

Arctic Wildlife Observatories Linking Vulnerable EcoSystems (ArcticWOLVES)

A study of the impact of climate change on tundra wildlife

Gilles Gauthier and Dominique Berteaux

Overview

- ArcticWOLVES is an international initiative
- The project will build a network of circumpolar wildlife observatories in order to assess the current state of arctic terrestrial food webs over a large geographical range
- Major aims:
 - To determine the relative importance of bottom-up (resources) and top-down (predators) forces in structuring arctic food webs
 - To examine how climate affects these trophic linkages and may impact terrestrial animal biodiversity
- The project will also provide baseline information to evaluate current and future population trends for several species

Scope of the project

- The project is a Canadian-lead initiative
- It currently involves more than 40 researchers from 9 countries:
 - Canada, USA, Norway, Sweden, Denmark, Netherlands, Finland, UK and Russia
- Over 12 field sites in the circumpolar world (6 in Canada)
- In Canada:
 - 13 principal investigators
 - Over 20 scientific and northern collaborators
 - More than a dozen graduate students and post-doctoral researchers

Investigators in Canada

Gilles Gauthier	Université Laval (leader)
Dominique Berteaux	Université du Québec à Rimouski (co-leader)
Joël Bêty	Université du Québec à Rimouski
Charles Krebs	University of British Columbia
Douglas Morris	Lakehead University
Robert Jefferies	University of Toronto
Donald Reid	Wildlife Conservation Society of Canada
Kenneth Abraham	Ontario Ministry of Natural Resources
Esther Lévesque	Université du Québec à Trois-Rivières
Josée Lefebvre	Canadian Wildlife Service
Guy Morrison	Canadian Wildlife Service
Suzanne Carrière	Government of the Northwest Territories
Robert Rockwell	American Museum of Natural History



First ArcticWOLVES meeting, Quebec City, 13-15 April 2007

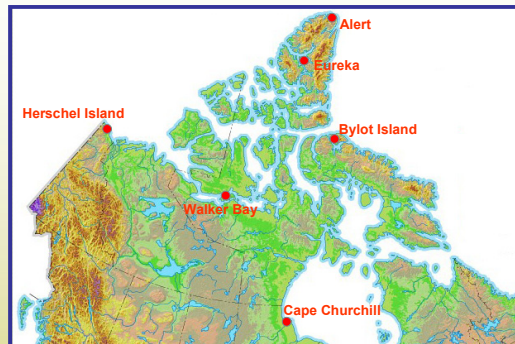
Originality of the project

- Inclusion of a large array of key wildlife species (e.g. geese, shorebirds, avian predators, lemmings, foxes, weasels)
- Focus on INTERACTIONS among these species
 - Predator-prey
 - Herbivore-plant
- Spatial replicates over a large latitudinal and longitudinal gradient
- Use of standard protocols across all sites
- A 3-year project (2007-2009) but most intensive in 2007 and 2008

Management of the project

- The project is run by a management committee composed of:
 - 6 researchers (1 per field site)
 - 3 representatives from communities (Pond Inlet, Aklavik and Churchill)
- Regular meetings and workshops in northern communities
- Extensive interactions with northern agencies managing wildlife
 - Parks Canada
 - Environment Canada
 - Territorial governments
 - Nunavut Wildlife Management Board
 - Wildlife Management Advisory Council of the Yukon North Slope
- Hiring of northerners to participate in the field work

Primary study sites in Canada



Field station of Bylot Island, one of the primary study sites of ArcticWOLVES in Canada

Theme 1: Trophic dynamics of food webs

- A dominant view is that resource abundance controls Arctic terrestrial food webs
- An alternative hypothesis is that top-down processes driven by predators are the primary forces structuring arctic communities
- Response to climate change will differ according to how food webs are structured

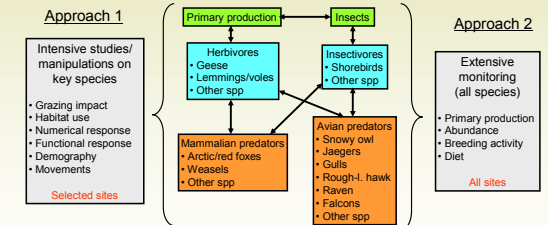


Photo: Nicolas Lecomte



Theme 2: Climate change and biodiversity

- Study of the impacts of climate change on terrestrial animal biodiversity
 - Measure the abundance, distribution, and phenology of reproduction of several wildlife species to build a spatially-explicit database
 - Assess recent changes in wildlife abundance and use by northern people in relation to climatic change
 - Conduct field experiments to measure the effects of key climatic events on herbivores
 - Combine western science with traditional knowledge



Funding and supporting agencies