# Arctic Marine Biodiversity Monitoring Plan Implementation, Norway, 2015

The ***Arctic Marine Biodiversity Monitoring Plan*** (CBMP-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. Approved by the Arctic Council in 2011, the Marine Plan integrates existing circumpolar monitoring datasets and models to improve the detection and understanding of changes in Arctic marine biodiversity, and informs 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 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 CBMP-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 Norway and Russia.

*Ringed seal, the primary prey species for polar bears are heavy threatened by climate change. This species has altered its behavior after the recent sea ice collapse in the Svalbard region. Photo: Kit M. Kovacs & Christian Lydersen, Norwegian Polar Institute.*

## Top CBMP Marine Priorities in 2016

- Started writing the State of the Arctic Marine Biodiversity Report (SAMBR). The report is scheduled to be completed and delivered to an Arctic Council Ministerial meeting in early 2017. The SAMBR is the first primary product from the implementation of the CBMPs Arctic Marine Biodiversity monitoring plan.
- Continue collecting, discovering, rescuing, aggregating and integrating existing Arctic marine biodiversity datasets to establish baselines; and contribute to the Arctic Biodiversity Data Service.
- Continue to explore ways to utilize Traditional Ecological Knowledge.
- Encourage participating states to follow up on the CBMP Marine plan by contributing to the monitoring of the plan's focal ecosystem components, indicators, and the analyzing of existing datasets
- Continue to contribute to international and national initiatives, e.g., the annual NOAA Arctic Report Card, Convention on Biological Diversity, Global Biodiversity Outlook, Group on Earth Observations Biodiversity Observing Network, and others.

## Links with National Priorities

Norway's ecosystem-based management plans are large-scale spatial management tools and cover the areas in Norway's Exclusive Economic Zone, outside the coastal baseline. The scientific basis are scheduled to be updated regularly. Currently Norway is revising the plan for the Barents Sea and Lofoten area, which will be presented in a White Paper in 2020. The first Barents Sea plan was presented in 2006, and updated in 2011. The purpose of the plan is to provide a framework for the sustainable use of natural resources and goods and to maintain the structure, functioning and productivity of the ecosystems.

BarentsWatch provides a unique overview of activity and knowledge in Norwegian coastal and sea areas. The Arctic Ocean Ecosystem and the Trophic interactions in the Barents Sea programs (2014-18) are established to improve the understanding of the trophic interactions, food web structure and function, and energy flow in the Barents Sea ecosystem.

The Joint Norwegian-Russian Commission on Environmental Protection (Marine Group), and the Mixed Norwegian-Russian Fisheries Commission cooperates on several projects that have relevance for CBMP, for example the BarentsPortal reporting about the environmental status of the Barents Sea ecosystem, and a joint ecosystem based monitoring program for the Barents Sea.

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# Marine Expert Network Summary of 2015 Achievements

## Benthos (contact: Lis Lindal Jørgensen)

Is developing a long term monitoring plan for benthic marine life on the pan-Arctic shelves. The cost- and time-effective method used in the Barents Sea as part of the annual fisheries trawl survey was implemented by Greenland and will be implemented by Iceland in 2016. Canada is compiling similar comparative, already existing data. L.L. Jørgensen gave a talk at the Arctic Frontiers Conference (January 2016) about multiple stressors changing benthic biodiversity in the Barents Sea. Two scientific papers about distribution of benthic megafauna in the Barents Sea were published in 2015 and 2016.

## Plankton (contact: Cecilie von Quillfeldt)

Is summarizing the spatial extent of past sampling and ongoing activities for the SAMBR. Within Norway, collaboration has been established with relevant institutions to validate species lists for Norwegian areas, including identifying existing literature and data sets. There is an ongoing work to identify suitable existing indicators, including identifying necessary adjustments in order to make indicators comparable with existing plankton indicators from other Arctic countries.

## Sea Ice Biota (contact: Bodil Bluhm and Haakon Hop)

Have synthesized ice biota data for the SAMBR. This work was led by the Norwegian team and was possible primarily through funding for post-doc Mikko Vihtakari. As part of the synthesis, study locations were identified, although no regular monitoring is in place. They collated 27 data sets with a total >700 ice cores collected over more than 40 years for a meiofauna inventory and 43 data sources for macrofauna. The meiofauna data set is in preparation for a peer-reviewed publication as are data sets collected by Russian member Igor Melnikov and digitized in collaboration with EN co-lead Haakon Hop. All retrieved data for sea ice biota in the Arctic have been stored at the NP Data Centre. A book chapter on the larger ice fauna is in press as part of the 3rd edition of the book 'Sea ice' edited by D. Thomas. "Sea Ice Life"- a book with dive pictures of marine life in and around sea ice, led by H. Hop, is in progress.

## Fish (contact: Edda Johannesen)

Is developing a pan-Arctic fish atlas funded by the Norwegian Ministry of Foreign Affairs and managed by IMR, Norway. This project had a meeting in Tromsø in December. A report on changes in fish distributions and data quality from the Joint IMR PINRO ecosystem survey was started. The report is partly funded the Norwegian Ministry of Climate and Environment. A paper on changes in fish community structure in the Barents Sea was published in Nature Climate Change in 2015. An Arctic report card based on this paper was also published. A presentation on Changes in distribution of fish and marine organisms in the Barents Sea was held by Edda Johannesen at the North Atlantic Seafood Forum Conference in Bergen March 2016.

## Seabird (contact: Hallvard Strøm)

Implementation takes place within the programs MOSJ, SEAPOP and SEATRACK. The focus has been on implementation of a new key site for seabird monitoring in East Svalbard, in line with recommendations in the Circumpolar Seabird Monitoring Plan. In SEATRACK, 2067 light loggers were deployed on 11 species in more than 30 breeding colonies in Norway, Russia, Iceland, the Faroe Islands and Britain, and 37.5% of loggers were retrieved from 2014. Around 100 loggers, deployed in earlier years, were retrieved and yielded data to be integrated. SEATRACK is a four-year program to map Norwegian seabirds' spatial ecology and movements outside the breeding season and follow bird populations from neighboring countries that enter Norwegian waters.

## Marine Mammals

(contact: Dag Vongraven and Kit Kovacs)

Survey of the Barents Sea polar bear population, conducted within the Marginal Ice Zone (MIZ) north of Svalbard as well as land areas of Svalbard Archipelago. Concomitant with the polar bear survey, ice whales were surveyed in the MIZ using both helicopter and ship platforms. Additionally, ringed seal responses to the major sea ice declines that have taken place in this region were explored. This keystone Arctic seal species, which is the primary prey species for polar bears, has altered its behavior markedly after the sea ice collapse. The seals are working harder to meet their energy needs compared to the situation under "normal" ice conditions, diving more and resting less.

## For more information


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