

Arctic Corridors and Northern Voices

GOVERNING MARINE TRANSPORTATION IN THE CANADIAN ARCTIC

RESOLUTE BAY NUNAVUT



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OCEANS
NORTH



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EXECUTIVE SUMMARY

Ship traffic in the Canadian Arctic nearly tripled between 1990 and 2015.¹ Most of that increase happened in Nunavut waters. The average annual kilometres travelled within 50 km of Resolute Bay has decreased by 1,819 km¹ when comparing the 1990-2000 and 2011-2015 averages; a decrease largely due to the 2002 closure of the Polaris zinc mine on nearby Little Cornwallis Island. However, from 2011-2015 an annual average of 4,542 kilometres of shipping activity occurred within 50 km of Resolute Bay; making it the community with the fourth highest annual average vessel traffic in Nunavut during that time period. Community members have noted an increase in cruise ship and pleasure craft traffic in recent years. With the September 2015 opening of nearby Qausuittuq National Park, accessible from the beginning of June until the end of September, community members have noted that tourism-related traffic has increased and they expect it to continue increasing.

The Government of Canada is developing a network of low-impact marine transportation corridors in the Arctic that encourages marine transportation traffic to use routes that pose less risk and minimize the impact on communities and the environment. The Low Impact

Shipping Corridors will be a framework to guide future federal investments to support marine navigation safety in the North, including improved charting and increased hydrography, in partnership with Northerners. The corridors initiative is co-led by the Canadian Coast Guard, Transport Canada, and Canadian Hydrographic Service.

Key considerations in the current prioritization of the Low Impact Shipping Corridors include identification of Inuit and Northerners' perspectives on 1) the potential impact of marine vessels on marine areas used for cultural and livelihood activities, and on community members and 2) potential management strategies for the corridors.

This report reflects knowledge and opinions gathered through participatory mapping and focus group discussions with Resolute Bay community members who were identified by community representatives and the Resolute Bay Hunters and Trappers Association as key knowledge holders. This report was validated by the research participants.

THE SPECIFIC PROJECT OBJECTIVES WERE TO...

- Describe local marine use areas including significant socio-cultural, archaeological and ecological areas, and local travel routes, for integration into the Low Impact Shipping Corridors;
- Outline the potential impacts of marine vessels on identified marine use areas and community members; and
- Provide potential strategies regarding management of the Low Impact Shipping Corridors and Arctic marine vessels.





KEY FINDINGS OF THE PROJECT ARE...

- Where ships anchor is the number one concern because it disturbs marine mammals resulting in fewer being seen around Resolute Bay area;
- It is good that these suggested routes were set out for shipping companies so that they will know the safest routes to take;
- Delivery of essential materials and equipment is less expensive than if delivered by air;
- If residents' recommendations for the Low Impact Shipping Corridors are put into place, marine mammals' migration routes will be protected, which will make residents' hunting lives easier, increase food security, and decrease the community's reliance on expensive, less nutritious store-bought food;
- Marine mammals are very sensitive to noise and are changing their migration routes in response to ship noise, so it is important for there to be less ship noise;
- Some walrus haul outs have been abandoned already;
- Ship companies need to be aware that narwhal, beluga and bowhead whales travel at night;
- Ships dumping ballast water in the ocean may introduce invasive species;
- Ships dumping garbage in the ocean negatively affects wildlife;
- Ships damage leads that community members use to harvest seals;
- Dangerous local travel conditions are created when ships pass through during the dark season after sea ice has formed, and year-round shipping would affect hunting routes;
- Tourists, especially on yachts and sailboats, are not monitored and may take artefacts;
- Shipping traffic is increasing but capacity to respond to an emergency is limited; and
- Existing spill-response capacity is not sufficient in Resolute Bay and the community has been told not to take action if a spill occurs due to liability issues.

COMMUNITY-IDENTIFIED RECOMMENDATIONS INCLUDE...

- No-anchoring zones, and preferred anchoring zones;
- No-go zones;
- Revised recommended corridors further from Resolute Bay and shore;
- Ship noise reductions;
- Ships should not dump garbage in Nunavut or the High Arctic Archipelago;
- Ships should not exchange ballast water in Nunavut or the High Arctic Archipelago and filters must be used to ensure no invasive species are introduced;
- Tourism Nunavut should incorporate the comments in this report in future tourism plans;
- Canadian Coast Guard should increase their presence in the area;
- Oils spills response time should be improved and a preparedness plan should be created;
- Depth testing and charting should be done; and
- Government of Canada agencies working in the area should streamline their regulations, and their consultations, include community members much earlier in planning, and follow community-identified recommendations.

Inuit and Northerners must be and wish to be included on an on-going basis in the development and management of the Low Impact Shipping Corridors.



BACKGROUND

Ship traffic in the Canadian Arctic nearly tripled between 1990 and 2015.¹ Most of that increase happened in Nunavut waters. The average annual kilometres travelled within 50 km of Resolute Bay has decreased by 1,819 km¹ when comparing the 1990-2000 and 2011-2015 averages; a decrease largely due to the 2002 closure of the Polaris zinc mine on nearby Little Cornwallis Island. However, from 2011-2015 an annual average of 4,542 kilometres of shipping activity occurred within 50 km of Resolute Bay; making it the community with the fourth highest annual average vessel traffic in Nunavut during that time period.¹

The Government of Canada is developing a network of low-impact marine transportation corridors in the Arctic that encourages marine transportation traffic to use routes that pose less risk and minimize the impact on communities and the environment (Figure 1). The Low Impact Shipping Corridors will be a framework to guide future federal investments to support marine navigation safety in the North, including improved

charting and increased hydrography, in partnership with Northerners. The corridors initiative is co-led by the Canadian Coast Guard, Transport Canada, and Canadian Hydrographic Service.

Key considerations in the current prioritization of the corridors include identification of Inuit and Northerners' perspectives on 1) the potential impact of marine vessels on marine areas used for cultural and livelihood activities, and on community members and 2) potential management strategies for the corridors.

This report documents Resolute Bay community members' knowledge and extensive year-round use of important marine areas (ecological, socio-cultural, archaeological, and travel routes), the potential impact of shipping on those areas and on community members, and potential management strategies for the Low Impact Shipping Corridors. This report was validated by the research participants.

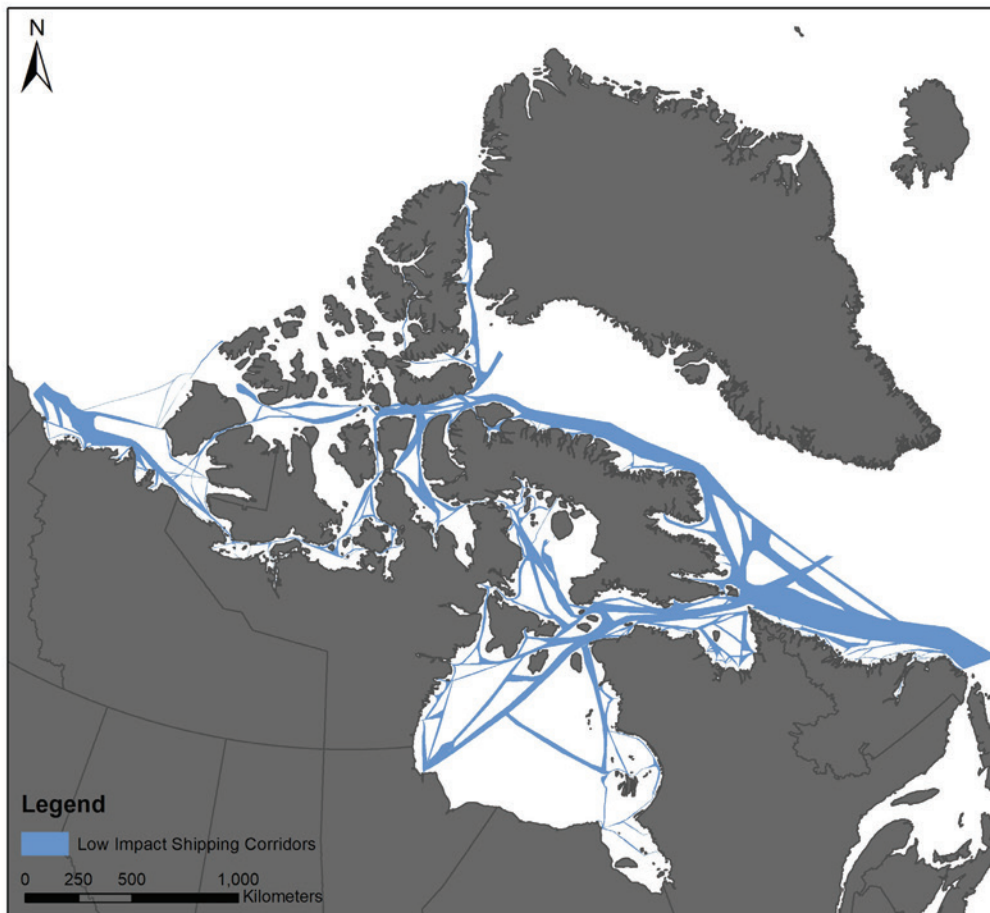


Figure 1. Example of Low Impact Shipping Corridors

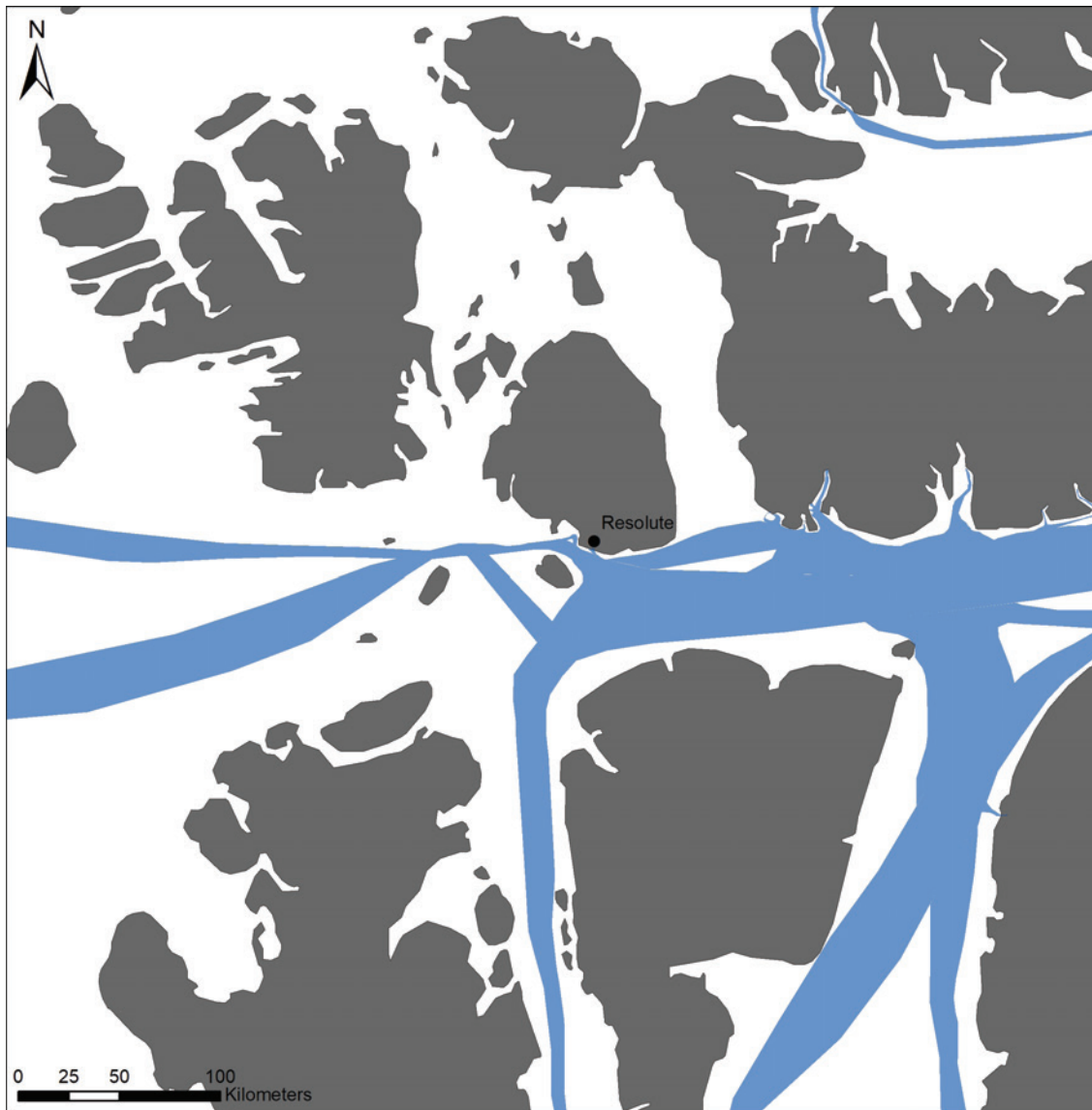


Figure 2. Example of Low Impact Shipping Corridors near Resolute Bay, Nunavut





CHANGE IN SHIPPING ACTIVITY

(1990–2000 ANNUAL AVERAGE COMPARED TO 2011–2015 ANNUAL AVERAGE)

In the Canadian Arctic, when comparing the average annual number of kilometres of shipping activity from 1990–2000 to the annual average from 2011–2015, shipping increases have been predominantly focused in the eastern Arctic, particularly around southwest Baffin Bay (e.g., Pond Inlet, Clyde River, Qikiqtarjuaq, Iqaluit), in the Queen Maud Gulf area (e.g., Cambridge Bay and Gjoa Haven), and northwest Hudson Bay (e.g., Chesterfield Inlet) (Figure 3). Changes in Hudson Strait have been generally minor (e.g., Cape Dorset,

Kimmirut), and changes in the High Arctic have been negative (e.g., Resolute Bay, Arctic Bay, Eureka). Resolute Bay experienced an 1,819 km decrease in shipping activity when comparing the average annual number of kilometres of shipping activity from 1990–2000 to the annual average from 2011–2015. However, from 2011–2015, an annual average of 4,542 kilometres of shipping activity occurred within 50 km of Resolute Bay; making it the community with the fourth highest annual average vessel traffic in Nunavut¹ (Figure 4).

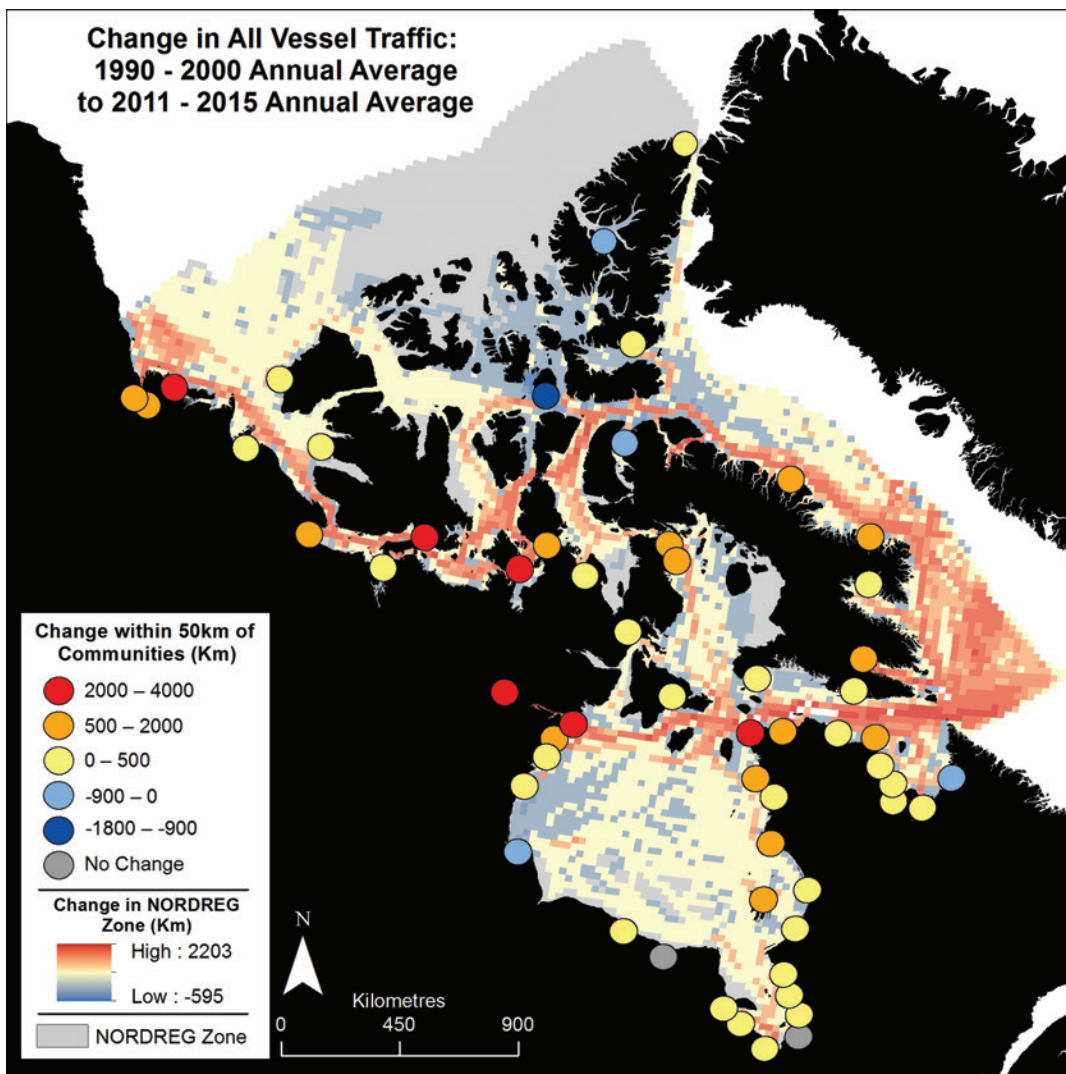


Figure 3. Change in shipping activity (km) in the Canadian Arctic: 1990–2000 annual average compared to 2011–2015 annual average¹

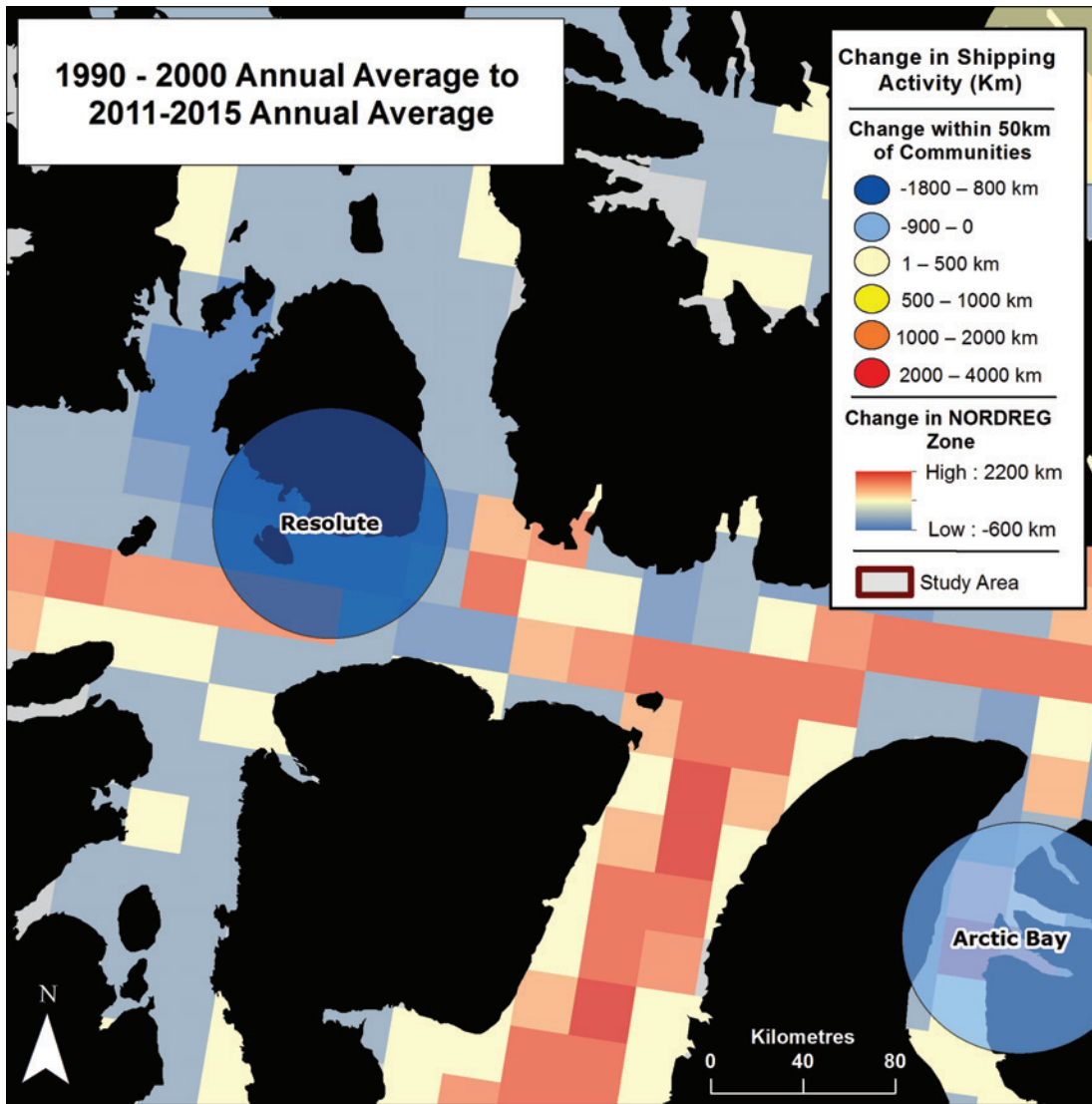


Figure 4. Change in shipping activity (km) near Resolute Bay, Nunavut: 1990–2000 annual average compared to 2011–2015 annual average¹

FOUR SEASONS

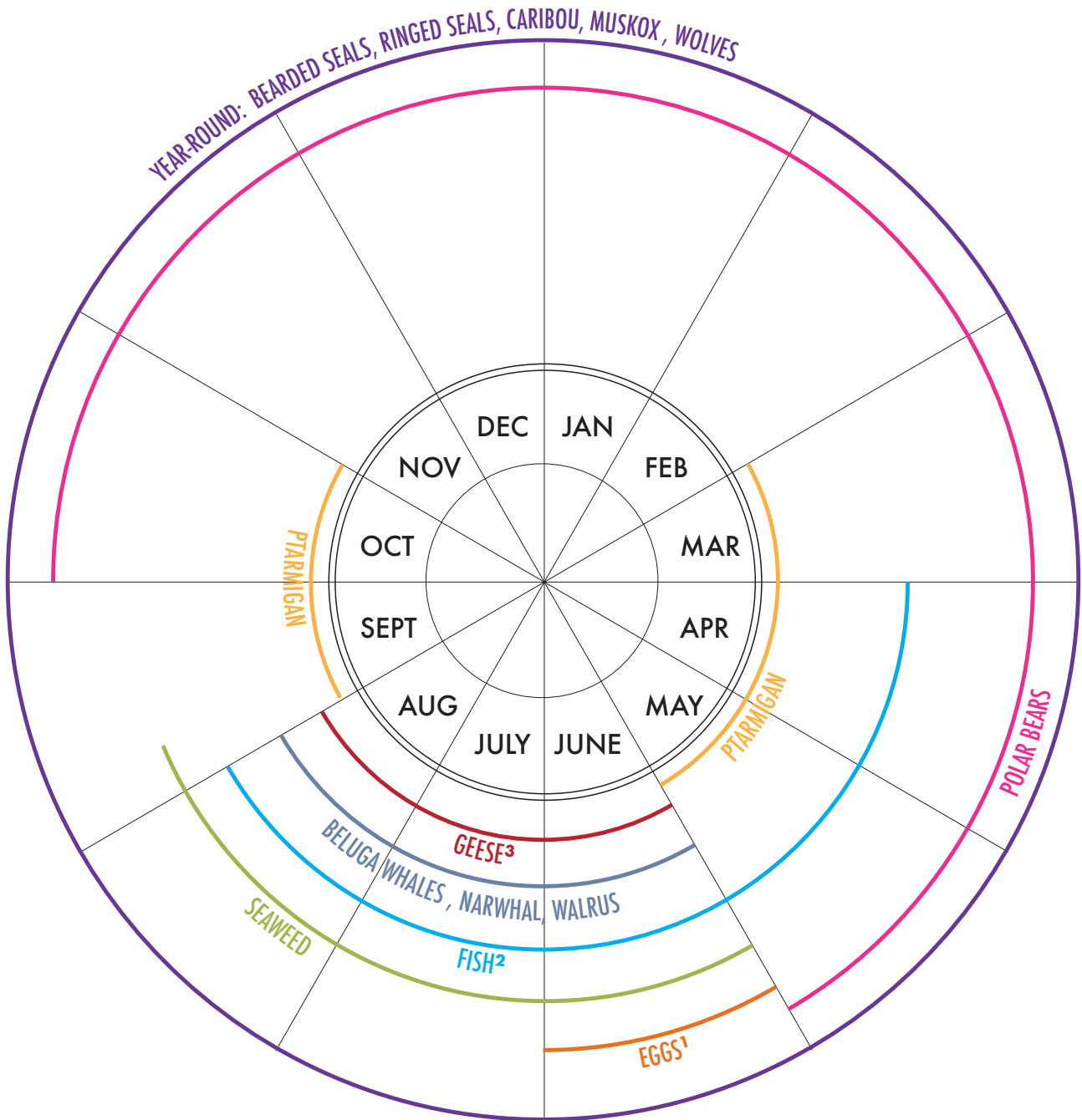
There are 4 main seasons in Resolute Bay, Nunavut that are related to the current weather (not months). The seasons and weather are ice dependent, therefore, the months each season happens in can be different each year. However, in general the ocean conditions are as follows:

MONTHS IN WHICH THEY HAPPEN	OCEAN CONDITION
June	Break up
July and August	Open water
September and October	Freeze up
November through May	Frozen



SEASONAL HARVESTING CYCLE

Harvesting happens according to seasons and follows an annual cycle.



¹ EGGS: Arctic Terns, Snow Geese, Brants, King Eider Ducks

² FISH: Arctic Char, Cisco, Salmon, Lake Trout

³ GEESE: Snow Geese, Brants, Canada Geese, King Eider Ducks

Figure 5. Seasonal cycle of harvesting activities near Resolute Bay, Nunavut

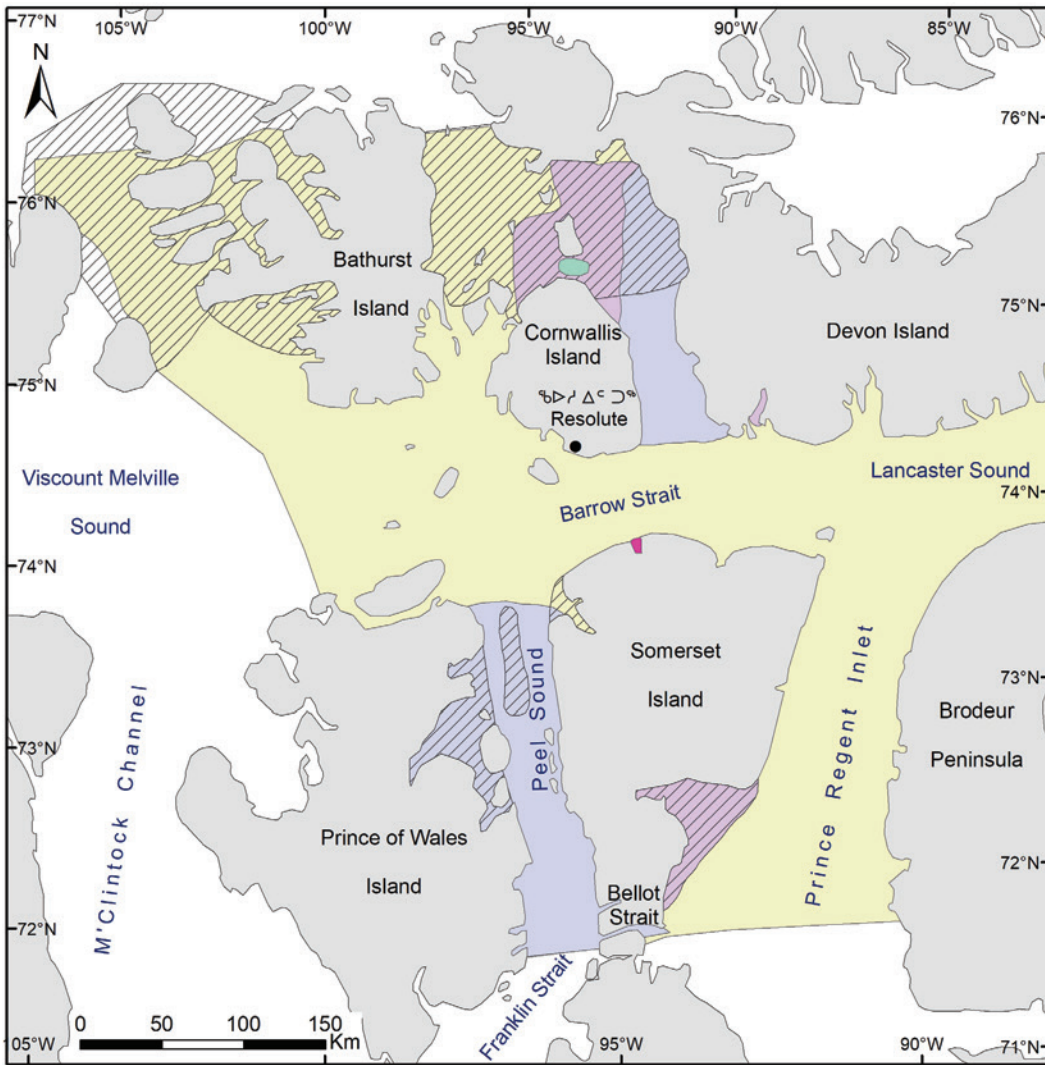


MAPS OF MARINE USE AREAS

Maps include:

1. Location of animals, marine mammals, and fish;
2. Location of community members' activities as well as camps, cabins, historical sites, and local travel routes; and
3. Location of significant marine features which include a polynya and lead.

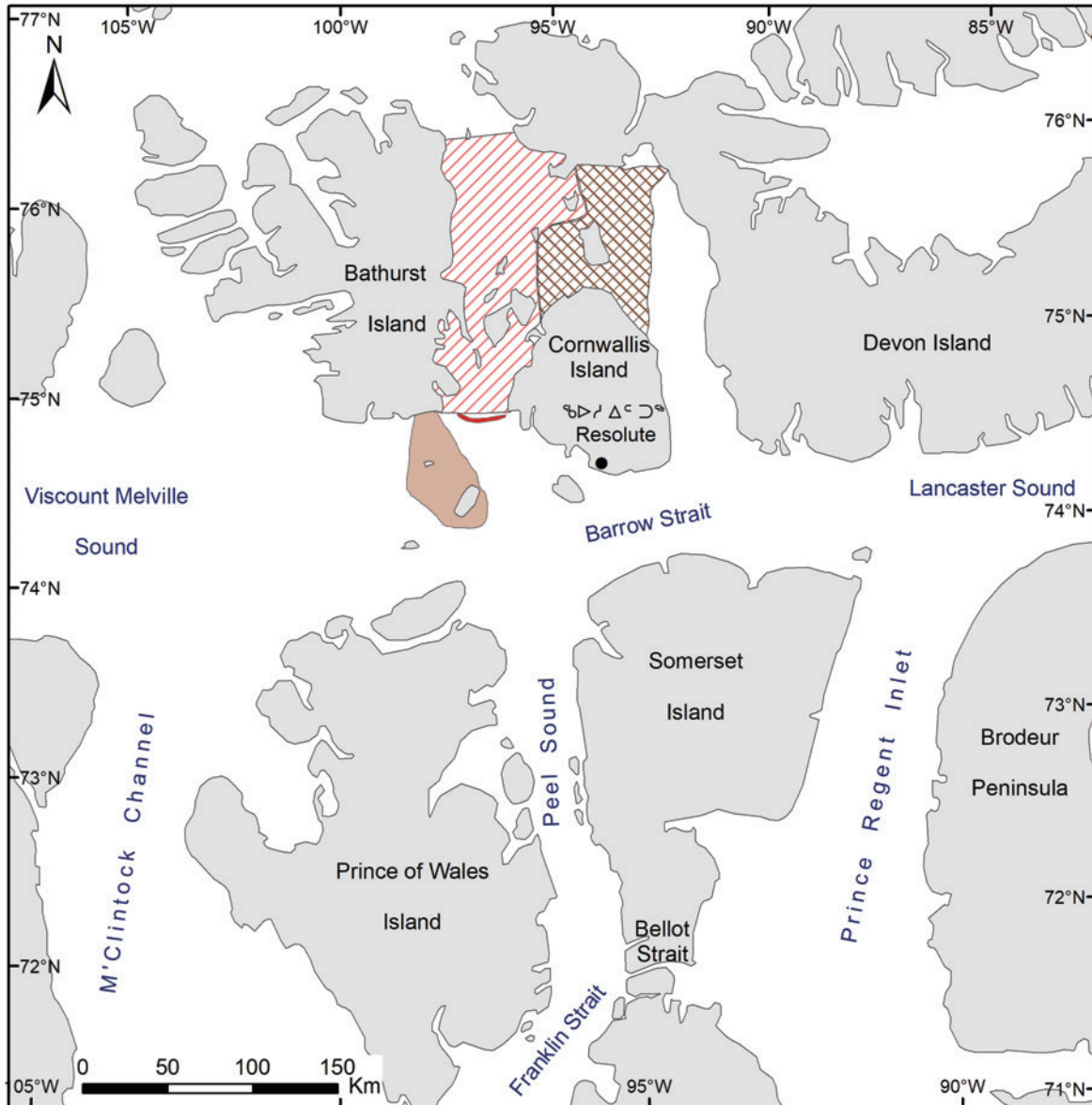
Maps will be available at www.arcticcorridors.ca and in Resolute Bay at Resolute Bay Hunters and Trappers Association, Qarmartalik School, and the Wildlife Office.



Beluga, Bowheads and Narwhals: open water activity

- Beluga Molting (July/August)
- Beluga, Bowheads and Narwhals Calving (July)
- Beluga, Bowheads and Narwhals Feeding (July/August)
- Beluga, Bowheads and Narwhals Feeding and Migrating (June to August)
- Whale Migratory Route: from the East (June) and from the West (September to November). Also Calving (July) and Feeding (August) throughout this region.
- Polynya: Whale Feeding (Year Round)

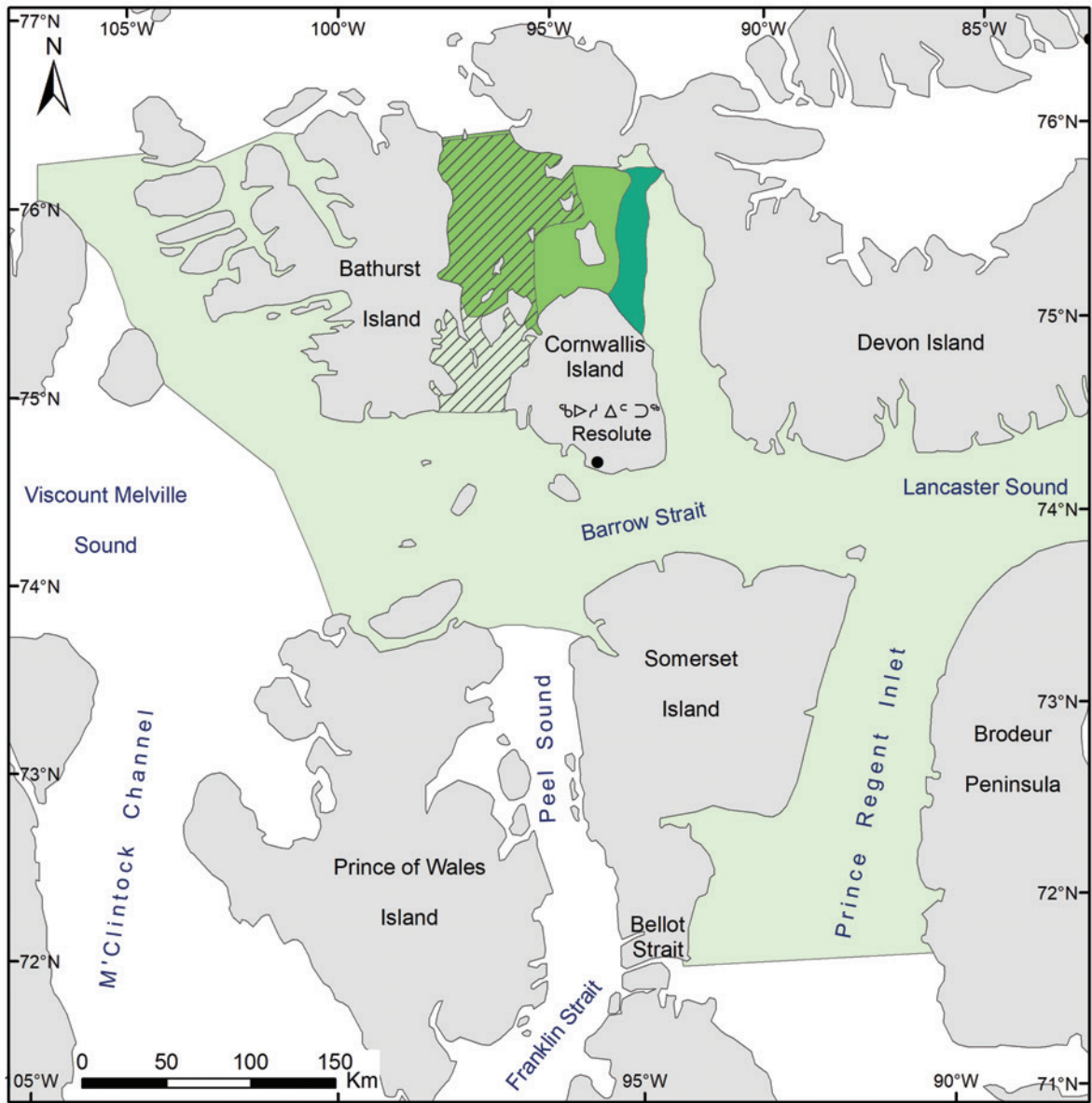
Figure 6. Location of narwhals, beluga, and bowhead whales seasonally and year-round



Seals

-  Seal Popping (June)
-  Seal Feeding (August)
-  Main Bearded Seal Feeding Area (Year Round)
-  Bearded Seals (January to July, in Lead)

Figure 7. Location of seals seasonally and year-round



Walrus





-  Walrus Calving (July)
-  Walrus Feeding (Year Round in Polynyas)
-  Walrus Feeding (August)
-  Walrus Migratory Route: from the East (June); from the West (September to November)

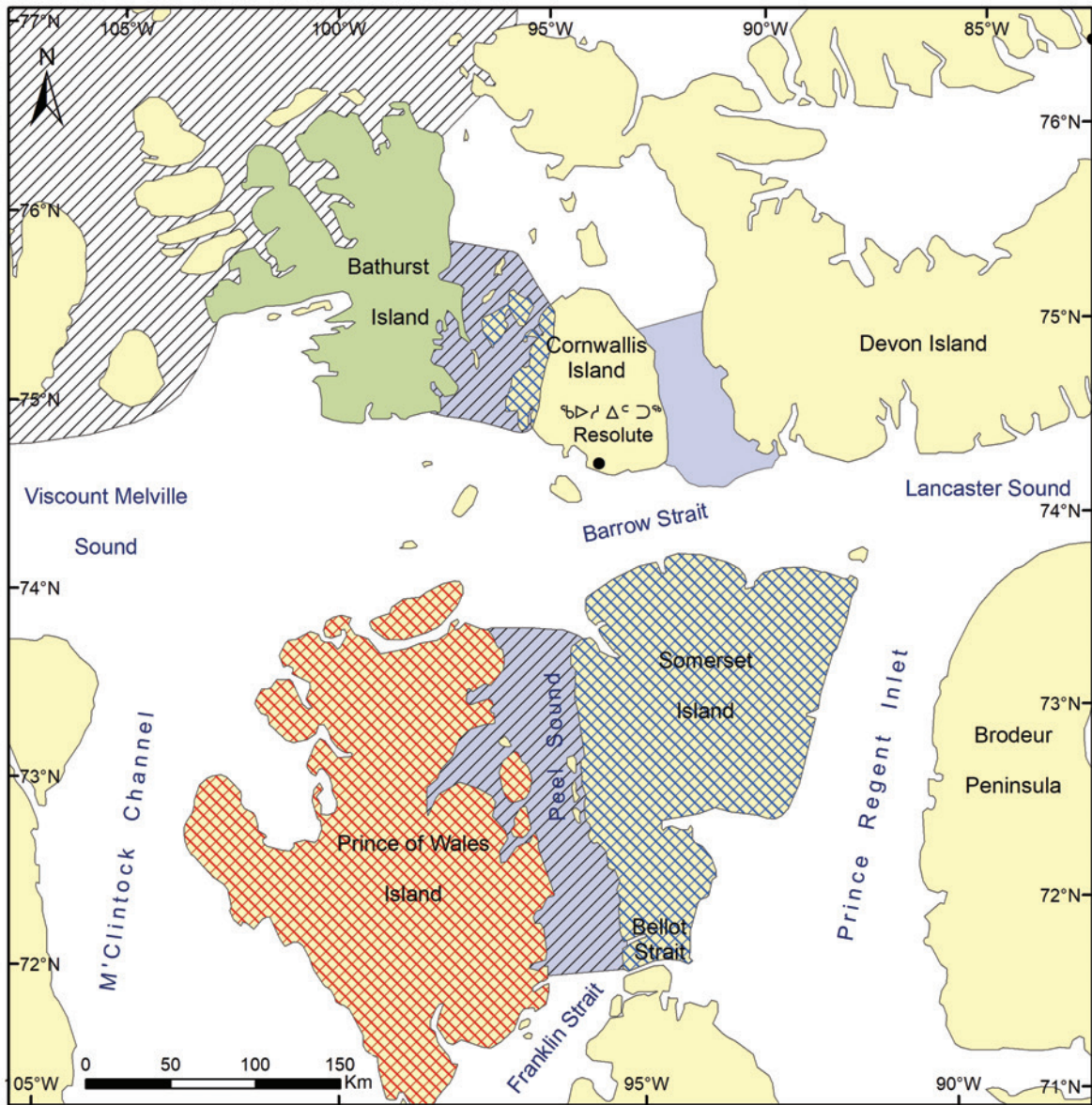
Figure 8. Location of walrus seasonally and year-round



Fish

- | | |
|---|---|
| Rivers, lakes and shoreline | Arctic Char and Cod: Fishing (Year Round) |
| Arctic Char, Cod, Shrimp, Salmon (Year Round) | Arctic Char, Cisco, Lake Trout: Former Fishing (Year Round) |
| Arctic Char: Fishing (Year Round) | Arctic Char: Former Fishing (Year Round) |

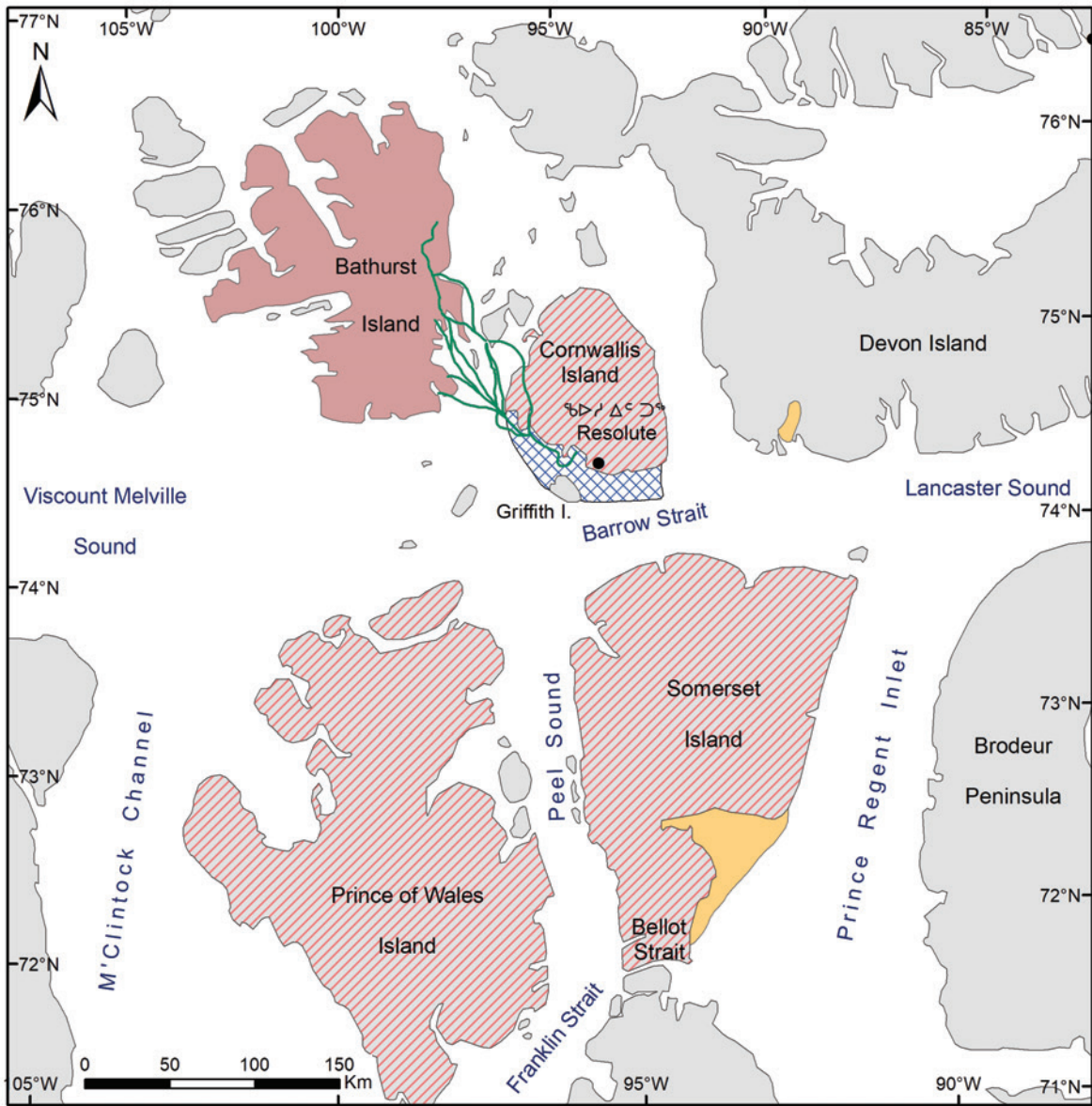
Figure 9. Location of fish seasonally and year-round



Land Mammals

- Main Caribou Area (Year Round)
- Occasional Caribou and Muskox sightings (Year Round)
- Caribou Feeding (Summer)
- Caribou Feeding (Winter)
- Caribou Migratory Routes (Frozen)
- Muskox Migratory Routes (Frozen)
- Caribou and Muskox Migratory Routes (Frozen)
- Other:** Polar Bears Region-wide (Year Round)
Wolves Follow Caribou and Muskox

Figure 10. Location of land mammals seasonally and year-round



Community Members' Activities






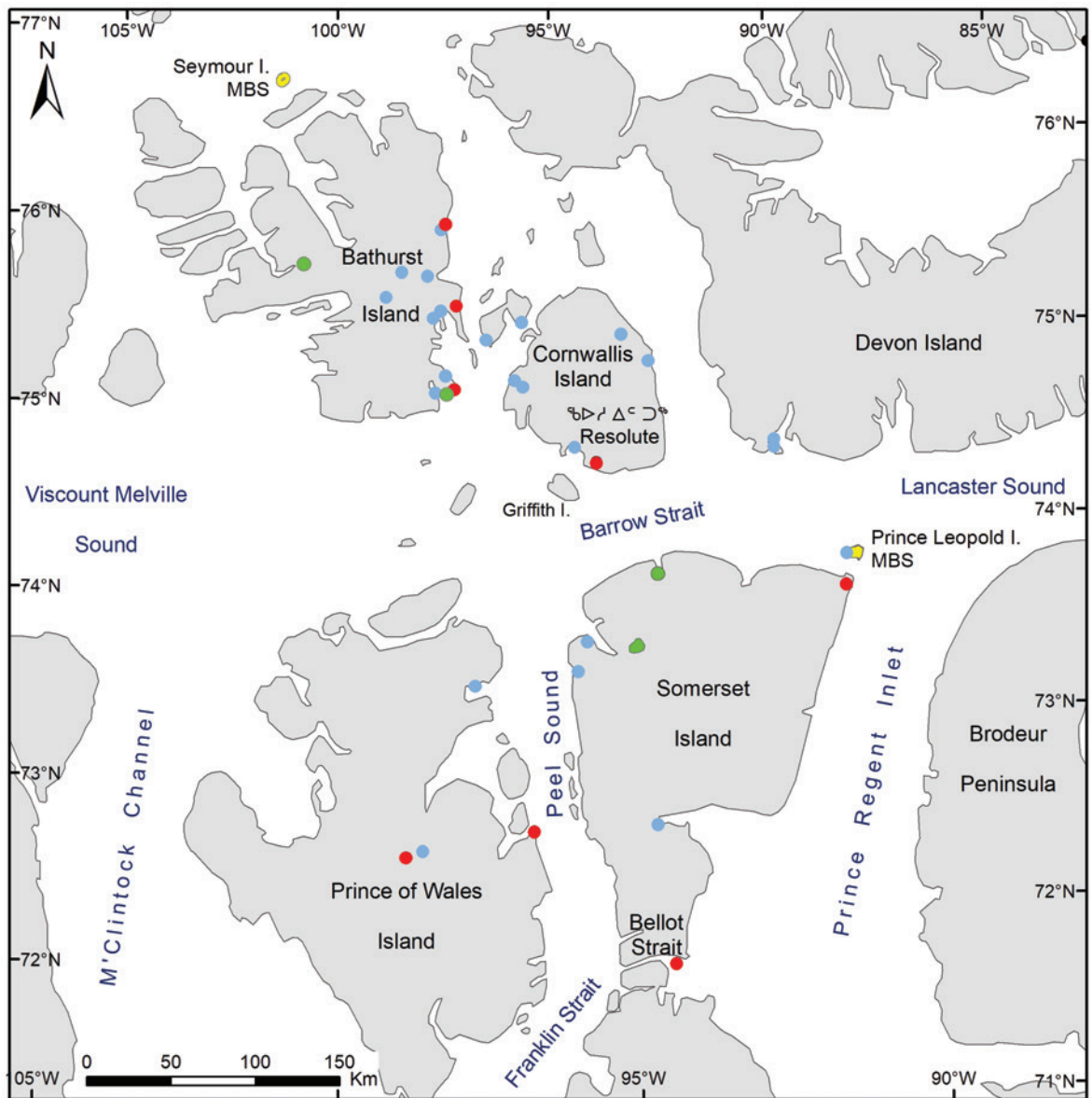
-  Main Travel Routes (Year Round: Boat in Summer; Snowmobile in Winter)
-  Main Hunting Area for Caribou and Wolves (August to March)
-  Occasional Hunting Area for Caribou and Wolves (August to March)
-  Main Hunting Area for Beluga, Narwhal, Ringed Seals and Walrus (Year Round)
-  Fishing (Year Round)
- Other:** Egg Picking Onshore Region-wide (Sea Ice Break-up)

Figure 11. Location of community members' activities seasonally and year-round



Community Sites

- Cabins
- Campsites
- Historical Sites
- Migratory Bird Sanctuary (MBS)

Figure 12. Location of community sites year-round



POTENTIAL IMPACT OF MARINE VESSELS

There are benefits to marine shipping and also related challenges. Economic benefits include reduced shipping expenses compared to shipping by air, and financial gains for those interacting with cruise ships. Tourists benefit by learning about and experiencing Nunavut. Sometimes beluga whales follow ships which can create harvesting opportunities for local hunters.

Community members are most concerned about wildlife, their habitat and migration routes. When animals are protected, community members' hunting lives are easier,

so regulations that help the community are supported. It is good that these suggested routes for ships were set out for the shipping companies, so that the shipping companies will know the safe travel areas. Community members hope that the recommendations presented here will be put into action.

Marine vessels using the Low Impact Shipping Corridors may impact the ecology, wildlife, and community members. Related recommendations are provided.

Table 1. Potential impact of marine vessels using the Low Impact Shipping Corridors on ecology, wildlife, and community members and related recommendations

POTENTIAL IMPACT OF MARINE VESSELS	RELATED RECOMMENDATION
<p>Where ships anchor is the number one concern. Anchoring disturbs the whales and seals. Residents are seeing fewer belugas. Ships currently anchor in Resolute Bay and Allen Bay. Allen Bay is the main hunting area. Wildlife disturbance negatively affects residents' ability to access country food which then affects food security, livelihoods, culture, and health. Residents already must order country food from other communities, or shop at the grocery store more often which is very expensive and not as nutritious. Harvesting is much less expensive than buying meat.</p>	<p>The number one recommendation is no anchoring in the migration route including near Prince Leopold Island (Figure 13). Also, no anchoring between the island and the mainland of Cornwallis Island (Figure 13). Anchor behind Griffith Island or at Beechey Island (Figure 13). This should be implemented for one open water season then assessed. Other locations may need to be trialed in future years. Resolute Bay is a secondary anchoring option (Figure 13), since it is a safe harbour; however, anchoring there causes belugas to leave, which is a great concern. However, if cargo and fuel ships could not anchor in Resolute Bay it would negatively affect the community. Tourism Nunavut should incorporate the comments in this report in future tourism plans.</p> <p>A VHF tower like they have in Pond Inlet and Clyde River is needed so that military and coast guard ships no longer have to anchor in Resolute Bay and Allen Bay to get better reception.</p>
<p>The corridors go through the main narwhal, beluga, and walrus migration route (Figures 6, 8). It is a very important area for harvesting beluga, narwhal, walrus, and harp seals (Figures 6, 7, 8, 11). Narwhal migratory routes have changed in Milne Inlet due to mine-related ship traffic, and the same may happen near Resolute Bay. Many ships go to Creswell Bay. As a result, narwhal there have changed their behaviour.</p>	<p>It is very important to protect marine wildlife and their main migratory routes. Some have already have changed their route. Some walrus haul out sites are already gone. The community needs to work with shipping companies because residents recognize that ships will continue travelling through the area. It is best to regulate ship operations.</p> <p>It is better, faster, and more cost effective for ships to maintain speed and stay in the further away corridors. (see Preferred corridors, away from Resolute Passage; Figure 13).</p>



Table 1 (continued). Potential impact of marine vessels using the Low Impact Shipping Corridors on ecology, wildlife, and community members and related recommendations

POTENTIAL IMPACT OF MARINE VESSELS	RELATED RECOMMENDATION
<p>There are thousands of beluga whales in Bellot Strait and Peel Sound. Bellot Strait is a narrow, dangerous area to travel. It would be hard to close Peel Sound and Bellot Strait. It is important that residents know when the corridors are being used and which routes ships are using. If those corridors are closed, ships may still go through and not report it. If an accident happens it could be a catastrophe.</p>	<p>No ships in Peel Sound and Bellot Strait (see Figure 13).</p> <p>Create a corridor west of Prince of Wales Island where it is much wider (M'Clintock Channel; Figure 13).</p> <p>Reduce and restrict the number of ships during migration.</p>
<p>Marine mammals have very sensitive hearing and can hear noise from very far away. From 11 hours before until 10 hours after a ship goes by, marine mammals stop communicating. Marine mammals are changing their migration route and going to Grise Fjord. The number of beluga whales, narwhal, seals, cod and walrus around Resolute Bay has decreased.</p> <p>Residents used to harvest 12 belugas per year which provided 10% to 20% of the community's food supply. There are so few belugas around today that residents have harvested only 4 to 5 total in the past few years. It could be that marine mammals' food source (cod) has moved away so the marine mammals have moved away too.</p>	<p>Reduce ship-related noise. The less noise the better.</p> <p>Move the corridors away from the bays where marine mammals are found especially south of Devon Island (Figure 13). Reduce and restrict the number of ships during marine mammal migration.</p> <p>Local hunters may need to hunt further away and be away longer, for example a month-long hunt.</p>
<p>Ships are travelling too close to Prince Leopold Migratory Bird Sanctuary (PLMBS).</p>	<p>Ships should not go so far inland. The PLMBS has a 5 km boundary into the water. Ships should stay 15-20 km offshore (Figure 13).</p>





Table 1 (continued). Potential impact of marine vessels using the Low Impact Shipping Corridors on ecology, wildlife, and community members and related recommendations

POTENTIAL IMPACT OF MARINE VESSELS	RELATED RECOMMENDATION
Walrus are very sensitive to the smell of humans. Some walrus haul outs have been abandoned.	No community members or visitors should walk on walrus haul outs, because once people have been there, walrus abandon the area.
Beluga whales, narwhal and bowhead whales travel at night.	Shipping companies should be made aware of this.
Ballast water is being released in Barrow Strait and between Griffith Island and Resolute Bay. While ballast water is needed for safe navigation, invasive species must not be introduced.	No ballast water should be released in Nunavut or the high Arctic Archipelago. Filters that ensure no invasive species are transferred must be used when ballast water is picked up or released.
Ship garbage is found on local beaches.	No garbage should be dumped in Nunavut or the High Arctic Archipelago. Garbage dumping should be regulated, monitored and enforced. Community members should note where they see garbage or anything unusual and report it to the Conservation Officer / Environmental Officer. Then the officer can find out what the latest ship to go by was (that would be assumed to have dumped the garbage).





Table 1 (continued). Potential impact of marine vessels using the Low Impact Shipping Corridors on ecology, wildlife, and community members and related recommendations

POTENTIAL IMPACT OF MARINE VESSELS	RELATED RECOMMENDATION
<p>There is a danger from ships passing during the dark season after sea ice has formed. It is hard for hunters to see the open water, and they could fall in resulting in injury or death. Hunters follow leads to catch seals. Ships damage leads. Year-round shipping would negatively affect hunting routes.</p>	<p>No winter shipping through Allen Bay; residents’ main winter hunting area (Figure 13).</p> <p>If shipping becomes year-round and shipping companies start saving a lot of money, and if it does get harder for residents to hunt, then funds could come to Resolute Bay. Funds could be used to remove garbage from beaches and local waters.</p>
<p>It is unclear how much authority the Canadian government has over local waters; some say it is international waters, and others say it is Canadian waters. Residents wonder how much authority is given to Inuit residing near the ocean and accessing it.</p>	<p>It may be too late to stop ships from passing through our area. Ships’ access needs to be controlled and a user fee implemented.</p>
<p>The Canadian Coast Guard only has one ship in such a vast area. Shipping is increasing but emergency response capacity is limited.</p>	<p>Increase Canadian Coast Guard presence.</p>
<p>It is not a matter of if there is an oil spill, but a matter of when. Response time is very slow. Responding to oil spills is not part of the Canadian Coast Guard’s mandate.</p> <p>Residents’ capacity to deal with an oil spill is insufficient. The Government of Nunavut said that due to liability, residents must not respond if there is a spill.</p> <p>Even when ships are still, there is oil or fuel around the ship, which spreads and does not evaporate. If a ship gets a hole in it, there will be fuel everywhere. The current is so fast that the fuel would be in Pond Inlet within a day or two.</p>	<p>The community is developing an oil spills preparedness plan. This report will be used in its development.</p>
<p>The April 2, 2019 opening of Tallurutiup Imanga Marine Conservation Area (TIMCA) will have an effect on migratory and marine wildlife. The effect may be positive (protective) or negative. The lack of protection outside the TIMCA border is a concern.</p>	<p>Make TIMCA larger.</p>
<p>In this area, the ocean is very shallow. There are certain areas that ships should not go because it is very shallow. Some areas do not freeze even during the coldest month of the year because it is too shallow and the current is so strong.</p>	<p>Depth test and chart these areas. One area in particular is very shallow and ships should stay away from it (Figure 13).</p>



RECOMMENDATIONS FOR ENHANCED COMMUNICATION

1. Community members would like to know who decided where to put the Low Impact Shipping Corridors with no consultation with Inuit. This is the first time anyone has asked residents about the corridors. Planning and communication need to change; residents need to be involved from the beginning.
2. Community members would like to know if the Low Impact Shipping Corridors were considered when selecting the site for Tallurutiup Imanga Marine Conservation Area since it overlaps with the Low Impact Shipping Corridors.
3. It would be helpful for hunters and other community members to know ship locations and itineraries. Then hunters could avoid areas where ships are, knowing that the animals will have left the area due to the disturbance of the ship. The new Parks Canada Visitor Centre being built in Resolute Bay could be a place for people to go and see a current online display of ship locations. Many residents do not have internet access so cannot research this information themselves. The local Nunavut Tunngavik Inc. Inuit Marine Monitoring Program observers will not be able to provide real-time information.
4. This report should be shared with Nunavut Tourism because they are promoting tourists coming to the area, but they are not considering the impact tourists and related vessels have on animals and Resolute Bay community members. These recommendations should be included and used in future tourism plans.
5. This report should be shared with Students on Ice so that they will know of and follow our recommendations. It should also be shared with Qarmartalik School so that when Students on Ice student come to visit them, the students can tell them about this report and our recommendations.
6. This report should be shared with the Hamlet Office, Hunters and Trappers Association, Wildlife Office, and the Parks Canada Office in Resolute Bay.
7. Residents would like to know what happened in response to the walrus calving area and a management plan where ships are not supposed to pass through. These were mapped with DFO. Ships are still passing through that area, and no update has been provided.
8. Community members would like to know what happened in response to DFO saying three years ago that they would investigate the release of ballast water in the High Arctic Archipelago, and tell ship owners to change their ballast water before coming into Canada.
9. Improved communication between government departments is needed to avoid overlap, and duplicate consultations, and for each agency to gain awareness of ongoing initiatives.
10. Each Government of Canada agency has its own areas they regulate, e.g., Parks Canada and Canadian Wildlife Service regulations. Regulations need to be streamlined.

MAP OF RECOMMENDATIONS FOR THE LOW IMPACT SHIPPING CORRIDORS

The map (Figure 13) includes:

- Revised corridors
- Recommended routes:
- No-anchoring zones and recommended anchoring zones;
- A recommended route for all non-essential services; and
- Areas to avoid.

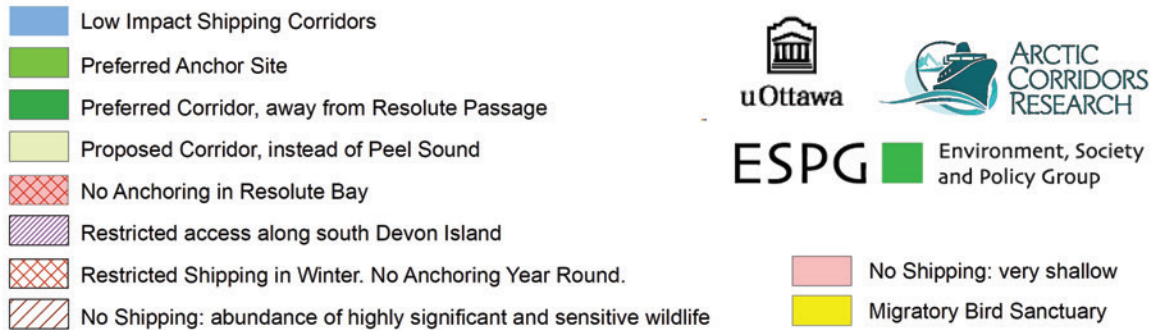
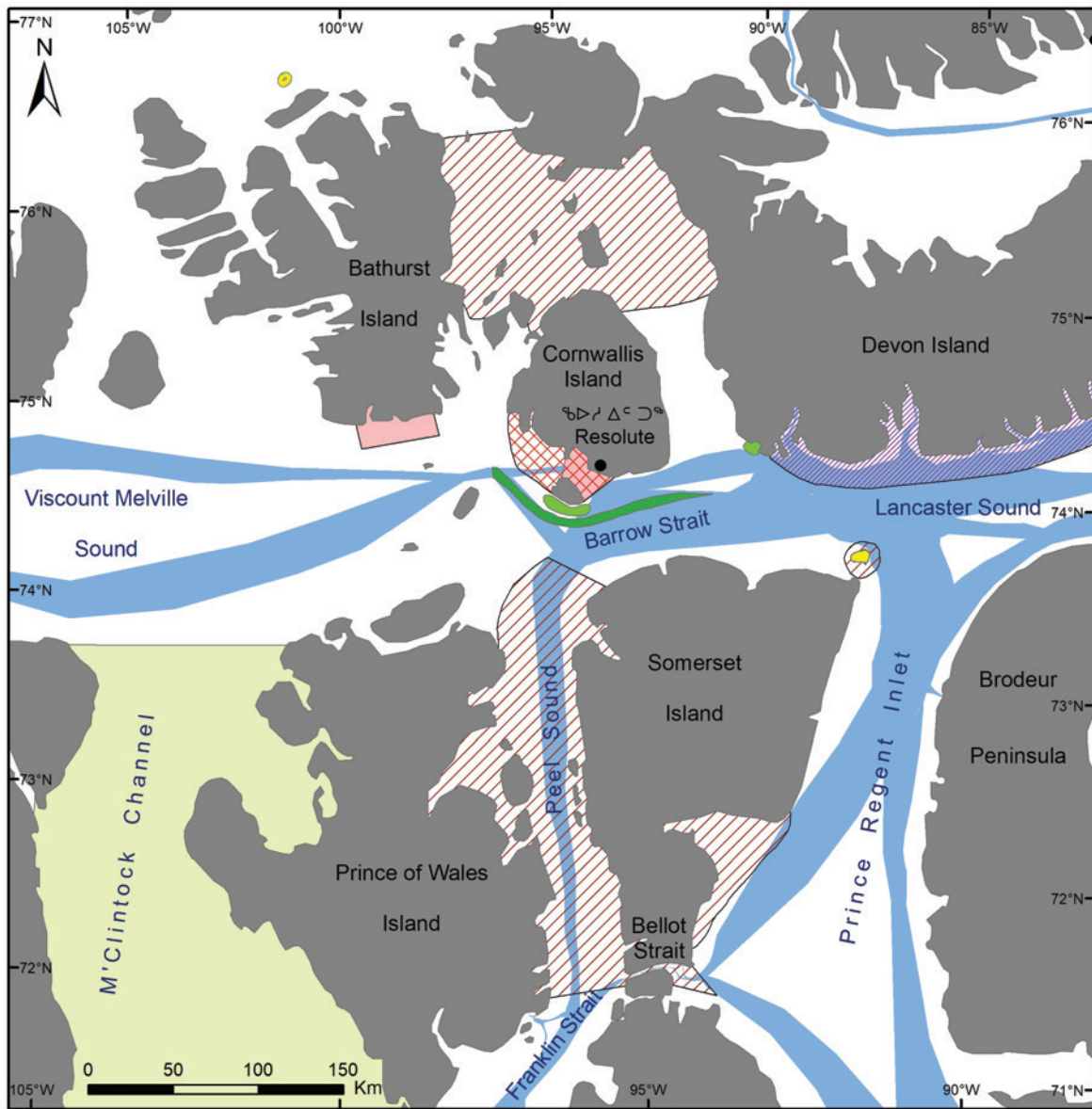


Figure 13. Recommendations for Low Impact Shipping Corridors



CONCLUSION

The number of marine vessels in Canadian Arctic waters continues to grow overall.¹ Resolute Bay has experienced a significant increase in vessel traffic in recent decades.¹ This study has documented that the marine areas that are most significant to community members' subsistence harvesting and livelihood activities, are located exactly where ship traffic has increased. Given community members' concerns about this attention and growth, and its implications for the ecology, environment, and Inuit way of life, the perspectives of Resolute Bay community members and all communities, should be a fundamental consideration during the implementation and management of the Low Impact Shipping Corridors. The consequences of a marine incident, and the loss of marine mammals in the marine areas accessed

by Resolute Bay community members, would have deep, lasting, and potentially irreversible ecological, environmental, and cultural impacts. Combining scientific knowledge and Inuit knowledge will provide the most effective approach for pro-active vessel management through a corridors approach. Infusing Inuit and Northerners' voices in the continued development of the Low Impact Shipping Corridors is critical to ensuring safe marine transportation near Resolute Bay, Nunavut and throughout the Canadian Arctic.

¹ Dawson J., Pizzolato, L., Howell, S.E.L., Copland, L., & Johnston, M.E. 2018. Temporal and Spatial Patterns of Ship Traffic in the Canadian Arctic from 1990 to 2015. *Arctic* 71(1). 15-26. <https://doi.org/10.14430/arctic4698>.

