Legal Developments Surrounding Anthropogenic Noise in the Arctic Ocean

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Introduction

Inaccessible for centuries, the Arctic has been left to itself. With global warming, however, this situation is beginning to change as shipping and extractive industries, along with sonar and seismic testing, are slowly becoming a reality in the Arctic Ocean. Concerns surrounding the impacts of such activities are usually focused on environmental degradation, yet the adverse effects of anthropogenic noise on marine biodiversity should not be overlooked.

The impacts of noise on marine biodiversity were initially raised a few decades ago by scientists who documented mass strandings of whales and significant decreases in fish catches near seismic survey sites.[1] Thanks to these discoveries, various intergovernmental organizations (IOs) started investigating the effects of noise on wildlife and taking action through the development of resolutions and guidelines to address these impacts. The International Whaling Commission (IWC) was the first IO to address underwater noise. In 1998, the IWC included noise pollution among its eight priority research topics [2] and, subsequently, prepared several reports on the noise impacts of seismic and sonar surveys on cetaceans which continue to constitute valuable sources of information on noise pollution.[3]

Most scientific data collected on noise and marine biodiversity in the Arctic Ocean has been focused on whales, in particular, belugas, narwhals and bowhead whales. Noise causes stress in whales, and the cumulative impacts of noise and other stressors in the whale's environment can lead to reduced reproductive output. [4] Noise forces whales to compete with anthropogenic noise that is too similar to their own pitch calls, such as shipping and extractive activities, and this can make it challenging for whales to find mates and

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[1] Irini Papanicolopulu, 'On the interaction between law and science: considerations on the ongoing process of regulating underwater acoustic pollution' (2011) 1 Aegean Rev Law Sea 247, 249.

[2] Irini Papanicolopulu, 'The European Union and the Regulation of Underwater Noise Pollution', in Davor Vidas and Peter Johan Schei (eds), *The World Ocean in Globalization: Climate Change, Sustainable Fisheries, Biodiversity, Shipping, Regional Issues* (Martinus Nijhoff, 2011) 457, 460.

[3] Ibid 460.

[4] Andrew J Wright and Line A Kyhn, 'Practical management of cumulative anthropogenic impacts with working marine examples' (2014) 29(2) Conservation Biology 333, 335.

feeding grounds. Noise also makes it difficult for whales to know when predators are approaching and, where whales struggle to navigate because of noisy waters, can cause strandings and, sometimes, whale death.

Research on the impacts of noise on other forms of life in the Arctic Ocean is lacking to a large extent. However, data does show that marine ecosystems are highly interconnected, more so than on land, meaning that there is a greater risk of broad ecological impacts from noise to Arctic marine ecosystems.[5]

General legal regimes for noise

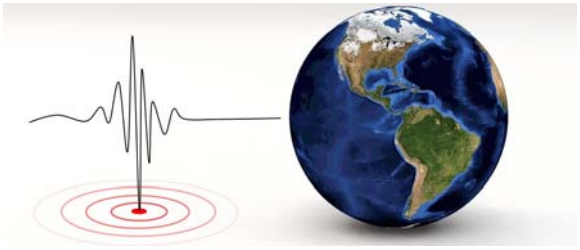
The United Nations Convention on the Law of the Sea (UNCLOS) is recognized as establishing the main legal regime applicable to oceans and continental shelves across the globe. UNCLOS defines pollution of the marine environment at paragraph 1(4) as the "…introduction by man, directly or indirectly, of substances or *energy* into the marine environment, including estuaries, which results or is likely to result in such deleterious effects as harm to living resources and marine life, hazards to human health, hindrance to marine activities, including fishing and other legitimate uses of the sea, impairment of quality for use of sea water and reduction of amenities".[6]
Noise is a form of energy and causes deleterious effects to marine life and, thus, the UNCLOS's definition of pollution must, undoubtedly, include noise. Many regional and international bodies support the view that noise is a form of energy which can cause deleterious effects to marine life and that noise, therefore, falls within the UNCLOS definition of pollution. The European Union (EU), for instance, expressly defined underwater noise as a form of pollution in its 2008 Marine Strategy Framework Directive (MSFD) at Article 1.[7]

Chapter XII of the UNCLOS calls on states to enjoy their rights in a sustainable and environmentally-friendly manner. Under Article 192 UNCLOS, states have the duty to protect and preserve the marine environment. States must also take all necessary measures to prevent, reduce and control pollution of the marine environment from any source, as per paragraph 194(1) UNCLOS. Under paragraph 194(2), states have the duty to address transboundary pollution. This paragraph is relevant for noise given

[5] Linda S Weilgart,'The Need for Precaution in the Regulation and Management of Undersea Noise' (2007) 10(3) J Int'l Wildlife L & Pol'y 247, 251.
[6] Third United Nations Convention on the Law of the Sea (adopted 10 December 1982) 1833 UNTS 3 (UNCLOS).
[7] Directive 2008/56/EC of the European Parliament and of the Council of 17 June 2008 establishing a framework for community action in the field of marine environmental policy (Marine Strategy Framework Directive) [2008] OJ L 164/19, art 1, Annex I, and Annex III, Table 2.

that noise is a transboundary pollutant, able to span, for instance, 400 km or more in parts of the Arctic Ocean.[8] And under paragraph 194(5) UNCLOS, states have the duty to take measures to reduce pollution affecting the habitats and ecosystems of rare, fragile and endangered marine species.

In recent years, organizations have become more active in managing underwater noise. For instance, the Agreement on the Conservation of Cetaceans in the Black Sea, the Mediterranean Sea and Contiguous Atlantic Area (ACCOBAMS) and the International Maritime Organization (IMO) have developed comprehensive noise guidelines.[9] In addition, the CMS, ACCOBAMS and the Agreement on the Conservation of Small Cetaceans of the Baltic, North East Atlantic, Irish and North Seas (ASCOBANS) have established the Joint Noise Working Group to effectively manage noise,[10] and with the MSFD the EU has created one of the few legally binding instruments addressing noise. [11] Regional Seas Programmes have also taken steps to address noise pollution. For example, the Barcelona Convention adopted the Offshore Protocol to address pollution deriving from seismological exploration and exploitation of seabed activities. [12] Unfortunately, the UN's work has been inadequate in this field, with the General Assembly mainly repeating a yearly call for scientific data-gathering on underwater noise.



[8] Anna Nowogrodzki, 'Global Warming Is Changing How the Ocean Carries Sound', Hakai Magazine (18 January 2017) <https://www.hakaimagazine.com/news/global-warming-changing-how-ocean-carries-sound/> accessed 28 January 2018.

[9] ACCOBAMS (Agreement on the Conservation of Cetaceans in the Black Sea, Mediterranean Sea and contiguous Atlantic), *Guidelines to address the impacts of anthropogenic noise on cetaceans in the ACCOBAMS area*, MOP4 Res 4.17 (2010) and IMO (International Maritime Organization), *Guidelines for the reduction of underwater noise from commercial shipping to address adverse impacts on marine life*, IMO Doc MEPC.1/Circ.833 of 7 April 2014, para 1.1.

[10] ASCOBANS (Agreement on the Conservation of Small Cetaceans of the Baltic and North Seas) Joint Noise Working Group, *Report of the Joint CMS/ACCOBAMS/ASCOBANS Noise Working Group (Joint NWG)*, AC22/Doc 4.2 (2015) <http://www.ascobans.org/sites/default/files/document/AC22_4.2_Report_NoiseWG.pdf> accessed 28 January 2018. See also CMS (Convention on the Conservation of Migratory Species of Wild Animals), *CMS Family Guidelines for Environmental Impact Assessment for Marine Noise-generating Activities, Draft for Consultation* (2016) <http://www.cms.int/sites/default/files/basic_page_documents/CMSFamilyGuidelines_EIAMarineNoise_ConsultationDraft_English.pdf> accessed 28 January 2018.

[11] EC Marine Strategy Framework Directive (n 8) art 3, Annex I and Annex III, Table 2.

[12] Protocol for the Protection of the Mediterranean Sea against Pollution Resulting from Exploration and Exploitation of the Continental Shelf and Seabed and its Subsoil, 1994 (entered into force 23 March 2011) (Offshore Protocol).

Legal regimes for noise specific to the Arctic

Efforts to address anthropogenic noise in the Arctic are close to non-existent. Given only recent, and limited, access to Arctic waters, this is not surprising. But with a high likelihood that the Arctic will witness increasing industrial activity and exploration, noise pollution should be on the agenda of the five Arctic coastal states - namely, Russia, Norway, the United States, Denmark (via Greenland) and Canada. Noise was first discussed at the Arctic level in 1991 through the Arctic Environmental Protection Strategy (AEPS, or Finnish Initiative) and the Declaration on the Protection of the Arctic Environment. [13] The AEPS was the precursor to the Arctic Council (AC). The AEPS identified underwater noise as a problem and priority and recommended that mitigation measures be taken, along with the collection of further scientific data. [14] Following the establishment of the AC, the Arctic Monitoring and Assessment Programme (AMAP) was entrusted with the AEPS' functions. However, the AMAP removed noise pollution from its agenda in 2000 and at the Second AMAP International Symposium on Environmental Pollution of the Arctic in October 2002 noise discussions were absent.[15]

In its 2009 Arctic Marine Shipping Assessment, the Protection of the Arctic Marine Environment (PAME), the Working Group of the AC which works on improving sustainability of the Arctic marine and coastal environments, recommended that the Arctic states begin conducting studies on the effects of noise on cetaceans in the Arctic and that, where necessary, the Arctic states work with the IMO to develop measures to mitigate against noise impacts.[16] The Conservation of Arctic Flora and Fauna (CAFF), the biodiversity Working Group of the AC, has not yet conducted any work on underwater noise.

The IMO Guidelines for the reduction of underwater noise from commercial shipping to address adverse noise impacts on marine life (IMO Guidelines) are a good start to addressing anthropogenic noise in Arctic waters: they recommend noise mitigation technologies for commercial ships, as well as speed reduction measures. Noise-quieting technologies can

[13] Arctic Council, *Arctic Environmental Protection Strategy* (Arctic Council, 1991). See also Timo Koivurova and David VanderZwaag, 'The Arctic Council at 10 Years: Retrospect and Prospects' (2007) 40(1) UBC L Rev 121, 124.

[14] Ibid 16, 22 and 28.

[15] Elena McCarthy, *International Regulation of Underwater Sound: Establishing Rules and Standards to Address Ocean Noise Pollution* (Kluwer Academic 2004), 156-157.

[16] Arctic Council, *Arctic Marine Shipping Assessment Report 2009 Report,* 7 <https://oaarchive.arctic-council.org/handle/11374/54> accessed 28 January 2018.

effectively reduce vessel-source noise. For example, the Norwegian research icebreaker Kronprins Haako is presently being constructed by Italian shipbuilder Fincantieri to include advanced technology to significantly reduce noise waves so that the marine species being studied by the researchers are not harmed.[17]

However, the IMO Guidelines alone are insufficient for protecting Arctic marine biodiversity. Firstly, the IMO Guidelines are not specific to the Arctic: the physiology of noise waves in the Arctic varies greatly as compared to other oceans, with sound waves travelling large distances in Arctic waters, and Arctic marine life is particularly sensitive to climate change and human activities. The IMO Guidelines also contain recommendations on noise-quieting technologies and speed reduction measures, but these may be insufficient to protect feeding and reproduction grounds and migratory routes of importance to Arctic marine biodiversity. In addition, the IMO Guidelines are limited to commercial shipping [18] and they are not legally binding.

Questions might also arise surrounding the role that other IMO instruments play in addressing underwater noise in the Arctic. The International Convention for the Prevention of Pollution from Ships (MARPOL) provides for the establishment by states of Special Areas to protect the marine environment from pollution due to shipping. However, the MARPOL's definition of pollution includes the discharge of noxious substances but makes no mention of the release of energy.[19] Thus, the MARPOL cannot be used to establish Special Areas to protect against noise pollution.[20] Of perhaps more interest to the Arctic region is the IMO International Code for Ships Operating in Polar Waters (Polar Code) which came into force in January 2017. The Polar Code was a strong step forward in terms of regulating shipping in the polar waters. As the Polar Code was implemented by the MARPOL (as well as the Safety of Life at Sea Convention), the Polar Code also includes noxious substances in its definition of vessel pollution but does not address anthropogenic noise.[21]

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[17] 'Plans on Ice', *Shipping and Marine* 128 (January 2016) 101, 103, <https://issuu.com/schofieldpublishingltd/docs/shipping_and_marine_issue_128_janua/56> accessed 28 January 2018.

[18] IMO (n 10) art 2.

[19] International Convention for the Prevention of Pollution from Ships (17 February 1973, as modified by the 1978 Protocol which entered into force 2 October 1983, updated by subsequent amendments) art 2, para 2 (MARPOL).

[20] Papanicolopulu (n 2) 255.

[21] International Code for Ships Operating in Polar Waters, Annex (entered into force 1 January 2017) MEPC 68/21/Add1 (Polar Code)

Conclusion

The legal regimes in place to address noise described in this paper showcase the lack of or gaps in regulation of anthropogenic noise in Arctic waters. Awareness of the impacts of noise on biodiversity is, however, slowly gaining track as international and regional bodies begin to take action. Due to the unique properties of noise, a better understanding of the harm that noise can have on Arctic marine life is required and, in particular, further scientific data needs to be collected. In this respect, the role of the AC in addressing anthropogenic noise cannot be understated. The AC has a strong history of conducting scientific research and, with Working Groups like the PAME and the CAFF, is well-placed to gather baseline data on the impacts of noise on Arctic whales. Based on the scientific findings, the AC could then consider appropriate policy guidelines for managing underwater noise in the Arctic.

The views expressed in this article are the author's own and do not reflect the views of the Federal Court of Canada.

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