Arctic Predators as Indicators of Tundra Ecosystem State. A Norwegian IPY proposal under the ArcticWOLVES initiative ID No: 672

Project leader: Nigel Yoccoz, Universitetet i Tromsø

Project summary

Strongly cyclic interaction between plants, herbivores and predators typically drives the food web dynamics over large tracts of the arctic tundra biome. These interaction cycles, however, now appear to be fading out at the southern edge of tundra, possibly due to climate warming. The Arctic Climate Impact Assessment (ACIA) highlights this change, if it was to spread further north into the tundra biome, to be one of the key processes by which terrestrial arctic biodiversity and ecosystem functioning could be lost. However, ACIA also acknowledged that there is currently very little research and monitoring that could detect dampened food web cyclicity and predict its consequences. The present IPY proposal is devoted to improve on this state of affair. Specifically, we propose to conduct research so as to establish arctic predators as predictors (indicators) of change in food web dynamics, based on the principle that species at the top of food webs often are most vulnerable and/or sensitive to changes. Our main research effort will be to calibrate a number of indicator parameters against data on food web structure from a number of sites distributed circumpolar within the international ArcticWOLVES initiative. The aim is then to establish a robust set of indicators to be used in large-scale/long-term research and monitoring of tundra ecosystem state. We intend to cover a large part of the Russian sector of the tundra biome and to involve (and fund) a large team of Russian ecosystem ecologists and students. If funded, the project will represent a boost for Norwegian-Russian cooperation on research and monitoring of tundra ecosystems.