State of the Arctic Marine Biodiversity Report

UPDATE
MARINE MAMMALS

Circumpolar Marine Mammal Expert Group, CBMP-Marine

2021

Polar bear with northern lights, Canada. Photo credit: Ondrej Prosicky/Shutterstock.com

In 2017, the ***State of the Arctic Marine Biodiversity Report*** (SAMBR) synthesized data about biodiversity in Arctic marine ecosystems around the circumpolar Arctic. SAMBR highlighted observed changes and relevant monitoring gaps. This document provides an update on the status of marine mammals in the circumpolar Arctic from 2015–2020 (scientific references for factual information and a more detailed version of the text herein can be found in Kovacs et al. 2021).

Arctic endemic marine mammals are one focal group of the Circumpolar Biodiversity Monitoring Program's (CBMP) Arctic Marine Biodiversity Monitoring Plan (CBMP-Marine Plan), along with sea ice biota, plankton, benthos, marine fishes and seabirds. Networks of experts have identified key elements, called Focal Ecosystem Components (FECs), within the Arctic marine ecosystem. Changes in the status of FECs indicate changes in the broader marine environment.

This update was prepared by the Marine Mammals Expert Network, which works to coordinate monitoring and report scientific findings regarding trends and their drivers in marine mammal populations around the Arctic.

BACKGROUND

Arctic endemic marine mammals live in close association with sea ice. Three species of whales, seven seal species (including the walrus) and polar bears are all highly visible components of Arctic ecosystems that are important to the structure and function of these systems. In addition, they are valuable resources for people living in the Arctic that also play a special role in their cultural identity. Arctic marine mammals are a unique part of global biodiversity, being found nowhere else on the planet. In an ecosystem monitoring context, these large, mobile predators can serve as ecosystem sentinels, because they integrate changes at more cryptic levels of food webs and hence have "added value" as monitoring subjects.

The 11 Arctic endemic marine mammal species targeted for monitoring in SAMBR are all expected to experience negative impacts due to declining sea ice.

The Circumpolar Biodiversity Monitoring Program (CBMP) is an adaptive monitoring program based on an international network of scientists, government agencies, Indigenous organizations and conservation groups working together to harmonize and integrate efforts to monitor the Arctic's living resources. The CBMP organizes its efforts around the major ecosystems of the Arctic: marine, freshwater, terrestrial and coastal.

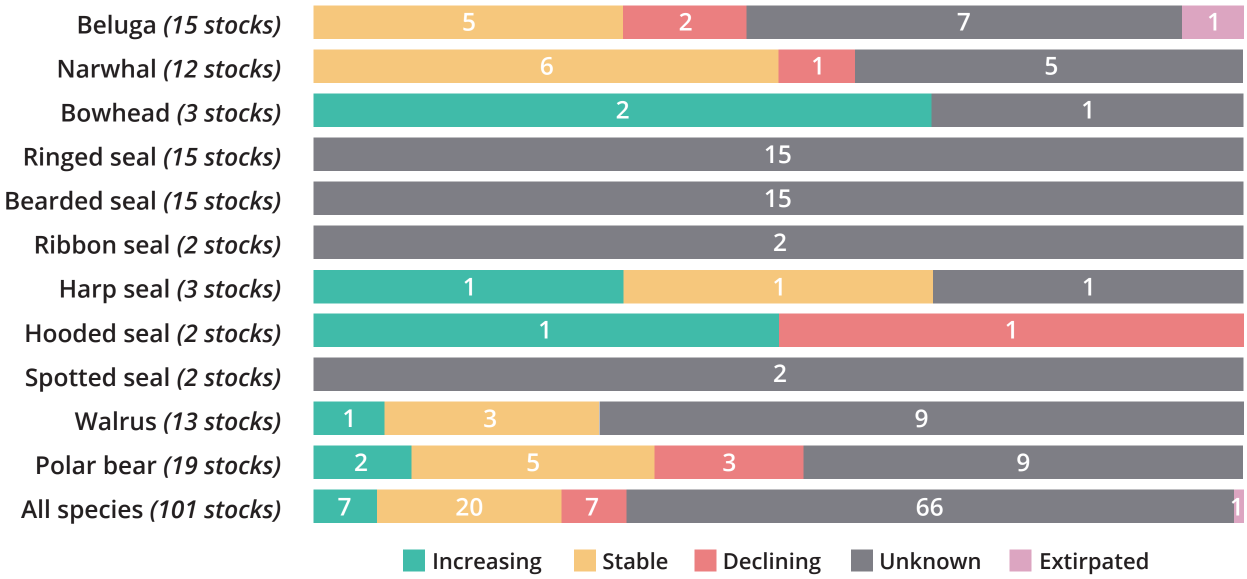
In 2011, the CBMP Marine Expert Monitoring Group published a circumpolar monitoring plan that describes how Arctic states will compile, harmonize, and compare results from existing Arctic marine biodiversity and ecosystem monitoring efforts (Gill et al. 2011).

CBMP is a cornerstone initiative of the Conservation of Arctic Flora and Fauna (CAFF), the biodiversity working group of the Arctic Council.

CIRCUMPOLAR BIODIVERSITY MONITORING PROGRAM

ARCTIC COUNCIL

Figure 1. Marine mammal FEC trends 2020



UPDATED STATUS OF POPULATIONS AND MONITORING

MONITORING

The overall knowledge regarding population trends of marine mammal stocks in the Arctic remains largely unchanged since SAMBR, with no new circumpolar monitoring programs, nor committed national monitoring programs, having been implemented for Arctic marine mammals. However, there has been considerable effort focused on assessment of polar bear stocks throughout the Arctic. Additionally, a review of the status and trends of the world's narwhal and beluga populations has recently been undertaken and some progress has been made in defining walrus stocks in the Barents Sea region. Although formal community-wide assessments have not taken place, the Arctic seals have been divided into more likely stocks/populations, increasing the number of stocks from 83 at the time of SAMBR to 100 (Kovacs et al. 2021).

POPULATIONS

During 2015-2020, abundance estimates have been undertaken for 14% of marine mammal stocks in the Arctic. A few regional sub-stocks have also received survey attention.

Please see back page for photo description and credits.


Polar bears


Bowhead whales


Narwhal


Beluga (white whale)


Walrus


Ringed seals, etc.


Harp seal


Hooded seal

Additionally, information from 37 stocks has been published based on older surveys, or survey results have been revised to improve correction factors or other aspects of data treatment. However, 14% of stocks for which there is some sort of estimate are ≥ 20 years old and an additional 16% of stocks have never been surveyed (mostly seals). Trends are unknown for 66% of marine mammal stocks overall (Figure 1, see also Kovacs et al. 2021).

Trends are known for circa 60% of whale stocks, 50% of polar bear stocks, 30% of walrus stocks and 10% of seal stocks (Figure 1; also see Kovacs et al. 2021). Seven stocks are known to be declining, including 3 polar bear stocks, one hooded seal stock, one narwhal stock and two beluga stocks (that may already be extinct).

Polar bears: There are enough data to assess short term trends for 10 of 19 subpopulations, and long-term trends for eight of 19 subpopulations (Kovacs et al. 2021). Five subpopulations have a stable (or likely stable) short term trend, two are likely or very likely increasing, and three are likely decreasing over the last few decades. New population estimates are available for three subpopulations since SAMBR: the Chukchi Sea (likely stable), Southern Hudson Bay (likely declining) and Western Hudson Bay (likely declining). Extirpation of some subpopulations is expected within this century.

Bowhead whales: Since the data compilation undertaken for SAMBR, abundance estimates have been reworked for two of the three bowhead stocks residing within CAFF regions (also see Kovacs et al. 2021) and survey effort has taken place covering part of the range of the third population. The Bering-Chukchi-Beaufort and the stock (or stocks) in Eastern Canada-West Greenland are thought to be increasing in number. The third stock, in the Barents Sea Region, has had considerable survey effort since SAMBR. However, Russian areas, which are home to part of this stock, have not been surveyed. This wide-ranging stock is Endangered and although the trend is unknown and the population size remains uncertain, it is thought to number in the low hundreds.

Narwhal: Since the SAMBR report, there are new abundance estimates available for narwhals in Eclipse Sound in the Baffin Bay – Davis Strait area (Marcoux et al. 2019), north of Svalbard in the Arctic Basin/Atlantic Arctic boundary region and five regions of East Greenland: Greenland Sea (winter and summer), Dovebugt, Scoresby Sound, Kangerlussuaq and Tasiilaq. Six of 12 narwhal stocks are thought to be stable, five are of unknown status and one is thought to be decreasing as a result of overharvesting and is at risk of extinction (Kovaks et al. 2021).

Beluga (white whale): Trend status for the majority of Arctic beluga stocks (8 of 14) is unknown. Three extant stocks in the Arctic warrant high conservation concern: 1) the Ungava Bay stock borders on extinction 2) a recent aerial survey of the Svalbard stock confirms the suspected near extirpation of this stock, due to overharvesting that took place in the 1950s and 1960s and 3) the Cumberland Sound population, which numbers approximately 1,400, but is in decline. Five Arctic beluga stocks are large (> 10,000 individuals) and considered secure (Kovaks et al. 2021).

Walrus: Since SAMBR, new information on genetics, movements, distribution and abundance, contamination, ecology and harvest data has become available for the Alaskan, Canadian, Greenlandic, Barents, Laptev, Chukchi and Pechora Sea walrus populations. However, large knowledge gaps remain, in particular in terms of population trends. Of the 13 recognized stocks, 3 are thought to be stable, one is increasing and 9 are of unknown status (Kovacs et al. 2021).

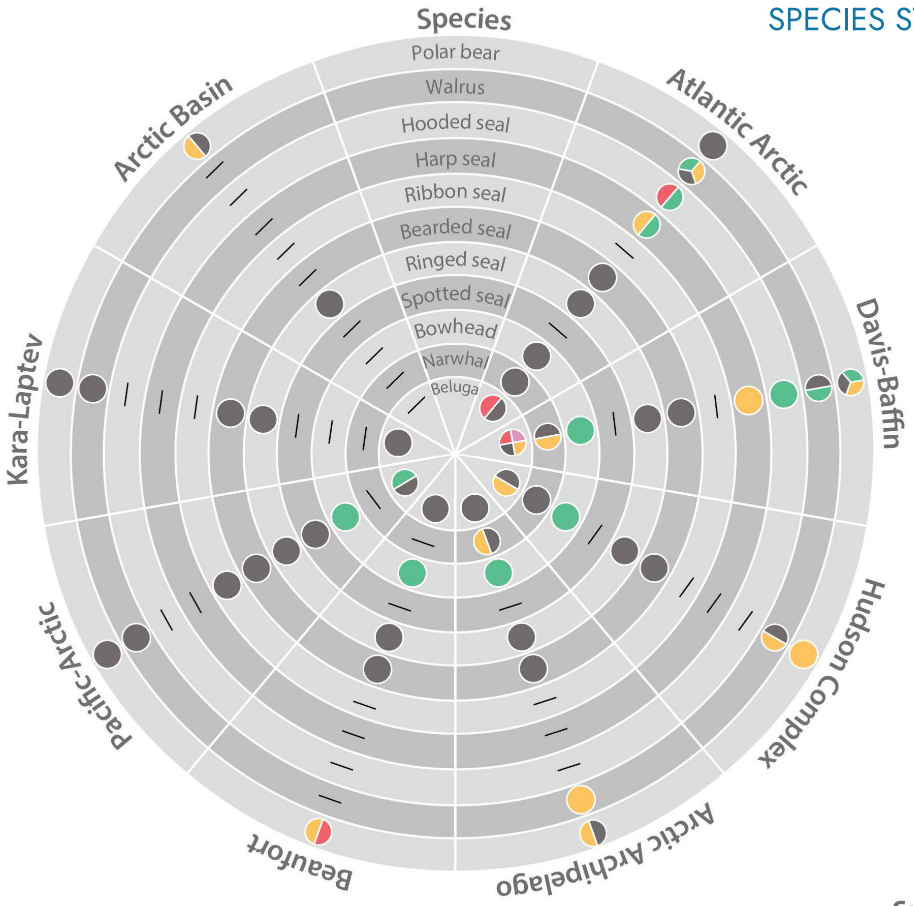
Ringed seals, bearded seals, ribbon seals, spotted seals: Since SAMBR, two new population estimates are available for the 34 stocks recognized for these four ice-affiliated seals – one ringed seal population and one bearded seal population, both in the Russian Pacific Arctic. Despite all populations of these species being harvested, trends are unknown for all stocks of all four species (Kovacs et al. 2021).

Harp seal: All three harp seal populations have been assessed recently, although new surveys are available for only two of the three stocks. One stock is increasing (Northwest Atlantic), one is stable (Northeast Atlantic) and the trend of the third (White Sea/Barents Sea) is unknown (Kovacs et al. 2021).

Hooded seal: The NW Atlantic hooded seal population has not been surveyed since 2005 but is assumed to be increasing due to reduced harvests, while the NE Atlantic population is known to be declining. This latter stock was surveyed in 2018 (see Kovacs et al. 2021) and is now classified as Endangered.

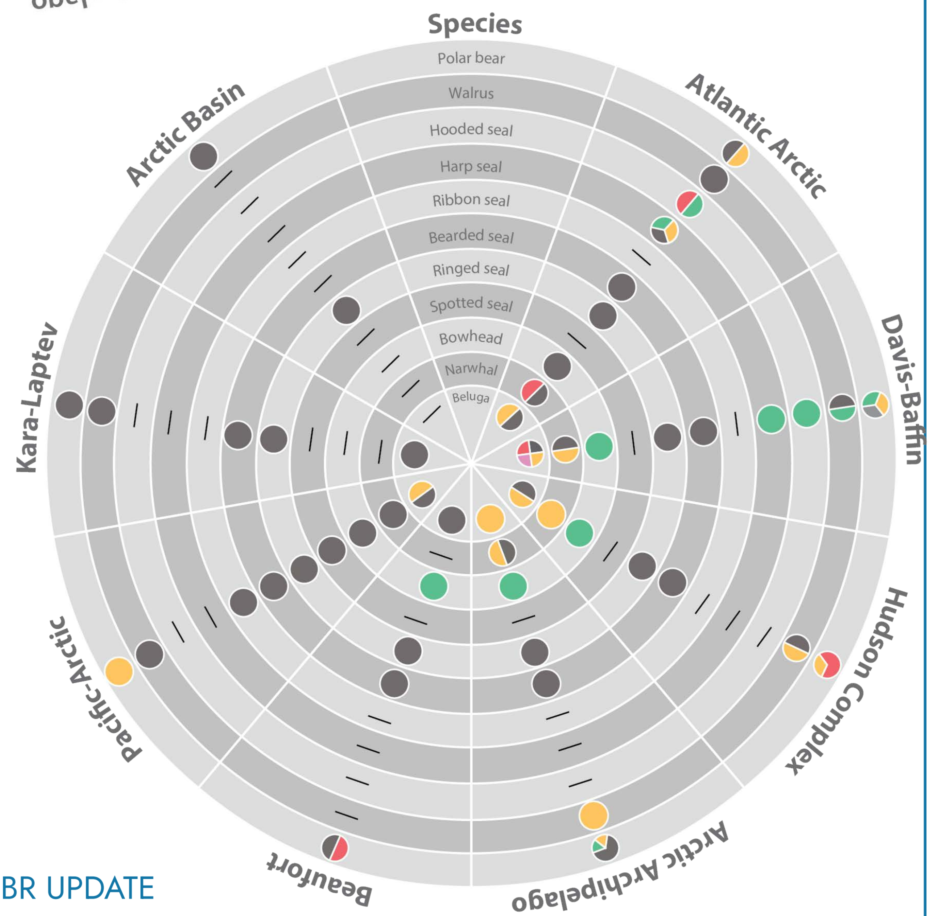
Spotted seal. Photo credit: Akkharat Jarusilawong/Shutterstock.com

SPECIES STATUS FROM 2017 SAMBR



- Extirpated
- Increasing
- Stable
- Declining
- Unknown
- Absent - FEC not in the Arctic Marine Areas (AMAs)*

*For the purposes of reporting and comparison, eight physically and bio-geochemically distinct AMAs



SPECIES STATUS FROM 2020 SAMBR UPDATE

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Conservation of Arctic Flora and Fauna

KEY FINDINGS

- Insufficient monitoring regionally and across taxonomic groups, makes it impossible to present a holistic assessment of status and trends of Arctic endemic mammals; trends for 66% of stocks are currently unknown.
- Direct and indirect impacts of climate warming continue to be the primary threat to marine mammals in the Arctic.
- Changes in distribution and phenology (such as timing of migration) of marine mammal stocks is making some stocks less accessible to hunters and reduced predictability of weather and sea ice conditions is making hunts more challenging.
- Monitoring efforts should enhance collaboration with communities to improve knowledge of species health and population status.
- Arctic endemic marine mammals are being exposed to greater levels of threat from both anthropogenic impacts such as shipping and for some populations in the North Atlantic Arctic harvest levels are of concern; biotic changes that increase disease risks and possibly also the toxicity of contaminants are additional threats.
- At the same time, endemic marine mammal populations are likely experiencing increased predation from open water predators and competition induced by range expansions of sub-arctic marine mammals.

DATA SOURCES AND ACCESS

Data sources are detailed in Kovacs et al. 2021. Data generated by CBMP-Marine are also provided in the Arctic Biodiversity Data Service (abds.is).

This report should be cited as: CAFF (2021). State of the Arctic Marine Biodiversity Report Update: Marine Mammals. Conservation of Arctic Flora and Fauna International Secretariat: Akureyri, Iceland. https://caff.is/marine/marine-expert-networks/marine-mammals

Photo references for marine mammal grouping on page three, starting at the top, left to right: Polar bear on melting ice floe, Arctic Ocean. Photo: FloridaStock/ Shutterstock.com; Bowhead whale. Photo: Kit Kovacs and Christian Lydersen/ Norwegian Polar Institute; Narwhal. Photo: Jennifer Nield, Fisheries and Oceans Canada; Beluga whale, White Sea, Russia. Photo: Vostapenko/ Shutterstock.com; Walrus group, Spitsbergen, Norway. Photo: Marta Kwiatkowska/Shutterstock.com; Ringed seal close-up in water. Photo: Kit Kovacs and Christian Lydersen/ Norwegian Polar Institute; Harp seal. Photo: Vladimir Melnik/Shutterstock.com; Hooded seal (male) on ice. Photo: Kit Kovacs and Christian Lydersen/ Norwegian Polar Institute.

REFERENCE

Kovacs, K.M., S. Belikov, P. Boveng, G. Desportes, S. Ferguson, R.G. Hansen, K. Laidre, G. Stenson, P. Thomas, F. Ugarte, D. Vongraven. 2021. 2021 SAMBR Update and Overview of Circumpolar Arctic Scientific Monitoring – Marine Mammals. Conservation of Arctic Flora and Fauna International Secretariat, Akureyri, Iceland.

Bearded seal, Svalbard, Norway. Photograph: Ondrej Prosicky/Shutterstock.com