

## **WATER QUALITY OF QUONOCHONTAUG POND-2007 UPDATE**

Ted Callender, Vice-President and Chair, Environment Committee, Salt Ponds Coalition

Now that plans for dredging the Quonochontaug breachway are firmly underway, it seems like a good time to review and update the water-quality status of Quonnie Pond. For this missive, I will concentrate on dissolved oxygen (DO) as this parameter is central to evaluating the aquatic health of the Pond.

Extensive monitoring for DO, temperature, salinity, and chlorophyll-a in Quonnie Pond was initiated in May 2006 and has continued in 2007. In 2006, four stations were monitored every two weeks from the middle of May to the middle of October. Two stations were shallow and two others were located in deeper water. In 2007, eight stations were sampled weekly during the same time period. Two stations were shallow (same as in 2006) and six stations were located in deeper water. In both years there were two stations in the eastern basin (one shallow and one deep). In 2006 there was one shallow and one deep station in the western basin; six stations were added in the western basin in 2007. Because it is important to characterize the entire Pond and the deep stations are widely distributed, I will discuss only the deeper water data.

For both years (2006 and 2007), the water column in the eastern basin (station located off mouth of breachway) was essentially saturated with DO. This is not surprising as these eastern basin waters receive substantial input of ocean water from Block Island Sound. At only two sampling times (July 19 and September 13, 2007) did bottom water DO saturation at these eastern basin sites fall below 80% and then only to 65%. In the western basin, in 2006, at the Judge's Rock station, DO saturation levels in bottom waters declined to less than 40% once in late July. Before and after this date, DO saturation values fluctuated between 60 to 90%. In 2007, DO saturation at the Judge's Rock station never exhibited values below 70% except for one time, July 19. At this time the bottom water DO saturation was 45%. On this particular day, low DO saturation values (30-40%) occurred at most stations in the western basin. Other than those samples, bottom water DO saturation values in the western basin never declined below 70%. The explanation for the one low DO period is that there was substantial rain a week prior to this sampling and little wind so that the water column was stratified, isolating surface waters from bottom waters.

The bottom line, considering the above data, is that for 2006 and 2007, the western basin of Quonochontaug Pond has not shown substantial dissolved oxygen depletion in bottom waters. To be sure, John King's DO sensors that rest on the bottom sediment will show more oxygen depletion but even these data do not decline below 20% saturation with most values clustering about 55%. Dredging of the Quonochontaug breachway can only improve the situation by bringing in an additional 10-15% of well-oxygenated water to the western basin. The nutrient and chlorophyll (an estimate of phytoplankton abundance) data for the Pond suggest that excessive nitrogen above that required for moderate plankton growth does not come into Quonnie Pond at this time. The best course of action appears to be to continue monitoring the water quality (dissolved oxygen, temperature, salinity, chlorophyll) and nutrient content (especially forms of nitrogen) of Quonnie Pond waters before, during, and after the dredging process.

In spite of the good news about dissolved oxygen, shoreline residents should be concerned about septic system upgrades and low nitrogen lawn fertilization.