

Memorandum 2/11/2018

EBM4: The State of the Arctic Marine Biodiversity Report

This memo provides a summary of reports submitted on the session EBM4 organized at the Arctic Biodiversity Session in Rovaniemi, Finland, October 9-12 organized by DFO Canada, Aarhus University; North Slope Science Initiative and the CBMP.

Attendance: 80

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

- Climate change
- Ecosystem-based Management
- Improving knowledge and public awareness

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

- SAMBR provides useful analysis and summary of current knowledge that can be effectively built upon to further monitoring of the changing Arctic. Climate warming is having significant influence on the Arctic marine biota, both on species composition and productivity. The Arctic marine food web is affected by reduction in sea ice cover, changed ocean currents, increased water temperature, lower salinity in surface waters, and increased sea acidity. One of the consequences is that Arctic species are being replaced by southern species from temperate waters. Many species, which are uniquely endemic to the Arctic, some of which are sea ice dependent, are facing extreme levels of habitat change and are prone to extinction. This is further exacerbated by increasing human activity, such as oil and gas production, marine mining, commercial fisheries, tourism, pollution, and increased ship traffic.
- Some selected aspects of the Arctic marine biota have been monitored, mostly in areas of commercial interest. Other studies tend to be regionally focused or are site specific, with different research objectives, often of intermittent duration. Synthesis of pan-Arctic trends from such disparate data is therefore rather limited. Furthermore, large parts of the Arctic marine areas are poorly or not at all monitored, resulting in a vast information gap in the Arctic ecosystem.
- Taxonomic inventory of the Arctic marine biota is incomplete, except perhaps for a few groups like marine mammals and sea birds. Species composition of other groups is less well or very poorly known, i.e. the benthos, the plankton, the sea ice biota, and fishes to some extent.

Recommendations/actions identified for how to deal with the issues raised in the session:

- There is a need for dedicated funding of a robust and long-term monitoring, possibly through some intergovernmental agency of the Arctic: especially to establish and maintain regular field work and analysis sample from unknown areas.
- Presently there are various ongoing research programs at national level, which often have limited time duration, different research objectives with clearly defined end result. Basing monitoring of the pan-Arctic on such a conglomerate of different research programs is rather limited and inadequate in the long run.

- Closer collaboration among these various national and local monitoring programs, would though allow more robust synthesis of ongoing biotic changes across the Arctic region. It is also emphasized that such an effort needs a properly funded intergovernmental mechanism, to develop further a properly standardized pan-Arctic monitoring protocols, like sample collection, preservation of voucher specimens, genetic analyses, standardized taxonomic identification, and data sharing among scientists and reporting to the greater general community.
- Mending of the information gaps of the vast and remote Arctic marine areas needs special consideration. Again, such an effort requires directions and additional funding through some intergovernmental mechanism of the Arctic nations.
- The SAMBR report summarizes what is known, and unknown, about the status and trends in some key components of the Arctic marine ecosystem. It is based on a synthesis of various local and regional studies throughout the Arctic. It is clear that any further development of a pan-Arctic monitoring will need special funding and a mechanism to realize effective cooperation among the Arctic nations.
- Last, but not the least, a more thorough inclusion of traditional knowledge of the indigenous communities is needed refine our understanding the Arctic and to identify additional actions and benefits to the objectives covered in SAMBR.

Take home message from the session:

- Pollution and destruction of natural habitats has profound impacts on the Arctic ecosystem. This can be controlled by concerted effort of the Arctic nations. However, the Arctic nations alone have limited force to control global warming, except in collaboration with other world nations. The words of Charles Dudley Warner, (usually attributed to Mark Twain) come to mind: “Everybody complains about the weather, but nobody does anything about it.” Given due fairness, to what is being done to control release of carbon dioxide, seems way to too little and slow – and meanwhile the Arctic melts away.