**Cyanobacteria Effects on White Perch Health in Missisquoi Bay, Vermont**

Abstract

Cyanobacteria blooms occur in Lake Champlain every summer with the most severe occurring in Missisquoi Bay. Blooms receive a lot of attention in regards to human impacts but little research has been done on their sub-lethal effects on fish populations. The goal of this study was to monitor white perch (*Morone americana*) health before, during and after cyanobacteria blooms in Missisquoi Bay. We hypothesized that white perch health indicators would decrease during cyanobacteria blooms in Missisquoi Bay. White perch were sampled from Missisquoi Bay using gill nets in July, August and October 2013. Additional samples were collected in the Inland Sea, Mallets Bay and Main Lake. Fish health was assessed using Fulton's relative condition factor (K), hepatosomatic index (HSI; liver mass/fish mass) and a modified health assessment (Adams *et al.* 1993). HSI was significantly different among locations and date ($F = 28.9$, $p < 0.0001$). K was not significantly different among locations and date ($F = 1.7$, $p = 0.1346$). Health assessment scores in Missisquoi Bay were significantly different across months ($F = 3.1$, $p = 0.05$). White perch across all our sampling locations had a lower HSI during August, indicating that HSI decreases throughout the summer. Therefore, HSI does not seem to be affected by cyanobacteria blooms. We conclude that Missisquoi Bay white perch do not appear to differ in K and HSI compared to white perch from other locations in Lake Champlain with less intense blooms. Applying the modified health assessment to white perch from across the lake would be a stronger test of the potential for cyanobacteria to negatively impact white perch health.