Stayin' Alive: Effects of Disturbances on the Biodiversity of an Aquatic Ecosystem

Perkins, Madison (School: Gilmer High School)

The purpose of the research was to determine if the vegetation removal from a lentic habitat would affect the water quality or biodiversity. A ten-meter section of a pond had the terrestrial and aquatic vegetation removed while another ten-meter section retained all vegetation. Water quality readings were measured over a six-month period while the biodiversity of the habitat was measured by plankton net, seine, fish baskets, and Hester-Dendy apparatuses to check species richness and evenness. The winter water quality readings showed higher carbon dioxide readings, indicating the presence of more organisms. The vegetation provided cover to retain heat with a slightly warmer temperature of 0.69 °C compared to the non-vegetative zone in the winter months. However, the spring readings had a higher dissolved oxygen reading in the non-vegetative zone of 7.56 g/mL over the vegetative zone average dissolved oxygen reading of 5.10 g/mL. The null hypothesis two stating no change in biodiversity due to vegetation removal was accepted due to the t-test values were lower than the t critical values, indicating no significant change in biodiversity. The Jaccard's Similarity Index showed an 88% similarity for the winter readings and 94% similarity for the spring readings between the two experimental zones while the Percent Similarity Index showed an 82% and 90 % similarity. The seasonal climate differences will cause changes in organism migration patterns, vegetation type, and plant growth. The biodiversity study should be continued for an entire year to account for organism, temperature, and vegetation differences for seasonal changes.

Awards Won: