Global Review of the Conservation Status of Monodontid Stocks

Preface

Two modern species of toothed whales, the narwhal, *Monodon monoceros,* and the beluga or white whale, *Delphinapterus leucas*, comprise the family Monodontidae. Both are endemic to the Arctic and, in the case of belugas, also certain portions of the sub-Arctic. While the narwhal's range is centered in high-latitude waters connected to the North Atlantic Ocean (eastern Canada, Greenland, Svalbard, and Franz Josef Land), the beluga's distribution is nearly circumpolar, with substantial populations not only in the High Arctic but also in the Sea of Okhotsk, the southern Bering Sea, Hudson Bay, the northern Gulf of Alaska, and the St. Lawrence River estuary. Range states of monodontids are the Russian Federation, the United States of America, Canada, Denmark (Greenland), and Norway.

In addition to government agencies within those states, several international and regional bodies are involved in the assessment and conservation of beluga and narwhal populations. The oldest and most inclusive of these (in terms of number of state members) is the International Whaling Commission (IWC). Among its 89 member countries are four of the five monodontid range states (Canada being the sole non-member).

The Scientific Committee of the IWC has on two occasions reviewed the world's stocks of belugas and narwhals (both species in 1992, IWC, 1993; only belugas in 1999, IWC, 2000). These reviews identified 29 stocks of belugas and 3 regional stocks of narwhals. Beluga stocks were considered in detail, and available information on range, abundance, trends in abundance, hunting removals, threats, and legal status were reviewed and summarized. The reviews identified four stocks of highest concern due to small population size, depletion from historical levels, and currently declining trend, and it made recommendations regarding future research.

In the North and Arctic Atlantic, two regional management bodies operate. The Canada-Greenland Joint Commission on the Conservation and Management of Narwhal and Beluga (JCNB) was established in 1991 to conserve and manage the shared stocks of narwhals and belugas (i.e., those stocks that migrate between Canadian and Greenlandic waters and spend at least part of each year within the EEZ of each country). The JCNB makes recommendations on the conservation and management of these shared stocks to the appropriate authorities of both countries.

The North Atlantic Marine Mammal Commission (NAMMCO) was established in 1992 by the Faroe Islands, Greenland, Iceland, and Norway to cooperate in the management and conservation of all marine mammals in the area. NAAMCO regularly reviews the status of the stocks of narwhals and belugas within its remit.

The NAMMCO Scientific Committee's Working Group on the Population Status of Beluga and Narwhal in the North Atlantic (NBWG) met for the first time in 1999 and carried out a detailed review of all stocks of both species in Atlantic and adjacent waters (NAMMCO[1]). In 2000, the NBWG carried out an assessment of belugas in West Greenland and concluded that the stock there was substantially depleted and that harvest levels were several times the sustainable yield, likely leading to extirpation of the stock within

doi: https://doi.org/10.7755/MFR.81.3–4.p

[1]NAMMCO. 2000. Report of the 7th Meeting of the NAMMCO Scientific Committee. *In* NAMMCO (Editor), Annual report 1999, p. 125–214. N. Atl. Mar. Mammal Comm., Tromsø, Norway (avail. at http://nammco.wpengine.com/wp-content/uploads/2016/08/Annual-Report-1999.pdf).

20 years. The NAMMCO Scientific Committee endorsed this conclusion and recommended various conservation measures, including the immediate reduction of harvests to prevent further decline of the stock, as well as prioritized research topics (NAMMCO, p. 136–145 and Annex 3)[2]. Close cooperation between the Scientific Committees of NAMMCO and the JCNB was recommended (NAMMCO, p. 75)[3] and a Joint Working Group (JWG) was established, which met for the first time in 2001 and has reviewed and assessed the status of shared stocks regularly since then (2004, 2005, 2009, 2012, 2014, 2015, 2017[4]). "National" stocks are assessed either within the framework of NAMMCO or by a national management body separately.

During the decade following 1999, as substantial new information on the delineation and status of beluga and narwhal stocks became available, the need to update the previous reviews became increasingly evident. At its annual meeting in 2010, the IWC Scientific Committee's Standing Sub-committee on Small Cetaceans noted that a "joint special meeting or workshop on monodontids" involving the IWC, NAMMCO, and the JCNB "should be considered in the near future" (IWC, 2011:287). At its next meeting, the sub-committee was advised that an intersessional correspondence group had "moved ahead … on planning a proposed global review of monodontids (involving, at a minimum, IWC, NAMMCO, and the JCNB)" (IWC, 2012:279).

In 2012 the sub-committee noted that NAMMCO had indicated an interest in organizing and convening the review jointly with the IWC Scientific Committee. The sub-committee formally recommended this approach (IWC, 2013a:296), which was endorsed by the full Committee, and a steering committee (consisting of Arne Bjørge from Norway, Randall Reeves and Robert Suydam from the United States, Steve Ferguson from Canada, and representatives of the IWC (Greg Donovan) and NAMMCO (Christina Lockyer, Mario Acquarone, and later Jill Prewitt)) secretariats were duly appointed to pursue planning and implementation (IWC, 2013b:58). Although the Global Review of Monodontids workshop continued to be discussed at annual IWC Scientific Committee meetings (IWC, 2014:362), the Sub-committee on Small Cetaceans was advised in 2014 that NAMMCO had decided to convene and undertake the global review separately from the IWC (IWC, 2015:307). We emphasize, however, that scientists from the range states, including those who regularly participate in either the IWC Scientific Committee or the NAMMCO Scientific Committee and NBWG, or both, continued to collaborate closely in planning and conducting the review workshop.

The steering committee for the workshop was expanded to include the chair of the NBWG and NAMMCO co-chair of the JWG (Rod Hobbs), a representative of the Arctic Council's Conservation of Arctic Flora and Fauna secretariat (Tom Barry), and scientists from Russia (Olga Shpak) and Greenland (Rikke Guldborg Hansen, JCNB co-chair of the JWG). The committee developed the terms of reference and agenda for the workshop and identified subject experts for each potential monodontid stock as well as other experts who would be invited to participate. Subject experts provided reports on the status of the stocks and potential stocks prior to the workshop. These reports were reviewed during the workshop and in some cases revised in response to comments received from participants. A report of the workshop and the compiled stock reports were then posted on the NAMMCO website (NAMMCO[5]).

This issue of *Marine Fisheries Review* includes a revised and updated version of the workshop report (Hobbs et al., 2019) and several related papers that were developed by workshop participants. Three of these papers concern stocks of belugas in the Russian Far East (Shpak et al., 2019) and western Alaska (Lowry et al., 2019; Citta et al., 2019). Most of the recognized beluga stocks are differentiated by mitochondrial DNA (mtDNA) data, and Skovrind et al. (2019) provide a circumpolar review of beluga mtDNA variation. NAMMCO has developed a metapopulation model for the narwhal stocks that winter in Baffin Bay, and Watt et al. (2019) explain how this model is used to allocate catches by the communities that hunt the narwhals from this metapopulation to the individual stocks. Statistics on removals of narwhals by hunting in Greenland from 1862 to 2017 (Garde et al., 2019) were used with other data and the metapopulation model in a Bayesian analysis to generate management advice for the Baffin Bay narwhal stocks (Witting et al., 2019).

Finally, this issue is dedicated to the memory of Lloyd Lowry, who died in late November 2018, soon after completing editing of the report on western Alaska beluga stocks (Lowry et al., 2019). Lloyd was a long-time beluga researcher and advocate for marine mammal conservation in Alaska and worldwide. He was instrumental in establishing the Alaska Beluga Whale Committee and remained an active member of that committee for over 30 years. See Gulland et al. (2019) for further details of Lloyd's life.

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[2]NAMMCO. 2001. Report of the 8th Meeting of the NAMMCO Scientific Committee. *In* NAMMCO (Editor), Annual report 2000, p. 123–296. N. Atl. Mar. Mammal Comm., Tromsø, Norway (avail. at http://nammco.wpengine.com/wp-content/uploads/2016/08/Annual-Report-2000.pdf).

[3]NAMMCO. 2001. Report of the NAMMCO Management Committee. *In* NAMMCO (Editor), Annual report 2000, p. 73–122. N. Atl. Mar. Mammal Comm., Tromsø, Norway (avail. at http://nammco.wpengine.com/wp-content/uploads/2016/08/Annual-Report-2000.pdf).

[4]Reports of the Joint Working Group (avail. at https://nammco.no/topics/sc-wg-reports/).

[5]NAMMCO. 2018. Report of the NAMMCO Global Review of Monodontids. 13–16 March 2017, Hillerød, Denmark (avail. at https://nammco.no/wp-content/uploads/2018/05/report-global-review-of-monodontids-nammco-2018_after-erratum-060518_with-appendices_2.pdf).

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