Effects of Climate Change on the Canadian Arctic Wildlife

Summary

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Many northern ecosystems are undergoing major shifts related to climate change. This adds to increasing pressures due to resource development. An understanding of these transformations and of the significance of their consequences is critical to anticipating ways in which potential negative and positive effects to wildlife populations (and ultimately humans) may be mitigated or used through sound management. Our overall goal is to provide the wildlife-related knowledge necessary to conduct the integrated regional impact studies of the 'Eastern Arctic' and 'Hudson Bay', two of the four regions identified by ArcticNet to conduct regional impact studies. In addition, we contribute to all international efforts synthesizing knowledge on biodiversity for the benefit of northern populations and policy makers. We work through 5 specific objectives. First, we identify the main vulnerabilities of Arctic wildlife with regards to climate change and resource development. Second, we monitor more than 30 wildlife populations (mostly tundra wildlife and marine birds) at study sites located in the Eastern Canadian Arctic (e.g., Belcher Islands, Rankin Inlet, Coats Island, East Bay-Southampton Island, Diggles Island, Deception Bay, Bylot Island, St.Helena Island). Third, we develop models to better understand the key interactions between species that drive the tundra food web. Fourth, we use data from our field work and from the literature to analyze past and present responses of wildlife to climatic variability in order to develop Impact Models. Finally, we project some wildlife patterns into the future by forcing these Impact Models with regional climate change scenarios. This project is a collaboration between ArcticNet researchers and a number of partners including the Canadian Wildlife Service (Environment Canada), Parks Canada Agency, Wildlife Conservation Society Canada, Nunavut Tunngavik Inc., Nunavut Wildlife Management Board, Baffinland Iron Mine Corporation, Department of Environment of Government of Nunavut, Nunavut General Monitoring Program, and many Northern communities, especially members of their Hunting and Trapping Organizations.

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Association of Canadian Universities for Northern Studies
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Parks Canada
Polar Continental Shelf Program
Sea Duck Joint Venture
The Kenneth M Molson Foundation
The Peregrine Fund
Université du Québec à Rimouski
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Publications

Articles Published in Refereed Publications

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Berteaux, D. and Gauthier, G., 2014, Long-term monitoring of the Bylot Island tundra ecosystem: what did we learn?, Arctic Biodiversity Congress, Norway, 1, Published


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Fauteux, D., Gauthier, G. and Berteaux, D., 2015, Effets directs de la prédation sur les lemmings du haut-Arctique, 6e colloque du département de biologie de l'Université Laval, 1, Published

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Gauthier, G. and Berteaux, D., 2014, Monitoring of terrestrial wildlife on Bylot Island in a global warming context: what did we learn after 20 years?, Arctic Change 2014, 1, Published
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Iverson S, Gilchrist HG, Forbes M, 2013, How changing ice conditions are affecting northern eider ducks, Ottawa-Carleton Student Northern Research Symposium, 1, Published

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