-water use criteria apply. This is intended to protect larval and early juvenile stages of freshwater species in upper tributaries and the Upper Chesapeake Bay. The early life stages are often more sensitive to low oxygen levels than adult fish

### Shallow-Water Bay Grass and Open-Water Fish and Shellfish Uses

5 mg/l as a 30-day average in tidal habitats with greater than 0.5 parts per thousand salinity or 5.5 mg/l as a 30-day average in tidal habitats with 0-0.5 parts per thousand salinity, with a 7-day average of 4 mg/l and an instantaneous minimum of 3.2 mg/l.

This provides enough oxygen for the survival of larval and juvenile fish found in these areas. The minimum level is enough to prevent lethal effects for the Atlantic and shortnose sturgeon, the latter of which is listed as an endangered species.

### Deep-Water Seasonal Fish and Shellfish Use

3 mg/l as a 30-day average, with a 1-day mean of 2.3 mg/l and an instantaneous minimum of 1.7 mg/l from June through September. From October through May, the shallow-water and open-water use criteria apply.

During the summer, these oxygen levels would protect eggs and larvae of bay anchovy, one of the most abundant fish in the Chesapeake and a critical link in the food chain, as well as crabs, oysters and bottom feeding fish like spot and flounder.

### Deep-Channel Seasonal Refuge Use

An instantaneous minimum of 1 mg/l from June through September. From October through May, the shallow-water/open-water use criteria would apply.

These levels are intended to protect worms, clams and other bottom dwellers that can tolerate low oxygen levels during the summer and provide food for crabs and bottom feeding fish. In winter, these same areas are important foraging areas for blue crabs and finfish (striped bass, white perch, sturgeon) that seek refuge in these deeper, warmer waters.

The Chesapeake Bay Program is restoring the Bay through a partnership among the U.S. Environmental Protection Agency representing the federal government, the State of Maryland, the Commonwealth of Pennsylvania, the Commonwealth of Virginia, the District of Columbia, the Chesapeake Bay Commission, and participating citizen advisory groups.

