**Predicting the effects of climate change on lake trout (Salvelinus namaycush) distributions in Ontario**

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Increasing lake water temperatures in response to climate change are expected to alter the distribution, thermal habitat, and growth of many aquatic organisms, including an ecologically and economically important coldwater fish species, lake trout (*Salvelinus namaycush*). My project will examine the effects of climate change on the distribution of lake trout populations in Ontario. Using a historical dataset of 9885 Ontario inland lakes surveyed between 1957-1986 and a contemporary dataset of 700 lakes sampled between 2007-2012, I will identify the importance of environmental characteristics, such as lake chemistry, lake morphology and presence of predators and prey on lake trout occurrence in Ontario. Preliminary analysis using a classification tree indicated that maximum depth and mean August air temperatures explained the most variation in lake trout occurrence, suggesting the importance of lake morphology and climate on lake trout occurrence in Ontario. I will further compare a suite of statistical approaches (e.g. logistic regression, artificial neural networks, linear discriminate analyses) to identify which environmental characteristics are important predictors of lake trout presence and absence. Subsequently, I will predict future lake trout occurrence across Ontario for the years 2050 and 2070 by incorporating future climate change scenarios from twenty general circulation models and four greenhouse gas scenarios into our best predictive model of lake trout occurrence. Through understanding the main drivers that control lake trout populations and how future climate changes may impact them, we may further improve fisheries management decisions before lake trout become extirpated in Ontario lakes.