April 2011

Biology @ Acadia

EXPLORING CONTROL REGION VARIABILITY IN STRIPED BASS (*MORONE SAXATILIS*) MITOCHONDRIAL DNA FOR USE IN CHARACTERIZING POPULATIONS)

Hebert, Elise, Dr. Trevor Avery and Dr. Don Stewart
Department of Biology, Acadia University, Wolfville, NS

In the past 30 years Striped Bass populations have declined along the eastern coast of North America, and Canadian populations are considered threatened (COSEWIC, 2004). Historically, there were at least five separate spawning populations. Currently only two populations remain in Atlantic Canada located in the Shubenacadie (NS) and Miramichi (NB) Rivers. For this study the U.S.A. is considered a single population. Distinguishing among populations is important so that changes in population size can be monitored through catch data and to help management practices that are generally population specific. To differentiate populations of Striped Bass, the use of meristics, morphometrics and, more recently, DNA analysis have been used. This study was undertaken to determine if Atlantic Canada Striped Bass populations could be differentiated using the mitochondrial control region, and to characterize control region variability. During May and June of 2008 and 2010, fin clip tissue samples were taken from Striped Bass spawning on the Shubenacadie River by local anglers. Using 5AS and R2RC primers, a portion of the mitochondrial control region was sequenced. These sequences are representative of the Shubenacadie River population. During July and August, Striped Bass fin clips were taken from the Gaspereau River, the Guzzle, and Five Islands in Nova Scotia. These fish probably represent a mixed population (Canada and U.S.A.). Samples were analyzed using neighbour joining and maximum parsimony phylogenetic trees. Variability within the mitochondrial control region was very low. Therefore, populations within the Bay of Fundy could not be differentiated using this genomic region. More research is needed to conclude that mitochondrial control region sequences are not useful in differentiating populations.

Elise Hebert graduated from St. Patrick's High School in Halifax in 2007. She is currently completing her Honours thesis in her fourth year at Acadia. While at Acadia, Elise received an NSERC undergraduate research award to fund her honours research and was on the Dean's List for the past two years. Elise was also the captain of the Acadia Women's Soccer Team, head of the Relay For Life Entertainment Committee and member of the Biology Society. In the future, Elise hopes to attend medical school.