Green Paper on AMAP-CAFF Coordinated Monitoring Effort

1.1 Introduction

Achieving sustainable development within the Arctic rests on the ability to maintain the integrity of Arctic ecosystems in light of rapidly increasing stressors such as climate change, contaminants, and economic development. In order to support science -based policy and decision-making for the sustainable use and conservation of the Arctic's living resources it is necessary to conduct sustained monitoring of key environmental variables. From it's beginning, the Arctic Council has identified monitoring as a key activity, coupled with assessments that address issues of importance to the Council. Two of the Working Groups of the Arctic Council have a monitoring mandate, the Arctic Monitoring and Assessment Program (AMAP) and the group on Conservation of Arctic Flora and Fauna (CAFF). AMAP's monitoring program is based on ongoing national and international monitoring activities. These are harmonized to the meet AMAP specifications for implementing a coordinated circumpolar monitoring program that is capable of delivering the data to meet AMAP's assessment needs. CAFF's monitoring is implemented through the Circumpolar Biodiversity Monitoring Program (CBMP). The purpose of this paper, is to further explore how AMAP and CAFF can look for opportunities to coordinate their monitoring programs to further strengthen our understanding of the processes driving change across the Arctic and the effects of these changes on Arctic ecosystems, and to identify possible actions to compensate for, or reverse the effects of these changes, with sustainability and sustainable use of Arctic ecosystems as the ultimate goals. The main part of the AMAP – CAFF Coordinated Monitoring will be implemented through National Programs that fulfill AMAP and CAFF needs.

1.2 AMAP monitoring

Priority issues covered by AMAP monitoring activities include the levels, trends and effects (on biota and humans) of specific contaminants (persistent organic pollutants – POPs, heavy metals, radionuclides, etc.) that are present in the physical environment or carried in the tissues of organisms. AMAP monitoring priorities also include the environmental consequences and effects of global climate change, stratospheric ozone depletion, the effects of pollution on environment and human health, and the combined effects of pollutants and other stressors on ecosystem components and humans. [1]

[1] A Strategy for Coordination of Monitoring Activities between CAFF and AMAP. Submitted to AC Ministers, November 2004. This document began the process of coordination by outlining the general approach to be used.

1.3 CAFF monitoring

The priority for CAFF's monitoring activities is monitoring species, their habitats and ecosystems, including population sizes and distributions; reproductive health and survival; food web and ecosystem integrity - including marine, terrestrial, coastal and freshwater; migration patterns; and assessment of the effects of climate change and other impacts both natural and human-induced, on biodiversity. This type of monitoring provides an overall view on the status and trends of species that live and breed in the Arctic and their habitats, on different/various temporal and spatial scales, and ecosystem health at large.[2]

1.4 An ecosystem -based approach to monitoring

If the monitoring strategies of the two Working Groups are viewed from the perspective of an integrated ecosystem-based approach (EBA), the manner in which the two monitoring programs fit together becomes clearer.

CAFF has the responsibility for monitoring ecosystems from the standpoint of species, their populations, habitats, and impacts on biodiversity resulting from a suite of stressors. AMAP is monitoring many of the relevant stressors, and their effects on Arctic ecosystems, e.g. climate change parameters, contaminants and UV radiation.

By bringing data series for the two monitoring programs together, a strong approach that can forge to maintain ecosystem health and structural integrity, resiliency, and sustainability. AMAP assessments of 1997 and 2002 demonstrated the potential for linkages between contaminant transport pathways and fate, and changes in climate and UV radiation. The ACIA report demonstrated that climate change will cause changes in biodiversity, but also noted that local human actions can be more influential on biodiversity in some cases than broad scale pressures of climate change.[3] To most accurately assess the changing state of the Arctic environment, and evaluate the causes for change, simultaneous measurement of physical climate variables, contaminant loadings, and biodiversity are essential.

Ultimately, this type of ecosystem-based approach relates back to the Indigenous and other local people, and sustainability of Arctic communities where people depend on biodiversity and ecosystem health for food, economic sustenance, and preservation of culture. Human health depends in part on stressors such as contaminants (e.g. in food), and UV radiation. Through a better, more comprehensive understanding of species and their populations, and the stressors affecting change to these populations, we may also identifying the stressors affecting the economic, social and cultural fabric of Arctic communities.

---

[2] Ibid.

[3] Arctic Climate Impact Assessment (ACIA). November 2004

1.5 Goals of the Coordinated Monitoring Efort

1. Form a more complete picture of the overall state of Arctic ecosystems, and their extent of structural integrity, resiliency, and sustainability.

2. Identify and/or quantify stressors affecting sustainability of Arctic ecosystems, and therefore the Arctic's living resources.

3. Seek efficiencies of operation as directed by the SAOs

To achieve these goals, the following objectives are proposed.

1.6 Objectives of the Coordinated Monitoring Efort

1. As far as possible take advantage of approaches already accepted by the Arctic Council (e.g., integrated ecosystem-based approach, large marine ecosystems) bring the existing data of the two monitoring programs together where possible for analyses.

2. To achieve a more cost efficient collection and storage of data, and a better use of the data collected in assessments and research.

3. Identify areas of commonality (species and/or sites and/or ecosystems), where data from the two programs *already exist* within national monitoring programs and analyze how the data overlap, where the linkages are, what the data is signifying, and where the gaps lay.

4. Based on the gap analysis, initiate projects to fill these gaps.

5. Establish better linkages between the findings of this coordinated monitoring program with those of other programs, within and outside the Arctic, in order to broaden the scope of understanding of the potential impacts of Arctic and global change.

6. Communicate the findings of this coordinated monitoring effort in published reports and maps, for use by policy-makers, environmental managers, indigenous people's organizations, international organizations, and the general public.

1.7 Proposed Approach to Initiating the Coordinated Monitoring Efort

For practical purposes, the coordinated effort will be based initially on activities already underway. Most of these activities are implemented at the national level. However, it may be necessary to propose relevant new components, e.g. if programs found in some Arctic

countries are not found in some others. As the coordinated effort matures, there may be increased opportunity for bi- or multi-national components.

Completion and acceptance of this Green Paper by both AMAP and CAFF are the first steps in initiating the coordinated effort.

Within each of the eight Arctic Council Member States, the AMAP Head of Delegation and the CAFF National Representative have identified examples of relevant on-going national monitoring activities. These activities are summarized in Table 1. Processing the information within Table 1, may require a joint meeting of the AMAP HoDs and CAFF NRs, augmented as needed by relevant experts, where the on-going activities of greatest relevance to the coordinated effort will be decided and proposed as initial activities. Over the course of 2007, the coordinated will continue to evolve and produce its initial products.

1.8 Expected High Priority Activities for the Initial Coordinated Efort

At CAFF's CBMP meeting in November 2006, and at the AMAP Climate Workshop in June 2005, experts noted that use of "integrated monitoring sites" is one of the best approaches for implementing monitoring of the type suitable for the coordinated AMAP -CAFF effort. The definition of a "site" is flexible and should be left to the countries and scientists to define, as they need. It will be clarified how the work can be coordinated with the ongoing work to establish a Sustainable Arctic Observing Network (SAON). Another good approach is a species network, for example projects on polar bears or reindeer, that evaluate the role of environmental factors, e.g. climate and contaminants, on their health and population trends in a way that allows data and information to come together and give a broader perspective.

It should be easy for the AMAP and CAFF representatives to identify relevant existing integrated monitoring sites or nodes in a species network that support the broad objectives of the coordinated effort. Once identified, these on-going activities would be considered as high priority candidates for inclusion in the coordinated effort.