LONG ISLAND SOUND STUDY

A Partnership To Restore And Protect The Sound

COMPREHENSIVE CONSERVATION AND MANAGEMENT PLAN FOR LONG ISLAND SOUND

How Low Dissolved Oxygen Conditions Affect Marine Life In Long Island Sound

The information presented here is based on results of laboratory research conducted by the US Environmental Protection Agency's Environmental Research Laboratory in Narragansett, Rhode Island and trawl surveys conducted by the Connecticut Department of Environmental Protection Marine Fisheries Division. Examples are provided for a series of low dissolved oxygen conditions. The timing, duration, and areal extent of low dissolved oxygen conditions are very important in determining the overall affect on marine organisms.

The Long Island Sound Study is using this data to identify dissolved oxygen levels protective of Long Island Sound aquatic resources and to guide management efforts. For additional information, please contact Mark Tedesco in the Long Island Sound Office at (203) 977-1541.

Dissolved Oxygen	Consequences
1.0 mg/L	■ High Lethality (75-90%) in fishes: pipe fish, winter flounder, summer flounder, Atlantic menhaden. ■ Lethality (~ 25%) in three additional fishes: windowpane flounder, tautog, fourspine stickleback. ■ Increased lethality (50%) in juvenile crustaceans: American lobster, sand shrimp, grass shrimp.
1.5 mg/L	■ Lethality in some fishes: pipe fish, 50%; winter flounder, 35%; summer flounder, 25%; Atlantic menhaden, 20%. ■ Lethal threshold for some juvenile crustaceans: American lobster, sand shrimp, grass shrimp.
2.0 mg/L	■ Reduce growth (~ 50%) in juvenile summer flounder and juvenile grass shrimp. ■ Lowest safe dissolved oxygen for survival of juveniles of several fish and crustaceans.

2.5 mg/L	■ Lethality threshold (15%) for the less sensitive planktonic larvae of crustaceans. ■ Growth reduced (25%) in juvenile grass shrimp and summer flounder; 50% in American lobster. ■ Additional species of bottom-living fishes show low dissolved oxygen avoidance.
3.0 mg/L	■ Greater lethality (~75%) among the most sensitive planktonic crab larvae. ■ Growth reduced (50%) in other, less sensitive planktonic crab larvae. ■ Growth reduced in juvenile American lobsters by 30%. ■ Bottom-living fishes begin to show low dissolved oxygen avoidance.
4.0 mg/L	■ May reduce survival (30%) of very sensitive planktonic larvae of <u>some</u> crabs.
5.0 mg/L or greater	■ Few adverse effects expected.

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http://www.epa.gov/region01/eco/lis/

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