

Memorandum 1/11/2018

## **KNO4: Enhanced assessment of marine biodiversity and anthropogenic stressors through integration of research and monitoring under CAFF-CBMP and AMAP**

This memo provides a summary of reports submitted on the session KNO4 organised at the Arctic Biodiversity Session in Rovaniemi, Finland on October 11 organised by *CAFFs Circumpolar Biodiversity Monitoring Programme (CBMP) and AMAP*.

### **Session Organisers:**

- Conservation of Arctic Flora and Fauna (CAFF) Arctic Council Working Group
- Arctic Monitoring and Assessment Program (AMAP) Arctic Council Working Group

**Attendance:** 60

### **Arctic Biodiversity Assessment recommendation themes most prominently addressed in the session:**

- Climate Change and Addressing stressors

### **Key points raised in the session that were important to note:**

- CAFFs CBMP Marine biodiversity monitoring programme is an adaptive monitoring program using a conceptual model and there is a need for information on the drivers that impacts the biodiversity.
- The multiple stressors discussed in the session (climate change, cryosphere impacts, ocean acidification and long-range pollutants) collectively impact all levels of Arctic marine ecosystems, including humans, and individually can have direct impacts on certain species, e.g. long-range pollutants on apex predators.
- There is a high degree of regional variability apparent in the results of each assessment, particularly in the degree of change, impacts and exposure to stressors presented (AMAP) as well as in the ecosystem monitoring results (CBMP).
- Effective biodiversity monitoring, particularly for benthos, can be achieved through better methods standardization and by taking advantage of existing fisheries assessment trawling surveys.
- More fulsome collaboration and input from the various expert groups would help to improve overall cumulative effects assessments and help to improve future monitoring and assessment plans.
- AMAP should provide information especially on climate change, ocean acidification, contaminants, and cumulative effects to the State of the Arctic Marine Biodiversity Report (SAMBR).
- There is lack of consistency and methodological standardisation on benthos surveys, in response the CBMP expert group is running a project funded by the Nordic Council of Ministers to

cooperate pan-Arctic on establishing benthos capacity on groundfish assessment survey platforms, and to try to develop common protocols for benthos monitoring on these platforms.

- There is a need to identify anthropogenic stressors and using species trait analyses identify vulnerable areas.
- Key findings from SWIPA 2017 related to sea-ice thickness and extent, distribution, snow on ice, and importance of leads and ice-types for Phytoplankton blooms.
- The Arctic is acidifying, with strong local and regional variability.
- The AMAP assessment 2018 on the biological effects of organohalogen and mercury exposure in Arctic Wildlife and Fish.
- There is a need for location and effect studies reporting linkages between global climate change-induced ecological impacts and POP and Hg pathways.
- Legacy chemicals (e.g. PCBs) and Mercury continue to pose significant concern for Arctic biota.
- The suite of environmental contaminants found in many Arctic apex predators is expanding and may require new investigations of the potential biological effects.
- Improved prediction of contaminant-related risks to Arctic biota will require methods that account for the combined toxicity of real-world, complex, multichemical exposures.
- The impact of contaminant exposure in Arctic biota needs to be considered in combination with other Natural and anthropogenic stressors.

**Were there any specific recommendations/actions identified for how to deal with the issues raised in the session? Please note them here:**

- Effective downscaling of circumpolar assessment results is needed in order to assess impacts at local scales relevant to Arctic communities in way that informs the development of local mitigation and adaptation strategies.
- Integrated ecosystem assessment at limited regional scales, i.e. large-marine ecosystems, were recommended as a way to assess the effects of multiple stressors on marine biodiversity in a multi-disciplinary manner involving experts from multiple Arctic Council Working Groups.
- It was recommended that experts from AMAP and CAFF/CBMP participate in workshops (e.g. the CBMP Marine scoping workshop in fall 2019) to refine future monitoring plans to ensure that they are responsive to multiple information and data needs and that they are driven by the most current hypotheses of ecosystem impacts to multiple stressors.
- It was recommended that stressor maps be developed based on existing assessments to help develop and focus monitoring and assessment activities and the prioritization of future work.
- It was suggested that it might be helpful to develop a time- and cost-effective, long-term and standardized monitoring of meta-benthic communities in all Arctic regions with regular groundfish assessment surveys.
- There is a need for stronger cooperation between AMAP and CAFF to improve assessments of stressors and biota.

**Can you summarize a "take home message" from the session?**

- CAFFs CBMP assessments and AMAP assessments must be more connected
- There is a pressing need and desire for Working Groups to work together.