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REDUCING IMPACTS FROM SHIPPING IN MARINE PROTECTED AREAS: A TOOLKIT FOR CANADA

# REDUCING IMPACTS FROM SHIPPING IN THE TALLURUTIUP IMANGA NATIONAL MARINE CONSERVATION AREA: ARCTIC CASE STUDY

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## Contents

# EXECUTIVE SUMMARY

This Arctic Case Study considers and applies the principles set forth in *Navigating the Law: Reducing Shipping Impacts in Marine Protected Areas* in the context of the newly established Tallurutiup Imanga National Marine Conservation Area (NMCA) in the Eastern Arctic region of Canada.[1] Tallurutiup Imanga is a collection of majestic landscapes and one of the richest ecological wonders in the world, attracting huge numbers of narwhals and other marine mammals, migratory birds and many other species to enjoy its bounty each summer. It also serves as a safe harbour for overwintering species that depend on the upwelling of warm water and profusion of aquatic organisms in the region's polynyas to make it through the long winter.

Tallurutiup Imanga is home to Qikiqtani Inuit who have lived in the region and cared for the land and sea in a sustainable manner for thousands of years. After decades of advocacy, their goal of establishing a marine protected area for their homeland in the form of an NMCA became a reality in 2019, although neither an interim nor final management plan nor protective regulations were yet in place by April 2021.

With formal legislation in place, the Tallurutiup Imanga NMCA will foreclose offshore oil and gas development and other industrial activity, but shipping will remain a key management challenge for the NMCA in the coming years. Vessel traffic, and associated ice-breaking activity, if permitted, have the potential to harm marine mammals and other wildlife, as well as Inuit harvesters. In recent years, climate change and retreating sea ice have made commercial shipping a more viable option through this eastern terminus of the Northwest Passage, which traverses the central channel of the Tallurutiup Imanga NMCA. Moreover, Baffinland Iron Mines Corporation (Baffinland) operates the Mary River mining operation on Baffin Island adjacent to the marine waters of the NMCA, and its ore transport vessels pass through the southeastern portion of the NMCA. Baffinland's extraction and shipping operations have increased in recent years, and the company has plans to further expand its activities.

The Governor in Council, Parks Canada, Transport Canada (TC) and the other federal agencies and officials involved in managing the NMCA and the vessel traffic within it have the authority under Canadian law to adopt a range of shipping-related management measures that would protect the tremendous ecological values and resources of Tallurutiup Imanga. The legal status of the portion of the NMCA that overlaps with the Northwest Passage is disputed under international maritime law. Regardless of whether these waters are considered internal to Canada (as Canada contends) or part of an international strait (as other nations contend), measures can be adopted to protect marine wildlife, and the five Inuit communities that depend on them, from the harmful impacts of shipping.

This paper sets forth several recommendations for such protective measures. As with all NMCAs, the Tallurutiup Imanga NMCA should be governed by a zoning system, including a Zone I (Preservation) area in which vessel traffic is excluded, and a Zone II (Natural Environment) area in which vessel traffic is carefully managed to minimize harmful impacts. The Zone II restrictions should include: (1) a 9-knot (kt) speed limit; (2) setback distances, navigational best practices and seasonal considerations designed to protect wildlife and Inuit harvesters; (3) a seasonal closure to ice-breaking activities and large vessels; and (4) vessel routeing measures. These Zone II restrictions should also apply within Zone I areas if any vessel traffic is allowed there. The effectiveness of these vessel management measures would be enhanced through international approval by the International Maritime Organization (IMO), and this paper recommends seeking such approval.

[1] Kofahl, M. and Hewson, S. 2020. *Navigating the Law: Reducing Shipping Impacts in Marine Protected Areas*. Part of WWF-Canada's Reducing Impacts from Shipping in MPAs: A Toolkit for Canada.

Vessel-related pollution is also of concern for the Tallurutiup Imanga NMCA. The vessel management recommendations listed above would be helpful in reducing the risks and impacts associated with oil and hazardous substance spills and pollution and in reducing the harmful impacts of underwater noise. Although Canada has strong laws prohibiting discharges and dumping of pollution in Arctic waters, there are some gaps relating to sewage, greywater, scrubber washwater and ballast water. This paper recommends that the Governor in Council, working with TC and Parks Canada as appropriate, make regulations prohibiting ballast water exchanges and all sewage, greywater and scrubber effluent discharges within or near the NMCA. To avoid unduly burdening local Inuit communities, the federal government should provide funding and support for the construction of any additional vessel wastewater reception facilities in the region that may be needed. The government should also establish thresholds, noise budgets and indicators to manage noise pollution in the NMCA, and it should implement collaborative programs with Inuit partners, like the Qikiqtaaluk Wildlife Board (QWB), local hunters and trappers organizations (HTOs) and the Qikiqtani Inuit Association (QIA), to conduct underwater noise research and monitoring, as well as monitoring of shipping and its impacts on wildlife, wildlife habitat and Inuit activities. At the international level, the Government of Canada should advocate for: a ban on the use of heavy fuel oil (HFO) in the Arctic by 1 January 2024 without exemptions or waivers, rules governing the reduction of underwater noise and design of quiet ships, consultative status for the Inuit Circumpolar Council (ICC) at the IMO, an Arctic-wide underwater noise monitoring regime and designation of the Tallurutiup Imanga NMCA as a particularly sensitive sea area (PSSA).


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# RECOMMENDATIONS

## RECOMMENDATION #1:

**Delineation of Zone I (Preservation) area and associated restrictions in the NMCA Management Plan.** Establish a core Zone I (Preservation) area within the management plan for the Tallurutiup Imanga NMCA. At a minimum, Zone I should include the Pond Inlet and Admiralty Inlet protection areas described in this paper. Zone I should also include other wildlife habitat and Inuit harvesting areas identified as especially important by Parks Canada in collaboration with the regional wildlife board (QWB) and local HTOs. To maximize protection, the areas comprising Zone I could simply exclude all vessel traffic and associated ice-breaking activity, subject to reasonable exceptions for human safety, emergency response and other exigent circumstances while allowing use by Inuit as provided under the NLCA. Alternatively, it may be reasonable for smaller vessels (e.g., under 20 metres (m) in length) to be allowed to transit the area as long as they adhere to the speed restrictions and other protective measures specified for Zone II.

## RECOMMENDATION #2:

**Delineation of Zone II (Natural Environment) area and associated restrictions in the NMCA Management Plan:** Designate all areas of the Tallurutiup Imanga NMCA, other than those in Zone I, as a Zone II (Natural Environment) area within the management plan for the NMCA. The restrictions set forth below should be incorporated into the management plan as well, and these should be made applicable throughout Zone II. If any vessel traffic is allowed in Zone I, these restrictions should be applicable in Zone I as well. However, Inuit should be excluded from these restrictions. It is important to ensure that any restrictions on Inuit activities in the NMCA should be in full compliance with the terms negotiated between Inuit and the Government of Canada in the NLCA."

Recommendation #2(a) – Vessel speed restriction. Establish a 9kt speed limit in the management plan for the Tallurutiup Imanga NMCA that is generally applicable at all times, throughout all areas of the NMCA, and for all sizes and types of vessels, including bulk cargo carriers, cruise ships, fuel tankers, government vessels, private boats and others. Exceptions should be made, however, to allow increased speed when necessary to avoid a safety hazard or wildlife disturbance and to avoid impeding subsistence harvesting, while at the same time ensuring that Inuit rights under the NLCA are not infringed upon.

Recommendation #2(b) – Setback distances, navigational best practices and seasonal considerations. Incorporate the following setback distances, navigational best practices and seasonal considerations into the management plan for the NMCA on a mandatory basis, or a voluntary basis subject to negotiations with the QWB and local HTOs:

Setback distances – Vessel operators should maintain the following setback distances when in the presence of wildlife:

- 5 kilometres (km) from an ulliit/walrus haul-out (all vessels);
- 2 to 5km from marine mammals (bulk cargo carriers, fuel tankers, other large vessels);
- 2km from ivory gull breeding sites (all vessels);
- 1,500m from seabird, seaduck and waterfowl colonies and moulting aggregations for ships (e.g., greater than 20m in length);
- 500m from marine mammals and seabird, seaduck and waterfowl colonies and moulting aggregations for smaller vessels (e.g., less than 20m in length) moving faster than 2kt;
- 300m from marine mammals and seabird, seaduck and waterfowl colonies and moulting aggregations for smaller vessels (e.g., less than 20m in length) moving less than 2kt;

Navigational best practices:

- Community use – Vessel operators should give Inuit harvesters the right-of-way, and they should not approach harvesting activities or allow photographs to be taken of such activities.
- Inuit travel routes – Vessel operators should avoid crossing community transportation corridors on sea ice, unless accompanied by ice-bridging.
- Marine mammals – Vessel operators should adhere to the following mitigation procedures in the vicinity of marine mammals:
    - Give wildlife the right-of-way.
    - Maintain a straight course and constant speed, avoiding erratic behaviour.
    - When marine mammals appear to be trapped or disturbed by vessel movements, vessels should take appropriate steps to mitigate the disturbance, including ceasing movement until the wildlife have moved away from the immediate area.

Seasonal considerations:

- Whales – Vessel operators should be especially cautious in whale calving, foraging and migration areas from mid-July through mid-September.
- Polynyas – Avoid shipping in polynyas (approximately October through July).
- Floe edges – Avoid shipping through and around floe edges from October through July.
- Seal pupping – Avoid shipping through seal habitat areas (see ***Appendix 9***) during pupping season from October through June.
- Caribou – Avoid shipping in caribou sea ice crossing areas from October through July.

To the extent these measures are made mandatory, such rules should not apply when a vessel's passengers are actively engaged in traditional harvesting activities, and any mandatory provisions applicable in the main east–west channel of Tallurutiup Imanga should be carefully crafted to avoid excessively slowing or delaying foreign ships.

Recommendation #2(c) – Seasonal closure to ice-breaking and large ships. Establish in the management plan for the Tallurutiup Imanga NMCA a seasonal ice-breaking prohibition and a seasonal closure to large ships. The management plan should prohibit the breaking of landfast ice and travel by all vessels larger than 20m in length throughout the NMCA from approximately 1 October through 31 July, but the federal government should retain the authority to adjust these dates, in consultation and agreement with the regional wildlife board (QWB) and local HTOs, depending on annual variations in weather and ice conditions. To minimize controversy relating to foreign ships, the seasonal closure to large vessels could be limited to nearshore areas covered by landfast ice, while allowing foreign vessels to travel through the central corridor of the main east–west channel of Tallurutiup Imanga in the absence of landfast ice.

Recommendation #2(d) – Vessel routeing. In addition to the exclusion of vessel traffic from Zone I (Preservation) areas, incorporate into the management plan for the Tallurutiup Imanga NMCA a mandatory version of the Baffinland shipping route and other shipping routes designed to avoid safety hazards and especially sensitive wildlife habitat. To minimize controversy concerning foreign vessels, routeing measures within the main east–west channel could be implemented with respect to foreign vessels on a voluntary basis or through international consensus and approval from the IMO.

Recommendation #2(e) – Precautionary area designation by IMO. Seek IMO approval for the designation of the entire Tallurutiup Imanga NMCA as a "precautionary area" with authorization for and/or specification of associated speed restrictions, setback distances, navigation requirements, routeing measures, seasonal closures and ice-breaking limitations.

Recommendation #2(f) – Inuit representation at IMO. Support and advocate for the IMO to approve the ICC's application for consultative status to ensure Inuit representation at the IMO.

## RECOMMENDATION #3:

**Reduce the risk of oil and hazardous substance spills:**

Recommendation #3(a) – Vessel management. Reduce the risks associated with oil and hazardous substance spills by establishing core preservation and natural environment areas, speed limits, setback distances, navigational best practices, seasonal ice-breaking and vessel traffic closures, and vessel routeing measures, as described in Recommendations #1 and #2.

Recommendation #3(b) – Arctic HFO ban by IMO. Continue to support and advocate for an international ban on the use and carriage for use of HFO throughout the Arctic by 1 January 2024 without exemptions or waivers.

## RECOMMENDATION #4:

**Strengthen prohibitions on discharges and dumping:**

Recommendation #4(a) – Sewage and greywater discharge prohibition. Make regulations prohibiting all sewage and greywater discharges, including treated and untreated, within the boundaries of the Tallurutiup Imanga NMCA. The prohibition should apply to ships operating entirely within Canada's Exclusive Economic Zone (EEZ) as well as those originating outside the EEZ boundary. These regulations should be incorporated into the management plan for the NMCA.

Recommendation #4(b) – Scrubber washwater discharge prohibition. Make regulations prohibiting the discharge of any effluent originating from a scrubber system, including bleed-off from closed loop and hybrid systems, within the boundaries of the Tallurutiup Imanga NMCA. The prohibition should apply to ships operating entirely within Canada's EEZ as well as those originating outside the EEZ boundary. These provisions should be incorporated into the management plan for the NMCA.

Recommendation #4(c) – Vessel wastewater reception facilities. Provide federal funding for the construction of vessel wastewater reception facilities as needed to avoid financial and logistical burdens on Inuit communities associated with the sewage and greywater discharge prohibitions. Until adequate wastewater reception facilities are available, and in instances when the discharge of wastewater is unavoidable, a discharge should be allowed only if the vessel is located at a distance of at least 12 nautical miles (NM) from an ice shelf or landfast ice and as far as practicable from areas of ice concentration exceeding 10 per cent and only if the vessel has in operation an approved sewage treatment plant. These facility construction plans and interim requirements should be incorporated into the management plan for the NMCA.

Recommendation #4(d) – Ballast water exchange prohibition. Make regulations prohibiting all ballast water discharges within the boundaries of the Tallurutiup Imanga NMCA as well as in a buffer zone area extending to at least 0.5NM or, preferably, 1NM outside the NMCA boundary. The prohibition should apply to ships operating entirely within Canada's EEZ as well as those originating outside the EEZ boundary. Exemptions should be made for truly local vessel traffic that originates and remains entirely within the Eastern Canadian Arctic. A new alternate ballast water exchange zone should be established outside the buffer zone for use in urgent situations. Limited exemptions may also be needed to allow ballast water exchange when necessary to protect vessel stability and human safety. Any exemptions should be construed narrowly, and reporting and recordkeeping requirements should be in place to ensure that such exemptions are not overutilized. These regulations and the locations of new alternate ballast water exchange zones should be incorporated into the management plan for the NMCA.

Recommendation #4(e) – Exemptions for vessels engaged in subsistence harvesting. Vessels engaged in subsistence harvesting within the boundaries of the Tallurutiup Imanga NMCA should be made exempt from the sewage and greywater discharge prohibitions and the ballast water exchange restrictions described above.

## RECOMMENDATION #5:

**Reduce underwater noise:**

Recommendation #5(a) – Vessel management. Reduce underwater noise by reducing ship speed and avoiding sensitive habitats through the establishment of core preservation and natural environment areas, speed limits, setback distances, navigational best practices, low emissions and noise vessels, seasonal ice-breaking and vessel traffic closures, and vessel routeing measures, as described in Recommendations #1 and #2. In parallel, establish thresholds, noise budgets and indicators to manage noise pollution in the NMCA.

Recommendation #5(b) – Underwater noise research and monitoring. Develop and implement collaborative programs involving QIA, QWB, HTOs and other Inuit partners to conduct underwater noise research and monitoring, which will serve as the basis for additional guidelines and standards to ensure ships operating within the NMCA are as quiet as possible. Establish a regional and Arctic-wide underwater noise monitoring regime similar to the European Union's Joint Monitoring Programme for Ambient Noise North Sea (JOMOPANS) in the North Sea Region.

Recommendation #5(c) – Underwater noise regulation by IMO. Continue to support and advocate for enforceable international rules governing underwater noise reduction.

## RECOMMENDATION #6:

**Pursue a PSSA Designation by IMO:** Compile evidence supporting the designation of the Tallurutiup Imanga NMCA as a PSSA by the IMO, and initiate the designation process. Use the shipping-related protective measures set forth in Recommendations #1 through #5 as associated protective measures to support such a designation.

# TALLURUTIUP IMANGA NMCA

## LOCATION AND GEOGRAPHY

Tallurutiup Imanga is a marine area of the Qikiqtani region in northeastern Nunavut within the Canadian Arctic (Figure 1).[2] The main east–west channel is approximately 320km long and 64km wide, situated between Devon Island to the north and Qikiqtaaluk (Baffin Island) and Somerset Island to the south.[3] "Tallurutiup" is the Inuktitut term for Devon Island, and it describes a woman's chin with tattoo marks, likely referring to certain geographic streaks on the island.[4] "Imanga" is the Inuktitut term for a body of water.[5] Tallurutiup Imanga is shown as Lancaster Sound on most maps before 2019. The majestic coastline is dominated by cliffs and jagged mountains, ice fields, tidewater glaciers, fjords, inlets and bays, as well as coastal plains and lowlands.[6] Landfast ice and pack ice are common for up to 10 months of the year in Tallurutiup Imanga.[7] At the same time, however, polynyas — open water areas that stay ice-free year-round — and the shore lead systems that develop between them ensure the presence of extensive open water in Lancaster Sound and east of Devon Island and Jones Sound in many winters.[8]

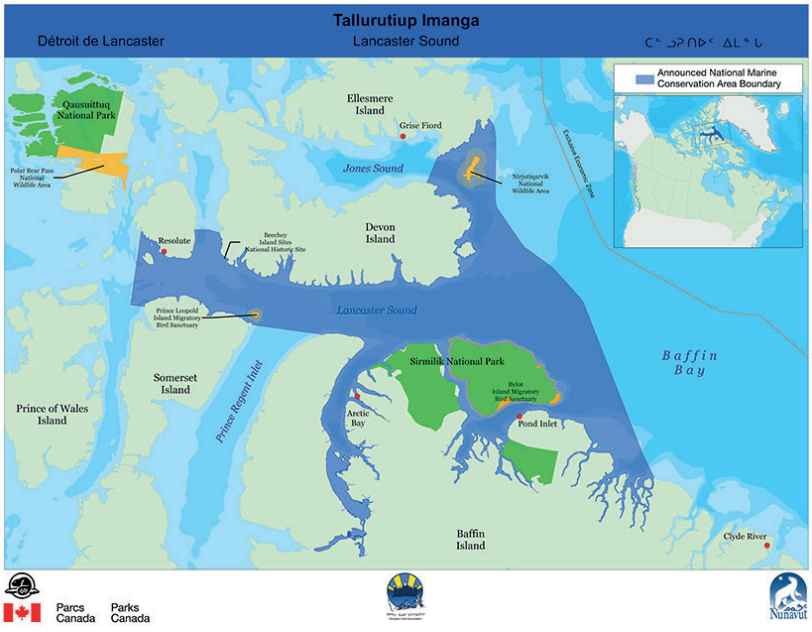


Figure 1 – Boundary of Tallurutiup Imanga NMCA (Source: Parks Canada)

[2] The region is also known as Qikiqtaaluk, based on the Inuktitut name for Baffin Island. See Travel Nunavut's information about Qikiqtaaluk, online at travelnunavut.ca/regions-of-nunavut/qikiqtaaluk

[3] See *Encyclopedia Britannica* entry on Lancaster Sound, Canada. Online: britannica.com/place/Lancaster-Sound

[4] Wong, M. 2017. Canada's Newest and Largest Marine Protected Area: Tallurutiup Imanga – Lancaster Sound. International Union for Conservation of Nature (IUCN). Online: iucn.org/news/protected-areas/201708/canada%E2%80%99s-newest-and-largest-marine-protected-area-tallurutiup-imanga-%E2%80%93-lancaster-sound; Tallurutiup Tariunga is an alternate Inuktitut name for Tallurutiup Imanga – Bell, J. 2017. Welcome to Tallurutiup Imanga: Nunavut's New Marine Protected Area. *Nunatsiaq News*. Online: nunatsiaq.com/stories/article/65674welcome_to_tallurutiup_imanga_nunavuts_new_marine_protected_area; Lancaster Sound is the name British explorers gave to the area in the 1600s – see Britannica entry on Lancaster Sound.

[5] Bell, Welcome to Tallurutiup Imanga.

[6] See Parks Canada. 2016. National Marine Conservation Areas of Canada, Canada's NMCA System Plan, Lancaster Sound. Online: web.archive.org/web/20070217223315/http:/www.pc.gc.ca/progs/amnc-nmca/systemplan/itm1-/arc6_e.asp

[7] Ibid. As defined in Polar Code s 4.1.3, see *infra* note 152, landfast ice, or fast ice, is "ice which forms and remains fast along the coast, where it is attached to the shore, to an ice wall, to an ice front, between shoals or grounded icebergs." "Pack ice" refers to sea ice that forms in deep waters and can drift and move with the currents and winds.

[8] Parks Canada. 2019. National Marine Conservation Areas, Tallurutiup Imanga, Ecological Values. Online: pc.gc.ca/en/amnc-nmca/cnamnc-cnnmca/tallurutiup-imanga/valeurs-values

# WILDLIFE AND ECOLOGY

Tallurutiup Imanga is recognized as one of the most important ecological areas in the world. Indeed, it has been called the "Serengeti of the Arctic" because of its rich wildlife diversity.[9] It was identified as a "Super Ecologically and Biologically Significant Area for the Arctic" in a 2011 report.[10]

Due to strong currents and tides and upwellings of nutrient-rich water, the region's polynyas, floe edges and shore lead systems provide important habitat for large concentrations of marine mammals, seabirds and other wildlife, as well as crucial feeding areas, overwintering sites, migratory stop-overs and spring feeding areas when access to ice-covered waters to the west is impossible.[11] Upwellings of warm water within the polynyas create explosions of plankton that support vast schools of Arctic cod (up to 30,000 tonnes) and many other species of fish and invertebrates, key food sources for many marine mammals and seabirds.[12] The North Water Polynya in Baffin Bay, adjacent to Tallurutiup Imanga, is the world's largest polynya and ensures an abundant food supply for the region's wildlife throughout the year.[13] Ice-edge habitat along the boundaries of polynyas and lead systems also provides essential spring staging areas for marine mammals and seabirds.[14] This abundant marine wildlife has sustained Inuit, their ancestors and predecessors for thousands of years.

## Polar Bears

The Tallurutiup Imanga region includes portions of two polar bear subpopulations, Lancaster Sound and Baffin Bay, the largest in Canada.[15] Females typically enter dens in the fall and give birth between November and February.[16] They remain in the dens, nursing their cubs until they emerge in March and April.[17] Females and cubs often remain near their den sites in the spring, harvesting in nearby fjords and along floe edges.[18]


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[9] Ibid.
[10] Speer, L. and Laughlin, T.L.2011. IUCN-NRDC Workshop Report. p. 11. Online: portals.iucn.org/library/efiles/documents/Rep-2011-001.pdf
[11] Parks Canada. 2017. Tallurutiup Imanga/Lancaster Sound, Backgrounder. Online: canada.ca/en/parks-canada/news/2017/08/tallurutiup_imangalancastersound.html; Mallory, M.L., et al. 2018. Identifying Key Marine Habitat Sites for Seabirds and Sea Ducks in the Canadian Arctic. NRC Research Press. Online: arcticecology.ca/uploads/4/5/1/1/45115275/mallory_env_rev_key_sites_2019__1_.pdf
[12] Parks Canada, NMCAs, Tallurutiup Imanga, Ecological Values; Mallory, Identifying Key Marine Habitat Sites.
[13] Moshøj, C.M., PhD. 2015. WWF Report, The North Water Polynya. Online: awsassets.wwfdk.panda.org/downloads/racer_north_water_polynya.pdf
[14] Lancaster Sound National Marine Conservation Area Feasibility Assessment Steering Committee. 2019. Feasibility Assessment Report. 2017. p. 9. Summary online: pc.gc.ca/en/amnc-nmca/cnamnc-cnnmca/tallurutiup-imanga/rapport-report
[15] Ibid at p. 22.
[16] Committee on the Status of Endangered Wildlife in Canada (COSEWIC). 2018. *Assessment and Update Status Report: Polar Bear*. p. 21. Online: sararegistry.gc.ca/virtual_sara/files/cosewic/sr_polar_bear_0808_e.pdf
[17] Ibid at p. 22.
[18] Moshøj, C.M. 2014. *On Thin Ice, Human-Polar Bear Conflicts in Ittoqqortoormiit*. WWF. p. 12. Online: arcticwwf.org/site/assets/files/1874/on_thin_ice.pdf; Appendix 4.

## Whales

Baffin Bay is home to the world's largest population of narwhals, with more than 60,000 individuals (about 75 per cent of the world's population),[19] along with about 20 per cent of Canada's beluga whale population[20] and about 6,500 bowhead whales.[21] These and other whales, including orcas and minke whales,[22] migrate to the area and spend the summer calving and foraging in the fjords, inlets and estuaries of Tallurutiup Imanga.[23]


## Walrus

Atlantic walrus are also found in Tallurutiup Imanga, and they tend to be most heavily concentrated around the major polynyas.[24] A haul-out site — ulliit in Inuktitut — is a place of refuge where large numbers of walrus congregate, reproduce and socialize. Walruses haul out on both sea ice and land.[25] They often form tight congregations on ice edges near polynyas in winter where food is readily available.[26] In summer, walruses congregate on low rocky shores, often returning to the same locations annually.[27] Suitable habitat for ulliit is limited.[28] Large numbers of walrus must be able to move easily, quickly and safely in and out of the water, and haul-outs must be in close vicinity to foraging areas, mainly shellfish beds.[29]

## Seals

Ice-dependent seals, such as ringed and bearded seals, reside in Tallurutiup Imanga in high concentrations.[30] These seal populations are especially sensitive during pupping season in the spring months.[31]

[19] Wong, Canada's Newest and Largest Marine Protected Area; NMCA Feasibility Assessment, at p. 22.
[20] Wong, Canada's Newest and Largest Marine Protected Area.
[21] Laidre, K.L., et al. 2014. Arctic Marine Mammal Population Status, Sea Ice Habitat Loss, and Conservation Recommendations for the 21st Century. Conservation Biology 29: 724. Online: doi.org/10.1111/cobi.12474 (estimating Eastern Canada-Western Greenland population of bowhead whales, a large portion of which summer in Nunavut waters).
[22] WWF Canada. 2018. Eastern Arctic Mariner's Guide. Online: wwf.ca/report/eastern-arctic-mariners-guide
[23] ***Appendix 9***.
[24] ***Appendix 2*** and ***Appendix 9***.
[25] COSEWIC 2017. Assessment and Status Report: Atlantic Walrus. Online: wildlife-species.canada.ca/species-risk-registry/virtual_sara/files/cosewic/sr_Atlantic%20Walrus_2017_e.pdf; Appendices 2, 3, and 9.
[26] COSEWIC, Assessment and Status Report: Atlantic Walrus.
[27] Ibid.
[28] Ibid.
[29] Ibid.
[30] Parks Canada, NMCAs, Tallurutiup Imanga, Ecological Values; NMCA Feasibility Assessment; Appendix 9.
[31] WWF Eastern Arctic Mariner's Guide.

## Seabirds

Millions of migratory seabirds return to Tallurutiup Imanga each summer to raise their young. About one third of all Eastern Canadian colonial seabirds breed in the region, including thick-billed murres, black-legged kittiwakes, northern fulmars, black guillemots, Arctic terns, dovekie, sea ducks, large colonies of greater snow geese and glaucous, Iceland and ivory gulls.[32] Many species of birds are unable to fly throughout much of the summer due to adult moulting and early chick development before fledging.[33] They spend much of their time in the water, on ice floes near their nesting sites, and within their nesting areas.[34]

## Fish

About thirty fish species are found in Tallurutiup Imanga.[35] As discussed above, however, Arctic cod are present in especially great abundance and serve as important prey for many of the region's marine mammals and seabirds.

## Caribou

Caribou are found throughout terrestrial areas surrounding Tallurutiup Imanga. They go through 70-to-90-year cycles of lower and higher abundance.[36] Inuit traditional and current knowledge, known as Inuit Qaujimajatuqangit (IQ), explains that caribou are especially sensitive to human disturbance during low-abundance phases of their cycles, as they have been since around the year 2000. As female caribou migrate to calving and post-calving areas, they must cross on the sea ice in some areas because of unpassable icefields and cliffs.[37] The primary caribou sea ice crossing routes within the Tallurutiup Imanga NMCA are in the fjords of northeastern Baffin Island south of the community of Pond Inlet (Figure 1). In future, sea ice conditions and wildlife movements may change due to climate change, although no major changes in these fjords have been reported as yet.[38] Intact sea ice crossing routes within the NMCA will probably remain important for caribou movements for many years to come.


[32] Parks Canada, NMCAs, Tallurutiup Imanga, Ecological Values; Mallory, Identifying Key Marine Habitat Sites; Wong, Canada's Newest and Largest Marine Protected Area.
[33] Mallory, Identifying Key Marine Habitat Sites.
[34] ***Appendix 5*** and ***Appendix 6***.
[35] NMCA Feasibility Assessment; Appendices 7 and 8.
[36] Ferguson, M.A.D., Williamson, R.G. and F. Messier. 1998. Inuit Knowledge of Long-term Changes in a Population of Arctic Tundra Caribou. Arctic 51(3): 201-219. Online: journalhosting.ucalgary.ca/index.php/arctic/article/view/64118/48053
[37] Based on IQ.
[38] Ibid.

# QIKIQTANI INUIT

Tallurutiup Imanga and the lands surrounding it are home to Qikiqtani Inuit, and their ancestors, who have relied on its rich biological productivity for thousands of years.[39] Each spring and autumn, the large numbers of narwhal and bowhead whales that migrate through Tallurutiup Imanga provide food and other resources for the nearby Inuit communities, including Pond Inlet, Grise Fjord, Clyde River, Resolute Bay and Arctic Bay.[40] Other traditional foods of the Qikiqtani region — known locally as "country food" — include seal, waterfowl, fish, caribou, polar bears, walrus, berries and more.[41] These are essential not only for nutrition, but also for maintaining the region's culture and sustainable self-reliant communities.[42] Through the practice of traditional activities and harvesting, Qikiqtani Inuit are able to feed themselves and their families while fostering and handing down to future generations a strong sense of cultural identity.[43] The vibrant culture and well-being of Qikiqtani Inuit are strongly tied to the land and sea.[44] These communities place a high value on the traditional knowledge known as IQ, as well as Inuit respect and care for the land, animals and the environment, referred to as Avatittinnik Kamatsiarniq.[45]

Key leadership and management entities in the Qikiqtani region of the territory of Nunavut include the QIA, a regional Inuit association representing approximately 15,500 Inuit in the 13 communities of the region.[46] The mission of QIA is to "safeguard, administer and advance the rights and benefits of the Qikiqtani Inuit" and to "promote Inuktitut, the Inuit language and Inuit traditions, environmental values, self-sufficiency, and economic, social and cultural well-being ..."[47] The QWB is a regional wildlife organization that represents 13 HTOs, and the same Inuit as does QIA, but with specific and general powers and functions for Inuit in the management and conservation of wildlife and their habitats. Each HTO manages local harvesting practices, allocations and other aspects related to wildlife among Inuit in each community, while the QWB manages similar aspects related to wildlife among multiple communities.[48] The Nunavut Wildlife Management Board (NWMB) is an instrument of government with equal numbers of delegates selected by government and Inuit. Because governments retain ultimate responsibility for wildlife management in Nunavut, the NWMB plays a largely advisory role with respect to wildlife and habitat management.[49]

[39] NMCA Feasibility Assessment.
[40] Ibid.
[41] Ibid at p. 25; QIA. 2019. Food Sovereignty and Harvesting. Online: qia.ca/wp-content/uploads/2019/03/Food-Sovereignty-and-Harvesting.pdf
[42] NMCA Feasibility Assessment.
[43] Ibid.
[44] Ibid.
[45] Ibid; LeTourneau, M. 2017. Inuit Celebrate Another Win. Nunavut News. Online: nunavutnews.com/nunavut-news/inuit-celebrate-another-environmental-win; Parks Canada. 2019. National Marine Conservation Areas, Tallurutiup Imanga, Inuit Traditional Knowledge. Online: pc.gc.ca/en/amnc-nmca/cnamnc-cnnmca/tallurutiup-imanga/connaissances-knowledge
[44] Ibid.
[45] Ibid; LeTourneau, M. 2017. Inuit Celebrate Another Win. *Nunavut News*. Online: nunavutnews.com/nunavut-news/inuit-celebrate-another-environmental-win; Parks Canada. 2019. National Marine Conservation Areas, Tallurutiup Imanga, Inuit Traditional Knowledge. Online: pc.gc.ca/en/amnc-nmca/cnamnc-cnnmca/tallurutiup-imanga/connaissances-knowledge
[46] QIA. Who We Are. Online: qia.ca/about%20us
[47] Ibid.
[48] Nunavut Tunngavik, Inc. 2018. Article 7: Special Features of Inuit Harvesting. Nunavut Agreement. Online: nlca.tunngavik.com/?page_id=561
[49] Nunavut Wildlife Management Board. Home. Online: nwmb.com/en


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Marine mammals are a vital subsistence resource for Qikiqtani Inuit. The traditional whale harvest, including narwhals, belugas and other whales, serves as a focal point of their culture and fulfills a substantial portion of their nutritional needs. Walruses are likewise important for Inuit well-being (e.g., food, other materials), and they serve as a key component of the Qikiqtaaluk marine ecosystem. Many ulliit are known to Qikiqtani people, and they carefully follow traditional rules for the timing and method for approaching ulliit to minimize disturbance.

Polar bears are an important part of Qikiqtani Inuit life as well, providing food and skins for clothing. As a top predator, they are critical to the functioning of the Qikiqtaaluk marine ecosystem. The polar bear harvest by Inuit is carefully managed through a complicated co-management system, and harvest levels have been more limited in recent years than under traditional customary harvesting practices. Polar bears den in coastal areas, and Inuit harvesters generally know where the dens are through their own observations and knowledge passed on by elders.

Arctic char, Arctic cisco (whitefish), lake trout, cod and other fish are staple foods for Qikiqtani Inuit. They harvest fish in lakes, rivers and coastal waters throughout all seasons of the year as the fish migrate. Seabirds, waterfowl and other birds serve as crucial food and cultural resources for Qikiqtani Inuit as well, and they are vital to the ecological health of Qikiqtaaluk region. Caribou are a keystone species for the maintenance of Qikiqtani Inuit culture and well-being, as well as for the Qikiqtaaluk ecosystem.


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## Inuit seasons and harvesting activities

Although the actual dates vary from year to year, Inuit seasons in Qikiqtaaluk region are generally understood as follows:

- Ukiaq – December and January are known as the "first winter," and this is the darkest period. Temperatures stay around -30°C, and there is extensive sea ice, lake ice and snow on land. Inuit harvest seal and polar bear during this period.
- Ukiuq – February and March may be known as the "second winter," and this is the coldest period. Temperatures range from -30 to -50°C. The sun returns in early February, and caribou, fish and seal harvesters travel on sea ice farther and more frequently thereafter because there is more light.
- Upingaksaaq – During April and May, temperatures range from -30 to -5°C. The sun is up 24 hours a day in early May, and whales, seabirds and waterfowl start to return during the month of May. Many Inuit harvest wildlife during this time. This period is also good for family camping, even with young children.
- Upingaaq – "Breakup" occurs in June and July. Snow is usually gone from land by mid-June, and the sea ice typically breaks up by late July. Skilled Inuit continue to travel on sea ice with their families until late June, even though large cracks in the ice are apparent. June is good for egging at goose, eider and seabird colonies. In July, people usually stay in town or at their camps.
- Aujaq – The sea and lakes are usually ice-free during August and September. The ground is always frozen again no later than mid-September. There may be some snow on the land in late September, but not enough for snowmobiles. During this season, harvesting of narwhal, seals, walruses, caribou, geese, ducks and fish are important for Inuit who need to stock up on winter food and skins.
- Ukiaqsaaq – "Freeze-up" of the sea ice and lakes takes place in October and November. Temperatures decline steadily from about -5 to -30°C, and the sun sets for the winter in early November. October and early November are an important time for harvesting, especially when there is less wind because this allows for an earlier freeze-up. Icebreaking during freeze-up could seriously disrupt these seasonal patterns and create difficult harvesting and travelling conditions on the sea ice for the entire winter.

From freeze-up in Ukiaqsaaq through breakup in Upingaaq, Inuit rely on many sea-ice routes throughout the Tallurutiup Imanga region for harvesting wildlife and travel between communities.[50] Moreover, the ice and floe edges surrounding polynyas serve as important wildlife harvesting platforms.[51] Subsistence harvesting in and around polynyas is fundamental to Qikiqtani Inuit survival and well-being, as well as to their cultural traditions and intergenerational and intercommunity connections. It is essential for Inuit nutrition, health, safety and well-being that these sea ice routes and the harvesting grounds surrounding them remain unaffected by ice breakers and vessel traffic.


[50] ***Appendix 1***.
[51] Ibid.

# ESTABLISHMENT OF THE TALLURUTIUP IMANGA NMCA

In 2017, after several decades of Inuit advocacy and multi-party negotiations, the governments of Canada and Nunavut, together with QIA, agreed upon a boundary for the Tallurutiup Imanga NMCA (Figure 1).[52] On 1 August 2019, the establishment of the NMCA became final with the execution of the Inuit Impact and Benefit Agreement (IIBA).[53] The Tallurutiup Imanga NMCA is the largest NMCA in Canada, protecting approximately 108,000km$^2$ in the Qikiqtani region.[54] Its fundamental purpose is to "protect and conserve a representative marine area for the benefit, education and enjoyment of Inuit of Nunavut and the people of Canada and the world."[55]

The entire area within the Tallurutiup Imanga NMCA boundary provides critically important habitat for marine mammals, birds and fish, and serves as a cultural heart for Inuit of the Qikiqtaaluk region. Indeed, almost every corner of its many sounds, channels, fjords, inlets, bays and estuaries are identified on one map or another because each plays a key role in the survival of wildlife and serves as essential harvesting areas for Qikiqtani Inuit.[56] The establishment of the boundary was based on the understanding that the entire 108,000km$^2$ area should provide vital protections for: (1) a "highly interconnected ecosystem that includes important migratory, feeding, nursery and breeding areas for a variety of species"; (2) "polynyas, which are depended on by wildlife for survival and by Inuit for harvesting"; (3) "various sites that support Inuit traditional land use and Inuit way of life"; (4) "essential migratory habitat for the majority of the world's narwhal population"; (5) "narwhal, beluga and bowhead whale aggregations"; (6) "Inuit cultural sites" and "other heritage sites"[57]; and (7) portions of two of the largest polar bear subpopulations in the world.[58]

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[52] Parks Canada, Tallurutiup Imanga/Lancaster Sound, Backgrounder.
[53] QIA, Blog, Tallurutiup Imanga and Tuvaijuittuq Agreements (6 Aug 2019), online: qia.ca/tallurutiup-imanga-and-tuvaijuittuq-agreements; Parks Canada. 2019. National Marine Conservation Areas, Tallurutiup Imanga Inuit Impact and Benefit Agreement. Online: pc.gc.ca/en/amnc-nmca/cnamnc-cnnmca/tallurutiup-imanga/entente-agreement
[54] Parks Canada. Tallurutiup Imanga National Marine Conservation Area. Online: pc.gc.ca/en/amnc-nmca/cnamnc-cnnmca/tallurutiup-imanga
[55] IIBA s 1.3.
[56] ***Appendices 1 through 9***.
[57] NMCA Feasibility Assessment, at p. 5.
[58] Polar Bears in Canada. Canada's Polar Bear Subpopulation. Online: polarbearscanada.ca/en/polar-bears-canada/canadas-polar-bear-subpopulations

# INCREASING SHIPPING ACTIVITY

## Northwest Passage

The main east-west channel of Lancaster Sound (Figure 1) within the NMCA serves as the eastern terminus of the Northwest Passage shipping route, which continues westward and southward to connect the Pacific and Atlantic oceans via waterways traversing the Canadian Arctic Archipelago (Figure 2).[59]

For centuries, the viability of the Northwest Passage as a transcontinental shipping route was largely theoretical. Until recently, Arctic sea ice prevented complete marine shipping transits of the Northwest Passage in a single winter without ships having to overwinter somewhere along the route. With recent climate change, however, Arctic seas have become increasingly ice-free in late summer and early fall.[60]

The sea ice decline has, in turn, rendered Arctic waterways more navigable for longer periods, making the Northwest Passage and other northern sea routes attractive as potential major shipping routes.[61] Indeed, the overall number of commercial vessels traversing the Arctic has increased significantly in recent years, and the upward trend is projected to continue.[62]

Even travel by large ships through the most formidable and impassable areas of the Arctic has already begun. In 2013, the *Nordic Orion* became the first commercial bulk carrier, carrying 15,000 metric tonnes of coal, to travel through the Northwest Passage.[63] In 2016, the first large passenger cruise ship, the *Crystal Serenity*, traversed the Northwest Passage in 32 days with 1,700 passengers and crew.[64] Overall, vessel transits rose from 443 in 2015 to 760 in 2017.[65]

Figure 2 – Northwest Passage shipping route (Source: NASA)

[59] This connection between oceans creates the potential for the Northwest Passage to be considered an international strait under international maritime law. See UNCLOS article 37 and discussion in the "International Law" section of "Legal Framework," below.

[60] Hoag, H. 2018. The Arctic Ocean's Ice-free Season Could Extend into Fall. ArcticToday. Online: arctictoday.com/arctic-oceans-ice-free-season-extend-fall/?wallit_nosession=1 (discussing studies presented at the Polar 2018 Open Science Conference in Davos, Switzerland).

[61] Gosnell, R. 2018. The Complexities of Arctic Maritime Traffic. *The Arctic Institute*. Online: thearcticinstitute.org/complexities-arctic-maritime-traffic; Struzik, E. 2016. Full Speed Ahead: Shipping Plans Grow as Arctic Ice Fades. Yale Environment 360. Online: e360.yale.edu/features/cargo_shipping_in_the_arctic_declining_sea_ice; Dalaklis, D., Baxevani, E. and P. Siousiouras. 2016. The Future of Arctic Shipping Business and the Positive Influence of the Polar Code. International Association of Maritime Economists, Annual Conference, Hamburg, Germany. Online: researchgate.net/profile/Dalaklis_Dimitrios/publication/307570631_The_Future_of_Arctic_Shipping_Business_and_the_Positive_Influence_of_the_Polar_Code/links/580492b208ae6c2449f96a17/The-Future-of-Arctic-Shipping-Business-and-the-Positive-Influence-of-the-Polar-Code.pdf?origin=publication_detail

[62] See also NMCA Feasibility Assessment, at pp. 34-35 (explaining that "with summer sea ice retreating as a result of climate change ... more vessels are coming to the Lancaster Sound region every year, most of these related to tourism, community resupply or affiliated with the Baffinland mining operation").

[63] Reuters. 2013. Northwest Passage Crossed by First Cargo Ship, the Nordic Orion, Heralding New Era of Arctic Commercial Activity. *National Post*. Online: nationalpost.com/news/canada/northwest-passage-crossed-by-first-cargo-ship-the-nordic-orion-heralding-new-era-of-arctic-commercial-activity

[64] The Arctic Journal. 2017. A Year after Its Historic Voyage, the Crystal Serenity is Preparing to Sail the Northwest Passage Again. ArcticToday. Online: arctictoday.com/a-year-after-its-historic-voyage-the-crystal-serenity-is-preparing-to-sail-the-northwest-passage-again

[65] Silver, G.K. and Adams, J.D. 2019. Vessel Operations in the Arctic, 2015-2017. Frontiers in Marine Science. Online: frontiersin.org/articles/10.3389/fmars.2019.00573/full

## Baffinland Mine

Another growing source of vessel traffic in Tallurutiup Imanga is the transport of ore from the Mary River iron mining operation on Baffin Island through a portion of the NMCA near the Inuit community of Pond Inlet (Figure 3). In 2014, the Federal Minister of Aboriginal Affairs and Northern Development Canada authorized Baffinland to ship up to 3.5 million tonnes of iron ore annually from its port at Milne Inlet to markets around the world.[66] The federal government increased Baffinland's authorization in 2018, allowing it to ship up to 6 million tonnes per year.[67] During the 2019 season, Baffinland shipped 5.85 million tonnes of ore, requiring 243 ship transits (ore carriers plus support and resupply vessels) along the route between July and October.[68]

Baffinland is currently seeking approval to expand the Milne Port, construct a railway north from the Mary River mine site to the port and increase its overall extraction and shipping of ore to 12 million tonnes per year, which equates to between 400 and 500 vessel transits (ore carriers, resupply, icebreakers and tugs).[69] Baffinland is also proposing to extend its shipping activities into the shoulder seasons during freeze-up and breakup. It has recently started shipping ore earlier (beginning in late June) and continuing later (through the end of October).[70]

For the foreseeable future, vessel traffic associated with transnational bulk cargo, local mining operations, tourism and other human activities can be expected to continue increasing above those levels seen in 2016 (year of Figure 4) in the Tallurutiup Imanga NMCA. The Arctic Council's 2021 report on Northwest Passage vessel traffic found that during the 2013-2019 period, unique ships entering the waterway increased 44 per cent, from 112 ships to 160.[71]

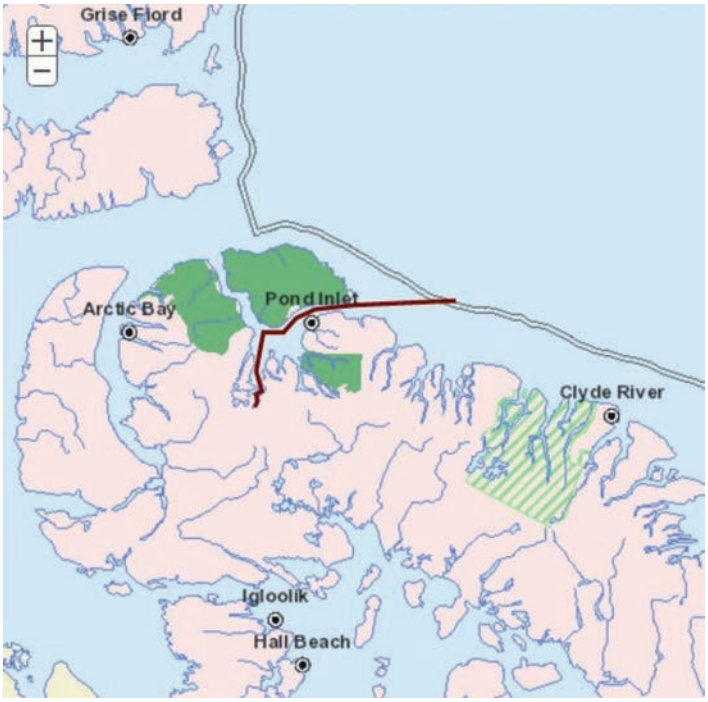


Figure 3 – Baffinland shipping route, 2020 (Source: Baffinland)

[66] Baffinland, Mary River Mine. Online: baffinland.com/operation/mary-river-mine

[67] Nunatsiaq News. 2018. Baffinland Sets New Iron Ore Shipping Record This Year. *Nunatsiaq News*. Online: nunatsiaq.com/stories/article/65674baffinland_sets_new_iron_ore_shipping_record_this_year; Baffinland, Expansion Project. Online: baffinland.com/expansion-project

[68] *See supra* note 67.

[69] Baffinland, Expansion Project; Tranter, E. 2020. Review Board Grants Baffinland's Request to extend Its Production Limit. *Nunatsiaq News*. Online: nunatsiaq.com/stories/article/review-board-grants-baffinlands-request-to-extend-its-production-limit; The proposed expansion has been controversial and is opposed by many Inuit. See Cecco, L. 2021. Inuit Harvesters Blockade Iron Mine in freezing temperatures over Expansion. *The Guardian*. Online: theguardian.com/environment/2021/feb/09/canada-inuit-harvesters-blockade-iron-mine-expansion-plan

[70] SeaWanderer. 2020. Baffinland to Charter the Multifunctional Icebreaker *Botnica*. SeaWanderer. Online: seawanderer.org/baffinland-to-charter-the-multifunctional-icebreaker-botnica

[71] Arctic Council. 2021. Report on Shipping in the Arctic Passage Launched. Arctic Council. Online: arctic-council.org/en/news/report-on-shipping-in-the-northwest-passage-launched


Figure 4 – Vessel Traffic in Tallurutiup Imanga, 2016 (Source: Vard Marine, Inc.)

# LEGAL FRAMEWORK

Navigating the Law includes a comprehensive discussion of the many Canadian and international laws governing shipping. The discussion below highlights a few of the laws, agreements and guidance that are most relevant for the management of shipping activities within the Tallurutiup Imanga NMCA.

## CANADIAN LAW

### CNMCA Act

The Tallurutiup Imanga NMCA is established and managed pursuant to the *Canada National Marine Conservation Areas Act* (CNMCA Act).[72] Under the CNMCA Act, marine conservation areas are established for the purpose of protecting and conserving representative marine areas for the benefit, education and enjoyment of the people of Canada and the world.[73]

The designation of an NMCA automatically precludes all aspects of exploration for and extraction of oil, gas, minerals, aggregates and any other inorganic matter within its boundaries.[74]

The CNMCA Act also precludes the "disposal of any substance" in waters within an NMCA without a permit.[75] The term "disposal" is defined broadly to include: the disposal of a substance at sea from a ship, aircraft, platform or structure; the disposal of dredged material into the sea from any source; the storage on the seabed, subsoil or ice of a substance that comes from a ship, aircraft, platform or structure; the deposit of a substance on the ice; the disposal at sea of a ship, aircraft, platform or structure; and any other act or omission that constitutes a disposal under regulations made by the Minister of the Environment further defining acts or omissions that constitute a disposal.[76] The disposal of a substance is not prohibited, however, if it is incidental to or derived from the normal operations of a ship, aircraft, platform, structure or equipment,[77] or if it is necessary to avert a danger to human life or threat to a ship, aircraft, platform or structure at sea.[78] The term "substance" is also defined broadly to include "any distinguishable kind of organic or inorganic matter, whether animate or inanimate."[79] There is some ambiguity in the meaning of key terms, such as what is "incidental to ... normal operations" or "necessary" to avert danger. With respect to the Tallurutiup Imanga NMCA, these issues are largely resolved by the applicability of the more specific and stringent provisions of the *Arctic Waters Pollution Prevention Act* (AWPPA) and its implementing regulations, as discussed below.

[72] CNMCA Act, SC 2002 c 18. See the "*Canada National Marine Conservation Areas Act* – National Marine Conservation Areas" section of "The Canadian Legal Framework" in *Navigating the Law*.
[73] Ibid, s 4(1).
[74] Ibid, s 13.
[75] Ibid, s 14(1).
[76] Ibid, s 2(1) (cross-referencing the *Canadian Environmental Protection Act*, 1999 (CEPA) s 122(a)-(g)).
[77] Ibid, s 2(1) (cross-referencing CEPA s 122(h)). The statute also includes a few other narrow exemptions of less importance here. See ibid, s 2(1) (cross-referencing CEPA s 122(i)-(k)).
[78] Ibid, 14(1) (referencing CEPA s 130).
[79] The term "substance" is not defined in the CNMCA Act, but it appears the CEPA definition of "substance" (CEPA s 3(1)) is applicable due to the CNMCA Act's incorporation of the CEPA definition of "disposal," which uses the term "substance" as defined for purposes of CEPA.

Beyond these prohibitions, under the CNMCA Act, NMCAs must be managed in a sustainable manner to meet the needs of present and future generations without compromising ecosystem structures and functions.[80] The government is expected to "consider traditional ecological knowledge ... and involve ... affected coastal communities, aboriginal organizations, aboriginal governments, bodies established under land claims agreements and other appropriate persons and bodies."[81]

Each NMCA must be administered through a management plan, which must be developed within 5 years after establishment and reviewed at least once every 10 years.[82] NMCA management plans "shall be based on principles of ecosystem management and the precautionary principle" in order to "protect marine ecosystems and maintain marine biodiversity."[83] To ensure consistency with the principles and objectives of the Nunavut Land Claims Agreement (NLCA), each NMCA must be divided into zones according to Inuit systems of wildlife and habitat managements. This could be accomplished with at least one zone that "fully protects special features or sensitive elements of ecosystems," especially those identified by Inuit, which could be known as Zone I (Preservation) areas, and at least one zone that "fosters and encourages ecologically sustainable use of marine resources," as identified by Inuit and known as a Zone II (Natural Environment) area.[84] Parks Canada guidelines for NMCAs describe zoning as an essential strategy within an NMCA management plan.[85] The purposes of zoning are to define and map varying levels of protection and use and to separate potentially conflicting activities.[86] The first priority for zoning is "maintaining the structure and function of marine ecosystems."[87] Zoning restrictions can include seasonal, cyclical, diurnal or other types of access and use restrictions to protect the marine ecosystem.[88] Establishing and maintaining a core of Zone I and II areas is a key feature of all NMCAs.[89]

Management planning for NMCAs must also consider the routeing of new transportation corridors. Vessel access to and movement within an NMCA must be managed in conformity with its conservation objectives and zoning plan.[91] Traditional rights of marine harvesting and access, including over-ice transportation, must be recognized and protected, as long as this is consistent with the conservation of marine wildlife and their habitat.[92]

Furthermore, under the CNMCA Act, the Governor in Council is specifically authorized to adopt regulations for the "control and management" of individual NMCAs or all NMCAs in general, including regulations protecting ecosystems, cultural resources and public safety, as well as regulations delineating zones and restricting or prohibiting various activities and uses.[93] The Governor in Council also has a narrower power to promulgate regulations concerning navigation and marine safety under the CNMCA Act.[94]


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[80] Ibid, s 4(3).
[81] CNMCA Act, preamble. See ibid s 9(1) (requiring the federal government to develop management plans "in consultation with ... affected coastal communities, aboriginal organizations, aboriginal governments and bodies established under land claims agreements, and with other persons and bodies").
[82] Ibid, s 9(1)-(2).
[83] Ibid, s 9(3).
[84] Ibid, s 4(4); Parks Canada. 2018. Guiding Principles and Operational Policies, Part II – Activity Policies: National Marine Conservation Areas Policy. s 2.10. Online: pc.gc.ca/en/docs/pc/poli/princip/sec2/part2b
[85] Parks Canada, Guiding Principles, s 2.0.
[86] Ibid.
[87] Ibid, 2.3.
[88] Ibid, s 2.10.4.
[89] Ibid, s 2.10.7.
[90] Ibid, s 3.4.2.
[91] Ibid, s 3.4.3.
[92] Ibid, s 3.4.4.
[93] Ibid, s 16(1) .
[94] Ibid, s 16(3).

## NLCA, IIBA and NWMB

The CNMCA Act requires NMCA management plans to be consistent with the provisions of relevant land claims agreements.[95] Since the Tallurutiup Imanga NMCA falls within the Nunavut Settlement Area, the management plan for this conservation area must be consistent with the NLCA.[96] The NLCA takes precedence over the CNMCA Act; therefore, to the extent there is any inconsistency or conflict between any federal, territorial or local government laws and the NLCA, the terms of the NLCA prevail.[97]

Article 5 of the NLCA "recognizes Inuit systems of wildlife management that contribute to the conservation of wildlife and protection of wildlife habitat."[98] The NLCA does not specifically recognize either scientific systems of wildlife management and habitat protection or the precautionary principle. Regulations based on such systems and principles unrecognized by the NLCA should not infringe on Inuit harvesting and other rights. The NWMB also has the discretion to identify, review and approve establishment, boundaries and management plans related to management and protection of wildlife and wildlife habitat in the Nunavut Settlement Area.[99] For clarity, "wildlife" includes all terrestrial, aquatic, avian and amphibian flora and fauna in Nunavut.[100]

The NLCA also requires the government to enter into an IIBA prior to the establishment of an NMCA.[101] As noted above, the IIBA for the Tallurutiup Imanga NMCA was finalized in August 2019. Its objectives include (1) maintaining the health of the ecosystem, (2) allowing ecologically sustainable use, (3) recognizing that Inuit are integrally connected to the marine environment and that wildlife harvesting is an Inuit right pursuant to the NLCA, (4) managing the NMCA using a consensus-based model, and (5) taking into account Inuit Qaujimajatuqangit.[102]

The IIBA includes specific requirements relating to marine navigation and shipping.[103] It requires TC to establish a centre within the Qikiqtani region to facilitate the achievement of a "safe and secure, efficient and environmentally responsible transportation system … in the region as it relates to the Tallurutiup Imanga NMCA and the [NLCA]."[104] The IIBA also directs the parties to "develop a vessel identification and movement strategy for Tallurutiup Imanga NMCA, including considering the use of Automatic Information Systems."[105] The parties must also develop and implement a communication strategy to keep local communities informed about vessel traffic activities.[106] TC must also work with QIA, federal and territorial government departments and other Inuit partners (e.g., the QWB and HTOs) to explore pilot programs in which Inuit stewards or local Inuit community members will undertake activities for TC, such as vessel monitoring, tracking and reporting, and other functions.[107] TC must provide funding, training and other support for such programs and activities.[108] The IIBA also provides for a collaborative approach between Inuit and government entities for ongoing research and monitoring of archaeological, social, cultural and ecological conditions in the Tallurutiup Imanga NMCA.[109]

[95] Ibid, s 9(5).
[96] Nunavut Land Claims Agreement (NLCA). Consolidated 25 May 2018. Online: nlca.tunngavik.com; *Nunavut Land Claims Agreement Act*, S.C. 1993 c 29.
[97] NLCA s 2.12.2; *Nunavut Land Claims Agreement Act* s 6(1).
[98] NLCA s 5.1.2(e).
[99] Ibid, s 5.2.34.
[100] Ibid, s 1.1.1.
[101] NLCA articles 8 and 9. To the extent of any inconsistency or conflict between the NLCA and IIBA, the terms of the NLCA prevail. See also IIBA s 3.1.6.
[102] Tallurutiup Imanga IIBA s 5.1.
[103] Ibid, art 10.
[104] Ibid, s 10.5.
[105] Ibid, s 10.3.3
[106] Ibid, ss 10.3.1-10.3.2.
[107] Ibid, s 10.3.4.
[108] Ibid, s 10.4.
[109] Ibid, art 13 (generally).

## AWPPA

Canada enacted the AWPPA in 1970 to protect against oil spills, dumping and other forms of pollution in sensitive Arctic ecosystems.[110] An overarching objective of the AWPPA is to ensure that waters in the Canadian Arctic are "navigated only in a manner that takes cognizance of Canada's responsibility for the welfare of the Inuit and other inhabitants of the Canadian arctic and the preservation of the peculiar ecological balance that now exists in the water, ice and land areas of the Canadian arctic."[111]

Initially, the AWPPA created a shipping safety control zone and established anti-pollution and marine safety standards within that zone.[112] The zone originally extended 100NM from the coastlines of all islands within the Arctic Archipelago (encompassing Tallurutiup Imanga) and from the coastline of mainland Canada. In 1977, Canada adopted voluntary regulations (the *Northern Canada Vessel Traffic Services Zone Regulations*, known as NORDREG) to manage vessel traffic in its northern waters.[113] Canada's adoption of these rules was controversial at first, but its exercise of jurisdiction over waters within the Arctic Archipelago was largely vindicated through the adoption of the *United Nations Convention on the Law of the Sea* (UNCLOS) in 1982,[114] as discussed below.

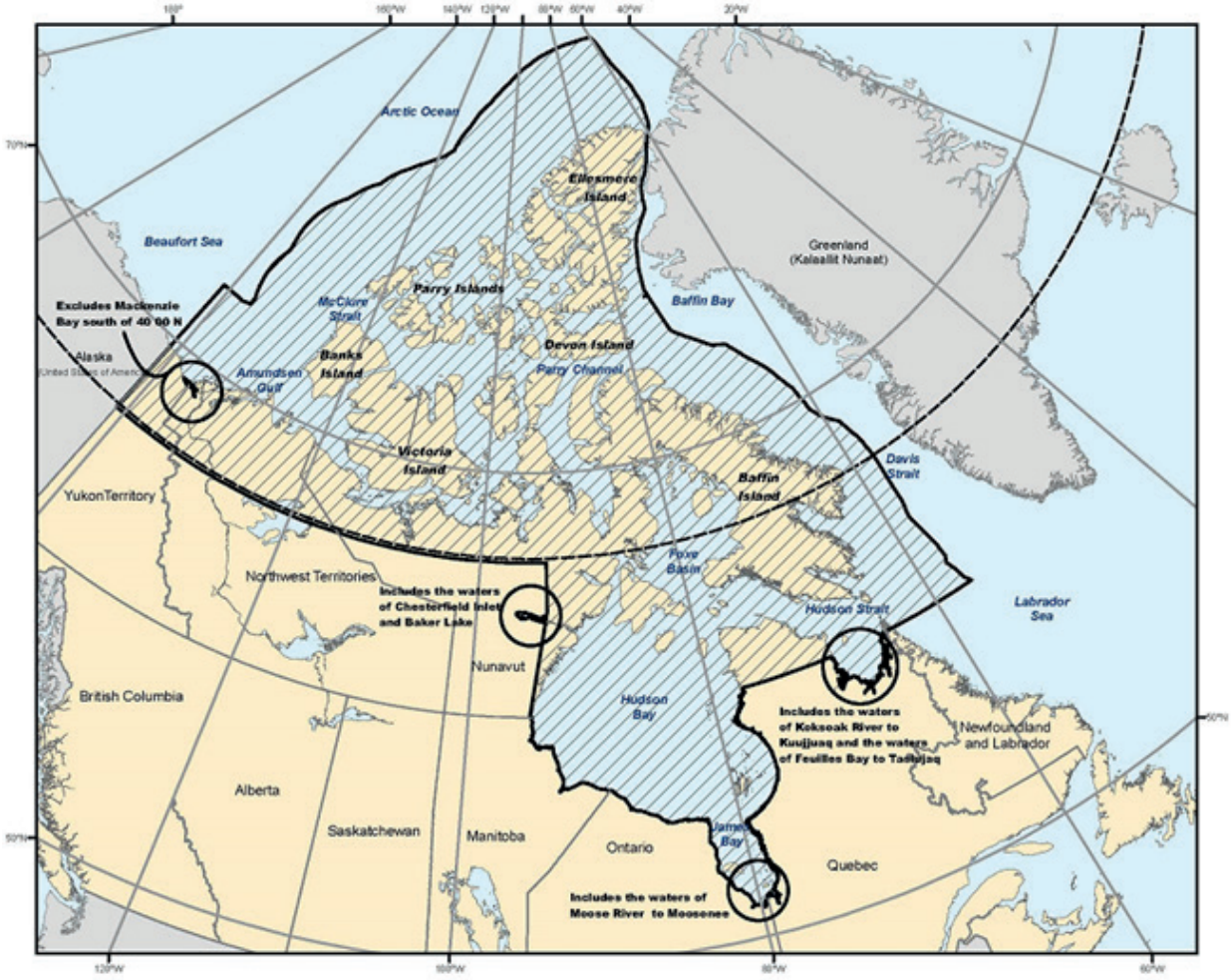


Figure 5 – Vessel Traffic in Tallurutiup Imanga, 2016 (Source: Vard Marine, Inc.)

[110] AWPPA, 1970, RSC 1985, c. A-12. See the "*Arctic Waters Pollution Prevention Act*" section of "The Canadian Legal Framework" in *Navigating the Law*.
[111] AWPPA, RSC 1985, c. A-12, preamble.
[112] Lalonde, S. 2018. Canada's Influence on the Law of the Sea. Centre for International Governance Innovation. p. 3. Online: cigionline.org/publications/canadas-influence-law-sea
[113] Knight, C.P. 2010. NORDREG Now Mandatory Within the Northwest Passage. Mondaq. Online: mondaq.com/canada/marine-shipping/114788/nordreg-now-mandatory-within-the-northwest-passage
[114] Lalonde, Canada's Influence, pp. 5-6. "UNCLOS" refers to the United Nations Convention on the Law of the Sea, UNCLOS, 1833 UNTS 3, 21 ILM 1261 (10 Dec 1982).

Subsequent laws and regulatory amendments made the NORDREG system mandatory for large vessels and extended the zone from the original 100NM out to 200NM, the maximum extent of Canada's EEZ,[115] as discussed below. The mandatory regime is now applicable to the prescribed NORDREG Zone, which encompasses a vast region of the Arctic Ocean, including the entire area of the Tallurutiup Imanga NMCA (Figure 5).[116] The Canadian Coast Guard (CCG) currently manages and regulates vessel traffic throughout the Arctic from its Marine Communications and Traffic Services (MCTS) centre in Iqaluit, Nunavut.[117]

The AWPPA includes provisions implementing the international safety requirements in SOLAS and the Polar Code,[118] which are discussed below. It also generally prohibits the "deposit of waste of any type in the arctic waters or in any place on the mainland or islands of the Canadian Arctic under any conditions where the waste ... may enter the Arctic waters," except where specifically authorized by regulation.[119] "Waste" refers to any substance in concentrations that would degrade or alter water quality to an extent that would be detrimental for the use of such water by humans or by animals, fish or plants that are useful to humans.[120]

Regulations implementing the AWPPA, known as the *Arctic Shipping Safety and Pollution Prevention Regulations* (ASSPPR), set forth pollution prevention requirements relating to oil and noxious liquid, including requirements concerning emergency planning, fuel tanks, cargo tanks and oily bilge water holding tanks.[121] The ASSPPR also creates narrow exemptions allowing for the deposit of waste into Arctic waters in situations involving safety threats, accidents and unavoidable *de minimis* waste.[122]

The ASSPPR regulations allow somewhat more leeway with respect to sewage and establish varying obligations (cross-referencing the sewage-related provisions of MARPOL Annex IV and its regulations, which are discussed below) for prior treatment, distance from shore and other requirements depending on the vessel's category, size, age, passenger capacity and other factors.[123] Vessels 15 gross tonnes or smaller and carrying fewer than 15 persons are generally allowed to deposit sewage generated onboard into Arctic waters.[124] Garbage discharges are generally prohibited in Arctic waters, with limited exceptions for food waste.[125] Cargo residue discharges are only allowed under limited circumstances from Canadian ships in polar waters other than Arctic waters (i.e., in Antarctic waters).[126] In the absence of any regulatory authorization for cargo residue discharges in Arctic waters, the general AWPPA prohibition would preclude such discharges. The terms "sewage," "garbage," and "cargo residues" are defined by reference to MARPOL and its implementing regulations, which are discussed below.[127] Treatment and disposal of greywater is not addressed in the ASSPPR.


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[115] Ibid, p. 3; Knight, NORDREG Now Mandatory.
[116] NORDREG s 2; Shipping Safety Control Zones Order, CRC c 356, sched 2 (made pursuant to the AWPPA); See also CCG. Radio Aids to Marine Navigation 2021: Part 3 – Vessel Traffic Services. Government of Canada. fig 3-3. Online: ccg-gcc.gc.ca/publications/mcts-sctm/ramn-arnm/part3-eng.html
[117] CCG. Marine Communications and Traffic Services Program Information. Government of Canada. Online: ccg-gcc.gc.ca/mcts-sctm/program-info-programme-eng.html
[118] AWPPA ss 5-11.
[119] AWPPA s 4(1).
[120] Ibid, s 2.
[121] ASSPPR ss 15-18, SOR/2017-286. See also the "*Arctic Shipping Safety and Pollution Prevention Regulations*" section of "The Canadian Legal Framework" in *Navigating the Law*.
[122] ASSPPR s 14. The AWPPA is also implemented by the *Arctic Waters Pollution Prevention Regulations* (AWPPR), which address sewage treatment facilities, domestic and industrial waste, and liability for unauthorized waste deposits. See also AWPPR, CRC c 354.
[123] Ibid, ss 19-21.
[124] Ibid, s 22.
[125] Ibid, ss 23-25.
[126] Ibid, s 26.
[127] Ibid, s 12.

## Canada Shipping Act, 2001

Under the *Canada Shipping Act, 2001* (CSA), the Governor in Council, advised by the Minister of Transport, has been granted broad authority to regulate shipping, including authority to "regulat[e] or prohibit[] the navigation, anchoring, mooring or berthing of vessels for the purposes of promoting the safe and efficient navigation of vessels and protecting the public interest and the environment."[128] Moreover, under recent amendments to the CSA, the Governor in Council is specifically authorized, on the Minister of Transport's recommendation, to make regulations "respecting the protection of the marine environment from the impacts of navigation and shipping activities."[129]

The *Ballast Water Control and Management Regulations* made by TC pursuant to the CSA aim to reduce risks associated with invasive species and pathogens.[130] Toward that end, they require ships originating outside Canada's EEZ (more than 200NM offshore) to retain their ballast water, treat it, or exchange it at sea in deep water away from coastal zones.[131] Under circumstances in which the stability of a vessel or human safety would be compromised, however, alternate ballast water exchange zones closer to shore can be used.[132]

Several other types of pollution from vessels are not yet regulated under Canadian law, including greywater in Arctic waters,[133] scrubber washwater[134] and underwater noise. Interim strategies for addressing these types of pollution are discussed below.

## Overlapping legal authorities

To the extent the Governor in Council's rulemaking powers under the CNMCA Act overlap with similar powers under the CSA or AWPPA, the Governor in Council can only act on the recommendation of both the Minister of Environment and Climate Change (responsible for Parks Canada) and the Minister of Transport.[135] Once adopted, however, regulations made under the CNMCA Act prevail over regulations adopted under other laws, including the CSA and *Navigation Protection Act*, to the extent there is a conflict between them.[136]

In short, under the various statutes, regulations, agreements and guidance described above, the federal government has extensive authority to regulate shipping within the Tallurutiup Imanga NMCA. It also has an obligation to do so in order to fulfill the objectives of the NMCA and to satisfy its obligations under the IIBA.


[128] CSA s 136(1)(f).
[129] CSA s 35.1(1).
[130] *Ballast Water Control and Management Regulations*, SOR/2011-237. See also the "Ballast Water Control and Management Regulations" section of "The Canadian Legal Framework" in *Navigating the Law*.
[131] Ibid, s 4.
[132] Ibid, s 4(5).
[133] Greywater is regulated under the CSA and the *Vessel Pollution and Dangerous Chemicals Regulations* made thereunder, but these rules do not apply in Arctic waters. See *Vessel Pollution and Dangerous Chemicals Regulations*, SOR/2012-69, s 131.1(2).
[134] Scrubbers are allowed as an alternative to IMO-compliant fuels under MARPOL Annex IV, which is discussed below, but port and coastal states may limit or prohibit the use of exhaust cleaning gas systems (EGCS) within their jurisdictions. Scrubber washwater discharges are limited or prohibited in many countries, but this does not include Canada. See Damgaard, J. 2020. List of Jurisdictions Restricting or Banning Scrubber Wash Water Discharges. Britannia P&I. Online: britanniapandi.com/2020/01/list-of-jurisdictions-restricting-or-banning-scrubber-wash-water-discharges
[135] CNMCA Act s 16(3).
[136] Ibid, s 16(5).

# INTERNATIONAL LAW

## Maritime zones

As discussed in *Navigating the Law*, the rights of coastal states to regulate shipping vary considerably depending on how far from the coastline the activity occurs.[137]

### Internal waters

In areas where the coastline is deeply indented or cut into, or where there is a fringe of islands along the coast in its immediate vicinity, a straight baseline is drawn joining the points on either side of the indentation to carry through the broader coastline.[138] Internal waters include harbours, coves and bays on the landward side of such a straight baseline. Canada has full sovereignty and regulatory jurisdiction over activities in such internal waters, just as it would have on land.

### Territorial sea

A coastal state's territorial sea extends from the coastline out to 12NM offshore, which aligns both with the Nunavut Settlement Area and NLCA. Canada likewise has full sovereignty and regulatory jurisdiction in its territorial sea, except that foreign ships have the right of "innocent passage," i.e., the right to travel in a manner that is "not prejudicial to the peace, good order or security of the coastal State."[139] Also, a coastal state may not impose requirements on foreign ships in their territorial sea concerning their design, construction, manning, or equipment unless they are giving effect to generally accepted international rules or standards, as discussed further below.[140]

### EEZ and contiguous zone

Within the EEZ (12 to 200NM offshore), Canada has the right to utilize and manage minerals and other renewable and non-renewable resources.[141] The "contiguous zone" refers to the area from 12 to 24NM offshore within the EEZ.[142] In addition to its other EEZ authorities, within the contiguous zone, Canada may exercise the control necessary to prevent and punish infringement of its customs, fiscal, immigration and sanitary laws and regulations within its territory or territorial sea.[143] As with the territorial sea, however, coastal states may not impose requirements on foreign ships in their EEZ concerning their design, construction, manning or equipment unless they are giving effect to generally accepted international rules or standards.[144]

### International straits

Coastal states adjoining "international straits" may adopt laws and regulations addressing the safety of navigation; regulation of maritime traffic; fishing; loading and unloading of commodities, currency and passengers; and implementation of international regulations relating to pollution.[145] In exercising such authority, however, the bordering states cannot discriminate against foreign ships or impair their right of "transit passage," i.e., the right to travel through the strait in a "continuous and expeditious" manner and "without delay."[146] Ships engaged in transit passage through an international strait must "comply with generally accepted international regulations ... for the prevention, reduction and control of pollution from ships," and coastal states are only allowed to address pollution by "giving effect to applicable international regulations."[147]

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[137] *Navigating the Law* "The Maritime Shipping Framework" and "International Legal Framework."
[138] UNCLOS art 7; *Navigating the Law* n 3 (in "Maritime zones").
[139] UNCLOS art 19(1).
[140] See UNCLOS art 21 s 2.
[141] Ibid, art 56.
[142] Ibid, art 33(2).
[143] Ibid, art 33(1).
[144] UNCLOS art 211(6)(c).
[145] Ibid, art 42(1). International straits are waters used for international navigation between one part of the high seas or an EEZ and another part of the high seas or an EEZ. See UNCLOS art 37.
[146] Ibid, arts 38, 42.
[147] UNCLOS art 39 s 2(b), 42 s 1(b).

Canada has established a baseline surrounding the entire Arctic Archipelago (Figure 6), and it asserts that everything within that baseline constitutes internal waters subject to its national sovereignty and jurisdiction. The international community has generally acquiesced in this approach with respect to most of the region. The legal status of waters within the Northwest Passage, however, has been disputed for many years. The United States and certain European countries contend that the Northwest Passage is an international strait in which their vessels have the right of transit passage and non-discrimination. In multiple high-profile incidents over the past five decades, American vessels have travelled through Canadian Arctic waters without seeking permission from Canada.[148] Each occurrence has upset the Canadian public and led the Canadian government to exert stronger authority over Arctic waters.[149]

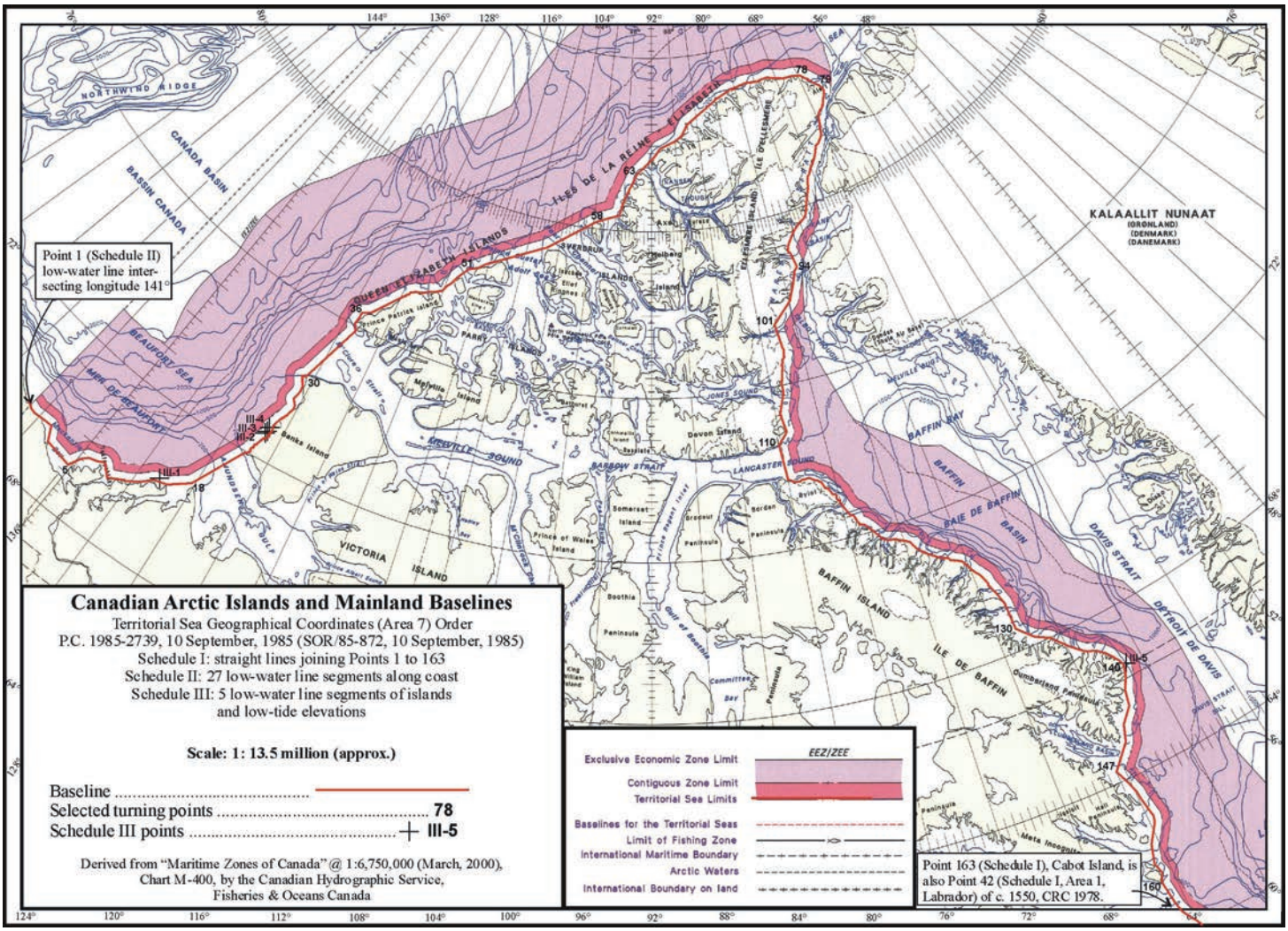



Figure 6 – Canadian Arctic Islands and Mainland Baselines (Source: Marineregions.org)

[148] Byers, M. and Lalonde, S. 2009. Who Controls the Northwest Passage? *Vanderbilt Journal of Transnational Law 42*:1133.
[149] Ibid.

The disputed legal status of the Northwest Passage may present some challenges for federal agencies managing shipping activities within the Tallurutiup Imanga NMCA, but responsible and effective management should still be feasible for several reasons. First, substantial portions of Tallurutiup Imanga NMCA lie outside the Northwest Passage entirely. These waters sit to the north of the Northwest Passage (in and around Devon Island) and to its south (in and around Baffin Island and Bylot Island). Some of the most sensitive ecological areas requiring protection are in deep bays and narrow inlets along the coast of Baffin Island, the huge land mass that forms the southern boundary of the NMCA. These waters do not comprise any part of the Northwest Passage shipping route. Moreover, regardless of where the baseline is drawn for the Arctic Archipelago as a whole, the bays and inlets landward of the coastal baseline of Baffin Island, Devon Island, Bylot Island and other land masses are internal waters subject to full Canadian sovereignty and regulatory jurisdiction.

Second, given the that the span of most passages, channels and other waterways in Tallurutiup Imanga are less than 24NM wide, even under a more traditional approach to the establishment of maritime zones along coastlines and around islands, the areas outside of internal waters would consist mostly of territorial waters.

Third, a lot of protection (of wildlife, ecosystems, safety, harvesting, etc.) can be accomplished without impeding innocent passage in territorial waters. Speed restrictions, routeing measures and wildlife avoidance requirements, for instance, might make travel slightly slower, but vessels would still be able to reach their destination. To the extent the Northwest Passage is viewed by some as an international strait, there could be some resistance to mandatory protective measures from foreign vessel operators if the measures are perceived as causing excessive delay and thus impeding transit passage. Implementing measures on a voluntary basis or with approval from the IMO, as discussed below, could help overcome these difficulties.

Finally, in Arctic waters, Canada has some degree of enhanced ability to regulate shipping beyond the usual authority of coastal states. Under Article 234 of UNCLOS, known as the "Arctic exception" or "Canadian clause,"[150] coastal states are authorized to adopt and enforce laws for the "prevention, reduction and control of marine pollution from vessels in ice-covered areas" within their EEZ where "particularly severe climatic conditions and the presence of ice covering such areas for most of the year create obstructions or exceptional hazards to navigation, and pollution of the marine environment could cause major harm to or irreversible disturbance of the ecological balance."[151] Such laws must be "non-discriminatory" and have "due regard to navigation and the protection and preservation of the marine environment based on the best available scientific evidence."[152] Canada relies on Article 234 as the basis for its exercise of regulatory oversight over foreign and domestic shipping throughout its entire EEZ in the Arctic under the AWPPA and NORDREG. The exact scope of Canada's authority pursuant to Article 234 is unclear, however, and terms such as "ice-covered" are ambiguous and open to interpretation.

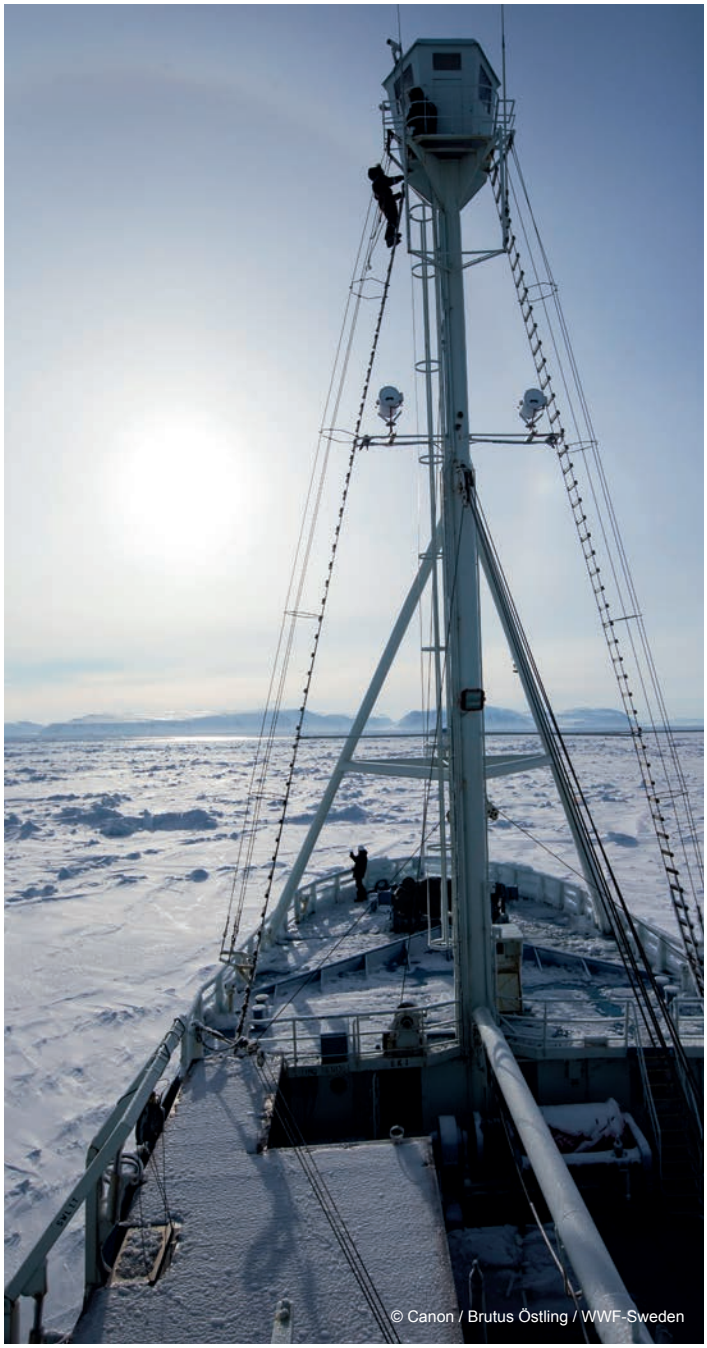

[150] Lalonde, Canada's Influence, pp. 5-6.
[151] UNCLOS art 234.
[152] Ibid.

## Ship routeing

Aside from the basic maritime zones, international law also offers some affirmative mechanisms for coastal states to manage shipping in cooperation with other states and with approval from the IMO. Some of the most relevant international agreements for these endeavours include the *International Convention for the Safety of Life at Sea of 1974* (SOLAS),[153] the *International Regulations for Preventing Collisions at Sea* (COLREGS),[154] and the *International Code for Ships Operating in Polar Waters* (Polar Code).[155]

SOLAS recognizes that ship routeing, ship reporting and vessel traffic systems "contribute to safety of life at sea, safety and efficiency of navigation and/or protection of the marine environment,"[156] and it encourages their establishment in accordance with IMO guidelines.[157] SOLAS also requires most large ships engaged in international voyages to be equipped with Automatic Identification Systems (AIS) and Long-Range Identification and Tracking (LRIT) Systems that can automatically transmit information about the ship to other ships and to coastal authorities.[158]

The COLREGS aim to prevent collisions and ensure navigation safety.[159] They include provisions relating to maintaining a proper look-out (Rule 5), safe vessel speed (Rule 6), determination of collision risks (Rule 7), actions to avoid collision (Rule 8), transit through narrow channels (Rule 9) and adherence to traffic separation schemes (Rule 10).[160] Under Rule 10, fishing vessels "shall not impede the passage of any vessel following a traffic lane" but are allowed to engage in fishing in the lanes.[161] The Polar Code includes additional safety provisions applicable in Arctic waters, and these have been made mandatory through amendments to SOLAS.[162]


© Canon / Brutus Östling / WWF-Sweden

[153] SOLAS, 1226 UNTS 213, 32 UST 47 (1 Nov 1974); UN Treaty Series, SOLAS, No 18961 (1974). See also the "*International Convention for the Safety of Life at Sea*" section of "International Legal Framework" in *Navigating the Law*.

[154] COLREGS, 1050 UNTS 16; 28 UST 3459 (20 Oct 1972); International Maritime Organization Webpage. COLREGS. IMO. Online: imo.org/en/About/conventions/listofconventions

[155] Polar Code. Part IIA – Pollution Prevention Measures – Chapter 4. PAME. Online: pame.is/index.php/part-iia-pollution-prevention-measures-chapter-4#part-iia-chapter-4-full-polar-code-text; IMO Webpage. Polar Code. IMO. Online: imo.org/en/About/conventions/listofconventions; IMO Webpage. 2015. Polar Code Environmental Provisions Adopted. Press Briefing. IMO. Online: imo.org/en/MediaCentre/PressBriefings/Pages/18-Polar-Code-MEPC.aspx

[156] SOLAS, ch V, regs 10.1 and 11.1. Accord ibid, reg 12.1.

[157] Ibid, reg 10.1, for example ("Ships' routeing systems are recommended for use by, and may be made mandatory for, all ships, certain categories of ships or ships carrying certain cargoes, when adopted and implemented in accordance with the guidelines and criteria developed by the [IMO]").

[158] Ibid, reg 19.

[159] See IMO Webpage, COLREGs.

[160] See generally COLREGs; IMO Webpage, COLREGs.

[161] COLREGS, rule 10(i).

[162] See generally IMO Webpage, Polar Code.

Ship routeing systems can be established to improve safety, navigation or protection of the marine environment.[163] They may be either voluntary or mandatory, and they may apply to all ships, certain categories of ships or ships carrying certain cargo.[164] The following are a few of the main types of vessel traffic routeing measures in common usage:[165]

- A "traffic separation scheme" (TSS) is a vessel routeing scheme aimed at the separation of opposing streams of traffic through the establishment of traffic lanes.[166] They can be used to prevent collisions and improve safety, as well as to protect the marine environment by preventing collisions with whales and other marine mammals or reducing the risk of oil spills.
- A marine "separation zone" or "separation line" is a zone or line (1) separating traffic lanes in which ships are proceeding in opposite directions; (2) separating a traffic lane from the adjacent sea area; or (3) separating traffic lanes designated for particular classes of ships proceeding in the same direction.[167]
- A marine "two-way route" is a route with defined limits inside which two-way vessel traffic is allowed, and it is aimed at providing safe passage where navigation is difficult or dangerous.[168]
- A marine "Area to be Avoided" (ATBA) is an area within defined limits in which either navigation is particularly hazardous or it is especially important to avoid casualties.[169] For example, an ATBA could guide vessels away from a shallow, rocky shoal that presents a high risk of groundings or collisions, or it could serve to protect a marine mammal calving or nursing area in which a vessel collision or grounding would have severe consequences.
- A marine "precautionary area" is an area within defined limits where ships must navigate with particular caution and within which the direction of flow of traffic may be recommended.[170]

A proposal for a ship routeing system outside a state's territorial seas generally must be submitted to the IMO for approval.[171] IMO-approved routeing systems are published in the IMO publication "Ship's Routeing,"[172] and their details are announced in weekly Notice to Mariners (NOTMAR) issued by the CCG,[173] US Coast Guard[174] and comparable agencies in other countries. They are also included on nautical charts and disseminated in other ways.

[163] See COLREGS, ch V, reg 10.1; IMO-Maritime Safety Committee. 2013. MSC.1-Circ.1060 – Guidance Note on the Preparation of Proposals on Ships' Routeing Systems and Ship Reporting Systems. CrewTraffic. [SOLAS Guidelines] s 1.2.
Online: crewtraffic.com/page/605-msc-1-circ-1060-guidance-note-on-the-preparation-of-proposals-on-ships-routeing-systems-and-ship.html;
See also the "Ships' routeing measures" and "Areas to be avoided" sections of "International Legal Framework" in *Navigating the Law*.

[164] SOLAS, ch V, reg 10.1; SOLAS Guidelines s 2.1.

[165] IMO Webpage. 1985. General Provisions on Ships' Routeing, Assembly Res A 572(14). IMO. [IMO Ships' Routeing Guidance] s 5.3 .
Online: wwwcdn.imo.org/localresources/en/KnowledgeCentre/IndexofIMOResolutions/AssemblyDocuments/A.572(14).pdf (providing guidance regarding various types of ship routeing measures).

[166] IMO Webpage. Ships' Routeing. IMO. Online: imo.org/en/OurWork/Safety/Pages/ShipsRouteing.aspx

[167] Ibid.

[168] Ibid.

[169] Ibid.

[170] Ibid.; IMO Ships' Routeing Guidance s 5.3 (containing diagrams illustrating the various uses of a precautionary area designation).

[171] SOLAS, ch V, reg 10.5; SOLAS Guidelines s 3.3.

[172] IMO. 2019. *Ships' Routeing, 2019 Edition*. American Nautical Services. Online: amnautical.com/blogs/news/ships-routeing-2019-edition

[173] Canadian Coast Guard. Notices to Mariners. Government of Canada. Online: notmar.gc.ca/index-en.php

[174] United States Coast Guard. Local Notice to Mariners. U.S. Coast Guard Navigation Center. Online: navcen.uscg.gov/?pageName=lnmMain

## Pollution

A coastal state's marine pollution laws apply to foreign vessels in its territorial seas, as long as the laws do not impede innocent passage,[175] and to foreign vessels in its EEZ, as long as the laws do not impede transit passage and conform to and give effect to "generally accepted international rules and standards" established through the IMO.[176] Additionally, where international rules and standards are "inadequate to meet special circumstances," a coastal state can seek IMO approval for special mandatory measures for the prevention of pollution from vessels within a "clearly defined area" of the EEZ.[177] After the defined area is established, the coastal state can unilaterally adopt additional laws and regulations relating to discharges and navigational practices, but these additional laws still cannot require foreign vessels to implement "design, construction, manning or equipment standards other than generally accepted international rules and standards."[178]

The primary international agreement addressing ship pollution is the *International Convention for the Prevention of Pollution from Ships* (MARPOL).[179] MARPOL governs various types of marine pollution, including oil (Annex I), noxious liquids (Annex II), harmful packaged materials (Annex III), sewage (Annex IV),[180] garbage (Annex V) and air (Annex VI). The Polar Code sets forth numerous additional provisions governing marine pollution in Arctic waters, and these have been made mandatory through amendments to MARPOL.[181]

### MARPOL special areas

MARPOL also provides for the designation of "special areas" of the ocean for protection from various types of pollution.[182] To qualify as a special area under MARPOL, the proponent must show that the basic MARPOL requirements do not provide adequate protection and that the area's oceanographic, ecological and vessel traffic conditions justify "special mandatory methods for the prevention of sea pollution."[183] The proponent must submit a proposal to the IMO explaining how the area fulfills the criteria for designation under the MARPOL annex applicable to the type of pollution in question.[184] If the IMO approves the designation, it becomes effective when adequate reception facilities exist in the area to accept the relevant type of pollutant.[185] The Antarctic, for example, is a designated special pollution area for oil (Annex I), noxious liquids (Annex II) and garbage (Annex V).[186] This has essentially made the Antarctic a no-discharge zone for oil, noxious liquids, and mixtures containing them, subject to very limited exceptions.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[175] UNCLOS art 211(4).
[176] Ibid, art 211(5).
[177] Ibid, art 211(6)(a)-(b).
[178] Ibid, art 211(6)(c).
[179] MARPOL (2 Nov 1973), 34 UST 3407; 1340 UNTS 184 (1973), as amended by Protocol Relating to MARPOL, 17 ILM 546 (16 Feb 1978) [MARPOL 1973/1978]; IMO Webpage. *International Convention for the Prevention of Pollution from Ships* (MARPOL). IMO. Online: imo.org/en/About/Conventions/Pages/International-Convention-for-the-Prevention-of-Pollution-from-Ships-(MARPOL).aspx
[180] MARPOL 1973/1978; IMO Webpage, MARPOL.
[181] IMO Webpage, Polar Code.
[182] MARPOL 1973/1978, Annexes I and II; IMO. 2001. Guidelines for the Designation of Special Areas Under MARPOL 73/78 and Guidelines for the Identification and Designation of Particularly Sensitive Sea Areas [MARPOL Special Area Guidelines]. Assembly Resolution A.927(22) s 2.1. Online: imo.org/blast/blastDataHelper.asp?data_id=10469&filename=927.pdf; IMO Webpage Special Areas Under MARPOL. IMO. Online: imo.org/en/OurWork/Environment/Pages/Special-Areas-Marpol.aspx
[183] MARPOL 1973/1978, Annex I, reg 1(10), Annex II, reg 1(7); Annex V, reg 1(3) (each providing a similar definition of "special area"). See MARPOL Special Area Guidelines, Annex 1 s 2.1; IMO Webpage, Special Areas Under MARPOL.
[184] Ibid, s 3.
[185] MARPOL Special Area Guidelines, Annex 1 s 2.7.
[186] IMO Webpage, Special Areas Under MARPOL.

## Oil and hazardous substances

MARPOL contains numerous provisions designed to protect against oil and hazardous substance pollution. For instance, Annex I requires double-hulled oil tankers,[187] and it prohibits the use of certain types of HFO in the Antarctic region.[188] Annex II details pollution control measures for about 250 specific noxious liquid substances carried in bulk, and it prohibits the discharge of residues containing such substances within 12 miles of the nearest land.[189] Additionally, the *International Convention on Oil Pollution Preparedness, Response and Co-operation* (OPRC) requires parties to establish a national system for responding to oil pollution incidents, and it commits parties to cooperating internationally in response to pollution incidents.[190] The OPRC also requires ships to carry an oil pollution emergency plan and to report pollution incidents to coastal authorities. A protocol to the OPRC addressing hazardous substances was adopted in 2000.[191]

There are also specific international protections against oil pollution in the Arctic, including the *Agreement on Cooperation on Marine Oil Pollution Preparedness and Response in the Arctic* (MOPPRA).[192] MOPPRA requires parties to maintain national systems for oil spill response, conduct assessments and notify other parties of oil pollution incidents, engage in oil spill monitoring activities, cooperate and provide assistance to each other in responding to oil pollution incidents, conduct joint exercises and training, and undertake other activities.[193] Additionally, the Polar Code prohibits oil and noxious liquid discharges from vessels in Arctic waters,[194] and it contains structural requirements for new ships built in January 2017 or later.[195] The IMO has been considering a potential ban on HFO in the Arctic, comparable to the one in the Antarctic, for many years. In February 2020, the IMO agreed on a draft regulation that would phase out the use and carriage of HFO beginning in 2024, but it has been criticized for its delayed implementation in domestic waters and exemption of double-hulled vessels until 2029.[196]


[187] IMO Webpage. Construction Requirements for Oil Tankers – Double Hulls. IMO. Online: imo.org/en/OurWork/Environment/Pages/constructionrequirements.aspx
[188] MARPOL 1973/1978, Annex I, ch 9, reg 43; IMO Webpage, Polar Code.
[189] IMO Webpage, MARPOL.
[190] OPRC, 30 ILM 733 (30 Nov 1990); IMO Webpage. International Convention on Oil Pollution Preparedness, Response and Co-operation (OPRC). IMO. Online: imo.org/en/About/Conventions/Pages/International-Convention-on-Oil-Pollution-Preparedness,-Response-and-Co-operation-(OPRC).aspx
[191] Ibid.
[192] MOPPRA; The Arctic Council. International Cooperation in the Arctic. The Arctic Council. Online: arctic-council.org/en/explore/work/cooperation; Arctic Council, *Ratification completed for agreement on oil pollution preparedness and response* (6 June 2016, updated 23 Mar 2017), online: oaarchive.arctic-council.org/handle/11374/529
[193] MOPPRA.
[194] Polar Code, Part II ss 1.1.1, 2.1.1.
[195] Ibid, s 1.2.
[196] Humpert, M. 2020. IMO Moves Forward with Ban of Arctic HFO But Exempts Some Vessels Until 2029. *High North News*. Online: highnorthnews.com/en/imo-moves-forward-ban-arctic-hfo-exempts-some-vessels-until-2029

## Sewage

Annex IV of MARPOL regulates sewage discharges from ships that are engaged in international voyages and are either certified to carry more than 15 persons or are over 400 gross tonnage in size.[197] Annex IV requires ships to be equipped with an approved sewage treatment plant (STP), comminuting and disinfecting system (CDS), and/or holding tank.[198] It prohibits the discharge of untreated sewage within 12NM of land and comminuted and disinfected sewage within 3NM of land.[199] Discharge within 3NM of land is allowed where an approved STP is in operation and the resulting effluent does not produce visible floating solids or discoloration of the surrounding water.[200] Annex IV includes detailed regulations governing sewage control equipment, rates of discharge and port reception facilities, and it specifies requirements for survey and certification.[201]

The Polar Code extends the minimum distances for discharging sewage away from land, ice shelves,[202] landfast ice and ice concentrations exceeding 10 per cent.[203] Further, it requires ships with an ice classification of Category A or B[204] and all passenger vessels constructed in January 2017 or later to either withhold sewage discharges when operating within 12NM of land, ice shelf, landfast ice or ice concentrations exceeding 10 per cent, or, alternatively, operate an approved STP.[205]

## Ballast water

Ballast water is governed by the *International Convention for the Control and Management of Ships' Ballast Water and Sediments* (Ballast Water Convention).[206] Under the *Ballast Water Convention* and guidelines adopted thereunder,[207] vessels are required to develop and implement a ship-specific management plan, manage ballast water to a certain standard and carry a record book and certificate proving compliance.

## Other types of pollution

Several other types of pollution from vessels are not yet regulated under international law, including greywater, scrubber washwater and underwater noise. Interim strategies for addressing these types of pollution are discussed below.

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[197] MARPOL 1973/1978, Annex IV, reg 2.
[198] Ibid, Annex IV, reg. 9.
[199] Ibid, Annex IV, reg. 11.
[200] Ibid.
[201] MARPOL 1973/1978, Annex IV.
[202] An ice-shelf is a "floating ice sheet of considerable thickness showing 2 to 50 m or more above sea-level, attached to the coast." Polar Code s 4.1.2.
[203] Polar Code s 4.2.1.
[204] A Category A ship is one "designed for operation in polar waters in at least medium first-year ice [sea ice of not more than one winter growth and 70 to 120 cm thickness], which may include old ice inclusions." Polar Code, Annex 10 s 2.1, 2.4, 2.8. A Category B ship is a ship not included in Category A that is "designed for operation in polar waters in at least thin first-year ice [sea ice of not more than one winter growth and 30 to 70 cm thickness], which may include old ice inclusions." Ibid, Annex 10 s 2.2, 2.4, 2.15.
[205] Ibid, s 4.2.2.
[206] *Ballast Water Convention*, 30 ILM 1455 (13 Feb 2004); IMO Webpage. Ballast Water Management. IMO. Online: imo.org/en/OurWork/Environment/Pages/BallastWaterManagement.aspx
[207] IMO. 2018. Guidelines and Guidance Documents Related to the Implementation of the International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004. IMO. Online: wwwcdn.imo.org/localresources/en/OurWork/Environment/Documents/Compilation%20of%20relevant%20Guidelines%20and%20guidance%20documents%20-%20May%202018.pdf

## Particularly sensitive sea areas

A "particularly sensitive sea area" (PSSA) is "an area that needs special protection through action by IMO because of its significance for recognized ecological, socio-economic, or scientific attributes where such attributes may be vulnerable to damage by international shipping activities."[208] The IMO derives its authority to establish PSSAs from multiple legal instruments, including the Convention on the IMO, UNCLOS, MARPOL, SOLAS and various resolutions previously adopted by the IMO.[209] "Associated protective measures," such as a "special area" designation for pollution or an ATBA routeing designation, are adopted at the time a PSSA is established in order to protect the area against environmental damage from shipping.[210] To be designated as a PSSA, a proposed area must meet at least one of the ecological, socioeconomic, or scientific criteria identified by the IMO.[211] In addition, an application for designation of a PSSA must describe the area's vulnerability to damage from international shipping activities.[212] To establish a PSSA, a state must submit an application to the IMO proposing an area for PSSA designation and associated protective measures.[213] Fifteen PSSAs have been established around the world, but there are none so far in Arctic waters.[214]


[208] IMO. 2005. Resolution A.982(24) – Revised Guidelines for the Identification and Designation of Particularly Sensitive Sea Areasv[IMO PSSA Guidelines]. IMO. s 1.2. Online: wwwcdn.imo.org/localresources/en/KnowledgeCentre/IndexofIMOResolutions/AssemblyDocuments/A.982(24).pdf; See IMO Webpage. Particularly Sensitive Sea Areas. IMO. Online: imo.org/en/OurWork/Environment/Pages/PSSAs.aspx; See the "Particularly sensitive sea areas" section of "International Legal Framework" in *Navigating the Law*.

[209] See supra note 205.

[210] IMO PSSA Guidelines ss 1.2, 6. See IMO Webpage, PSSA.

[211] IMO PSSA Guidelines s 4.4.

[212] Ibid, s 5.1.

[213] Ibid, ss 3, 7. See also ibid, ss 8 (assessment criteria).

[214] IMO Webpage, PSSA (listing currently designated PSSAs).

# SHIPPING IMPACTS AND TOOLS FOR REDUCING HARM

The establishment of the NMCA will eliminate or reduce several threats to wildlife and Inuit communities in marine areas within the boundaries of Tallurutiup Imanga, including seismic exploration, oil and gas drilling, mineral extraction and waste dumping. Nevertheless, growing levels of vessel traffic and ice-breaking activity in the region associated with transnational cargo, tourism and Baffinland mining operations will likely pose continuing and increasing threats to the integrity of the NMCA.[215] Increased shipping could pose greater risks that vessels could injure or kill marine mammals and disrupt wildlife behaviours, distributions and abundances. It also increases the likelihood of interference with traditional Inuit harvesting of wildlife and may increase risks for public safety. Ice-breaking during ice formation in fall and early winter (often called the "shoulder season" for Arctic shipping) could result in destroying or changing natural ice formation in areas that Inuit communities depend on for seal harvesting, potentially impacting their winter food supplies. Ice-breaking in any season could increase risks of Inuit becoming unable to return to land or to be set adrift on moving ice floes that had been part of the landfast ice. Similar consequences could lead to whales becoming entrapped more frequently in isolated patches of open water surrounded by ice. Furthermore, increased vessel traffic and ice-breaking may increase the chances for vessels to collide, run aground, spill oil, discharge pollutants and introduce invasive species. Ship routeing, exclusion areas, and other mechanisms should be used to reduce the likelihood of such consequences.



[215] NMCA Feasibility Assessment, pp. 34-35; Ocean Conservancy. 2017. Navigating the North: An Assessment of the Environmental Risks of Arctic Vessel Traffic. Ocean Conservancy. Online: oceanconservancy.org/protecting-the-arctic/take-deep-dive/navigating-the-north; The PEW Charitable Trusts. 2014. Arctic Vessel Traffic in the Bering Strait: Key Measures for Developing Regulatory Standards. PEW. Online: pewtrusts.org/-/media/legacy/oceans_north_legacy/arctic_vessel_for_print_200copiesmay20141.pdf

# WILDLIFE DISTURBANCE AND SHIP STRIKES

A scientific study released in July 2018 was the first to focus on the impacts of shipping on Arctic marine mammals.[216] The researchers looked at the impacts of shipping on several species. Narwhals were found to be the most vulnerable to shipping impacts given their high exposure, as well as their sensitivity to disturbance and underwater noise. The study pointed to transit routes often coinciding with narwhal migration and feeding areas. Belugas, bowhead whales and walruses were also found to be at risk from shipping impacts.

For polar bears, vessel traffic, ice-breaking and other human activities have the potential to cause early emergence from dens, separate mothers from cubs, interfere with mating and harvesting, and otherwise disrupt activities essential to polar bear survival.[217] Cubs often die when their dens are disturbed or when they become separated from their mothers after emergence; separation can result in cub starvation and predation by male bears. Disturbance during the den emergence period for harvesting females or their prey (e.g., denning ringed seals) can also jeopardize cub survival.

In addition, female bears learn where higher density ringed seal pupping areas may be located and tend to den in such areas so they can feed their cubs soon after emergence. Fall and early winter ice-breaking could change ice formation dynamics so that the usual density of seal denning areas no longer occur in the same areas previously known to female bears. Ice-breaking in such important areas before cub emergence could put females and their cubs at high risk of starvation after months in their dens without feeding.

Similarly, walruses in and around ulliit are susceptible to harm from vessel traffic, ice-breaking and other human disturbance, which can lead to tragic trampling events and short- and long-term abandonment of ulliit areas.[218] Human activities, including ice-breaking and vessel traffic, can also disturb seals, interfering with foraging, mating, calving and other behaviours, as well as cause injury and mortality through ship strikes, sonar, noise and other impacts.

Seabirds, sea ducks and coastal waterfowl are also threatened by increased shipping and ice-breaking activity. During much of the summer, seabirds are flightless due to adult moulting and early chick development before fledging. While flightless, the birds must dive to avoid vessels and can become trapped or sucked into propellers. Young birds are also inexperienced in avoiding boats and ships, and they are often unable to respond quickly enough to avoid injury or death. Adults may put themselves at risk while attempting to protect their offspring. The QWB and its member HTOs are very concerned that the Canadian Wildlife Service (CWS) mandated setback distances for ship and boat approaches to seabirds, coastal waterfowl and sea ducks during summer are far too close.

In addition, vessel traffic has also been found to result in energetically costly responses, such as causing birds to take flight or dive, and physiological stress responses, such as elevated heart rates.[219] Nesting and rearing congregations of seabirds, sea ducks and coastal waterfowl thus may be at risk from nearby vessel traffic and other forms of human disturbance.

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[216] Hauser, D.D.W., Laidre, K.L. and H.L. Stern. 2018. Vulnerability of Arctic Marine Mammals To Vessel Traffic in the Increasingly Ice-free Northwest Passage and Northern Sea Route. *Proceedings of the National Academy of Sciences*. Online: pnas.org/content/115/29/7617

[217] Crockford, S.J. 2020. State of the Polar Bear Report 2019. The Global Warming Policy Foundation Report 39. Online: polarbearscience.files.wordpress.com/2020/02/crockford-2020_statepb2019-final.pdf; Smith, T.S., Partridge, S.T., Amstrup, S.C. and S. Schliebe. 2007. Post-den Emergence Behavior of Polar Bears (*Ursus maritimus*) in Northern Alaska. *Arctic 60*: 187. Online: pubs.er.usgs.gov/publication/70029716 (summarizing previous studies).

[218] Monson, D.H., Udevitz, M.S. and C.V. Jay. 2013. Estimating Age Ratios and Size of Pacific Walrus Herds on Coastal Haulouts Using Video Imaging. *Public Library of Science ONE 8*(7): e69806. Online: dx.doi.org/10.1371%2Fjournal.pone.0069806

[219] Schwemmer, P., Mendel, B., Sonntag, N., Dierschke, V. and S. Garthe. 2011. Effects of Ship Traffic on Seabirds in Offshore Waters: Implications for Marine Conservation and Spatial Planning. *Ecological Applications 21*(5): 1851-60. Online: researchgate.net/publication/51560971_Effects_of_ship_traffic_on_seabirds_in_offshore_waters_Implications_for_marine_conservation_and_spatial_planning

Vessel traffic and ice-breaking also pose threats to fish and their habitat through noise, sonar, groundings, collisions, oil spills, waste disposal, seismic testing, erosion and sedimentation.

Due to the rugged terrain and many sheer cliffs that caribou cannot cross, they are reliant on crossing intact sea ice in fjords in the southern portions of Tallurutiup Imanga in order to access alternate foraging areas from December through March, and for seasonal migrations during October and November and April through June. With climate change in future, the timing and locations of caribou sea-ice crossing may change somewhat throughout the NMCA. Ice-breaking to facilitate shipping at or near caribou sea-ice crossings poses a potential major threat to their survival. Caribou attempting to cross the broken ice and open water created by ice-breaking often die through injury, exhaustion, drowning or freezing. However, if they do not attempt such crossings, they may never reach areas with sufficient forage to survive the winter, or they may never reach suitable calving and post-calving areas and breeding or rutting areas, and as a result, suffer increased mortality and reduced reproductive success.

## Zone I – Preservation

As discussed above, the CNMCA Act and related guidance require the establishment of Zone I (Preservation) and Zone II (Natural Environment) areas. The Pond Inlet and Admiralty Inlet areas shown in Figures 7 and 8 below would be especially suitable for inclusion in the Zone I area of the Tallurutiup Imanga NMCA. Due to the extremely high value of these areas for wildlife and Inuit harvesting, the regional Inuit wildlife board, QWB, has sought protection for these areas both as part of the NMCA interim and final management plan, which has not yet been finalized, and under the ongoing Nunavut land use planning processes by the Nunavut Planning Commission (NPC).

The QWB-proposed Pond Inlet Protection Area (Zone I) (shown in green on Figure 7) would encompass areas within Navy Board Inlet, Tremblay Sound, Milne Inlet and Koluktoo Bay.[220] It occupies all of Tremblay Sound and Koluktoo Bay, up to 10km from the western shores of Eclipse Sound, and up to 50 per cent of the width of Navy Board and Milne Inlets.

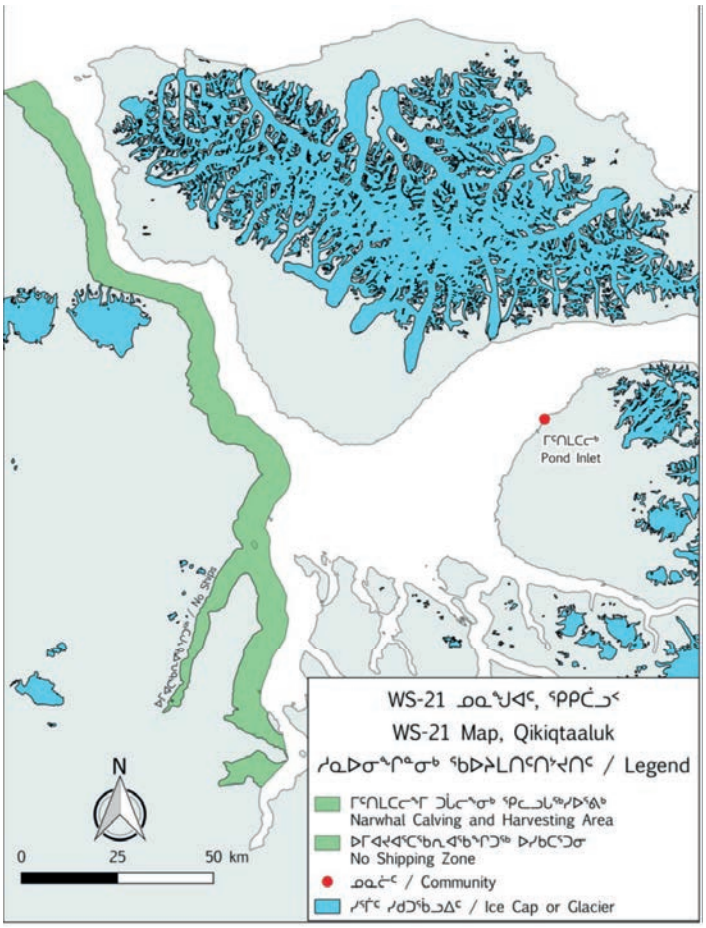

Figure 7 – Proposed Pond Inlet Protection Area (Source: QWB)

The Pond Inlet Protection Area is an area where both summering and migratory narwhals aggregate. Koluktoo Bay is well-known as a narwhal calving area. After calving, some narwhal females and calves remain in Koluktoo Bay, while others disperse to nearby areas. The Pond Inlet Protection Area is also home to many other species vital to the integrity of this complex ecosystem, including but not limited to ringed seals, bearded seals, polar bears, bowhead

[220] The Pond Inlet Protection Area is the same as the Pond Inlet Narwhal Calving, Post-calving and Harvesting Area requested by QWB and the Pond Inlet HTO proposed as part of the Nunavut land use planning process. See QWB and Pond Inlet HTO, Written Submission No. 21 regarding the 2016 Draft Nunavut Land Use Plan, Community Area of Interest—Multiple Values and Narwhal Calving, Post-calving and Harvesting, Pond Inlet (4 Sept 2018).

whales, killer whales, greater snow geese, king eiders, common eiders, brant geese, gyrfalcons, gulls, terns, seabirds, Arctic char and Arctic cod. Many of these species are utilized by Inuit and are important components of nutritional and cultural Inuit life. Protecting the Pond Inlet Protection Area from vessel disturbance is important to avoid disrupting narwhal calving and to prevent interference with traditional harvesting, camping, travelling and other Inuit activities.

The Admiralty Inlet Protection Area (Zone I) (shown in green on Figure 8) includes Admiralty Inlet, Berlinguet Inlet, Bell Bay, Moffet Inlet and all adjacent and interjacent bays, inlets and other marine waters. Admiralty Inlet is an area where both summering and migratory narwhals concentrate. Admiralty Inlet is also home to many other species integral to ecosystem functioning as well, including but not limited to harp seals, ringed seals, bearded seals, polar bears, beluga whales, bowhead whales, killer whales, red-throated loons, peregrine falcons, sandhill cranes, greater snow geese, king eiders, common eiders, brant geese, gyrfalcons, gulls, terns, fulmars, jaegers, Arctic char, Arctic cod, sculpins, crabs and clams. Many of these species are utilized by Inuit, and the area is critically important for the health, culture and heritage of the Inuit of Arctic Bay. Moreover, the Canadian Wildlife Service has identified Berlinguet Inlet as a Key Migratory Bird Site (KMBS) and, among Inuit, southern Admiralty Inlet is known as a feeding and breeding "home" for snow geese.

Keeping the Admiralty Inlet Protection Area free from vessel disturbance will protect the wide array of marine mammals, birds and other wildlife that depend on it, while allowing traditional harvesting, camping, travelling and other Inuit activities to continue.

It may be appropriate to include other especially important wildlife habitat and Inuit harvesting areas within Zone I as well. The sensitive areas identified in the appendices hereto could serve as a starting point for the delineation of additional components of Zone I in the Tallurutiup Imanga NMCA interim and final management plans.

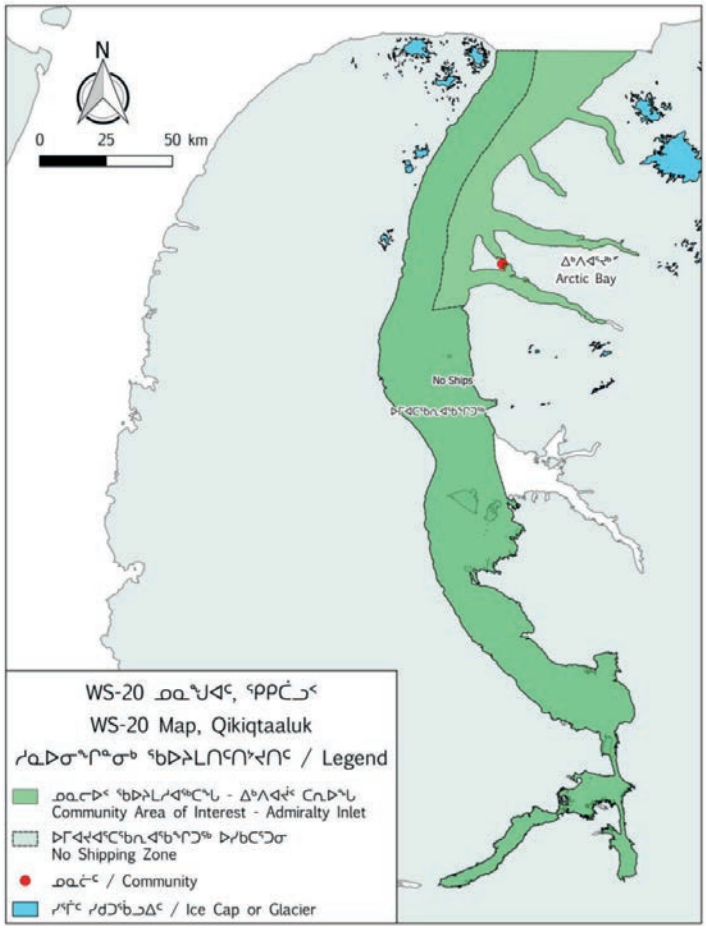

Figure 8 – Proposed Admiralty Inlet Protection Area (Source: QWB)

While allowing for continued Inuit use, the areas proposed for Zone I by the QWB and the HTOs should exclude all vessel traffic and associated ice-breaking activity in order to maximize protection, subject to reasonable exceptions for human safety, emergency response and the like. To avoid excessive infringement on Inuit harvesting and local transit, locally or regionally owned vessels would be allowed under the Nunavut Agreement. The specific parameters of Zone I and its restrictions would need to be detailed in the management plan for the NMCA, which is currently under development.

As explained above, the Government of Canada is authorized to exclude or restrict vessel traffic in a Zone I (Preservation) area under the CNMCA Act, AWPPA, and CSA, while at the same time adhering to the rights given to Inuit in the NLCA. Establishing a Zone I area encompassing the Pond Inlet and Admiralty Inlet protection areas, as well as other Zone I areas proposed by the QWB and HTOs in the appendices, would also help the government achieve its objectives and obligations under the IIBA. Furthermore, the inclusion of the Pond Inlet Protection Area would be consistent with the Baffinland Shipping and Marine Wildlife Management Plan, which serves as a means for the company to achieve compliance with a variety of legal and regulatory obligations as well as to address Inuit concerns relating to its Mary River iron mining operations and associated ore transport activity.[221] In the plan, Baffinland establishes a shipping route from the Milne Port that lies to the east of the Pond Inlet Protection Area described above, and it commits to ensuring that ore transport vessels follow this route "to the fullest extent possible."[222] Moreover, the plan establishes a "Restricted Shipping Area" in Koluktoo Bay and along the west side of Milne Inlet that is largely coextensive with the portion of the Pond Inlet Protection Area near the Baffinland shipping route.[223] Baffinland has thus already committed to "avoid [] areas such as Koluktoo Bay and the western shoreline [of Milne Inlet] near Bruce Head … to minimize effects on marine mammals and interference with harvesting activities."[224]

For the reasons discussed above, international maritime law should not pose a substantial impediment to the exclusion or restriction of vessel traffic in the protection areas described above and in the appendices. Under Canada's delineation and longstanding practice, these areas are included within the area defined as internal waters landward of the baseline surrounding the Arctic Archipelago (see Figure 6). The CCG routinely exercises oversight and control over navigation within this region (and all the way out to the boundary of the EEZ) from its MCTS centre in Iqaluit. Moreover, since these areas do not sit within the Northwest Passage, controversies relating to Canada's treatment of the Arctic Archipelago as a whole are not likely to arise in connection with these areas. Even under a more traditional approach to establishing baselines, Admiralty Inlet would be considered internal waters because it is "deeply indented" and lies landward of a straight baseline from the coastline of Baffin Island.[225] Eclipse Sound and Milne Inlet are likewise deeply indented within Baffin Island, and Bylot Island, which sits in the mouth of this inlet, would probably be considered a "fringe" island along the coast "in its immediate vicinity."[226] Thus, even under a traditional approach, waters within the Pond Inlet Protection Area would most likely be considered internal waters as well.[227]

### RECOMMENDATION #1:

**Delineation of Zone I (Preservation) Area and Associated Restrictions in the NMCA Management Plan.** Establish core Zone I (Preservation) areas within the management plan for the Tallurutiup Imanga NMCA. At a minimum, the Zone I area should include the Pond Inlet Admiralty Inlet protection areas described in this paper. Zone I should also include other wildlife habitat and Inuit harvesting areas identified as especially important by Parks Canada in collaboration with the regional wildlife board (QWB) and local HTOs. To maximize protection, the areas comprising Zone I could simply exclude all vessel traffic and associated ice-breaking activity, subject to reasonable exceptions for human safety, emergency response and other exigent circumstances, while allowing use by Inuit as provided under the NLCA. Alternatively, it may be reasonable for smaller vessels (e.g., under 20 metres (m) in length) to be allowed to transit the area as long as they adhere to the speed restrictions and other protective measures specified for Zone II.

[221] Baffinland Iron Mines Corporation. 2020. Shipping and Marine Wildlife Management Plan, Doc. BAF-PH1-830-P16-0024, rev 7.
[222] Ibid, at 35 (fig 5.2), 37. See Figure 6 above.
[223] Ibid, at 38 (fig 6.1).
[224] Ibid, at 37.
[225] UNCLOS art 7.
[226] Ibid.
[227] UNCLOS art 7; Navigating the Law n 3 (in "Maritime zones").

## Zone II – Natural environment

The sounds, channels, fjords, inlets, bays and estuaries of Tallurutiup Imanga NMCA all play an important role in sustaining the region's globally-significant abundance of wildlife and in allowing Qikiqtani Inuit to continue their traditional harvesting activities. As such, the remainder of the NMCA should be given a Zone II (Natural Environment) designation under the CNMCA Act and related guidance. The following are some of the protective measures that could be implemented within Zone II. The same restrictions should be applicable in Zone I as well, if any vessels are allowed to enter those areas.

### RECOMMENDATION #2:

**Delineation of Zone II (Natural Environment) area and associated restrictions in the NMCA Management Plan.** Designate all areas of the Tallurutiup Imanga NMCA, other than those in Zone I, as a Zone II (Natural Environment) area within the management plan for the NMCA. The restrictions set forth below should be incorporated into the management plan as well, and these should be made applicable throughout Zone II. If any vessel traffic is allowed in Zone I, these restrictions should be applicable in Zone I as well. However, Inuit should be excluded from these restrictions. It is important to ensure that any restrictions on Inuit activities in the NMCA should be in full compliance with the terms negotiated between Inuit and the Government of Canada in the NLCA.

### Vessel speed restriction

Vessel speed is one of the primary predictors of the frequency and severity of ship strikes with whales and other marine mammals, and speed restrictions have been effective in mitigating ship strikes.[228] Slower vessel speeds, plus setbacks (see below), would also make it easier for adult and juvenile seabirds to avoid collisions with vessels, especially during periods when the seabirds are flightless. In the absence of internationally-approved standards addressing underwater noise, speed restrictions are also one of the few mechanisms available to reduce such noise from both domestic and foreign vessels. Local Qikiqtani Inuit communities are also very concerned about safety hazards posed by vessels when they are harvesting wildlife and fish. Reducing vessel speeds would greatly reduce these risks and reduce interference with traditional harvesting activities.

In its Shipping and Marine Wildlife Mitigation Plan, Baffinland has committed to ensuring that its ore transport vessels adhere to a 9kt speed limit.[229] Other examples of speed reduction measures designed to protect marine wildlife include the recent NOTMAR encouraging vessels to travel at 10kt or slower to protect beluga whales from potential strikes and underwater noise in marine protected areas within the Inuvialuit Settlement Region.[230] Canada has also repeatedly imposed a 10kt speed limit for vessels 20m or longer travelling in designated areas of the Gulf of St. Lawrence in order to protect North Atlantic right whales.[231]

To achieve the objectives of the Tallurutiup Imanga NMCA and IIBA, the management plan for the NMCA should establish a 9kt speed limit. Its effectiveness would be greatest and implementation simplest if the limit were generally applicable at all times, throughout all areas of the NMCA, and for all sizes and types of vessels, including bulk cargo carriers, cruise ships, fuel tankers, government vessels, private boats and others. Exceptions should be made, however, to allow increased speed when necessary to avoid a safety hazard or wildlife disturbance and to avoid impeding subsistence harvesting.

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[228] Conn, P.B. and Silber, G. 2013. Vessel Speed Restrictions Reduce Risk of Collision-Related Mortality for North Atlantic Right Whales. *Ecosphere 4*(4): art 43. Online: researchgate.net/publication/270528066_Vessel_speed_restrictions_reduce_risk_of_collision-related_mortality_for_North_Atlantic_right_whales; Fisheries and Oceans Canada. 2017. Assessing the Risk of Ship Strikes to Humpback (*Megaptera novaeangliae*) and Fin (*Balaenoptera physalus*) Whales off the West Coast of Vancouver Island, Canada. *DFO Canadian Science Advisory Secretariat Science Response* 2017/038. Online: waves-vagues.dfo-mpo.gc.ca/Library/40619709.pdf; Hauser, Vulnerability of Arctic Marine Mammals.

[229] Baffinland, Shipping and Marine Wildlife Mitigation Plan, p. 39.

[230] Canadian Coast Guard. 2020. Notice to Mariners Publication, Western Edition (31 July 2020). Fisheries and Oceans Canada. Online: notmar.gc.ca/publications/monthly-mensuel/archives/2020/west-ouest-07-20-en.pdf

[231] Transport Canada. 2021. Protecting North Atlantic Right Whales from Collisions with Ships in the Gulf of St. Lawrence. Government of Canada. Online: tc.gc.ca/en/services/marine/navigation-marine-conditions/protecting-north-atlantic-right-whales-collisions-ships-gulf-st-lawrence.html

The legal authority for a speed limit is grounded in multiple federal laws and other instruments. As discussed above, under the CNMCA Act, vessel access and movement within an NMCA must be managed in conformity with its conservation objectives and zoning plan.[232] The Governor in Council has general authority to make regulations for the control and management of the NMCA, as well as a more limited authority to make regulations concerning navigation and marine safety.[233] Additionally, under the IIBA, TC is required to establish a transportation centre in the region, and the parties must develop a "vessel identification and movement" strategy for the NMCA.[234] Furthermore, under the AWPPA and the NORDREG system, as well as the CSA, the Governor in Council and TC have broad authority to regulate shipping to protect public safety and the environment in the Arctic, including within the NMCA.[235]

**Recommendation 2(a) — Vessel speed restriction.** Establish a 9kt speed limit in the management plan for the Tallurutiup Imanga NMCA that is generally applicable at all times, throughout all areas of the NMCA, and for all sizes and types of vessels, including bulk cargo carriers, cruise ships, fuel tankers, government vessels, private boats and others. Exceptions should be made, however, to allow increased speed when necessary to avoid a safety hazard or wildlife disturbance and to avoid impeding subsistence harvesting, while at the same time ensuring that Inuit rights under the NLCA are not infringed upon.

### Setback distances, navigational best practices and seasonal considerations

Based on community input, Inuit Qaujimajatuqangit, science, the Nunavut land use planning process and the Baffinland Shipping and Marine Wildlife Management Plan, WWF-Canada has developed several recommendations for vessel setback distances, navigational best practices and seasonal considerations to minimize harm to wildlife, and it has disseminated these recommendations to vessel operators through its Eastern Arctic Mariner's Guide.[236] QWB reiterated many of these recommendations and others in its comments regarding the management plan for the Tallurutiup Management NMCA.[237] Key recommendations from these materials are summarized below and should be incorporated into the management plan for the NMCA:

### Setback distances – Vessel operators should maintain the following setback distances when in the presence of wildlife:

- 5km from an ulliit/walrus haul-out (all vessels);
- 2 to 5km from marine mammals (bulk cargo carriers, fuel tankers, other large vessels);
- 2km from ivory gull breeding sites (all vessels);
- 1,500m from seabird, seaduck and waterfowl colonies and moulting aggregations for ships (e.g., greater than 20m in length);
- 500m from marine mammals and seabird, seaduck and waterfowl colonies and moulting aggregations for smaller vessels (e.g., less than 20m in length) moving faster than 2kt;
- 300m from marine mammals and seabird, seaduck and waterfowl colonies and moulting aggregations for smaller vessels (e.g., less than 20m in length) moving less than 2kt.

[232] CNMCA Act s 3.4.3.
[233] Ibid, s 16(1), (3).
[234] IIBA ss 10.3.3, 10.5.
[235] NORDREG s 2; Shipping Safety Control Zones Order, CRC c 356, sched 2; CSA ss 35.1, 136. *Cf.* CNMCA Act s 16(3) (requiring concurrence from the Minister of Environment and Climate Change in instances where CNMCA Act authority overlaps with other laws).
[236] WWF-Canada. 2018. Eastern Arctic Mariner's Guide. WWF-Canada. Online: wwf.ca/report/eastern-arctic-mariners-guide/
[237] QWB, Letter to Tallurutiup Imanga NMCA Interim Management Plan Planning Committee (3 Aug 2019).

## Navigational best practices:

- Community use – Vessel operators should give Inuit harvesters the right-of-way, and they should not approach harvesting activities or allow photographs to be taken of such activities.
- Inuit travel routes – Vessel operators should avoid crossing community transportation corridors on sea ice, unless accompanied by ice-bridging.
- Marine mammals – Vessel operators should adhere to the following mitigation procedures in the vicinity of marine mammals:
  - Give wildlife the right-of-way;
  - Maintain a straight course and constant speed, avoiding erratic behaviour;
  - When marine mammals appear to be trapped or disturbed by vessel movements, vessels should take appropriate steps to mitigate the disturbance, including stoppage of movement until the wildlife have moved away from the immediate area.


## Seasonal considerations:

- Whales – Vessel operators should be especially cautious in whale calving, foraging and migration areas (see ***Appendix 9***) from mid-July through mid-September.
- Polynyas – Avoid shipping in polynyas (approximately October through July).
- Floe edges – Avoid shipping through and around floe edges from October through July.
- Seal pupping – Avoid shipping through seal habitat areas (see ***Appendix 9***) during pupping season from October through June.
- Caribou – Avoid shipping in caribou sea ice crossing areas from October through July.

These recommendations should be set forth in the NMCA management plan preferably as mandatory measures. If Parks Canada proposes to make any of the above restrictions voluntary, then the voluntary measures should be negotiated and agreed to by the QWB and local HTOs. The federal government's authority to impose such measures on a mandatory basis arises from the same provisions of the CNMCA Act, IIBA, AWPPA, NORDREG system and CSA as described above with respect to speed limits. To the extent they are made mandatory, such rules should not apply when a vessel's passengers are actively engaged in traditional harvesting and similar activities. This could interfere with Inuit harvesting activities and their use of their traditional homes and camps, which would be inconsistent with numerous provisions of the CNMCA Act and IIBA. Also, any mandatory provisions applicable in the main east-west channel of Tallurutiup Imanga (i.e., the Northwest Passage) should be carefully crafted to avoid excessively slowing or delaying foreign ships as this could generate controversy concerning whether the route is an international strait and what restrictions can be imposed there without unlawfully impeding transit passage.

**Recommendation 2(b) — Setback distances, navigational best practices and seasonal considerations.** Incorporate the following setback distances, navigational best practices and seasonal considerations into the management plan for the NMCA on a mandatory basis, or a voluntary basis subject to negotiations with the QWB and local HTOs:

Setback distances – Vessel operators should maintain the following setback distances when in the presence of wildlife:

- 5km from an ulliit/walrus haul-out (all vessels);
- 2 to 5km from marine mammals (bulk cargo carriers, fuel tankers, other large vessels);
- 2km from ivory gull breeding sites (all vessels);
- 1,500m from seabird, seaduck and waterfowl colonies and moulting aggregations for ships (e.g., greater than 20m in length);
- 500m from marine mammals and seabird, seaduck and waterfowl colonies and moulting aggregations for smaller vessels (e.g., less than 20m in length) moving faster than 2kt;
- 300m from marine mammals and seabird, seaduck and waterfowl colonies and moulting aggregations for smaller vessels (e.g., less than 20m in length) moving less than 2kt.

Navigational best practices:

- Community use – Vessel operators should give Inuit harvesters the right-of-way, and they should not approach harvesting activities or allow photographs to be taken of such activities.
- Inuit travel routes – Vessel operators should avoid crossing community transportation corridors on sea ice, unless accompanied by ice-bridging.
- Marine mammals – Vessel operators should adhere to the following mitigation procedures in the vicinity of marine mammals:
    - Give wildlife the right-of-way;
    - Maintain a straight course and constant speed, avoiding erratic behaviour;
    - When marine mammals appear to be trapped or disturbed by vessel movements, vessels should take appropriate steps to mitigate the disturbance, including stoppage of movement until the wildlife have moved away from the immediate area.

Seasonal considerations:

- Whales – Vessel operators should be especially cautious in whale calving, foraging and migration areas from mid-July through mid-September.
- Polynyas – Avoid shipping in polynyas (approximately October through July).
- Floe edges – Avoid shipping through and around floe edges from October through July.
- Seal pupping – Avoid shipping through seal habitat areas (see ***Appendix 9***) during pupping season from October through June.
- Caribou – Avoid shipping in caribou sea ice crossing areas from October through July.

To the extent these measures are made mandatory, such rules should not apply when a vessel's passengers are actively engaged in traditional harvesting activities, and any mandatory provisions applicable in the main east-west channel of Tallurutiup Imanga should be carefully crafted to avoid excessively slowing or delaying foreign ships.

## Seasonal closure to ice-breaking and large ships

Vessel traffic and associated ice-breaking activities threaten wildlife and Inuit harvesters during the winter and shoulder seasons. Ice-breaking of landfast ice in particular poses major threats to wildlife and would destroy Inuit travel routes to essential harvesting areas. To achieve the purposes of the Tallurutiup Imanga NMCA and IIBA, the management plan should establish a seasonal ice-breaking prohibition and a seasonal closure to large ships. Specifically, the management plan should prohibit the breaking of landfast ice and travel by all vessels larger than 20m in length throughout the Tallurutiup Imanga NMCA during ice formation, coverage and breakup. By default, the closure period would run from early Ukiaqsaaq (1 October) through to late Upingaaq (31 July) inclusive, but the federal government should retain the authority to adjust these dates, in consultation and agreement with the regional wildlife board (QWB) and local HTOs, depending on annual variations in weather and ice conditions. Together, these seasonal ice-breaking and large vessel closure measures would protect important Inuit travel routes, seal pupping areas, ulliit/walrus haul-outs on sea ice, polar bear and human harvesting activities around floe edges, aggregations of wildlife in and around polynyas, and caribou sea-ice crossing areas.

The legal authority for these seasonal limitations is derived from the CNMCA Act, IIBA, AWPPA, NORDREG system, and CSA, as described above with respect to speed limits. The implementation of these limitations would not interfere with smaller vessels (under 20m in length) travelling within the NMCA for local transit between communities, subsistence harvesting activities, emergency response, scientific research and other purposes, whenever and wherever natural weather and ice conditions allow. As such, they should not generate substantial controversy in most areas of the Tallurutiup Imanga NMCA.

To the extent the main east-west channel of the Tallurutiup Imanga NMCA is considered an international strait by some nations, these seasonal measures could generate some controversy relating to foreign vessel travel. Nevertheless, Canada could make a strong argument that these measures fall comfortably within the "ice covered area" provision of Article 234 of UNCLOS because they would prevent large vessels from travelling through ice-covered areas, which are present during the most dangerous times of year, when vessel maneuverability is limited, visibility is poor, collisions, groundings, oil spills, and other hazards are most likely to occur and emergency response efforts would be most challenging. Alternatively, if the federal government wishes to avoid such controversy altogether, the seasonal measures could still be implemented to a large degree. The seasonal prohibition against ice-breaking only applies to landfast ice along the coast and would not interfere with transit passage through the central corridor of the main channel, if, where and when landfast ice fails to form across some of the channel. The seasonal closure to large vessels could be made applicable in these same nearshore areas, while allowing foreign vessels to travel through the central corridor.

Another source of potential controversy relates to ore transport associated with Baffinland mining operations. Until recently, the vast majority of such ore transport has taken place during the open-water season.[238] As discussed above, however, Baffinland is now using ice-breaker support to extend its operations into the shoulder seasons. The Baffinland shipping route through Milne Inlet and Eclipse Sound is not part of the east-west channel arguably constituting an international strait. On the contrary, according to Canada's definition of the coastal baseline (see Figure 6 above) and longstanding practice, Baffinland's route through the NMCA traverses internal waters. Even under a more traditional approach, the route would probably be considered to lie within internal waters because of the deep indentation of these waters into Baffin Island. The federal government therefore possesses sufficient jurisdiction and legal authority to limit the seasonal period of Baffinland's shipping operations and associated ice-breaking activities.

[238] Baffinland, Shipping and Marine Wildlife Management Plan, p. 23 (indicating its annual shipping season generally runs from July 15 through October 15).

**Recommendation 2(c) — Seasonal closure to ice-breaking and large ships.** Establish in the management plan for the Tallurutiup Imanga NMCA a seasonal ice-breaking prohibition and a seasonal closure to large ships. The management plan should prohibit the breaking of landfast ice and travel by all vessels larger than 20m in length throughout the NMCA from approximately 1 October through 31 July, but the federal government should retain the authority to adjust these dates, in consultation and agreement with the regional wildlife board (QWB) and local HTOs, depending on annual variations in weather and ice conditions. To minimize controversy relating to foreign ships, the seasonal closure to large vessels could be limited to areas covered by landfast ice, while allowing foreign vessels to travel through the central corridor of the main east-west channel of Tallurutiup Imanga in the absence of landfast ice.

## Vessel routeing

The government of Canada has legal authority to impose vessel routeing measures within the Tallurutiup Imanga NMCA pursuant to the CNMCA Act, IIBA, AWPPA, NORDREG system and CSA as described above with respect to speed limits. The exclusion of vessel traffic from the Pond Inlet and Admiralty Inlet protection areas, and other sensitive areas, through their inclusion in a Zone I (Preservation) area within the NMCA represents a first step in this regard. The management plan should also include a formalized and mandatory version of the Baffinland shipping route as well as other shipping routes designed to avoid safety hazards and especially sensitive wildlife habitat. The sensitive areas identified in the appendices hereto should serve as a starting point for the development and implementation of specific vessel routeing measures in negotiation with the QWB and local HTOs. To minimize the potential for controversy relating to the Northwest Passage, routeing measures within the main east-west channel of Tallurutiup Imanga NMCA could be implemented with respect to foreign vessels through international consensus and approval from the IMO, as discussed below.

**Recommendation 2(d) — Vessel routeing.** In addition to the exclusion of vessel traffic from Zone I (Preservation) areas, incorporate into the management plan for the Tallurutiup Imanga NMCA a mandatory version of the Baffinland shipping route and other shipping routes designed to avoid safety hazards and especially sensitive wildlife habitat. To minimize controversy concerning foreign vessels, routeing measures within the main east-west channel could be implemented with respect to foreign vessels through international consensus and approval from the IMO.

## Precautionary area designation and Inuit representation at IMO

There would be several advantages to having some or all of the shipping measures described above approved by the IMO under SOLAS. IMO approval would provide an additional layer of international consensus and consistency with respect to domestic and foreign ships, and this may encourage greater compliance. IMO methods of distribution may also be more effective in reaching foreign vessels that may not otherwise receive notices from Canadian authorities.

One approach would be to seek IMO approval for the designation of the entire Tallurutiup Imanga NMCA as a "precautionary area" due to its challenging navigation conditions, sensitive wildlife and ecosystems, and widespread Inuit harvesting activities. A speed restriction, setback distances, navigation requirements, routeing measures, seasonal closures and ice-breaking limitations would all be appropriate corollaries for such a designation. Such measures could be included as part of the IMO designation itself, or the designation could leave some or all of the specifics to the discretion of the NMCA managers (Governor in Council, Parks Canada, TC, etc.) in order to maintain sufficient flexibility and adaptability in response to changing conditions and ongoing research and monitoring.

It should be noted that Inuit are not currently represented at the IMO. The ICC has recently applied for IMO consultative status to "ensure that the ICC can participate directly and independently to advocate for issues of concern to Inuit voices."[239] The ICC represents 180,000 Inuit in the United States (Alaska), Canada, Greenland and Russia (Chukotka),[240] and this international constituency could be very helpful in promoting IMO approval of a precautionary area designation or other shipping-related measures in connection with the Tallurutiup Imanga NMCA. Canada should support and advocate for the IMO to approve the ICC's application for consultative status.

**Recommendation 2(e) — Precautionary area designation by IMO.** Seek IMO approval for the designation of the entire Tallurutiup Imanga NMCA as a "precautionary area" with authorization for and/or specification of associated speed restrictions, setback distances, navigation requirements, routeing measures, seasonal closures and ice-breaking limitations.

**Recommendation 2(f) — Inuit representation at IMO.** Support and advocate for the IMO to approve the ICC's application for consultative status to ensure Inuit representation at the IMO.


[239] Inuit Circumpolar Council. 2020. Inuit Circumpolar Council Calls for Safe Arctic Shipping to Protect Inuit Rights and the Marine Environment – ICC Applies for IMO Consultative Status. Press Release. ICC Canada. Online: inuitcircumpolar.com/news/inuit-circumpolar-council-calls-for-safe-arctic-shipping-to-protect-inuit-rights-and-the-marine-environment-icc-applies-for-imo-consultative-status

[240] ICC Webpage. About ICC: Our Story. Online: inuitcircumpolar.com/about-icc

# OIL AND HAZARDOUS SUBSTANCE SPILLS

Oil and hazardous substance spills represent one of the most serious threats to marine life in the Tallurutiup Imanga NMCA and other regions of the Arctic, including the potential for severe harm to marine mammals, fish, seabirds and invertebrates.[241] Spills can be nearly impossible to clean up in the Arctic's harsh weather conditions and broken ice,[242] and microorganisms are much less effective at degrading spilled material over time in cold Arctic waters.[243] HFO have especially harmful effects, and they have been banned in the Antarctic and other regions of the world.[244] Canada has already committed to a ban on HFO in the Arctic by 2024 through the IMO.[245]

As discussed above, domestic Canadian law and international agreements establish extensive requirements relating to oil and hazardous substance spill prevention, response, emergency preparedness and liability. These protections are especially stringent in the Canadian Arctic due to the AWPPA and the ASSPPR regulations made thereunder. Coastal states generally may not impose requirements on foreign ships concerning their design, construction, manning or equipment unless they are giving effect to generally accepted international rules or standards.[246] In light of the existing framework and the limitations on further requirements, the main ways to enhance protections against accidental spills in the Tallurutiup Imanga NMCA will be through the establishment of core preservation areas, speed limits, setback distances, navigational best practices, seasonal closures and vessel routeing, as described above. All of these measures should be designed to reduce the incidence of groundings and collisions that could lead to spills and to encourage avoidance of sensitive areas altogether. Canada should also continue to support and advocate for an international ban on HFO use throughout the Arctic by 1 January 2024 without exemptions or waivers.

### RECOMMENDATION #3 — REDUCE THE RISK OF OIL AND HAZARDOUS SUBSTANCE SPILLS:

**Recommendation #3(a) – Vessel management.** Reduce the risks associated with oil and hazardous substance spills by establishing preservation and natural environment areas, speed limits, setback distances, navigational best practices, seasonal ice-breaking and vessel traffic closures, and vessel routeing measures, as described in Recommendations #1 and #2.

**Recommendation #3(b) – Arctic HFO ban by IMO.** Continue to support and advocate for an international ban on the use and carriage for use of HFO throughout the Arctic by 1 January 2024 without exemptions or waivers.

[241] Østreng, W., Eger, K.M., Fløistad, B., Jørgensen-Dahl, A., Lothe, L., Mejlænder-Larsen, M. and T. Wergeland. 2013. *Effects of Oil Spill in Arctic Waters. In Shipping in Arctic Waters: A Comparison of the Northeast, Northwest and Trans Polar Passages*. Heidelberg: Springer. pp. 159-162.

[242] Nuka Research and Planning Group, LLC. 2018. *Estimating an Oil Spill Response Gap for the U.S. Arctic Ocean (Revised)*. Nuka Research. Online: nukaresearch.com/wpfb-file/estimating-an-oil-spill-response-gap-for-the-us-arctic-ocean-revised-pdf/

[243] Vergeynst, L., Wegeberg, S., Aamand, J., Lassen, P., Gosewinkel, U., Fritt-Rasmussen, J., Gustavson, K. and A. Mosbech. 2018. Biodegradation of Marine Oil Spills in the Arctic with a Greenland Perspective. *Science of the Total Environment 626*: 1243-1258. Online: sciencedirect.com/science/article/abs/pii/S0048969718302110

[244] DeCola, E. and Robertson, T. 2018. Phasing Out the Use and Carriage for Use of Heavy Fuel Oil in the Canadian Arctic: Impacts to Northern Communities, Report to WWF-Canada. Nuka Research and Northern Economics. Online: wwf.ca/wp-content/uploads/2020/03/Phasing-Out-the-Use-and-Carriage_July-2018.pdf

[245] Transport Canada. 2018. Let's Talk Marine Fuel in the Arctic. Government of Canada. Online: letstalktransportation.ca/marine-fuel-in-the-arctic2

[246] UNCLOS art 211(6)(c).

# DISCHARGES AND DUMPING

Shipping also generates pollution through ordinary operations, and the discharge and dumping of pollution from ships poses substantial threats to wildlife, habitat and ecosystems. The Canadian Arctic enjoys some of the most stringent protections against these types of shipping-related pollution. Indeed, the AWPPA and ASSPPR come close to establishing a zero-discharge regime for the Arctic. Sewage, greywater, scrubber washwater and ballast water, however, are pollutants that warrant higher protective standards within the Tallurutiup Imanga NMCA.

## Sewage

Sewage discharge can introduce invasive species and pathogens and produce fecal-contaminated waters, which pose health risks to humans that eat fish from these areas.[247] The discharge of raw sewage from vessels can also create or exacerbate oxygen depletion, algal blooms and degradation of beaches and other scenic areas with unsightly and foul-smelling accumulations.[248]

As discussed above, despite the overall objective of the ASSPPR to prohibit waste dumping in Arctic waters, the regulations do allow some discharges of sewage. They establish varying obligations for prior treatment, distance from shore, and other requirements depending on a vessel's category, size, age, passenger capacity and other factors, and vessels 15 gross tonnes or smaller and carrying fewer than 15 persons are generally allowed to discharge sewage generated onboard. At the same time, however, under the CNMCA Act, the Governor in Council is authorized to make regulations for the control and management of NMCAs, including the restriction or prohibition of activities and uses. Also, under the CSA, the Governor in Council is authorized, on the Minister of Transport's recommendation, to make regulations to protect the marine environment from the impacts of navigation and shipping activities.

The release of sewage is not necessary for safe and continuous navigation. To protect wildlife and Inuit harvesters within the Tallurutiup Imanga NMCA from the harmful impacts of sewage discharges, the Governor in Council and TC should make regulations prohibiting all sewage discharges within its boundaries. To the extent such regulations may impose a financial or logistical burden on small Inuit harvesting vessels or other community members, it would be appropriate and consistent with the IIBA for TC, Parks Canada or other federal government entities to fund the installation of sufficient vessel wastewater reception facilities in convenient locations and other measures to alleviate such burdens. These sewage regulations, facility construction plans and other measures should be incorporated into the management plan for the NMCA.


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[247] Woehler, E.J., Ainley, D. and J. Jabour. 2014. Human Impacts to Antarctic Wildlife: Predictions and Speculations for 2060. In *Antarctic Futures: Human Engagement with the Antarctic Environment*. Eds. Tin, T., Liggett, D., Maher, P.and M. Lamers. pp. 27-60. Online: researchgate.net/publication/294317390_Human_Impacts_to_Antarctic_Wildlife_Predictions_and_Speculations_for_2060

[248] IMO Webpage. Prevention of Pollution by Sewage from Ships. IMO. Online: imo.org/en/OurWork/Environment/Pages/Sewage-Default.aspx

## Greywater

Greywater includes wastewater from sinks, floor drains, dishwashers, laundry machines, bathtubs, shower stalls, dishwashers and other facilities.[249] Recent research indicates that the average greywater generation rate per person onboard a vessel per day is 170 litres for working vessels and 254 litres for passenger vessels.[250] The US Environmental Protection Agency (EPA) has concluded that greywater can be as environmentally damaging as domestic sewage in equivalent volumes.[251] It can contain high levels of bacteria, nutrients and harmful substances including microplastics and cleaning products that may impair human and environmental health.[252] It can also increase the amount of nutrients in the surrounding water, causing algal blooms and anoxic dead zones, and it can spread harmful bacteria and disease, posing risks to human health.[253]

Like sewage, the release of greywater is not necessary for safe and continuous navigation. To protect wildlife and Inuit harvesters within the Tallurutiup Imanga NMCA from the harmful impacts of greywater discharges, the Governor in Council and TC should make regulations prohibiting all greywater discharges within its boundaries. As discussed above with respect to sewage, to the extent such regulations may impose a financial or logistical burden on small Inuit harvesting vessels or other community members, it would be appropriate and consistent with the IIBA for TC, Parks Canada or other federal government entities to fund the installation of sufficient vessel wastewater reception facilities in convenient locations and other measures to alleviate such burdens. These greywater regulations, facility construction plans and other measures should be incorporated into the management plan for the NMCA.

## Scrubber washwater (EGCS effluent)

Wet exhaust gas cleaning systems (EGCS), also called scrubbers, are used to reduce sulfur dioxide from ships' engine exhaust as an alternative to using IMO-compliant low-sulfur fuels. A scrubber system functions by introducing exhaust gases to water, which cools and removes sulfur dioxide and other contaminants from the exhaust before it is vented into the atmosphere. The resulting effluent ("scrubber washwater") is strongly acidic and contains substances with known harmful and genotoxic properties, including heavy metals and polycyclic aromatic hydrocarbons.[254] In certain closed-loop and hybrid EGCS systems, residue from the bottom of the process tank is extracted using suction and then this "bleed-off" washwater is either stored onboard or treated and discharged.[255]

The use of scrubbers, and the resulting release of scrubber washwater, is not necessary for safe and continuous navigation. The acidity of the effluent poses an ecological risk to mildly alkaline environments, such as the Arctic, and the contaminants entrained within the effluent pose a risk to aquatic species and Indigenous communities who rely on these species as a source of nutrition and way of life. In addition, the use of scrubber systems facilitates the use of HFO, which poses a severe threat to the marine environment when spills occur.

To protect wildlife and Inuit harvesters within the Tallurutiup Imanga NMCA from the harmful impacts of scrubber effluent discharges, the Governor in Council and TC should make regulations prohibiting the discharge of scrubber washwater, including bleed-off from closed-loop or hybrid EGCS systems, within NMCA boundaries. These discharge regulations and other measures should be incorporated into the management plan for the NMCA.

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[249] *Vessel Pollution and Dangerous Chemicals Regulations* s 131.1(1).

[250] Parks, M., Ahmasuk, A., Compagnoni, B., Norris, A. and R. Rufe. 2019. Quantifying and Mitigating Three Major Vessel Waste Streams in the Northern Bering Sea. *Marine Policy 106*: 103530. Online: sciencedirect.com/science/article/pii/S0308597X18308315#!

[251] U.S. Environmental Protection Agency, Office of Wastewater Management. 2011. *Graywater Discharges from Vessels*. EPA-800-R-11-001. Online: nepis.epa.gov/Exe/ZyPDF.cgi/P100ZVHG.PDF?Dockey=P100ZVHG.PDF

[252] Ibid.; Parks, et al., Quantifying and Mitigating Three Major Vessel Waste Streams; Nowlan, L. and Kwan, I. 2001. Cruise Control – Regulating Cruise Ship Pollution on the Pacific Coast of Canada. West Coast Environmental Law. Online: georgiastrait.org/wp-content/uploads/2015/02/CruiseControl_WCEL.pdf

[253] Nowlan and Kwan, Cruise Control.

[254] Marine Protection Environment Committee. 2019. Scrubber Environmental Impact Literature Review, MEPC 74/INF.10. IMO. Online: 1u594u31nvw01cjgyx4gvsr15ge-wpengine.netdna-ssl.com/wp-content/blogs.dir/1/files/2019/08/MEPC-74-INF.10-Scrubber-Environmental-Impact-Literature-Review-Panama-2019.pdf

[255] American Bureau of Shipping. 2018. ABS Advisory on Exhaust Gas Scrubber Systems. ABS. Online: ww2.eagle.org/content/dam/eagle/advisories-and-debriefs/exhaust-gas-scrubber-systems-advisory.pdf

## Ballast water

Ballast water is water that has been pumped from the sea into chambers in a ship's hull. It is used to reduce stress on the hull, provide transverse stability, improve propulsion and maneuverability, and compensate for weight changes due to cargo loading and off-loading.[256] The release of ballast water collected from one marine region into the waters of another region can cause harm due to the bacteria, microbes, invertebrates, eggs, cysts and larvae that it contains and the resulting transfer of non-native species from one place to another.[257] A few examples of invasive aquatic species that have caused health, ecological and economic problems around the world after being transported in ballast water include various types of cholera, water fleas, mitten and green crabs, toxic algae, round goby fish, comb jellyfish, sea stars, zebra mussels and kelp.[258]

As discussed above, the CSA and *Ballast Water Control and Management Regulations* thereunder require ships originating outside Canada's EEZ to retain their ballast water, treat it, or exchange it at sea in deep water away from coastal zones. In exigent circumstances, however, they allow alternate ballast water exchange to occur in alternate zones closer to shore. The alternate zones nearest to Tallurutiup Imanga have been criticized as being situated too close to shore and posing too great a risk to local ecosystems.[259] To reduce such risks, it has been recommended that the existing alternate ballast water zones be eliminated and new alternate zones established at least 1km (approximately 0.5NM) offshore.[260] Additionally, ships operating entirely within Canada's EEZ are not subject to the ballast water exchange regulations even though there are risks associated with transfers of water from southern to northern waters within Canada's EEZ.[261]

Here again, under the CNMCA Act and CSA, the Governor in Council is authorized to make regulations for the control and management of NMCAs and, on the Minister of Transport's recommendation, to make regulations to protect the marine environment from the impacts of navigation and shipping activities. To protect the sensitive wildlife and ecosystems of the Tallurutiup Imanga NMCA, and the Inuit communities that depend on them, from the harmful impacts of ballast water exchanges, the Governor in Council and TC should make regulations generally prohibiting all ballast water discharges within its boundaries, as well as in a buffer zone area extending to at least 0.5NM outside the NMCA boundary. This should include ships operating entirely within Canada's EEZ, as well as those originating outside the EEZ boundary. The precautionary principle[262] suggests an even greater buffer zone area, such as 1NM outside the boundary or more, may be warranted. Exemptions should be made for truly local vessel traffic that originates and remains entirely within the Eastern Canadian Arctic, as ballast water exchange within the same general ecosystem does not pose substantial threats. A new alternate ballast water exchange zone should be established outside the buffer zone for use in urgent situations, and limited exemptions may be needed to allow ballast water exchange when necessary to protect vessel stability and human safety. Any such exemptions should be construed narrowly, however, and reporting and recordkeeping requirements should be in place to ensure that such exemptions are not overutilized. These regulations and the locations of new alternate ballast water exchange zones should also be incorporated into the management plan for the NMCA.

[256] IMO Webpage. Ballast Water Management. IMO. Online: imo.org/en/OurWork/Environment/Pages/BallastWaterManagement.aspx

[257] Ibid.; Ricciardi, A. 2016. Tracking Marine Alien Species by Ship Movements. *Proceedings of the National Academy of Sciences 113*(20): 5470. Online: pnas.org/content/113/20/5470

[258] IMO Webpage. Invasive Aquatic Species (IAS). IMO. Online: imo.org/en/OurWork/Environment/Pages/AquaticInvasiveSpecies(AIS).aspx

[259] Goldsmit, J., Nudds, S.H., Stewart, D.B., Higdon, J.W., Hannah, C.G. and K.L. Howland. 2019. Where Else? Assessing Zones of Alternate Ballast Water Exchange in the Canadian Eastern Arctic. *Marine Pollution Bulletin 139*: 74. Online: sciencedirect.com/science/article/pii/S0025326X18308476

[260] Ibid.

[261] Ibid.

[262] The "precautionary principle" counsels that a lack of full scientific certainty should not be used as a reason for postponing cost-effective measures to reduce the harmful environmental effects of human activity. See ScienceDirect Webpage. Precautionary Principle. ScienceDirect. Online: sciencedirect.com/topics/earth-and-planetary-sciences/precautionary-principle

## RECOMMENDATION #4 — STRENGTHEN PROHIBITIONS ON DISCHARGES AND DUMPING:

**Recommendation #4(a) – Sewage and greywater discharge prohibition.** Make regulations prohibiting the discharge of any sewage or greywater, including treated and untreated, within the boundaries of the Tallurutiup Imanga NMCA. The prohibition should apply to ships operating entirely within Canada's EEZ as well as those originating outside the EEZ boundary. These regulations should be incorporated into the management plan for the NMCA.

**Recommendation #4(b) – Scrubber washwater discharge prohibition.** Make regulations prohibiting the discharge of any effluent originating from a scrubber system, including bleed-off from closed loop and hybrid systems, within the boundaries of the Tallurutiup Imanga NMCA. The prohibition should apply to ships operating entirely within Canada's EEZ as well as those originating outside the EEZ boundary. These provisions should be incorporated into the management plan for the NMCA.

**Recommendation #4(c) – Vessel wastewater reception facilities.** Provide federal funding for the construction of vessel wastewater reception facilities as needed to avoid financial and logistical burdens on Inuit communities associated with the sewage, greywater, and scrubber washwater discharge prohibitions. Until adequate wastewater reception facilities are available, and in instances when the discharge of wastewater is unavoidable, a discharge should be allowed only if the vessel is located at a distance of at least 12NM from an ice shelf or landfast ice and as far as practicable from areas of ice concentration exceeding 10 per cent and only if the vessel has in operation an approved sewage treatment plant. These facility construction plans and interim requirements should be incorporated into the management plan for the NMCA.

**Recommendation #4(d) – Ballast water exchange prohibition.** Make regulations prohibiting all ballast water discharges within the boundaries of the Tallurutiup Imanga NMCA as well as in a buffer zone area extending to at least 0.5NM or, preferably, 1NM outside the NMCA boundary. The prohibition should apply to ships operating entirely within Canada's EEZ as well as those originating outside the EEZ boundary. Exemptions should be made for truly local vessel traffic that originates and remains entirely within the Eastern Canadian Arctic. A new alternate ballast water exchange zone should be established outside the buffer zone for use in urgent situations. Limited exemptions may also be needed to allow ballast water exchange when necessary to protect vessel stability and human safety. Any exemptions should be construed narrowly, and reporting and recordkeeping requirements should be in place to ensure that such exemptions are not overutilized. These regulations and the locations of new alternate ballast water exchange zones should be incorporated into the management plan for the NMCA.

**Recommendation #4(e) – Exemptions for vessels engaged in subsistence harvesting.** Vessels engaged in subsistence harvesting within the boundaries of the Tallurutiup Imanga NMCA should be made exempt from the sewage, greywater and scrubber washwater discharge prohibitions and the ballast water exchange restrictions described above.

# UNDERWATER NOISE

Underwater noise is a well-known cause of harm to marine life.[263] It is becoming an increasing threat in Arctic waters as shipping increases in response to retreating sea ice due to climate change. Most at risk are marine mammals that rely on the acoustic environment for communication, hunting and feeding. Underwater noise can force marine mammals to avoid preferred habitats and increase their stress hormones, leading to fewer offspring and higher death rates.[264] Underwater noise also threatens seabirds that dive to forage for food and may use, or be sensitive to, underwater sounds.[265]

Underwater noise is not yet regulated under Canadian law or international law, but momentum has been growing for controls on underwater noise. Fisheries and Oceans Canada is developing an Ocean Noise Strategy to reduce underwater noise and its harmful effects.[266] The United Nations General Assembly has identified underwater noise as one of five "current major threats to some populations of whales and other cetaceans" and as one of the ten "main current and foreseeable impacts on marine biodiversity" on the high seas.[267] And, since 1992, the IMO's Marine Environment Protection Committee (MEPC) has made shipping-related ocean noise a subject of its agendas and work programs.[268]

The IMO has also developed and released voluntary "Guidelines for the Reduction of Underwater Noise from Commercial Shipping to Address Adverse Impacts on Marine Life."[269] The IMO noise guidelines acknowledge that "underwater-radiated noise from commercial ships may have both short and long-term negative consequences on marine life, especially marine mammals."[270] The guidelines are meant to apply to noise generated by commercial ships (not military ships, sonar or seismic activities),[271] and they provide advice to ship designers, builders and operators.[272] Since these recommended noise controls generally involve design, construction, manning or equipment standards, in order for a coastal state to implement and enforce them with respect to foreign ships, the guidelines would first have to become generally accepted international rules or standards.[273]

In the meantime, reducing ship speed and avoiding sensitive habitats can be effective means of reducing underwater noise and its adverse impacts. The main ways to address underwater noise in the Tallurutiup Imanga NMCA will be through the establishment of core preservation areas, speed limits, setback distances, navigational best practices, seasonal closures and vessel routeing as discussed above.

[263] Firestone, J., and Jarvis, C. 2007. Response and Responsibility: Regulating Noise Pollution in the Marine Environment. *Journal of International Wildlife Law and Policy 1*: 124-127. Online: tandfonline.com/doi/abs/10.1080/13880290701347408; IMO Webpage. Ship Noise. IMO. Online: imo.org/en/MediaCentre/HotTopics/Pages/Noise.aspx

[264] Protection of the Arctic Marine Environment. 2019. PAME, Underwater Noise in the Arctic: A State of Knowledge Report, Roveniemi, May 2019. Arctic Council. Online: pame.is/index.php/document-library/pame-reports-new/pame-ministerial-deliverables/2019-11th-arctic-council-ministerial-meeting-rovaniemi-finland/421-underwater-noise-report/file

[265] Crowell, S.C. 2016. Measuring In-Air and Underwater Hearing in Seabirds. In *The Effects of Noise on Aquatic Life II*. Eds. Popper, A.N. and Hawkins, A. Springer Nature: Switzerland. pp. 1155-1160. Online: springer.com/gp/book/9781493929801#aboutAuthors

[266] Fisheries and Oceans Canada, Mitigating the Impacts of Ocean Noise. Government of Canada. Online: dfo-mpo.gc.ca/oceans/noise-bruit/index-eng.html

[267] Animal Welfare Institute. Ocean Noise. AWI. Online: awionline.org/content/ocean-noise

[268] Ibid.; IMO Webpage. Ship Noise. IMO. Online: imo.org/en/MediaCentre/HotTopics/Pages/Noise.aspx

[269] Noise Working Group. 2014. IMO-MEPC.1/Circ.833: Guidelines for the Reduction of Underwater Noise from Commercial Shipping to Address Adverse Impacts on Marine Life [IMO Noise Guidelines]. ASCOBANS. Online: ascobans.org/sites/default/files/document/AC21_Inf_3.2.1_IMO_NoiseGuidelines.pdf; See the "Guidelines for the reduction of underwater noise from commercial shipping to address adverse impacts on marine life" section of "Internation Legal Framework" in *Navigating the Law*.

[270] IMO Noise Guidelines, Annex s 1.1.

[271] IMO PSSA Guidelines ss 2.1-2.2.

[272] Ibid, s 3.1.

[273] UNCLOS art 211(6)(c).

It will also be necessary to establish thresholds, noise budgets and indicators to effectively manage noise pollution within the NMCA. To facilitate such efforts, ongoing research, monitoring and standards development will be needed. As discussed above, TC has an obligation to work with QIA, federal and territorial government departments and other Inuit partners (e.g., QWB and HTOs) to explore pilot programs in which Inuit stewards or local Inuit community members will undertake activities vessel monitoring, tracking and reporting, and other functions. TC must also provide funding, training and other support for such programs and activities. Further, the IIBA calls for a collaborative approach between Inuit and government entities for ongoing research and monitoring of ecological conditions in the Tallurutiup Imanga NMCA. TC should move forward with collaborative programs involving QIA, QWB, HTOs and other Inuit partners to conduct underwater noise research and monitoring, and to develop guidelines and standards to help ensure ships operating within the NMCA are as quiet as possible.

Similarly, at the international level, the Government of Canada should work with other Arctic nations to establish a regional and Arctic-wide underwater noise monitoring regime, similar to the European Union's JOMOPANS project. Prompted by the EU's Marine Strategy Framework Directive and its provisions relating to underwater noise,[274] JOMOPANS uses a combination of computational modelling and state-of-the-art measurements to monitor ambient noise in the North Sea. Research partners include government agencies, universities and laboratories from European nations within the North Sea Region, which includes the United Kingdom, Belgium, Netherlands, Germany, Denmark, Sweden and Norway. JOMOPANS studies the effectiveness of various options for reducing the adverse effects of underwater noise on the marine environment through coordinated control measures for the entire North Sea Region. The Government of Canada should also continue to support and advocate for enforceable international rules governing underwater noise.

### RECOMMENDATION #5 — REDUCE UNDERWATER NOISE:

**Recommendation #5(a) – Vessel management.** Reduce underwater noise by reducing ship speed and avoiding sensitive habitats through the establishment of core preservation and natural environment areas, speed limits, setback distances, navigational best practices, seasonal ice-breaking and vessel traffic closures, and vessel routeing measures, as described in Recommendations #1 and #2. In parallel, establish thresholds, noise budgets and indicators to manage noise pollution in the NMCA.

**Recommendation #5(b) – Underwater noise research and monitoring.** Develop and implement collaborative programs involving QIA, QWB, HTOs and other Inuit partners to conduct underwater noise research and monitoring, which will serve as the basis for additional guidelines and standards to ensure ships operating within the NMCA are as quiet as possible. Establish a regional and Arctic-wide underwater noise monitoring regime similar to the EU's JOMOPANS project in the North Sea Region.

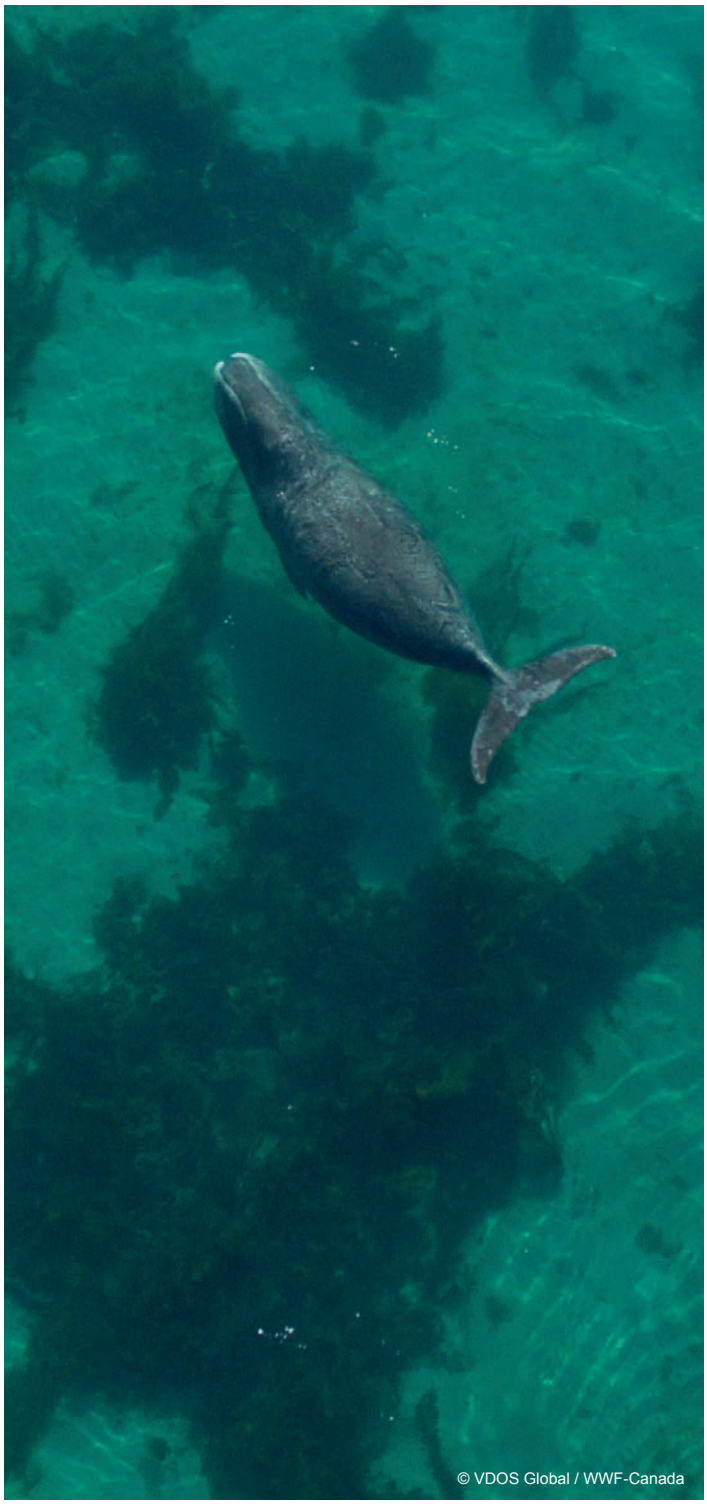
**Recommendation #5(c) – Underwater noise regulation by IMO.** Continue to support and advocate for enforceable international rules governing underwater noise reduction.

[274] In the Marine Strategy Framework Directive, 2008/56/EG (17 June 2008), descriptor 11 focuses on the introduction of energy in the marine environment, including underwater sounds, and it sets forth two indicators: loud, low, and mid frequency impulsive sounds (s 11.1.1) and continuous low frequency sound (s 11.2.1). European Parliament, Council of the European Union. 2008. 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). Online: eur-lex.europa.eu/legal-content/en/ALL/?uri=CELEX%3A32008L0056; Netherlands Ministry of Infrastructure and Water Management. Jomopans: Monitoring Ambient Noise of the North Sea Project. Rijkswaterstaat. Online: rijkswaterstaat.nl/english/water/projects/jomopans/index.aspx

# PARTICULARLY SENSITIVE SEA AREA DESIGNATION

As discussed above, a PSSA is marine area granted special protection by the IMO based on (1) its ecological, socioeconomic and/or scientific attributes; (2) its vulnerability to damage from shipping; and (3) the availability of associated protective measures within the competence of the IMO to prevent, reduce or eliminate such vulnerability. The establishment of a PSSA usually represents the culmination of domestic and international efforts to protect a marine area with especially high ecological value. Given that only a handful of PSSAs have ever been designated, the PSSA designation is a great honour, and it reflects a strong international consensus as to the importance of the region, its need for long-term protection and the ability of the IMO to play a key role in protecting the region from shipping-related impacts. A PSSA designation for the Tallurutiup Imanga NMCA would strengthen Canada's ability to protect the region from international shipping impacts, and it would help ensure more comprehensive awareness of the applicable protections and rules among vessel operators from around the world.

While only one of the three main criteria for PSSA designation (i.e., ecological, socioeconomic and/or scientific attributes) must be satisfied, the Tallurutiup Imanga NMCA would easily satisfy all three. Ecological criteria would overwhelmingly support the designation of the Tallurutiup Imanga NMCA as a PSSA. Tallurutiup Imanga is an ecological jewel of global significance on par with the Galapagos Islands, which were designated as a PSSA in 2005. The region serves as important habitat for polar bears, bowhead whales, narwhals, walruses, beluga whales, ice seals and many species of seabirds. It has also been identified as a potential World Heritage Site and a "Super Ecologically and Biologically Significant Area for the Arctic,"[275] and it has been established as an NMCA by the Government of Canada.


© VDOS Global / WWF-Canada

[275] Kenchington, E., Link, H., Roy, V., Archambault, P., Siferd, T., Treble, M., and V. Wareham. 2011. Identification of Mega- and Macrobenthic Ecologically and Biologically Significant Areas (EBSAs) in the Hudson Bay Complex, the Western and Eastern Canadian Arctic. DFO Canadian Science Advisory Secretariat Research Document. DFO Canadian Scientific Advisory Secretariat Research Document 2011/071. vi + 52 p. Online: researchgate.net/figure/Location-of-super-EBSAs-in-the-Arctic-identified-by-an-IUCN-expert-workshop-from-IUCN_fig1_232749461

Socioeconomic and cultural criteria would support PSSA designation just as strongly. Tallurutiup Imanga is a cultural heart of the region, and its waters have supported Inuit, their ancestors, and their way of life for millennia. Through traditional harvesting, Qikiqtani Inuit feed themselves and their families while handing down to future generations a strong sense of cultural identity. The importance of the region to Inuit is a key underpinning of the NMCA and the associated IIBA. Similar socioeconomic and cultural factors supported the designation of the Jomard Entrance in Papua New Guinea as a PSSA in 2016.

Scientific and educational criteria would provide further support for the designation of Tallurutiup Imanga as a PSSA. Both Inuit and external researchers have studied the area's many natural processes, such as one of the greatest whale migrations in the world and the response of mid-Arctic latitudes to climate change. The region also provides exceptional opportunities to educate youth and the public about particular phenomena, such as polynyas.

Proponents of a PSSA designation would also be able to show that the Tallurutiup Imanga NMCA is vulnerable to adverse impacts from shipping. Shipping in the Arctic is increasing as sea ice retreats due to climate change, and Tallurutiup Imanga sits at the eastern terminus of the Northwest Passage, which represents a potentially shorter, faster route for international shipping. More and larger commercial and industrial ships, including oil tankers and vessels carrying hazardous cargo, are expected to transit through the area in years to come. Already more and larger cruise ships, potentially carrying more passengers than most of the local resident communities, disembark their passengers at or near the many sensitive wildlife and cultural sites throughout the NMCA. As well, shipping of iron ore from the Baffinland mine increased from 4.2 million tonnes in 2018 to nearly 6 million tonnes in 2019, and if approved may double to 12 million tonnes within a year or two. Notably, the Papahānaumokuākea Marine National Monument in Hawai'i was designated as a PSSA in 2008, even though strict regulations had virtually eliminated large-scale shipping in the area, and remaining activities consisted primarily of research, management, fishing, cultural practices and recreation. The threats posed by international shipping in the Tallurutiup Imanga NMCA are thus far greater than those that were threatening the now-established PSSA in Hawai'i. Finally, most or all of the of the shipping-related measures recommended in this white paper could serve as associated protective measures for purposes of a PSSA designation.

The Government of Canada should compile evidence supporting the designation of the Tallurutiup Imanga NMCA as a PSSA by the IMO and initiate the designation process. Canada should utilize the shipping-related protective measures set forth above as associated protective measures to support such a designation.

### RECOMMENDATION #6:

**Pursue a PSSA designation by IMO.** Compile evidence supporting the designation of the Tallurutiup Imanga NMCA as a PSSA by the IMO and initiate the designation process. Use the shipping-related protective measures set forth in Recommendations #1 through #5 as associated protective measures to support such a designation.

The graphics and information set forth in the appendices is derived from materials submitted by QWB and HTOs to the NPC in 2018 in connection with the Nunavut Land-Use Planning process.

# APPENDIX 1: INUIT SEA-ICE TRAVEL ROUTES

**Written Submission No. 01**

**2016 draft Nunavut Land Use Plan**

**Proposed additions to:**
**On-ice marine transportation routes**

**Qikiqtaaluk Region**

**To:** The NPC

**From:** The QWB and the HTOs of Grise Fiord, Resolute Bay, Arctic Bay, Pond Inlet, Clyde River, Qikiqtarjuaq, Pangnirtung, Iqaluit, Kimmirut, Cape Dorset, Sanikiluaq, Hall Beach and Igloolik

## Background information:

From freeze-up to breakup, Inuit use many routes on the sea ice throughout Qikiqtaaluk Region. During winter and spring, these sea-ice routes are critical for travel between communities and harvesting. Inuit use these routes to access areas on land, on and under the sea ice and at and beyond the floe edge to harvest many species of seals, whales, fishes and migratory birds, as well as caribou, polar bears and walruses.

Throughout winter and during early breakup, it is critical for the nutrition and health of all Inuit that the sea ice remain unaffected by ice-breakers and other shipping along these routes. Inuit harvest wildlife across wide areas of sea ice between these main routes, and therefore it is important that shipping does not disturb or break ice between the mapped routes.

These routes must be protected from ice-breaking activity of ships, regardless of the ships' ownership or purpose. This includes the Canadian or other Coast Guard or military vessels, tourism-related ships, cargo ships, exploration or survey ships, and any other ships with potential ice-breaking capabilities.

The locations of the floe edges change throughout each winter, as well as from year to year. Inuit search for marine wildlife on ice routes along most floe edges throughout Qikiqtaaluk Region, wherever those changing floe edges may happen to be at any given time. Routes along floe edges would obviously be approximate and subject to annual and seasonal changes. Ships should not break ice at or near any floe edge without prior informed and written consent from all of the HTOs within 250km. HTO directors are often on the sea ice, at the floe edge or elsewhere, and therefore may not be available to respond without notice several months in advance. Lack of response from an HTO can never be assumed to indicate consent.

## Source of information:

Inuit Qaujimajatuqangit

## Proposed designation:

Special Management Area

## Proposed restrictions:

### Conditions:

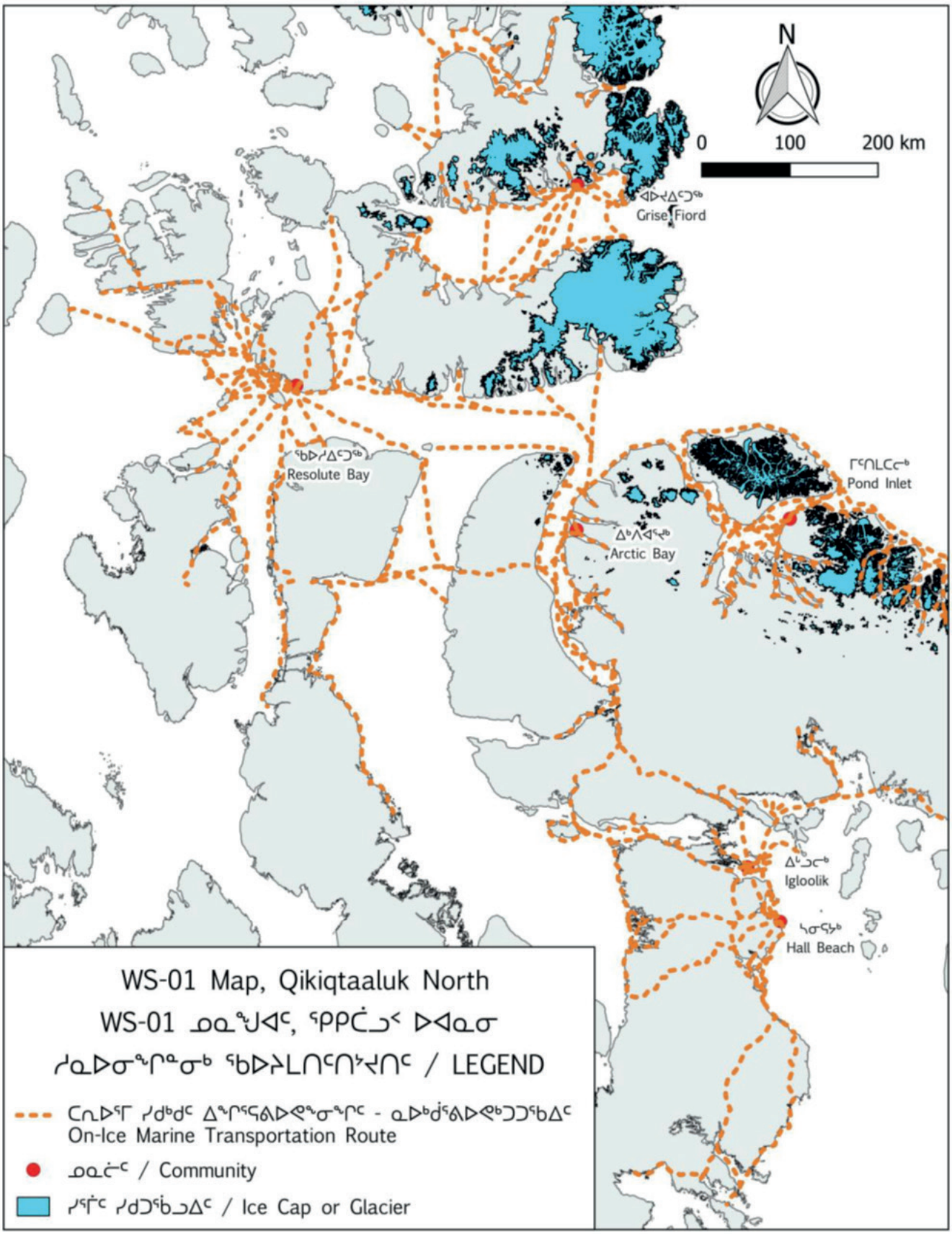
- Closed to all ship traffic, subject to safe navigation, during Ukiaq, Ukiuq, Upingaksaaq, and Upingaaq.
- All floe edges are closed to all ship traffic, subject to safe navigation, during Ukiaq, Ukiuq, Upingaksaaq, and Upingaaq without prior, informed and written consent from all of the Hunters and Trappers Organizations (HTOs) and Regional Wildlife Organizations (RWOs) within 300 km, and subject to any conditions requested by the HTOs and RWOs. Lack of response from an HTO or RWO does not indicate consent.
- Any project in Nunavut that involves shipping that would violate these conditions is prohibited.
- This condition may be waived through submission of a robust ice-bridging plan.

## Description of area boundaries and mapping:

Routes are as indicated on the attached maps and associated shape files.

### Date of this draft:

21 November 2018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# APPENDIX 2: WALRUS HAUL-OUTS

**Written Submission No. 02**

**2016 draft Nunavut Land Use Plan**

**Proposed land use designation amendments and additions: Site # 41, walrus haul-outs (Ulliit), Qikiqtaaluk Region**

**To:** The NPC

**From:** The QWB and the HTOs of Grise Fiord, Resolute Bay, Arctic Bay, Pond Inlet, Qikiqtarjuaq, Pangnirtung, Iqaluit, Cape Dorset, Hall Beach, Igloolik and Sanikiluaq

## Background information:

Atlantic walruses are important to the nutritional, cultural and economic well-being and traditions of Inuit. They are also a vital component of the ecology of marine environments in Qikiqtaaluk Region.

Walruses haul out on sea ice in winter and spring and on land in summer and fall. They often haul out in tight congregations on sea ice around stable polynyas in winter where food is readily available annually. In summer, they haul out and congregate on low rocky shores, often returning to known locations annually. Many annual and alternative haul-out sites are known to Inuit. Although in some years they may occasionally use alternative locations, they will eventually return to previously used haul-outs in future. Haul-outs are often small but heavily used areas. Traditional rules for the timing and method of approaching haul-outs are known and followed by Inuit in order to minimize disturbance.

In Inuktitut, walrus haul-outs are ulliit (ulli, singular). Habitats for ulliit are limited. Large numbers of walruses must be able to move easily, quickly and safely in and out of the water, especially in the presence of predators and human disturbance. Haul-outs must also be in close vicinity to suitable foraging habitats, mainly shellfish beds. Walruses are susceptible to impacts of human disturbance at and near ulliit. Repeated disturbances by people who do not have sufficient knowledge of approach methods known to Inuit may cause short- or long-term abandonment of ulliit.

The 2016 draft Nunavut Land Use Plan (NLUP) identified and mapped only a few ulliit (site # 41) in Foxe Basin. Inuit know about the presence and locations of many ulliit throughout Qikiqtaaluk Region. All of these sites should be added and protected under the final NLUP. In addition to being protected from ocean vessels, walruses should be protected from disturbances from aircraft and terrestrial vehicles. Walruses at ulliit on land and sea ice should be protected.

One of the most notable ice ulliit is near the year-round polynya around Dundas Island, north of Resolute Bay. Large numbers of walruses haul out onto the ice and feed in the waters nearby throughout winter. Each spring the polynya expands to the southwest toward Crozier, Little Cornwallis and Cornwallis Islands. The walruses continue to haul out on the ice edges as the polynya expands until open water allows them to move farther. (Note: Although the sea ice in the spring expansion zone may appear solid in winter and early spring, it is highly unstable and unsafe for humans at all times.)

## Source of information:

Inuit Qaujimajatuqangit.

## Proposed amended restrictions:

### Prohibited uses:

- Mineral exploration and production
- Oil and gas exploration and production
- Seismic testing
- Disposal at sea
- Quarries
- Hydro-electrical and related infrastructure
- Linear Infrastructure
- Tourism
- Related research except Non-exploitive Scientific Research

**Conditions:**

- No vessel may approach within five (5) kilometres seaward of a walrus haul-out, any time during the year.
- When walruses are present, fixed wing aircraft must maintain a minimum vertical setback of 460m (1,500ft) above ground level (AGL) while within 310m (1,000ft) of a group of walruses. Helicopters should remain at altitudes greater than 910m (3,000ft) AGL when travelling within 1,610m (1mi) of a group of walruses.
- When walruses are present, walruses must not be approached by terrestrial vehicles closer than 800m (0.5mi) while the vehicle remains out of sight of the walruses.
- Any project in Nunavut that would violate these conditions is prohibited.

## Proposed additional walrus haul-outs:

Add the walrus haul-outs (ulliit) identified throughout Qikiqtaaluk rRegion, as shown on the attached maps and in the associated shapefiles.

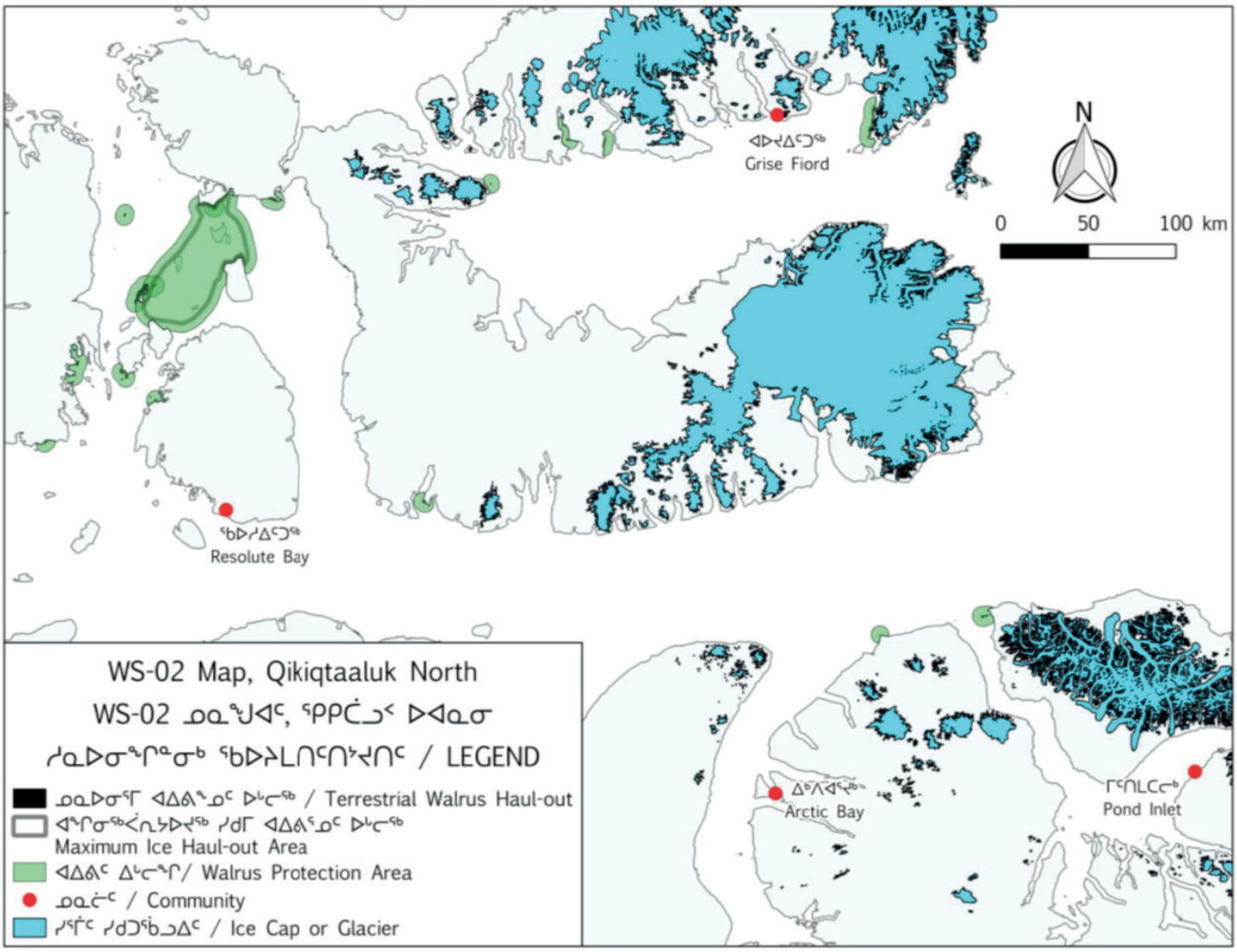
## References:

Ristroph, B. 2016. Pacific Walrus Protection and Management in a Changing Climate: Findings from the 2016 Arctic Science Summit Seminar. Pacific Environment, San Francisco, USA. 45 pp. pacificenvironment.org/wp-content/uploads/2017/02/walrus-mgmt-report_final_gl.pdf

US Fish and Wildlife Service. 2018. US Fish and Wildlife Service Approach & Viewing Guidelines for Pacific Walruses. USFWS, Anchorage, USA. 2 pp. s3.amazonaws.com/arc-wordpress-client-uploads/adn/wp-content/uploads/2018/05/08093104/walrus-viewing-guidelines-2018-1.pdf

## Date of this draft:

9 November 2018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# APPENDIX 3: WALRUS HARVESTING

**Written Submission No. 03**

**2016 draft Nunavut Land Use Plan**

**Proposed land use designation: Community area of interest – Walrus harvesting**

**To:** The NPC

**From:** The QWB and the HTOs of Clyde River, Grise Fiord, Pond Inlet and Hall Beach

## Background information:

Atlantic walruses are important to the nutritional, cultural and economic well-being and traditions of Inuit. They are vital components of the ecology of marine environments of Baffin Bay, Jones Sound, Lancaster Sound, Foxe Basin, Hudson Bay and other arctic marine waters.

Walruses often congregate in areas with shallow water where food is readily available annually, and on terrestrial and ice haul-outs. These areas are important for Inuit where they harvest walruses according to the traditional rules of Inuit Qaujimajatuqangit. Such important walrus areas are well known to Inuit in Foxe Basin, Baffin Bay, Lancaster Sound, Jones Sound and elsewhere. Walruses may occur in these areas throughout the year. These same areas also often have abundances of narwhals, bowheads, ringed seals and other marine species. These are important areas for harvesting of walruses and other marine mammals by Inuit of Clyde River, Pond Inlet, Grise Fiord and Hall Beach.

These areas need to be protected from human development and disturbance under the final NLUP.

## Source of information:

Inuit Qaujimajatuqangit.

## Proposed designation:

Protected Area

## Proposed restrictions:

### Prohibited Uses:

- Oil and gas exploration and production
- Seismic testing
- Disposal at sea
- Related research, except non-exploitive scientific research

### Conditions:

- Closed to all ship traffic, subject to safe navigation, during Ukiaq, Ukiuq, Upingaksaaq and Upingaaq.
- When walruses are present, no vessel may approach within five (5) kilometres seaward of a walrus harvesting area at any time during the year.
- When walruses are present, fixed wing aircraft must maintain a minimum vertical setback of 460m (1,500ft) AGL while within 310m (1,000ft) of a group of walruses. Helicopters should remain at altitudes greater than 910m (3,000ft) AGL when travelling within 1,610m (1mi) of a group of walruses.
- When walruses are present, walruses must not be approached by terrestrial vehicles closer than 800m (0.5mi) while the vehicle remains out of sight of the walruses.
- Any project in Nunavut that would violate these conditions is prohibited.

## Proposed boundaries of the community areas of interest – Walrus harvesting:

See the attached maps and the associated shapefiles.

Note: The QWB and HTOs would like to meet with the NPC to determine the best locations of shipping lanes through these areas during Aujaq and Ukiaksaaq, as may be needed. These shipping lanes could be added to the maps after these meetings. The vessel setback distance may be modified for such shipping lanes.

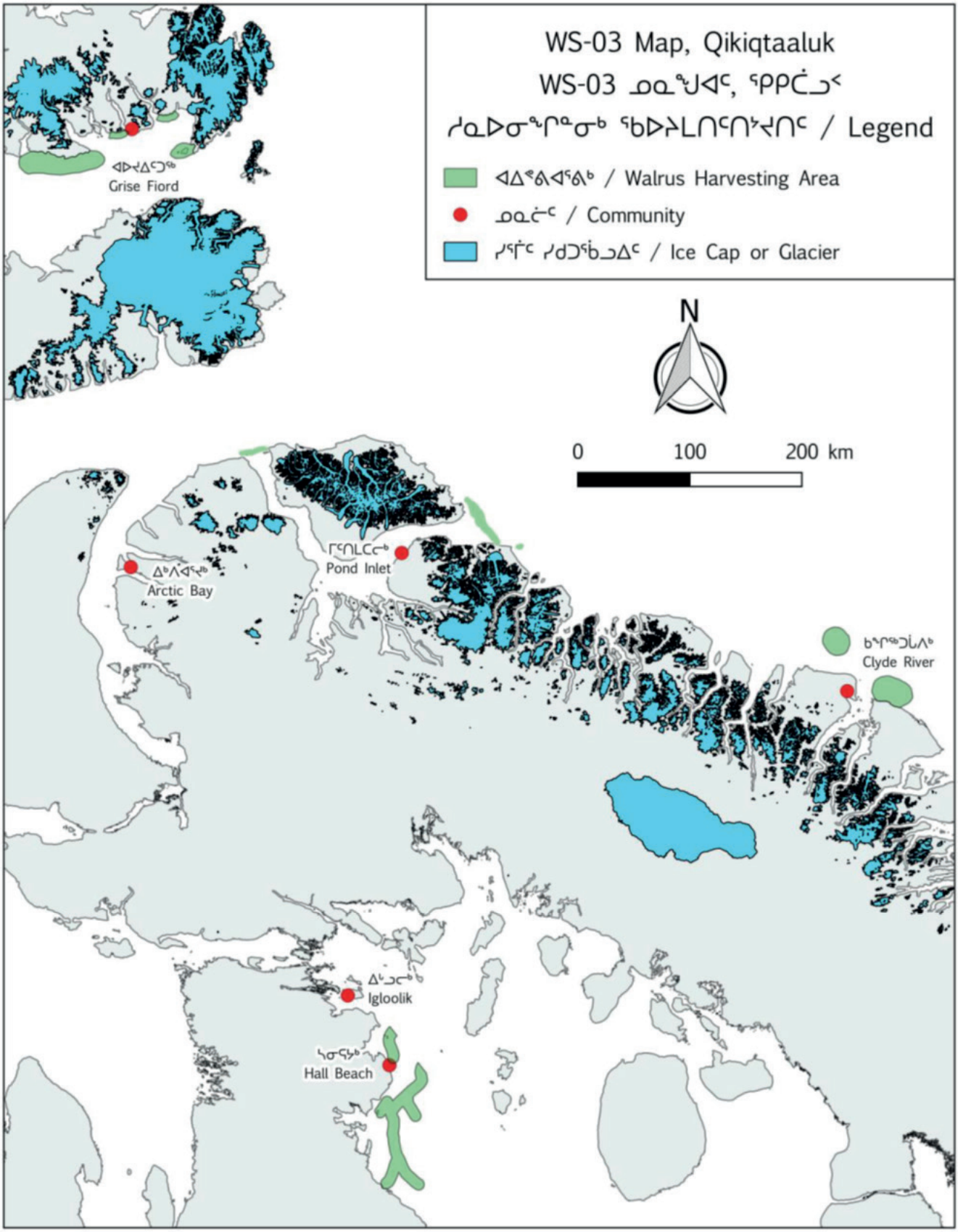
## References:

Ristroph, B. 2016. Pacific Walrus Protection and Management in a Changing Climate: Findings from the 2016 Arctic Science Summit Seminar. Pacific Environment, San Francisco, USA. 45 pp. pacificenvironment.org/wp-content/uploads/2017/02/walrus-mgmt-report_final_gl.pdf

US Fish and Wildlife Service. 2018. US Fish and Wildlife Service Approach & Viewing Guidelines for Pacific Walruses. USFWS, Anchorage, USA. 2 pp. s3.amazonaws.com/arc-wordpress-client-uploads/adn/wp-content/uploads/2018/05/08093104/walrus-viewing-guidelines-2018-1.pdf

## Date of this draft:

22 November 2018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# APPENDIX 4: POLAR BEAR HABITAT

**Written Submission No. 13**

**2016 draft Nunavut Land Use Plan**

**Proposed land use designation: Community areas of interest – Polar bear denning, emergence and mating**

**To:** The NPC

**From:** The QWB and the HTOs of Grise Fiord, Resolute Bay, Arctic Bay, Pond Inlet, Clyde River, Sanikiluaq and Hall Beach

## Background information:

Polar bears are an important part of Inuit cultural, nutritional and economic life. As a top predator, they are also critical elements in the functioning of Nunavut's marine ecosystem. Polar bears are currently listed as a species of special concern under the federal Species at Risk Act (SARA).

The polar bear harvest by Inuit of Nunavut is closely managed through a complicated co-management system involving Inuit, the Government of Nunavut and the Government of Canada. Harvesting of female polar bears with cubs has been especially limited for many years, despite the fact that occasional harvesting of females and cubs has been traditional within Inuit society since time immemorial.

The 2016 draft NLUP provided no specific protection of denning female polar bears and their cubs against potential impacts of industrial development and other non-traditional human activities, even within areas where denning is highly predictable.

In our view, the discrepancy between government protection of females and their cubs from traditional Inuit activities and a lack of clear protection of females and their emergent cubs from non-traditional human land uses is highly imbalanced or biased. This discrepancy should be addressed in the final NLUP.

The QWB is encouraged by the following statements in the 2016 draft NLUP. Regarding polar bear denning areas, "[Although] the information provided to the NPC on polar bear denning areas was not sufficiently precise, … this will be reviewed as new information comes to light" (page 28). And regarding IQ, "the Commission's objectives are to: … (f) Utilize both science and IQ to maintain or enhance the biological diversity of Nunavut and to promote the restoration and revitalization of depleted wildlife populations" (page 26).

In this submission, the QWB presents precise and clear information, based on IQ, about specific Polar Bears Denning, Emergence and Mating areas in Qikiqtaaluk Region, so that these areas and protective conditions can be incorporated into the final NLUP.

Polar bear denning areas are important coastal habitats where females give birth and nurture their cubs, and where they often remain for days and weeks after the cubs emerge. Dens may be distributed over very large geographic areas.

Nevertheless, in some areas, polar bear denning is predictable from year to year and at higher density than in other areas. Such areas with predictable polar bear denning have also been found in parts of Svalbard,[276] where the high elevation and rugged terrain is similar to that of much of Qikiqtaaluk Region, unlike that in lower elevation parts of Nunavut. In Qikiqtaaluk Region, Inuit hunters know where denning females are more predictable, known through their own observations and knowledge passed on from their elders and ancestors.

Cub survival is unlikely if dens are inadvertently disturbed before females emerge naturally, and also if human disturbance inadvertently causes separation of females from their cubs during the period following den emergence. Starvation of cubs and predation of cubs by male bears are risks when cubs become separated from their mothers, even for short periods of time outside their maternal dens. This could be exacerbated through human disturbance.

[276] Larsen 1985.

Females may enter dens as early as mid-November and as late as early January. They remain in their dens, giving birth and nursing their cubs, usually until March and April when they emerge. Females and cubs may then remain near their den sites for up to a month, hunting in nearby fjords or at nearby floe edges, but they may also move away if they are disturbed or if hunting near the denning area is not successful. Disturbance of hunting females and their prey (e.g., denning ringed seals) can jeopardize early cub survival.

In the denning and emergence habitats that are used in most years, females and their cubs should be protected from human disturbance throughout these periods, and from long-term industrial damage to denning and emergence habitats.

Encounters between female polar bears and humans in these areas are especially dangerous, as the females will protect their young cubs at all costs. Therefore, limiting human access in critical denning and emergence habitats is also done in the interest of public safety.

Extensive sea-ice areas are used by mating polar bears from March to June. Male bears compete for and pursue females for long distances over several weeks. Violent conflicts occur between males. Humans must avoid mating areas unless they are being guided by knowledgeable Inuit. Some but not all mating areas may be near denning and emergence areas. We propose to designate one mating area north of Grise Fiord because of the high density of mating bears each year.

## Source of information:

IQ

## Proposed designation:

Special Management Area

## Proposed restrictions:

### Conditions:

- During Ukiaksaaq (starting 15 November), Ukiaq, Ukiuq and Upingaksaaq, Critical Polar Bear Denning, Emergence and Mating Areas must not be disturbed by any activities related to:
  - Mineral exploration and production
  - Oil and gas exploration and production;
  - Quarries
  - Hydro-electrical and related infrastructure
  - Linear infrastructure
  - Shipping
  - Tourism without Inuit guides
- In these areas, any long-term projects related to these land uses must shut down annually during these seasons.
- No activities in other seasons related to these land uses may be developed if they may impact polar bear denning or emergence in these areas.
- Any project in Nunavut that would violate these conditions is prohibited.

## Proposed community areas of interest – Polar bear denning, emergence and mating:

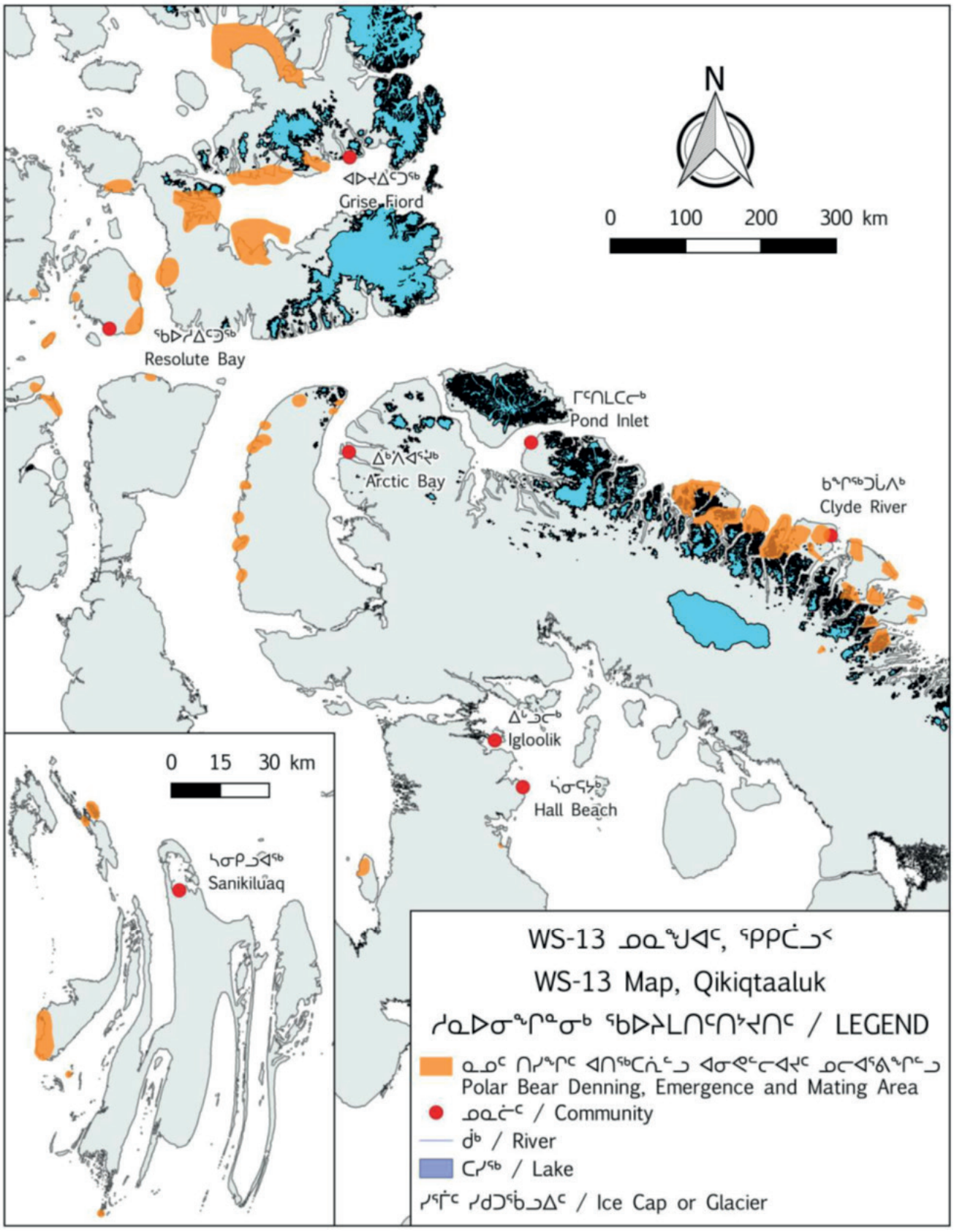
See the attached maps and the associated shapefiles.

## Reference:

Larsen, T. 1985. Polar Bear Denning and Cub Production in Svalbard, Norway. Journal of Wildlife Management 49: 320-326.

## Date of this draft:

23 November 23 2018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WS-13 Map, Qikiqtaaluk
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Polar Bear Denning, Emergence and Mating Area
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# APPENDIX 5: EIDER NESTING HABITAT

**Written Submission No. 15**

**2016 draft Nunavut Land Use Plan**

**Proposed land use designation: Community areas of interest – Eider nesting**

**To:** The NPC

**From:** The QWB and the HTO of Grise Fiord, Resolute Bay, Pond Inlet, Qikiqtarjuaq, Pangnirtung and Iqaluit

## Background information:

There are several eider nesting areas that are important to Inuit that are not protected under 2016 draft NLUP. Most of these areas are nesting areas for both common and king eiders, and some other waterfowl and seabirds. Eiders are an important resource for the health, well-being and culture of Inuit throughout Qikiqtaaluk Region.

These islands can be expected to draw increased attention from tourists and others as boat, yacht and ship traffic increases throughout the region. Their eider populations will be at risk to increased harassment and pollution if not protected.

Without protection of these important eider habitats, the NLUP will fail in its goal to protect and promote the well-being of Nunavut's residents and communities, a primary purpose of land use planning under Article 11 of the Nunavut Agreement.

Because other species of migratory birds occur in these areas, all setbacks for all types of migratory birds should apply.

**Special note – Community area of interest:** The QWB and the HTOs have chosen not to indicate these areas as KMBS. Section 2.1 of the 2016 draft NLUP sets criteria for KMBS based on percentages of a species' national population or recognition of critical habitat under SARA. These KMBS criteria consider the interests of all Canadians, but do not "protect and promote the existing and future well-being of those persons ordinarily resident and communities of the Nunavut Settlement Area" (Nunavut Final Agreement Article 11, Section 11.2.1 (b)). In order to meet that objective, IQ and the needs of Inuit in the communities must be taken fully into account.

**Special note – Other important eider habitats:** There are many other eider habitats that are important to Inuit in Qikiqtaaluk communities. Most notable among these are the many islands with eiders in the Multiple Values Area of Markham Bay – Western Hudson Strait – Foxe Channel, and the Key Migratory Bird Habitats of the Belcher and Sleeper Islands, for which protection must be strengthened in order to protect the communities' interest in these birds.

## Source of information:

IQ

## Proposed designation:

Special Management Area

## Proposed restrictions:

### Conditions:

- Regulatory authorities, where appropriate, must incorporate the aerial, marine and terrestrial setbacks in a modified Table 2[277] for all migratory birds and seabirds, and for coastal waterfowl and sea ducks during issuance of permits, licenses and authorizations.
- Wind turbines for electrical generation should be prohibited within 10km of eider nesting areas until they can be proven to be safe for eiders and will not impact Inuit harvesting.
- Any project in Nunavut that would violate any of these conditions is prohibited.

[277] Modified Table 2 refers to a version of Table 2 that incorporates modifications recommended in Written Submission No. 14 (in ***Appendix 11*** of this Case Study report) from the QWB and its associated HTOs.

## Proposed boundaries of community areas of interest – Eider nesting:

The following table gives the map numbers and general location of these eider nesting areas that are important to Inuit in the communities, as shown on the attached maps and the associated shapefiles.

| Eider nesting site # | Description of location | Important species |
|---|---|---|
| 15A | East of Philpotts Island (10 islands), east of Devon Island | King and common eiders |
| 15B | Maze Islands (Qikiqtaukkat) (263 islands), Browne Bay, Prince of Wales Island | King and common eiders |
| 15C | Mouth of Moses Robinson River, Bathurst Island | King and common eiders |
| 15D | Somerville Island (Saattuq), NW of Griffith Island | King and common eiders |
| 15E | Qikiqtaapik, Becher Bay near Cornwallis Island | King and common eiders, and Arctic terns |
| 15F | Assistance Bay (Kangiqsuruluk), Cornwallis Island | King and common eiders |
| 15G | Kajjuaqtaliarusiq, Western Eclipse Sound | King and common eiders, brant and snow geese |
| 15H | Low Island (Quiraassuq), Milne Inlet | King and common eiders, brant and snow geese |
| 15I | Adams Island (Tuujjuk), Navy Board Inlet | King and common eiders |

## References:

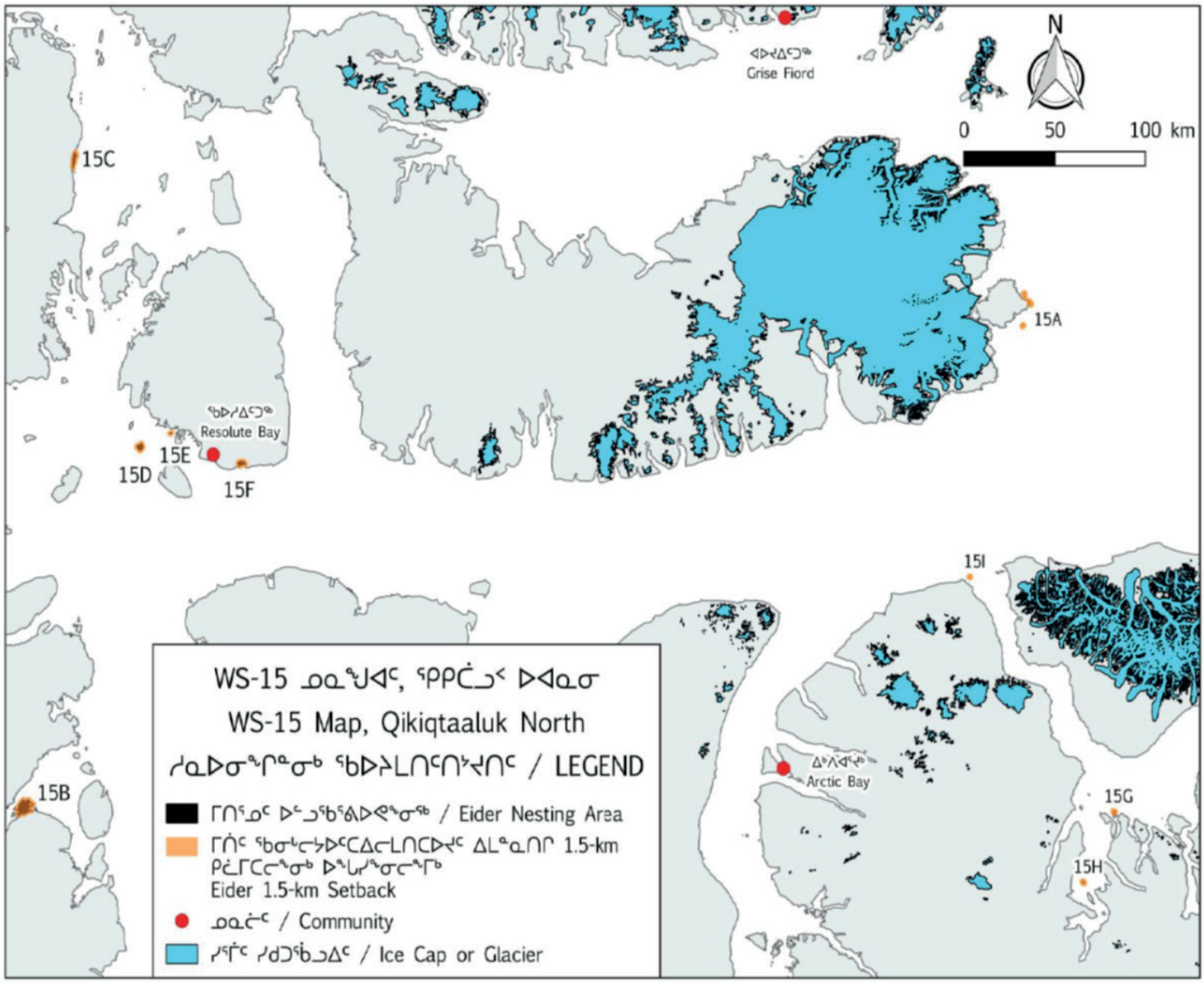

Schuster, E., Bulling, L. and J. Köppel. 2015. Consolidating the State of Knowledge: A Synoptical Review of Wind Energy's Wildlife Effects. Journal of Environmental Management 56: 300.

Tabassum-Abbasi, M.T, Abbasi, T. and S.A. Abbasi. 2014. Wind Energy: Increasing Deployment, Rising Environmental Concerns. Renewable and Sustainable Energy Reviews 31: 270-288.

Wang, S. and Wang, S. 2015. Impacts of Wind Energy on Environment: A Review. Renewable and Sustainable Energy Reviews 49: 437-443.


## Date of this draft:

24 November 2018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Resolute Bay
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Arctic Bay
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WS-15 ᓄᓇᖅᐱᑦ, ᖃᑭᒋᓪᓗᒍ ᐅᐊᓇᓂ
WS-15 Map, Qikiqtaaluk North
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# APPENDIX 6: SEABIRD NESTING HABITAT

**Written Submission No. 17**

**2016 draft Nunavut Land Use Plan**

**Proposed land use designation: Community areas of interest – Seabird harvesting**

**To:** The NPC

**From:** The QWB and the HTO of Resolute Bay, Pond Inlet, Qikiqtarjuaq and Pangnirtung

## Background information:

There are several important seabird nesting and feeding areas known to Inuit that are not protected under 2016 draft NLUP. These areas are important to several species of seabird. The main species at each site are listed, but other seabird and waterfowl species may also occur at these sites. These seabirds are important to the health, well-being and culture of Inuit throughout Qikiqtaaluk Region.

These islands and coastal areas can be expected to draw increased attention from tourists and others as boat, yacht and ship traffic increases throughout the region. These locally important populations will be at risk to increased harassment and pollution if not protected.

Without protection of these important seabird areas, the NLUP will fail in its goal to protect and promote the well-being of Nunavut's residents and communities, which is a primary purpose of land use planning under Article 11 of the Nunavut Agreement.

Because several species of migratory birds occur in these areas, all setbacks for all types of migratory birds should apply at each site.

Three seabird colonies near Pond Inlet are designated as Key Migratory Bird Habitats, at Cape Graham Moore and in Buchan Gulf, but because of their importance to the Inuit of Pond Inlet, we are requesting that they are also recognized as community areas of interest (AOI).

**Special Note:** The QWB and the HTOs have chosen not to indicate these areas as KMBS. In section 2.1, the 2016 draft NLUP sets criteria for KMBS based on percentages of a species national population or on recognition of critical habitat under SARA. These KMBS criteria consider the interests of all Canadians, but do not "protect and promote the existing and future well being of those persons ordinarily resident and communities of the Nunavut Settlement Area" (Nunavut Final Agreement Article 11, Section 11.2.1 (b)). In order to meet that objective, IQ and the needs of Inuit in the communities must be taken fully into account.

## Source of information:

IQ

## Proposed designation:

Special Management Area

## Proposed restrictions:

### Conditions:

- Regulatory authorities, where appropriate, must incorporate the aerial, marine and terrestrial setbacks in a modified Table 2[278] for all migratory birds and seabirds, and for coastal waterfowl and sea ducks during issuance of permits, licences and authorizations.
- Wind turbines for electrical generation should be prohibited within 10km of seabird nesting areas until they can be proven to be safe for seabirds and will not impact Inuit harvesting.
- Any project in Nunavut that would violate any of these conditions is prohibited.

[278] Modified Table 2 refers to a version of Table 2 that incorporates modifications recommended in Written Submission No. 14 (in ***Appendix 11*** of this Case Study report) from the QWB and its associated HTOs.

## Proposed boundaries of community AOI – Seabird harvesting:

The following table gives the map numbers and general location of these important seabird nesting and feeding areas, as shown on the attached maps and the associated shapefiles.

| Seabird nesting site # | Description of location | Species present |
|---|---|---|
| 17A | Cape Hotham, Cornwallis Island | Thick-billed murres and black guillemots |
| 17B | Southern Griffith Island | Thick-billed murres and black guillemots |
| 17C | Browne Island | Black-legged kittiwakes |
| 17D | Button Point and Cape Graham Moore, Bylot Island | Black-legged kittiwakes and thick-billed murres |
| 17E | Buchan Gulf, Baffin Island | Northern fulmars |

## References:

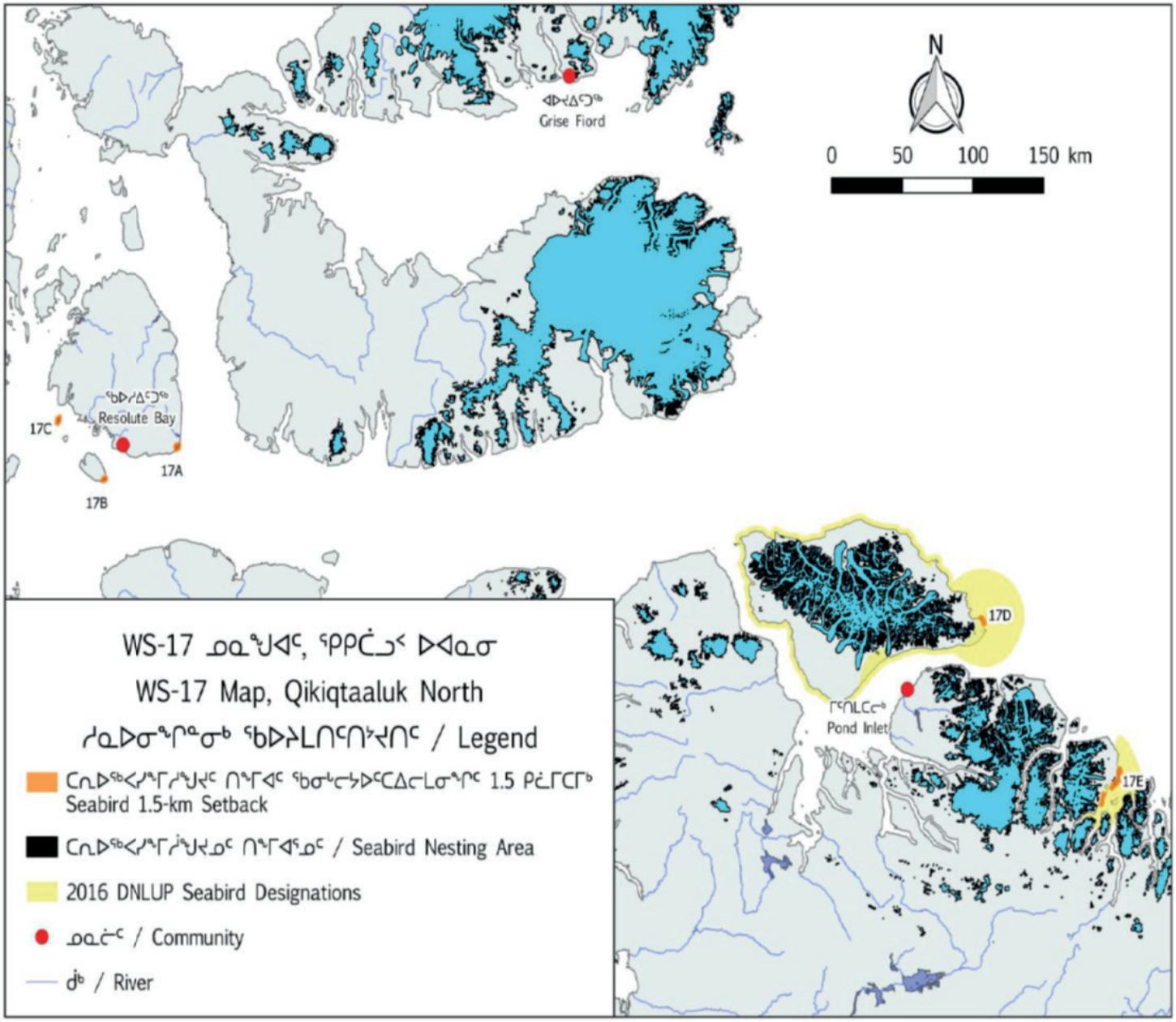
Schuster, E., Bulling, L. and J. Köppel. 2015. Consolidating the State of Knowledge: A Synoptical Review of Wind Energy's Wildlife Effects. Journal of Environmental Management 56: 300.

Tabassum-Abbasi, M.T, Abbasi, T. and S.A. Abbasi. 2014. Wind Energy: Increasing Deployment, Rising Environmental Concerns. Renewable and Sustainable Energy Reviews 31: 270-288.

Wang, S. and Wang, S. 2015. Impacts of Wind Energy on Environment: A Review. Renewable and Sustainable Energy Reviews 49: 437-443.

## Date of this draft:

25 November 2018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WS-17 ᓄᓇᖓᐊᖅ, ᖁᑭᒋᓗᑦ ᐅᐊᓇᓂ
WS-17 Map, Qikiqtaaluk North
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2016 DNLUP Seabird Designations
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ᑯᒃ / River

# APPENDIX 7: TURBOT HARVESTING

**Written Submission No. 25**

**2016 draft Nunavut Land Use Plan**

**Proposed land use designation: Community area of interest – Eclipse Sound turbot harvesting**

**To:** The NPC

**From:** The QWB and the HTO of Pond Inlet

## Background information:

The community of Pond Inlet is actively developing a turbot fishery in Eclipse Sound. Protection of this resource will be important to maintain the health, culture and economy of Inuit of Pond Inlet. Without protection of the community's turbot fishing area in Eclipse, the NLUP will fail in its goal to protect and promote the well-being of all of Nunavut's residents, a primary purpose of land use planning under Article 11 of the Nunavut Agreement.

Industrial development, especially oil and gas and seismic testing, would destroy the economic benefits of this resource to Inuit of Pond Inlet. Such development must be prohibited.

## Source of information:

IQ

## Proposed designation:

Protected Area

## Proposed restrictions:

### Prohibited uses:

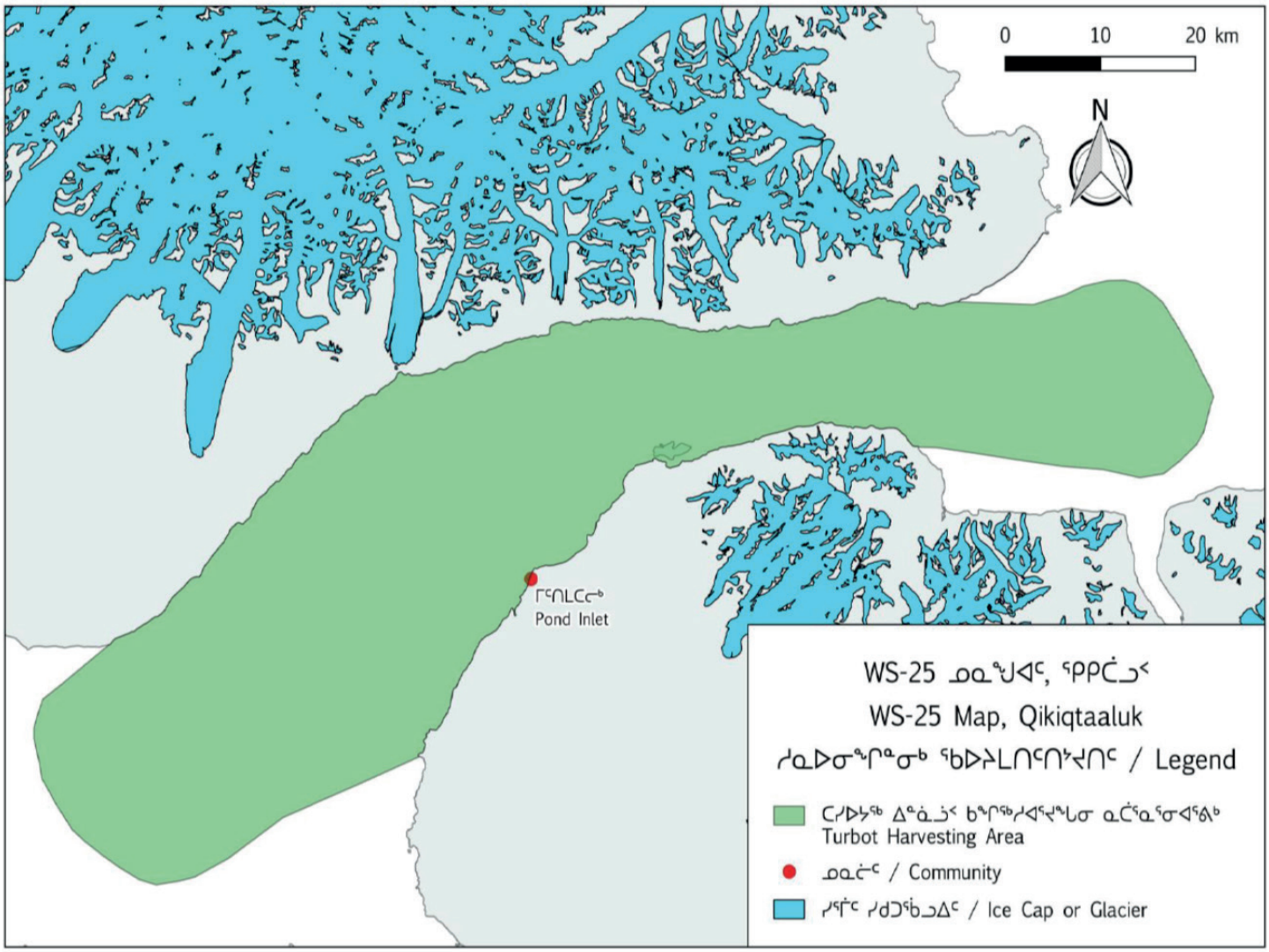
- Oil and gas exploration and production
- Seismic testing
- Related research, except non-exploitive scientific research

## Proposed boundaries of the community AOI – Eclipse Sound turbot harvesting:

See the attached maps and the associated shapefiles.

## Date of this draft:

4 September 2018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WS-25 Map, Qikiqtaaluk
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# APPENDIX 8: SEA-RUN FISH HARVESTING

**Written Submission No. 28**

**2016 draft Nunavut Land Use Plan**

**Proposed land use designation: Community area of interest – Sea-run fish harvesting**

**To:** The NPC

**From:** The QWB and the HTOs of Grise Fiord, Resolute Bay, Arctic Bay, Clyde River, Pond Inlet, Qikiqtarjuaq, Pangnirtung, Iqaluit, Kimmirut, Cape Dorset, Hall Beach, Igloolik and Sanikiluaq

## Background information:

Arctic char and other fish are staple foods for Inuit. Fish are extremely important to the health, culture and economy of Inuit throughout Qikiqtaaluk Region. Without adequate protection of the lakes, rivers and watersheds where Inuit harvest Arctic char and other species, the NLUP would fail in its goal to protect and promote the well-being of all of Nunavut's residents, a primary purpose of land use planning under Article 11 of the Nunavut Agreement.

Inuit of Qikiqtaaluk Region utilize specific lakes, rivers and nearby coastal waters to harvest Arctic char throughout the year. Although the sea-run species that Inuit most commonly fish in these rivers and lakes is Arctic char, Inuit also harvest other species where they are present, including but not limited to: landlocked Arctic char, Arctic cisco (whitefish), lake trout, landlocked cod and fish of uncertain species (e.g., ivisaruk in Stanwell Fletcher Lake).

Sea-run fish must be protected from potential development impacts:

- In the lakes and rivers where Inuit harvest them;
- In the downstream rivers and lakes, and the coastal marine waters through which the fish migrate seasonally;
- Ipstream from the fishing areas where development could have detrimental impacts on water flow, sedimentation and effluent on harvested fish and their habitats.

After extensive discussions with HTOs in Qikiqtaaluk Region, the QWB and HTOs propose a two-level protective regime for sea-run fish in watersheds where Inuit harvest these resources:

- Protected Areas (PA), extending 5km around each fishing lake and river continuing downstream to the mouth of the river and out into marine waters from the mouth of each river. These areas may extend beyond watershed boundaries because human activities on adjacent lands may impact sea-run fish population while the fish are migrating or in marine waters.
- Special Management Areas (SMA), extending upstream in the watershed of each fishing lake and river up to 50km from the farthest upstream fishing area.

**Note:** Where sea-run fish and landlocked fish co-exist in the same lake and river system, the entire system should be protected as a sea-run watershed.

## Source of information:

IQ

## Proposed designation 1:

Protected Area (PA)

## Proposed restrictions for PA designation:

### Prohibited uses:

- Oil and gas exploration and production
- Mineral exploration and production
- Quarries
- Hydro-electrical and related infrastructure
- Linear infrastructure
- Seismic testing
- Disposal at sea
- Related research, except non-exploitive scientific research

## Proposed designation 2:

Special Management Area (SMA)

## Proposed restrictions for SMA designation:

### Conditions:

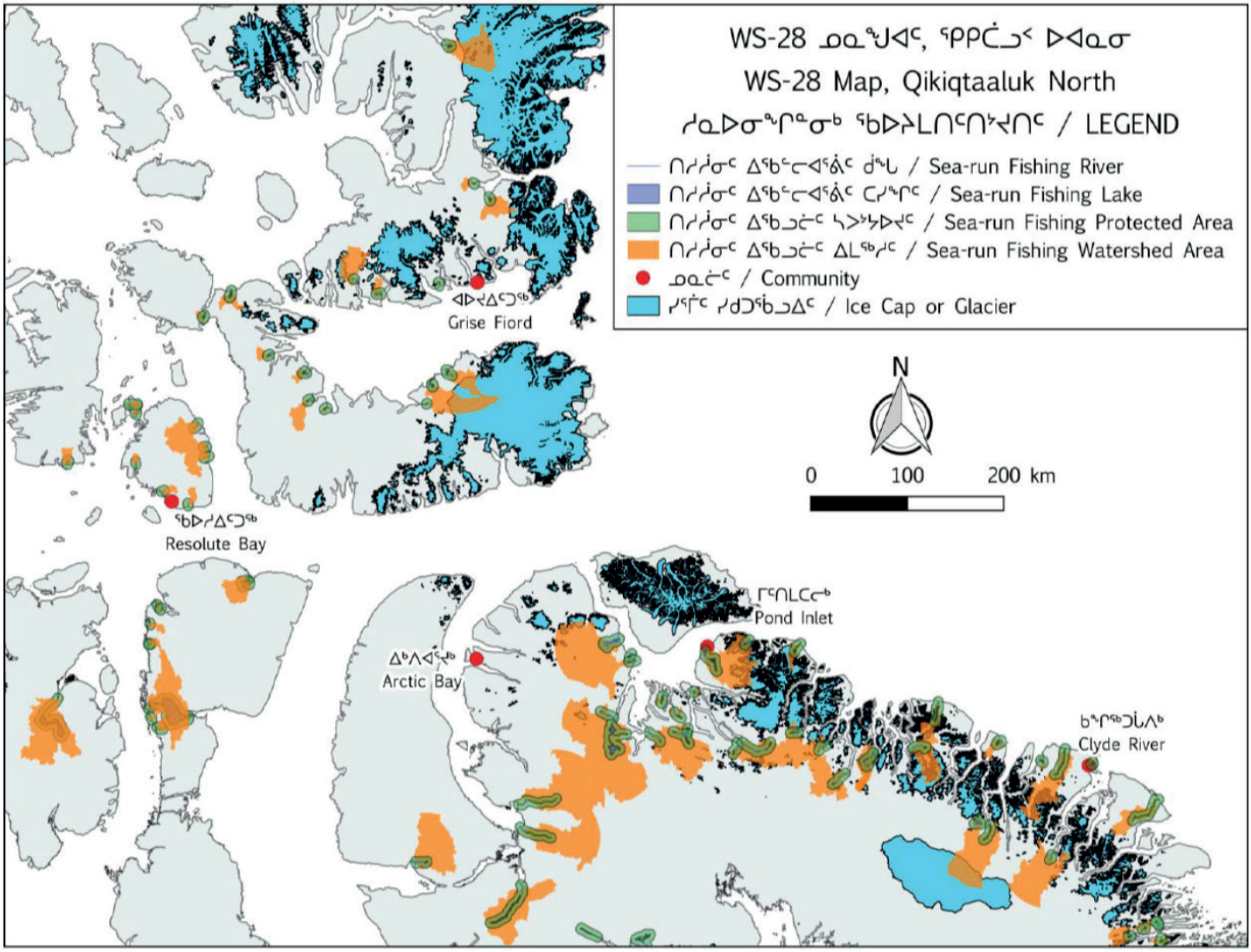
- Within the watershed up to 50km upstream from any fishing lake or river, any fish populations harvested by Inuit must not be impacted by any of the following land uses:
    - Mineral exploration and production
    - Oil and gas exploration and production
    - Quarries
    - Hydro-electrical and related infrastructure
    - Linear infrastructure
- Any project in Nunavut that would violate any of these conditions is prohibited.

## Proposed boundaries of the community AOI – Sea-run fish harvesting:

See pairs of Sea-run fish PAs and SMAs on the attached maps and associated shapefiles.

## Date of this draft:

9 November 2018


WS-28 ᓄᓇᖅᓯᐊᑦ, ᖁᑭᒋᓗᑦ ᐅᐊᓇᓂ
WS-28 Map, Qikiqtaaluk North
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Clyde River

# APPENDIX 9: MULTIPLE CONSERVATION VALUES

**Written Submission No. 36**

**2016 draft Nunavut Land Use Plan**

**Proposed land use designation: Community areas of interest – Multiple values – 36A. Allen Bay - Resolute Passage – Resolute Bay**

**To:** The NPC

**From:** The QWB and the HTO of Resolute Bay

## Background information:

Multiple resources are highly valued by Inuit of Resolute Bay in four areas (i.e., Multiple Value Areas, MVAs). One of these areas, MVA 36A, is a marine area with islands close to the hamlet of Resolute Bay, and includes Allen Bay and Resolute Passage.

Without protection of this MVA, plus others, the NLUP will fail in its goal to protect and promote the well-being of all of Nunavut's residents as a primary purpose of land use planning under Article 11 of the Nunavut Agreement.

All of these MVAs are important community harvesting areas for wildlife, including but not limited to: ringed, bearded and harp seals; beluga and bowhead whales, narwhals and walruses; Peary caribou; muskoxen; wolves; snow and brant geese; common and king eiders; Arctic char; and polar bears.

All of these areas are critically important to maintain the health, culture and heritage of Inuit of Resolute Bay.

Industrial development in or near these areas would degrade their value. Such development must be prohibited.

**Special note for MVA 36A:** The CCG seems to intentionally and unnecessarily break ice in MVA 36A even though Resolute Bay has asked them to stop. Other agencies have cooperated with Inuit of Resolute Bay and stopped doing research and undertaking other activities in this area. In the opinion of the HTO, some of the CCG's activities pose dangers to public safety and harass wildlife. CCG ships have been seen moving directly toward whales, as well as engaging in ice-breaking in areas where Inuit harvest seals and other wildlife. The CCG is the most prominent agency in terms of disrespect for this critical harvesting area for the community. They could station their ships east of the Hamlet of Resolute Bay and use their helicopters and other vehicles to access the airport.

## Source of information:

IQ

## Proposed designation:

Protected Area

## Proposed restrictions for MVA 36A:

### Prohibited uses:

- Oil and Gas exploration and production
- Mineral exploration and production
- quarries
- Seismic testing
- Disposal at sea
- Sonar
- All research, including but not limited to non-exploitive scientific research

### Conditions:

- Closed to all ship traffic, subject to safe navigation, during Ukiaksaaq, Ukiaq, Ukiuq, Upingaksaaq and Upingaaq.
- All ice-breaking must be prohibited.
- Regulatory Authorities, where appropriate, must incorporate the aerial, marine and terrestrial setbacks as per a modified Table 2[279] for all migratory birds and seabirds, and coastal waterfowl and sea ducks during issuance of permits, licences and authorizations.
- Any project or activity in Nunavut that would violate any of these conditions is prohibited.

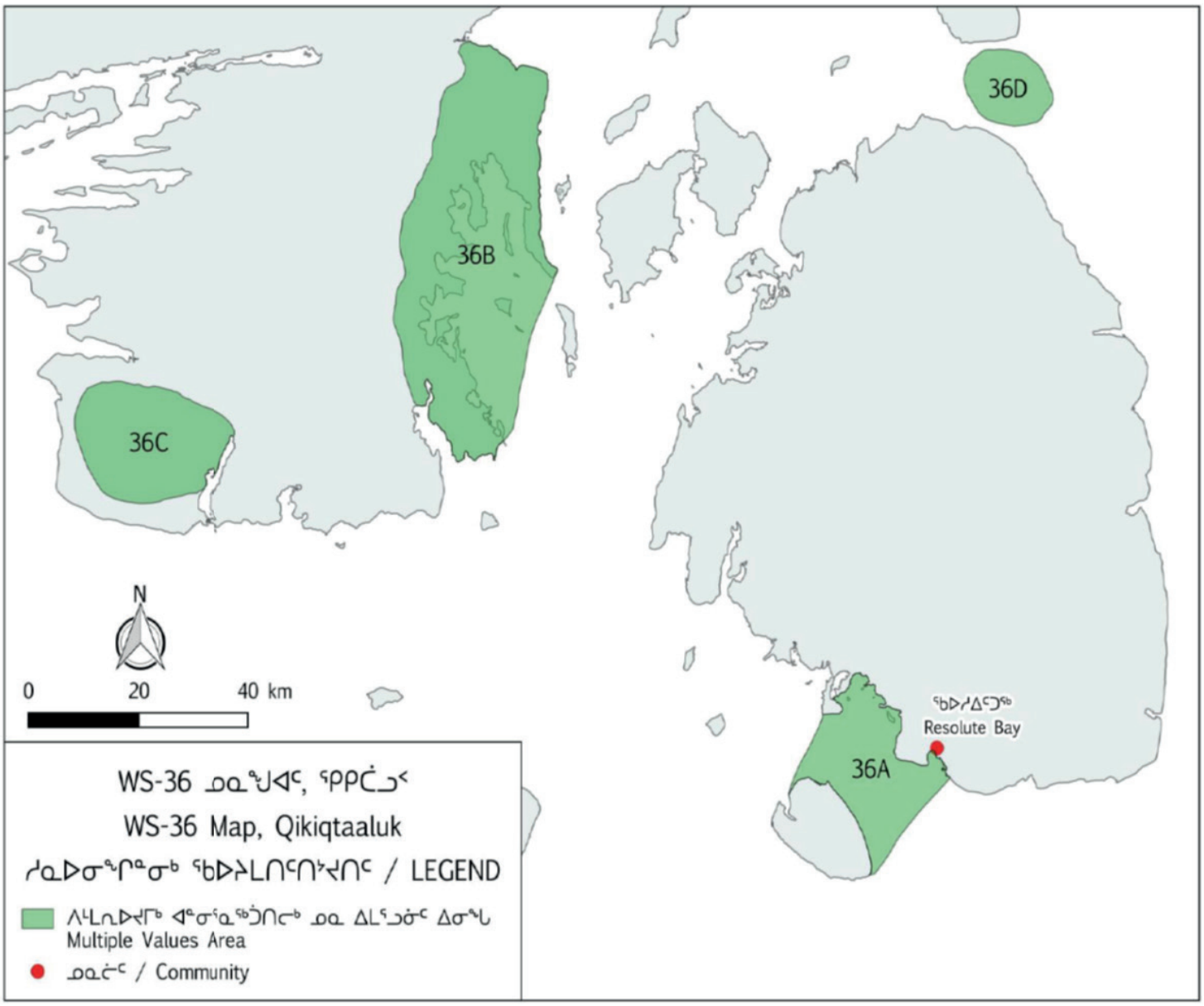
## Proposed boundaries of the community AOI – MVA 36A:

36A: Resolute Passage, Allen Bay and Resolute Bay and all islands in these waters as per the attached map and associated shapefile.

## Date of this draft:

14 August 2018

[279] Modified Table 2 refers to a version of Table 2 that incorporates modifications recommended in Written Submission No. 14 (in ***Appendix 11*** of this Case Study report) from the QWB and its associated HTOs.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Resolute Bay
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WS-36 Map, Qikiqtaaluk
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# APPENDIX 10: CARIBOU SEA-ICE CROSSINGS

**Written Submission No. 09**

**2016 draft Nunavut Land Use Plan**

**Proposed land use designation additions and amendments: Community areas of interest – Caribou sea-ice crossings, Baffin Island**

**To:** The NPC

**From:** The QWB and the HTO of Clyde River

## Background information:

Caribou is a keystone species for the maintenance of Inuit culture and well-being, as well as for the northern ecosystem. Arctic tundra caribou are known to go through long-term cycles.[280] During these cycles, there are years and decades when caribou are in low abundance, when they are especially sensitive to disturbance by humans.

Caribou abundance in the mountains of northeastern Baffin Island[281] rarely reaches densities seen at times on southern and northern Baffin Island or on the mainland of Nunavut; the mountainous terrain, fjords and glaciers are challenges to their migrations. Similarly, Peary caribou on the High Arctic islands are typically at low densities, compared to caribou farther south, due to the severity of the climate where they live. Because of their usually low abundance, they are vulnerable to disturbance by human activities at all times. Vegetation is especially sparse on the High Arctic islands, and among the mountains of northeastern Baffin Islands. Most vegetation in these areas is inaccessible to caribou during winter due to wind-hardened snow cover, and occasionally due to icing on the land.

To adapt to changing conditions of forage availability and accessibility throughout the snow-covered period, caribou on Baffin Island, Melville Peninsula and the High Arctic often move short distances across fjords and straits, and longer distances between islands as and when needed. Sea-ice crossings are critical to female caribou as they migrate to access suitable areas where they can successfully give birth to their calves and then move to favourable post-calving areas. All of these caribou must cross fjords, inlets and straits to find wintering areas where forage may be accessible. In some areas, caribou must cross on the sea ice because of unpassable icefields and cliffs that jut out of the sea vertically up to 1,600m in elevation.

Ice-breaking at or near known sea-ice crossings will have significant negative impacts on the survival of these populations of caribou. Caribou may attempt crossing ice-breaker tracks and subsequently die through injury, exhaustion, drowning or freezing upon failure to escape the water on the far side of the track. If they do not attempt the crossing, they may never reach areas with accessible forage at various times during winter or never reach suitable calving and post-calving areas, risking the population's reproduction.

The 2016 draft NLUP claimed that there is insufficient information for caribou-specific land use designations, except on the mainland of Nunavut. The QWB believes that this is not true, given the extensive IQ that was shared with the NPC and governments by Inuit of Qikiqtaaluk communities in the past and peer-reviewed papers already published about caribou in Qikiqtaaluk Region.

Further, the 2016 draft NLUP specifically excluded all caribou wintering areas from potential protection. The QWB views this as a serious error. Throughout the period from freeze-up to breakup, ready access across sea ice is critical to the survival of caribou on northeastern Baffin Island and in the High Arctic. Future unmanaged human impacts from winter ship traffic would be devastating.

[280] Ferguson et al. 1998.
[281] Ferguson 1989.

**Special note:** Several Caribou Sea-Ice Crossings were identified in the 2016 NLUP. The HTOs and QWB support the designation of Sites #153 and #154 as per Table 1 in the 2016 draft NLUP, assuming that on-ice winter roads and winter skid tracks are also prohibited (see Conditions below). The Caribou Sea-Ice Crossings identified in this written submission are additional crossings that should also be protected. Construction and operation of wind turbines for electrical power generation have been found to negatively impact reindeer, which are far more habituated to humans. Inuit expect such infrastructure near sea-ice crossings would have similar or greater negative impacts on tundra caribou in Qikiqtaaluk Region.

## Source of information:

IQ

## Proposed designation:

SMA

## Proposed restrictions:

### Conditions:

- Closed to all ship traffic, subject to safe navigation, during Ukiaq, Ukiuq, Upingaksaaq and Upingaaq.
- On-ice winter roads and winter skid tracks are prohibited.
- Wind turbines for electrical generation must be at least 5km from caribou calving and post-calving areas and must be positioned so they are not visible from caribou calving and post-calving areas.
- Any project in Nunavut that would violate these conditions is prohibited.

## Proposed boundaries of the Caribou Sea-Ice Crossings -Baffin Island:

See the attached maps and the associated shapefiles.

## References:

Ferguson, M. 1989. Baffin Island. In: E. Hall, editor. People & Caribou in the Northwest Territories. Department of Renewable resources, Government of the Northwest Territories, Yellowknife, Canada. pp. 140-149.

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Skarin, A. and Alam, M. 2017. Reindeer Habitat Use in Relation to Two Small Wind Farms, During Preconstruction, Construction, and Operation. Ecology and Evolution 7: 3870-3882.

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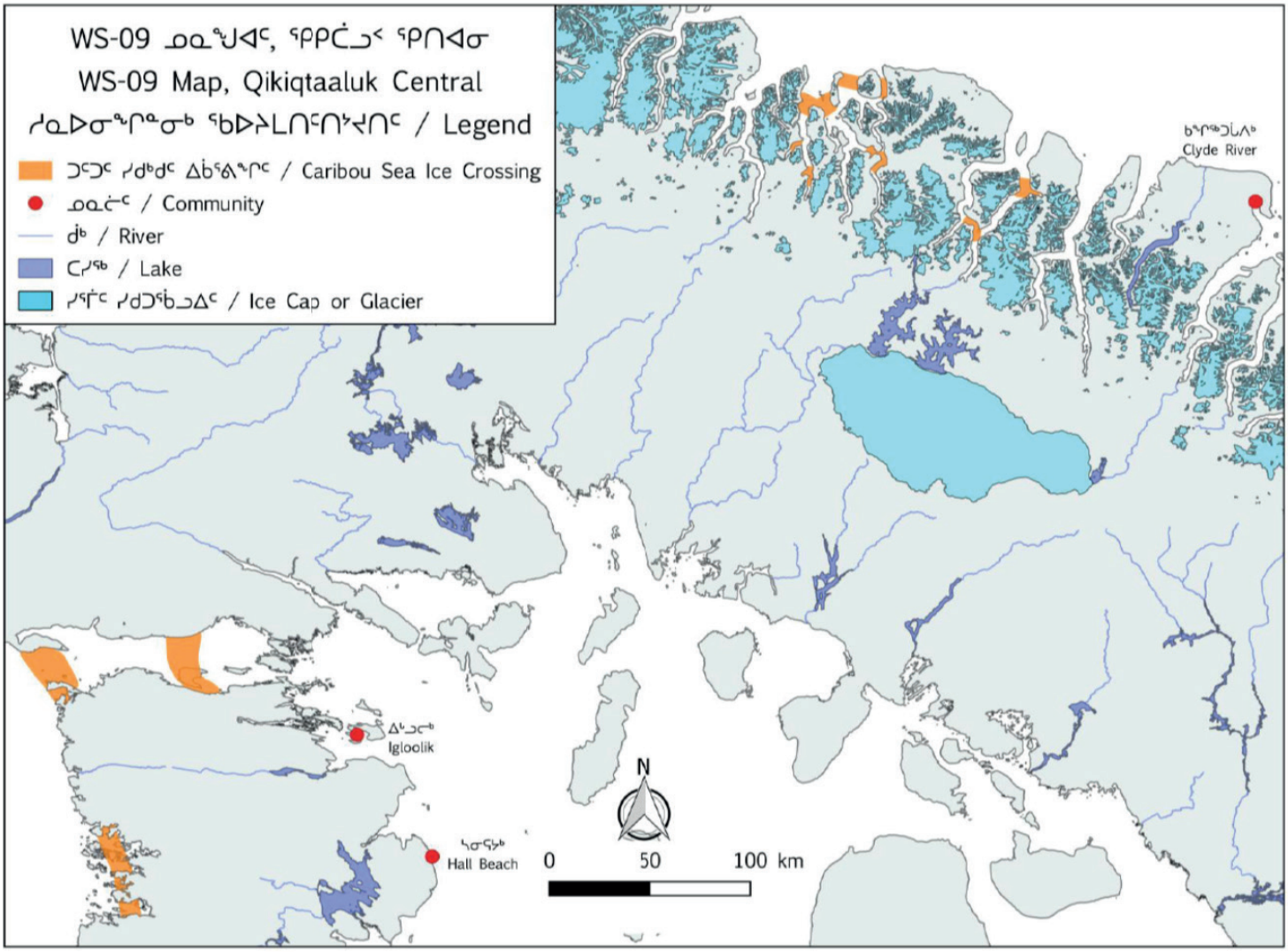
## Date of this draft:

21 November 2018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WS-09 Map, Qikiqtaaluk Central
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# APPENDIX 11: MIGRATORY BIRD SETBACKS

**Written Submission No. 14**

**2016 draft Nunavut Land Use Plan**

**Proposed amendments:**
**Table 2: Migratory bird setbacks**

**To:** The NPC

**From:** The QWB and the HTOs of Pond Inlet, Grise Fiord, Resolute Bay, Arctic Bay, Clyde River, Qikiqtarjuaq, Pangnirtung, Iqaluit, Kimmirut, Cape Dorset, Sanikiluaq, Hall Beach and Igloolik

## Background information:

Migratory seabirds, waterfowl and others are important nutritional, cultural and economic resources for Inuit and their culture. These birds are also vital components of the ecology of healthy marine environments in Qikiqtaaluk Region.

IQ informs Inuit about actions that humans should follow within and near coastal migratory birds to maintain their healthy populations. We hereby recommend important changes to Table 2 appearing on pages 81 and 82 of the 2016 draft NLUP before the NLUP is finalized. These changes should be applied within all of Qikiqtaaluk Region, and potentially elsewhere in Nunavut depending on IQ teachings in other areas.

Young seabirds and coastal waterfowl are unable to fly for most, if not all, of July and August. During this period, they spend much of their time in the water, on ice floes near their nesting sites, and within their nesting areas. Adults are also flightless for one to two months during the summer. The young are especially naïve about how to avoid boats and ships and may be unable to respond to boats and ships so as to avoid death and injury. Adults may also put themselves at risk while they attempt to protect their offspring. While flightless, they often dive to avoid ships and boats and may be sucked into propellers and trapped or struck by boats and ships, resulting in death or injury. Also, groups of people should not approach nesting birds on the land in ways that may cause them to escape into the water.

Based on IQ, adequate marine setbacks will require ships to remain at least 1.5km from all nesting colonies of seabirds, coastal waterfowl and seaducks (i.e., all categories of migratory birds except ivory gulls). Marine setbacks of at least 1.5km should apply to all migratory birds since they are most likely to be in one of the other categories in a marine environment. Motorized Zodiacs, kayaks and other small launch vessels should adhere to the following requirements:

- Remain at least 500m from any birds in the water without restricted speed;
- Remain at least 300m from any birds in the water and a maximum speed of 3.5km/h (i.e., 1.9kt) when 300 to 500m from birds.

Terrestrial setbacks should require people to remain at least 500m from concentrations of birds for all categories of migratory birds except ivory gulls. Please note that we assume that if a Zodiac, kayak, boat or other small launch vessel goes around birds in the water to land at or near a colony or moulting area, then the people would be immediately restricted to remain at least 500m for any groups of birds. If that is not the case, then this should be specified in Table 2.

Further, in the preamble for Table 2 or as an additional setback, it should state that wind turbines for electrical generation should be prohibited within 10km of migratory bird nesting areas until they can be proven to be safe for birds and will not impact the activities of Inuit in these areas.

## Source of information:

IQ

## Proposed amended restrictions:

### Amendments to Table 2 (2016 draft NLUP, pages 81-82):

| Bird group | Aerial setbacks | Marine setbacks | Terrestrial setbacks |
|---|---|---|---|
| All migratory birds | No amendments | **Seasonal (when birds are present)**<br>• 1.5km setback for ships from seabird colonies when birds are present;<br>• 500m setback from seabirds in water without speed restriction for Zodiacs, kayaks, boats and other small launch vessels;<br>• 300m setback from seabirds in water with a maximum speed of 3.5km/hr (1.9kt) within 500m for Zodiacs, kayaks, boats and other small launch vessels. | **Seasonal (when birds are present)**<br>• 500m setback from concentrations of birds (e.g., bird breeding colonies and moulting areas). |
| All seabirds | No amendments | **Seasonal (when birds are present)**<br>• 1.5km setback for ships from seabird colonies when birds are present;<br>• 500m setback from seabirds in water without speed restriction for Zodiacs, kayaks, boats and other small launch vessels;<br>• 300m setback from seabirds in water with a maximum speed of 3.5km/hr (1.9kt) within 500m for Zodiacs, kayaks, boats and other small launch vessels. | No amendments |
| Ivory gulls | No amendments | No amendments | No amendments |
| Coastal waterfowl and seaducks | No amendments | **Seasonal (when birds are present)**<br>• 1.5km setback for ships from seaduck colonies and moulting aggregations of seaducks and coastal waterfowl;<br>• 500m setback from seaducks and coastal waterfowl in water without speed restriction for Zodiacs, kayaks, boats and other small launch vessels;<br>• 300m setback from seaducks and coastal waterfowl in water with a maximum speed of 3.5km/hr (1.9kt) within 500m for Zodiacs, kayaks, boats and other small launch vessels. | No amendments |

## References:


Schuster, E., Bulling, L. and J. Köppel. 2015. Consolidating the State of Knowledge: A Synoptical Review of Wind Energy's Wildlife Effects. *Journal of Environmental Management 56*: 300.

Tabassum-Abbasi, M.T, Abbasi, T. and S.A. Abbasi. 2014. Wind Energy: Increasing Deployment, Rising Environmental Concerns. *Renewable and Sustainable Energy Reviews 31*: 270-288.

Wang, S. and Wang, S. 2015. Impacts of Wind Energy on Environment: A Review. *Renewable and Sustainable Energy Reviews 49*: 437-443.


## Date of this draft:

24 November 2018

# GLOSSARY OF TERMS

| | |
|---|---|
| AIS | Automatic Identification System |
| AOI | Area of interest |
| ATBA | Area to be avoided |
| ASSPPR | *Arctic Shipping Safety and Pollution Prevention Regulations* |
| AWPPA | *Arctic Waters Pollution Prevention Act* |
| AWPPR | *Arctic Waters Pollution Prevention Regulations* |
| CCG | Canadian Coast Guard |
| CDS | Comminuting and disinfection system |
| CEPA | *Canadian Environmental Protection Act, 1999* |
| COLREGS | *International Regulations for Preventing Collisions at Sea* |
| COSEWIC | Committee on the Status of Endangered Wildlife in Canada |
| CSA | *Canada Shipping Act* |
| CNMCA Act | *Canada National Marine Conservation Areas Act* |
| EEZ | Exclusive Economic Zone |
| EGCS | Exhaust gas cleaning system |
| EPA | Environmental Protection Agency (United States) |
| HFO | Heavy fuel oil |
| HTO | Harvesters and trappers organization |
| ICC | Inuit Circumpolar Council |
| IIBA | Inuit Impact and Benefit Agreement |
| IUCN | International Union for Conservation of Nature |
| IMO | International Maritime Organization |
| IQ | Inuit Qaujimajatuqangit |
| JOMOPANS | Joint Monitoring Programme for Ambient Noise North Sea |
| KMBS | Key Migratory Bird Sites |
| LRIT | Long-Range Identification and Tracking |
| MARPOL | *International Convention for the Prevention of Pollution from Ships* |
| MCTS | Marine Communications and Traffic Service |

| | |
|---|---|
| MEPC | Marine Environment Protection Committee |
| MOPPRA | *Agreement on Cooperation on Marine Oil Pollution Preparedness and Response in the Arctic* |
| MVA | Multiple Value Area |
| NLCA | Nunavut Land Claims Agreement |
| NLUP | Nunavut Land Use Plan |
| NM | Nautical mile |
| NMCA | National Marine Conservation Area |
| NOAA | National Oceanic and Atmospheric Administration (United States) |
| NORDREG | *Northern Canada Vessel Traffic Services Zone Regulations* |
| NOTMAR | Notice to Mariners |
| NPC | Nunavut Planning Commission |
| NWMB | Nunavut Wildlife Management Board |
| OPRC | *International Convention on Oil Pollution Preparedness, Response and Co-operation* |
| PSSA | Particularly sensitive sea area |
| QIA | Qikiqtani Inuit Association |
| QWB | Qikiqtaaluk Wildlife Board |
| SOLAS | *International Convention for the Safety of Life at Sea of 1974* |
| STP | Sewage treatment plant |
| TC | Transport Canada |
| TSS | Traffic separation scheme |
| UNCLOS | *United Nations Convention on the Law of the Sea* |

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