The Arctic Marine Biodiversity Monitoring Plan (the Marine Plan) is the first of four pan-Arctic, long-term, integrated biodiversity monitoring plans produced by the Conservation of Arctic Flora and Fauna (CAFF)’s Circumpolar Biodiversity Monitoring Program (CBMP). Approved by the Arctic Council in 2011, the Marine Plan will integrate existing circumpolar monitoring datasets and models to improve the detection and understanding of changes in Arctic marine biodiversity, and inform policy and management responses to these changes.

Development of the plan was co-led by Norway and the United States and was the result of extensive discussions and consultations involving experts from Arctic coastal nations, Permanent Participants and other Arctic Council working groups. The Marine Plan identifies eight Arctic Marine Areas (AMAs) and Focal Ecosystem Components (FECs) to monitor at various trophic levels using specific methodologies, parameters, indicators and sampling designs drawn from existing monitoring capacity (programs), best practices and data.

The Marine Plan is designed to provide comprehensive and timely circumpolar information on Arctic marine biodiversity to decision makers. Its implementation is currently co-led by Canada and Greenland.

Top CBMP Marine Priorities in 2013

- establish and promote the relevance and importance of the Marine Plan
- improve and stabilize funding for full participation of all Arctic Council coastal states and Permanent Participants (e.g., travel and scientific capacity)
- focus on discovering, rescuing, and integrating existing Arctic marine biodiversity datasets to establish baselines; contribute to the interoperable Arctic Biodiversity Data Service
- encourage participating states to monitor focal ecosystem components and indicators, and analyze datasets in a coordinated manner
- begin reporting on the best indicators of change in Arctic marine biodiversity, building on existing monitoring and observation programs
- contribute to international and national initiatives, e.g., the annual NOAA Arctic Report Card, UN Convention on Biological Diversity, Global Biodiversity Outlook, and Group on Earth Observations Biodiversity Observing Network
- continue to explore ways to utilize Traditional Ecological Knowledge

Links with National Priorities

Northern resource development and sound environmental stewardship depend on a credible knowledge base. In response to a decision by Arctic Council Ministers in 2007 to develop the Marine Plan, Fisheries and Oceans agreed to represent Canada and now co-leads implementation.

Canada’s leadership in the Marine Plan supports Canada’s Arctic Foreign Policy, the Northern Strategy, and the priorities of northerners. It meshes with science on polar bears, marine mammals, seabirds, fisheries, conservation and ecosystem-based management, one example being the Tarium Niruytait Marine Protected Area, in the Inuvialuit Settlement Region.

Other aspects contribute to Fisheries and Oceans’ efforts to protect corals and sponges in Baffin Bay and to identify ecologically and biologically sensitive areas (EBSAs). Other examples include linkages with the Nunavut General Monitoring Plan (NGMP) and science initiatives under the Canadian High Arctic Research Station (CHARS).

The Marine Plan shares common indicators with the Canadian Northern Contaminants Program (NCP), which examines contaminant levels, trends and effects in marine ecosystems, and conducts annual monitoring of key focal ecosystem components.

At the international level, the CBMP contributes to a number of important initiatives (see left).
Canadian Marine Expert Network 2012 Achievements

Benthos
- led the Benthos Expert Network
- contributed to the 2012 NOAA Arctic Report Card Benthos chapter
- developed a data sharing agreement among Benthos Expert Network members
- identifying and aggregating pan-Arctic data
- housing data at the Arctic Benthos Network Database (Université du Québec à Rimouski) (Arctic Ocean Diversity data already housed there)
- developing cross-linked indicators on regional scales. See Identification of Mega and Macrobenthic Ecologically and Biologically Significant Areas (EBSAs) in the Hudson Bay Complex, the Western and Eastern Canadian Arctic

Fish
- co-led the Marine Fish Expert Network, continuing in 2013
- collecting and aggregating data on species composition and distribution, as well as population genetics, in Canadian Arctic Marine Areas
- analyzing fish tissue samples for stable isotopes
- digitizing legacy fish data (maps) using ArcGIS

Marine Mammals
- developed historical abundance database for beluga, narwhal, and bowhead whales
- summarizing historic abundance estimates for pinnipeds (walrus, ringed seals, bearded seals)
- contributed to the development of the Circumpolar Monitoring Framework for Polar Bears

Plankton
- will co-lead the Plankton Expert Network for 2013
- consolidating datasets – complemented by efforts in Pacific Arctic by other funding agencies/industry
- developing species lists: Archaea/Bacteria, Phyto/Protozooplankton – draft list from Census of Marine Life (CoML), Arctic Biodiversity Assessment (ABA) and refinement now underway, Meta-zooplankton – legacy of CoML and maps now being developed
- growing the genetic library

Sea Ice
- verifying the taxonomy of ice algae species
- establishing sea ice algae diversity and abundance (including phytoplankton)
- publishing as primary or contributing author, e.g.: The pan Arctic biodiversity of marine pelagic and sea ice unicellular eukaryotes: a first attempt assessment

Seabird
- led CAFF’s Seabird Expert Network (CBird), which has nearly completed its monitoring plan

General
- Fisheries and Oceans Canada leads for Canada, supported by other government departments, academia, Inuit organizations and northern wildlife management boards
- chaired implementation of the Marine Plan in 2012, and co-chairing in 2013 with Greenland
- funded Canadian participation: $54K in 2012, and $77K in 2013
- completed primary publications through the Canadian Science Advisory Secretariat (CSAS) including Science Advice for Identifying Indicators for Monitoring Arctic Marine Biodiversity in Canada
- hired part-time staff for secretariat support, and data rescue and digitization for the Canadian fish and marine mammal work; 42 legacy metadata sets were added to the Polar Data Catalogue
- contributed lead authors for the Arctic Biodiversity Assessment (Arctic Marine Ecosystems; Fishes)
- digitized 1970s Traditional Ecological Knowledge of the marine ecosystem in the Inuvialuit Settlement Region (Beaufort Sea Arctic Marine Area)
- established website to highlight Canadian contributions to the Marine Plan

For more information

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