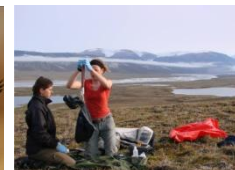


- *ArcticNet project profile (2008-11)*
- *Scientific priority issues*

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Project profile #15 – March 2011

Effects of climate change on the Arctic wildlife

Summary

Many northern ecosystems are undergoing major shifts related to climate change. An understanding of this transformation and of the significance of its 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.



Climate change vulnerability of Arctic wildlife

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. We work through 4 specific objectives.



Arctic wildlife monitoring

First, we identify the main vulnerabilities of Arctic wildlife with regards to climate change. Second, we monitor more than 30 wildlife populations, mostly tundra wildlife and marine birds, at nine main study sites (see map).

Third, we use data from our own 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.

Study site locations



Bylot Island, Rankin Inlet, Igloodik, Steensby Inlet, East Bay (Southampton Island), South Baffin Island, Belcher Islands, St-Elena Island, and Coats Island.

Local collaborations

Nunavut Wildlife Management Board, Communities of Igloodik, Coral Harbour, Ivujivik, Belcher Islands, Cape Dorset, Rankin Inlet, and Pond Inlet, Nunavut Tunngavik Incorporated, Nunavut Field Unit of Parks Canada, Staff of Sirmilik National Park of Canada, Joint Park Management Committee of Sirmilik National Park of Canada, Nunavut Research Institute (Arctic College), Department of Environment of Government of Nunavut, Baffinland Iron Mine Corporation, Canadian Wildlife Service,

Hunters and Trappers Organizations of all communities located near field sites.

Questions to Researchers

ArcticNet recognizes the importance of framing climate change issues from various perspectives. Below we are asking a few questions to the project leaders in order to identify scientific priority issues and demonstrate how the research results can be used by policy and decision-makers in terms of community and climate change adaptation planning in the Eastern Canadian Arctic.

1) From your own research perspective can you identify and describe the key issues that are (will be?) affecting social, economic or environmental conditions in the Eastern Canadian Arctic?

From our perspective of wildlife biologists, the key priority science issues that need our attention are: 1) detecting changes in wildlife distribution and abundance; 2) better understanding the structure and functioning of food webs because they generally explain changes in wildlife patterns; 3) elucidating the roles of climate in wildlife distribution and abundance; 4) modeling the effects of climate on wildlife patterns; 5) projecting arctic wildlife patterns into a warmer future.

2) How will your ArcticNet project contribute to a better understanding of these issues affecting the Eastern Canadian Arctic?

Our first contribution is to monitor more than 30 wildlife populations (mostly birds and mammals) distributed from the Low to the High Eastern Arctic. There is no possibility to understand environmental issues affecting the Eastern Canadian Arctic without a detailed monitoring of its wildlife. Our second contribution is to improve our understanding of the food webs of the Arctic and, more generally, of the functioning of arctic ecosystems and wildlife communities, including the roles of climate in structuring wildlife patterns.

Wildlife monitoring tells us which wildlife populations' increase or decrease, but detailed analyses of food webs and ecosystems tell us the reasons of these changes.

Our third contribution is to work at models that will help us to anticipate future changes in wildlife patterns in the Eastern Canadian Arctic. Although projections into the future cannot be very precise, they are still very useful to inform current wildlife management decisions.

3) Provide an example of how the results of your project may contribute to the decision-making process with respect to these issues.

Wildlife management, biodiversity conservation, and management of protected areas in the Eastern Arctic are informed and influenced by our project. A few examples: we work closely with the Canadian Wildlife Service to monitor wildlife populations of high importance to Inuit communities (e.g. eider ducks in the Belcher Islands), we provide a large portion of the information available to Parks Canada to monitor the ecological integrity of Sirmilik National Park, we examine environmental impacts of mining operations on Baffin Island in close collaboration with Baffinland Iron Mines Corporation, we work with the Department of Environment of the Government of Nunavut to examine the ecology of several tundra predators and help determining best management practices, etc.

General information

Contact us if you have suggestions, feedback or questions regarding the research projects presented in this newsletter.

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Upcoming Newsletter

Researcher

Greg Henry

Research project

Impacts of Vegetation Change
in the Canadian Arctic:
Local and Regional Assessments