You are invited to attend the presentation of the

Final PhD Defense
of
Jody Reimer

Date	March 25, 2019
Time	11:00 a.m.
Location	CAB 457

"**Predator and prey, past, present, and projected: modelling polar bears and ringed seals in a dynamic Arctic**"

The Arctic is warming twice as fast as the global average, with resultant changes in population dynamics, species distributions, food web structure, and ecosystem services. Our ability to successfully monitor ecological changes and manage vulnerable populations relies on our ability to predict and understand these responses. I will give a summary of some of the knowledge gaps in our understanding of Arctic ecology, focused on ringed seals—an indicator species for Arctic marine ecosystems—and polar bears—iconic symbols of climate change. I will highlight how applications of mathematical models to the study of these species can provide novel ecological insights both into historical processes and possible future scenarios. Further, this work illuminates surprising links between seemingly disparate mathematical modelling frameworks (matrix population models and stochastic dynamic programming), which I exploit to produce a novel method of model analysis. Mechanistic mathematical models are a powerful tool for exploring the unprecedented nature of climate change, and this work highlights the value they may bring both to applied and theoretical ecologists.