We are seeking a PhD student to assess the statistical limitations and biological inference of contemporary long-term ecological monitoring study designs and datasets, to help reveal the extent that existing approaches may be limited in guiding wildlife conservation programs or documenting broader patterns of environmental change. Currently, few robust long-term datasets of wildlife abundance exist, and there is the need to evaluate both the optimal design of long-term monitoring studies and the reliability of surrogate datasets (e.g., harvest statistics, habitat loss timeseries) in population analysis. Indeed, our previous work on carnivores and waterfowl (e.g., Murray et al. 2010, Ecology 91: 571-581; Murray et al. 2008 J. Wildl. Manage. 72: 1463-1472) revealed shortcomings that call into question the broader utility of existing approaches in population analysis and management. Through timeseries analysis, statistical power analysis, and simulation modeling, the project will address questions such as: 1) population timeseries attributes that are needed to reliably detect a numerical decline or increase; 2) the most robust statistical methods for assessing cyclicity and attenuation in fluctuating animal populations; 3) optimal design of wildlife surveys in heterogeneous and changing landscapes; and 4) forecasting population viability using limited or biased data. The student will have the opportunity to develop specific research questions within the scope of the larger project, and our lab-based model system (i.e., Chlamydomonas, see Borlestean et al. 2015 Frontiers in Ecology and Evolution doi: 10.3389/fevo.2015.00037) is available to test specific model predictions in an empirical context.

The funding package includes a competitive stipend, foreign tuition waiver (if the student is not a Canadian citizen or permanent resident) as well as coverage of all research/travel expenses. The successful candidate will have an MSc degree in Ecology, Mathematics, Statistics, or related field, evidence of peer-reviewed publications, and very strong quantitative skills. The successful candidate will join the Integrative Wildlife Conservation laboratory at Trent University (www.dennismurray.ca).

To apply, send a cover letter, curriculum vitae, unofficial academic transcript, and contact information for 3 references, to: Dennis Murray (dennismurray@trentu.ca). The successful candidate will begin enrolment by January or May 2018, and we will accept applications until a suitable candidate is found, so apply early.