



Lead Author e-mail: donald.mclennan@aandc.gc.ca

Title: *The Role of the Canadian High Arctic Research Program in Arctic Monitoring*

Donald McLennan¹

¹*Canadian High Arctic Research Station*

The immediate need for effective monitoring and reporting of arctic ecological change as a key component of successful adaptation has been widely identified, and is fundamental to assessing and anticipating gradual change and potential tipping points, and for making informed, proactive management decisions. However, implementing such a program is complicated by the ecological diversity and spatio-temporal variability of arctic ecosystems and the potential impacts of multi-scalar and evolving natural and anthropogenic stressors, and is constrained by the vast areas to be monitored, costly and difficult access, and the low density of long term monitoring locations.

In the face of these difficulties, it is proposed that CHARS could facilitate environmental monitoring for the Canadian Arctic through implementation and/or coordination of the following key actions.

1) Work with the arctic science community to develop a world-class environmental monitoring station at CHARS that will implement ecosystematic, hypothesis-based environmental research and monitoring, develop best practices and provide training opportunities for Northerners, coordinate these approaches across the network of arctic research stations and vessels, and use these data to develop ecological models that can be applied broadly to predict and validate change. 2) Work with northern governments presently conducting environmental monitoring to coordinate and integrate the results of ongoing programs. 3) Work with industry and regulators to provide baseline inventory and monitoring in resource rich areas that will support cumulative effects assessments and modelling, and the establishment of regional thresholds for Valued Ecosystem Components. 4) Work with educators and communities to build on ongoing community-based monitoring initiatives and traditional knowledge sources, so that this information can contribute meaningfully to a national synopsis of arctic ecosystem condition and change. 5) Build on and support the Circumpolar Biodiversity Monitoring Program (CBMP), including monitoring design, and data management and distribution, and in particular, the ongoing international monitoring designs and approaches presently being developed by the CBMP Marine, Coastal, Freshwater, and Terrestrial Expert Monitoring Groups. 6) Collect and assess all available data and develop a defensible and repeatable 5 year synthesis of the condition of arctic ecosystems (State of the Canadian Arctic Report) that can inform Canadians and global circumpolar partners of emerging important ecological issues in the Canadian Arctic.

