



Biology Seminar

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Tracking changes in marine ecosystems through interactions between top predators and their prey



Monday, February 10, 2020 | 12:00pm
HCK 132 Refreshments at 11:45am

Observing life in the vast and dynamic open ocean is a perpetual challenge for marine ecologists. Marine top predators such as seabirds, sharks and whales can be more conspicuous and accessible than the species they prey on, and integrate information from the bottom to the top of the food web. As such, it is often suggested that these species can be monitored as “sentinels” of ecosystem change. However, for predators to be effective sentinels, the ways in which changes in their distribution, behaviour, and demography reflect changes in the prey base must be carefully resolved. I present research on the ecology of marine predators including penguins and large fish, showing the insight that these animals can give into prey availability at multiple spatial and temporal scales. At the finest scale, I show how biologging technology and machine learning can identify the time and location of individual predation events at sea. I then use these events as a lens through which to explore how the environment

shapes prey abundance, distribution, and predator foraging strategy, using a case study of penguins feeding in a region of rapid ocean warming. At the broadest scale, I model population-level distributions of ecological communities, showing how species-specific responses to climate change in Alaska alter spatial overlap between commercially important fish and their prey. I also present a framework for incorporating predator-prey dynamics into conservation applications such as marine park design and fisheries management strategies, with the specific aim of conserving ecosystem function. By resolving predator-prey-environment interactions, I aim to understand what marine predators can tell us about the health of their ecosystems, so that we can better conserve them into the future.

Seminar Speaker Host: Toby Bradshaw

