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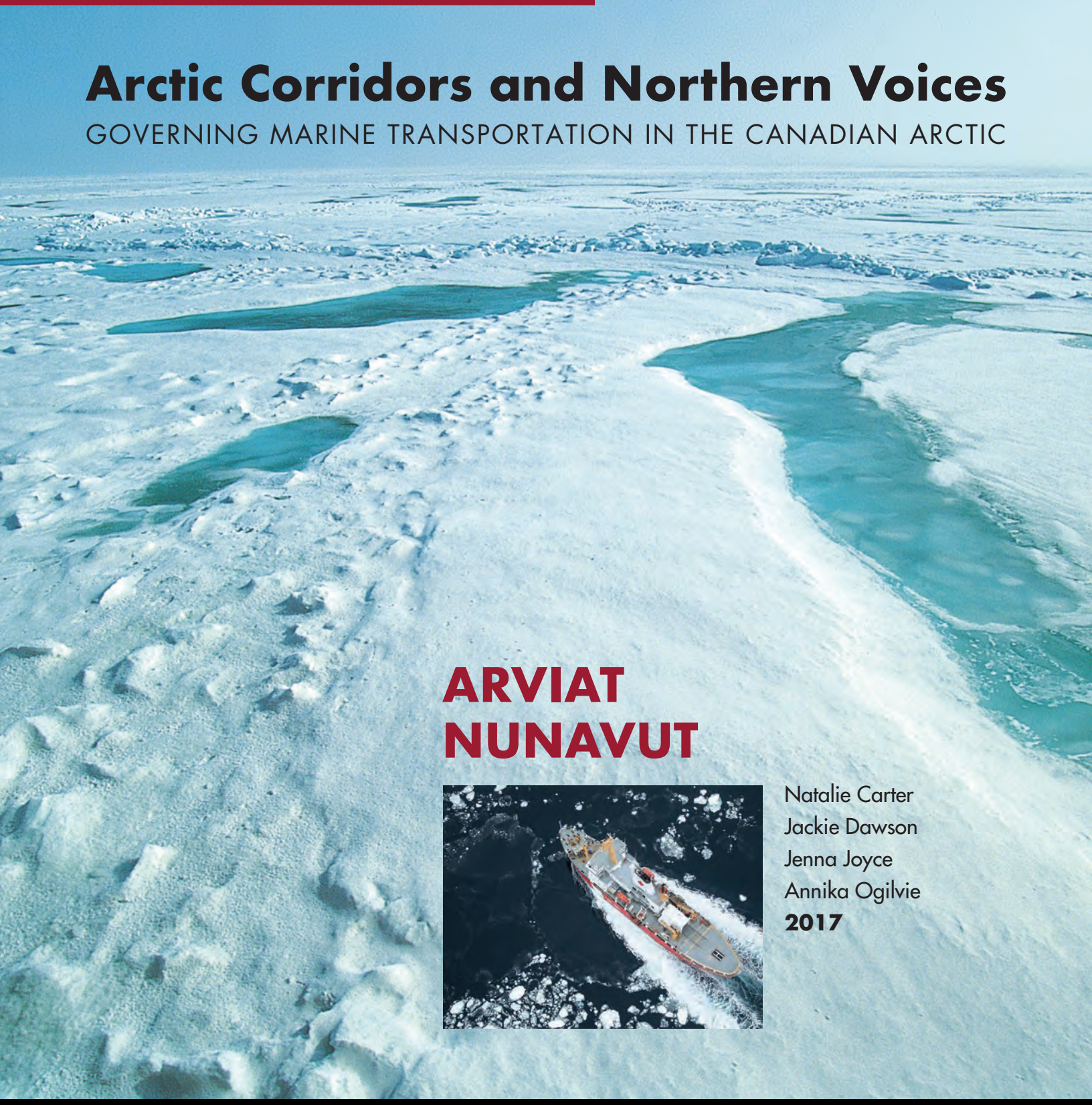
Arctic Corridors and Northern Voices

GOVERNING MARINE TRANSPORTATION IN THE CANADIAN ARCTIC



ARVIAT NUNAVUT

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ARCTIC CORRIDORS RESEARCH

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MEOPAR

OCEANS NORTH

IRVING
Irving Shipbuilding Inc.

Fisheries and Oceans Canada
Pêches et Océans Canada

PARTICIPANT BIOGRAPHIES

Joachim Akatsiak

Thomas Siatalaaq Alikasuak is an active hunter and a member of the Arviat Hunters and Trappers Organization board.

Louie Angalik was born October 1, 1938. He was raised on the land; way inland during winter and at the shore during spring. At first, he was a hunter and trapper, then worked at the mine for 4 years. Then he became a hunter and trapper again and for 12 years, he worked at the store. In the 1970s he worked at the school taking kids hunting. He developed the education system at the school in Arviat first then for all of Nunavut. He also monitored people who are prisoners who were sent to the land.

Paul Kablutsiak was born on the land on February 12, 1941 and was raised on the land. When he was 10 years old he moved to Arviat from the land. Upon reaching adulthood he was a hunter and trapper and on worked on and off in heavy duty construction. He also worked at the mine from 1989 until it closed. He is now 77 years old and is still working with heavy equipment.

Joe Karetak is married to Susanne and has 6 boys and 3 girls. He is an active hunter, and is a Director for Aqqiumavvik Society, a community wellness group. He is the Community Education Development Coordinator and spends a lot of time researching Inuit culture and their ways of being. He promotes the ways Inuit used to manage their existence, based on a holistic perspective and self-reliance. He was born in Arviat, during a blizzard and has lived most of his life up north.

Arden Nibgoarsi was born in Arviat on November 16, 1953. He was raised in Arviat. He became a teacher in 1993 and worked for 23 years. He enjoys hunting and dog mushing and hunting and fishing in the summer.

Scottie Shamee was born on October 18, 1957 in Churchill, Manitoba. He was raised in Churchill and then moved to Arviat. He worked at Hamlet of Arviat as a truck driver for 31 years and he is now retired. He is now 59 years old and is a hunter.

EXECUTIVE SUMMARY

Ship traffic in the Canadian Arctic nearly tripled between 1990 and 2015.[1] Most of that increase happened in Nunavut waters. 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 Arviat community members who were identified by community organizations as key knowledge holders.

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...

- Potential impacts of marine vessels transiting through the Low Impact Shipping Corridors include
  - increased or decreased local travel costs, depending on where animals flee to;
  - behavioural changes in wildlife;
  - decreased meat quality (change in taste due to stress);
  - increased levels of contaminants in the sea, sea mammals, country food, and people; and
  - increased shoreline erosion.
- Local knowledge should inform decision-making during search and rescue operations, and spills containment and clean up;
- Icebreaking has never happened in Arviat. Potential impacts of icebreaking are unknown;
- Ship sonar use should be limited, and ship noise and wake should be reduced;
- Existing oil/fuel spills response capacity is not sufficient on ships or in Arviat and this needs to change;
- Research documenting the impact of ships on northern waters, the impact of waves on shoreline erosion, and the impact of sonar activity on marine mammals and country food supply is needed; and
- Research participants will approach the Arviat Hunters and Trappers Organization (HTO) to ask them to approach the Nunavut Planning Commission to seek involvement with the Nunavut Marine Council and on-going shipping policy development.

COMMUNITY-IDENTIFIED RECOMMENDATIONS INCLUDE...

- Key areas where new or improved charting is needed;
- No-go zones, and restricted-use zones (size of ship, limited sonar, reduced wake and noise);
- Preferred revised corridors including wider corridors located farther from shore;
- Permanent, lighted navigational markers or GPS co-ordinates marking reefs to guide ships in to Arviat;
- Monitoring of ship sewage and waste disposal in Hudson Bay;
- Improved communication and feedback including notification of changes made to the Low Impact Shipping Corridors, and on-going discussions about the corridors as the sea, marine mammals and ship traffic change; and
- Formation of a committee that includes territorial-level organizations as well as hunters and other community members from across the Canadian Arctic to manage the Low Impact Shipping Corridors.

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 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 Arviat 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.

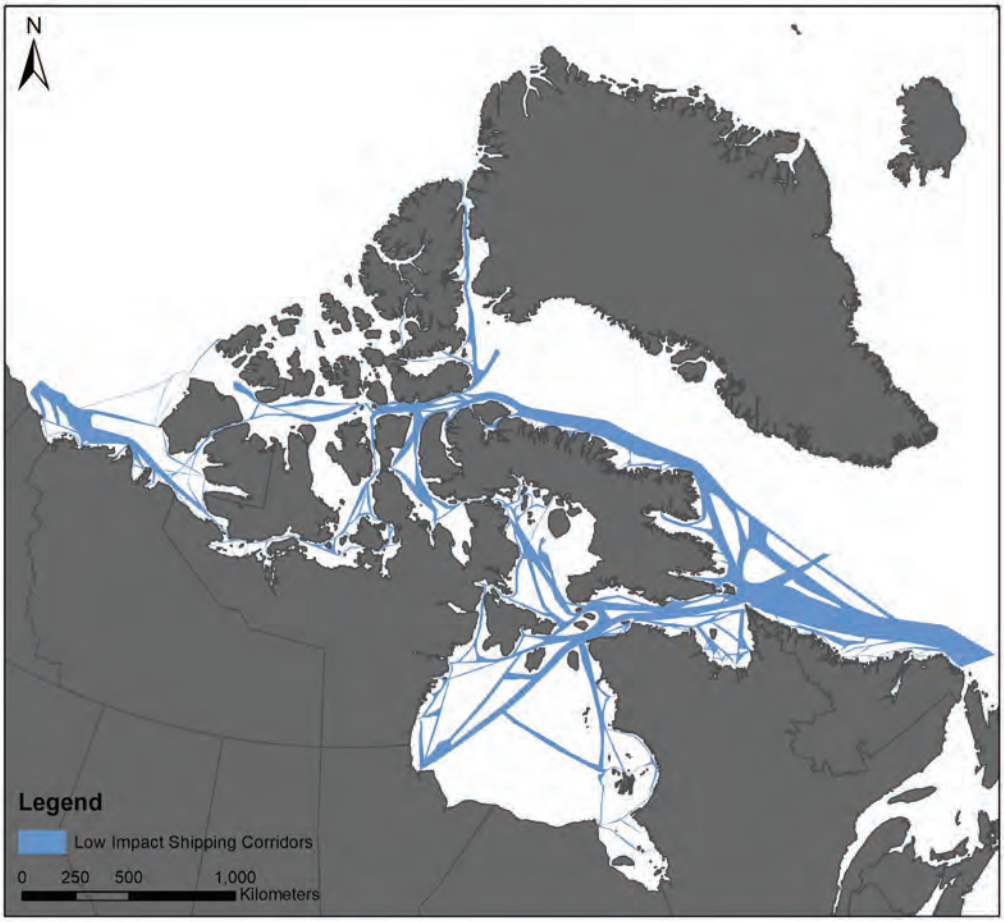

Figure 1. Example of Low Impact Shipping Corridors

Figure 2. Example of Low Impact Shipping Corridors near Arviat, 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). Arviat experienced a 252 km increase in shipping activity when comparing the average annual number of kilometres of shipping activity from 1990-2000 to the annual average from 2011-2015 **(Figure 4)**.[1]

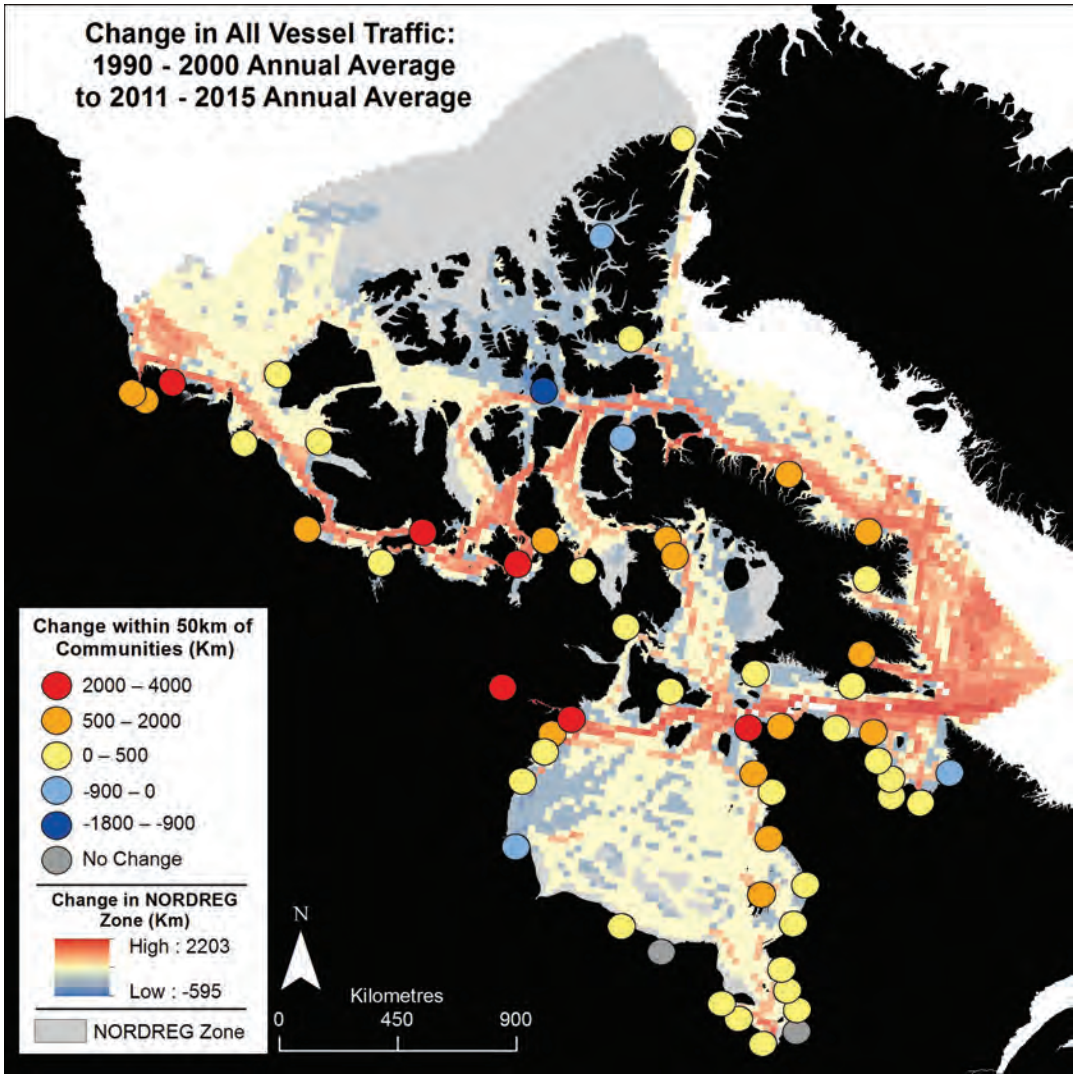

Figure 3. Change in shipping activity (km) in the Canadian Arctic: 1990–2000 annual average compared to 2011–2015 annual average[1]

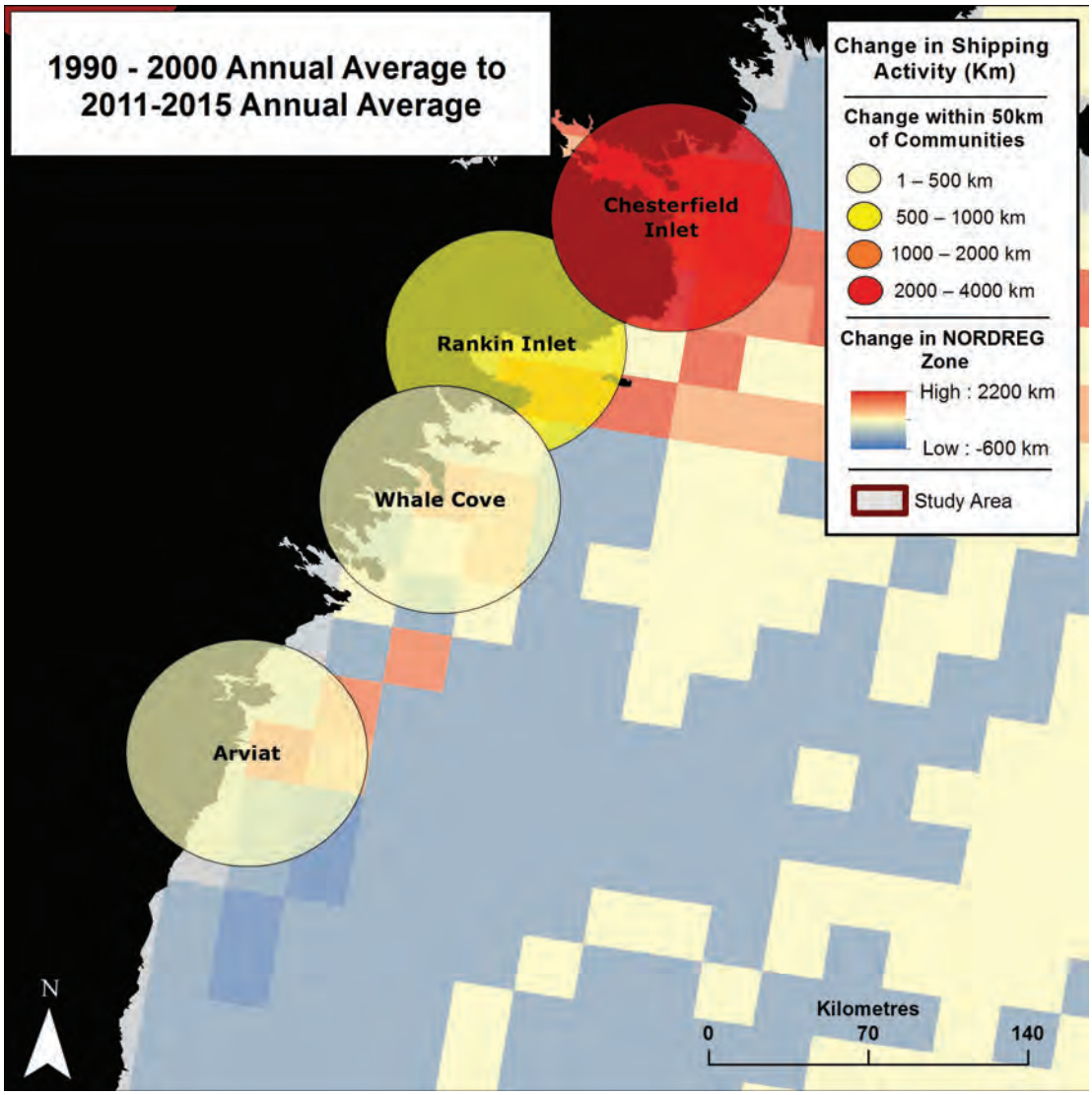

Figure 4. Change in shipping activity (km) near Arviat, Nunavut: 1990–2000 annual average compared to 2011–2015 annual average[1]

FOUR SEASONS

There are 4 main seasons in Arviat, Nunavut. The seasons are weather and ice dependent; therefore, the months each season happens in can be different each year. However, in general the seasons are:

SEASON	MONTHS IN WHICH IT HAPPENS	OCEAN CONDITION
Spring	March through June	Frozen until break-up in June
Summer	July and August	Open water
Fall	September and October	Open water and freeze-up (some years fall includes November and December)
Winter	November through February	Frozen

SEASONAL HARVESTING CYCLE

Harvesting happens according to seasons and follows an annual cycle.

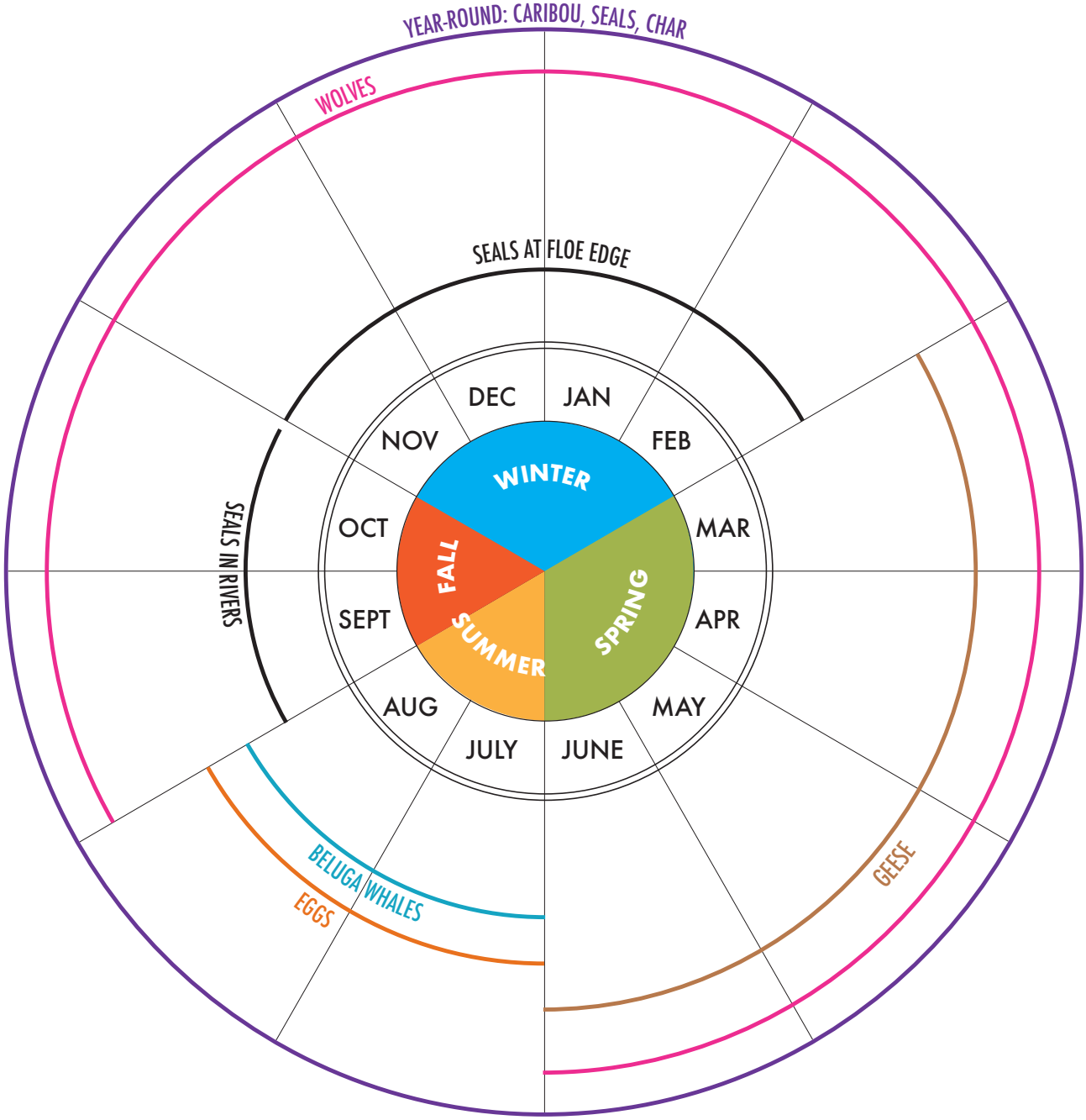

Figure 5. Seasonal cycle of harvesting activities near Arviat, Nunavut

MAPS OF CULTURALLY SIGNIFICANT MARINE AREAS

Maps include:

1. Location and behavioural activities of terrestrial mammals, sea mammals, fish, and birds/eggs;
2. Location of community members' activities as well as camps and cabins, the floe edge, and other dangerous areas; and
3. Local travel routes.

Maps will be available at www.arcticcorridors.ca and in Arviat at Young Hunters.

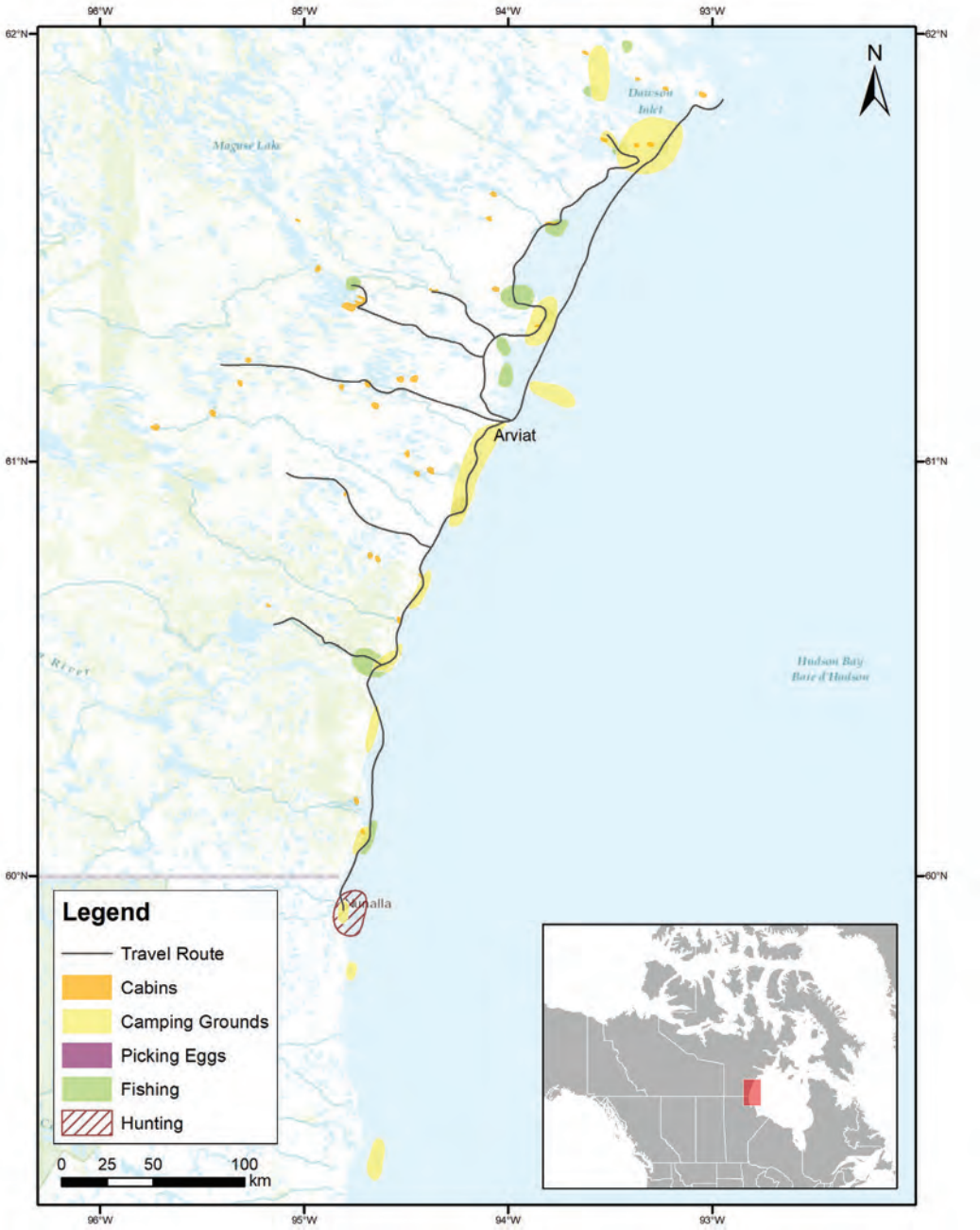

Figure 6. Location of community members' activities around the time of sea ice break-up

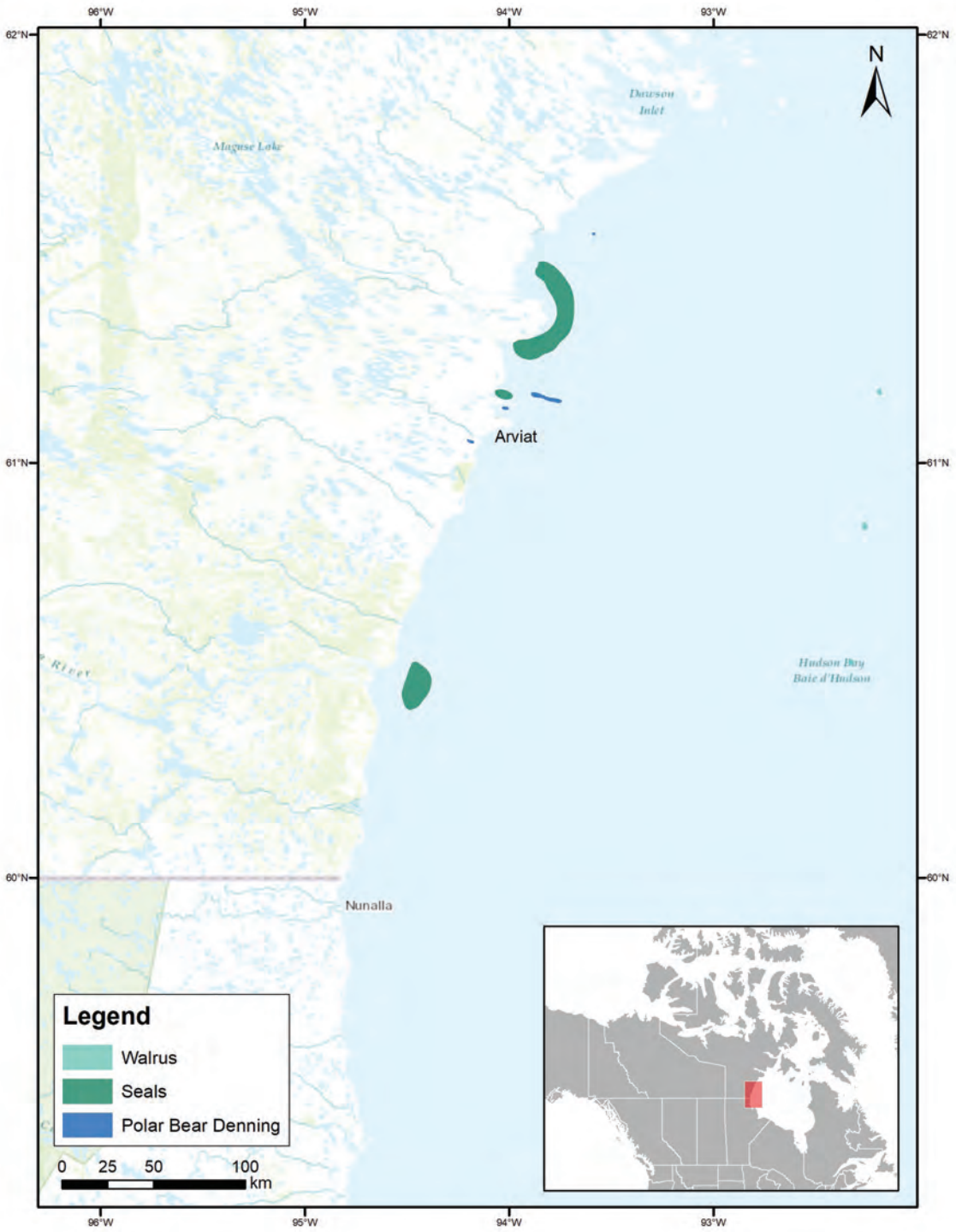

Figure 7. Location and behavioural activities of wildlife around the time of sea ice break-up

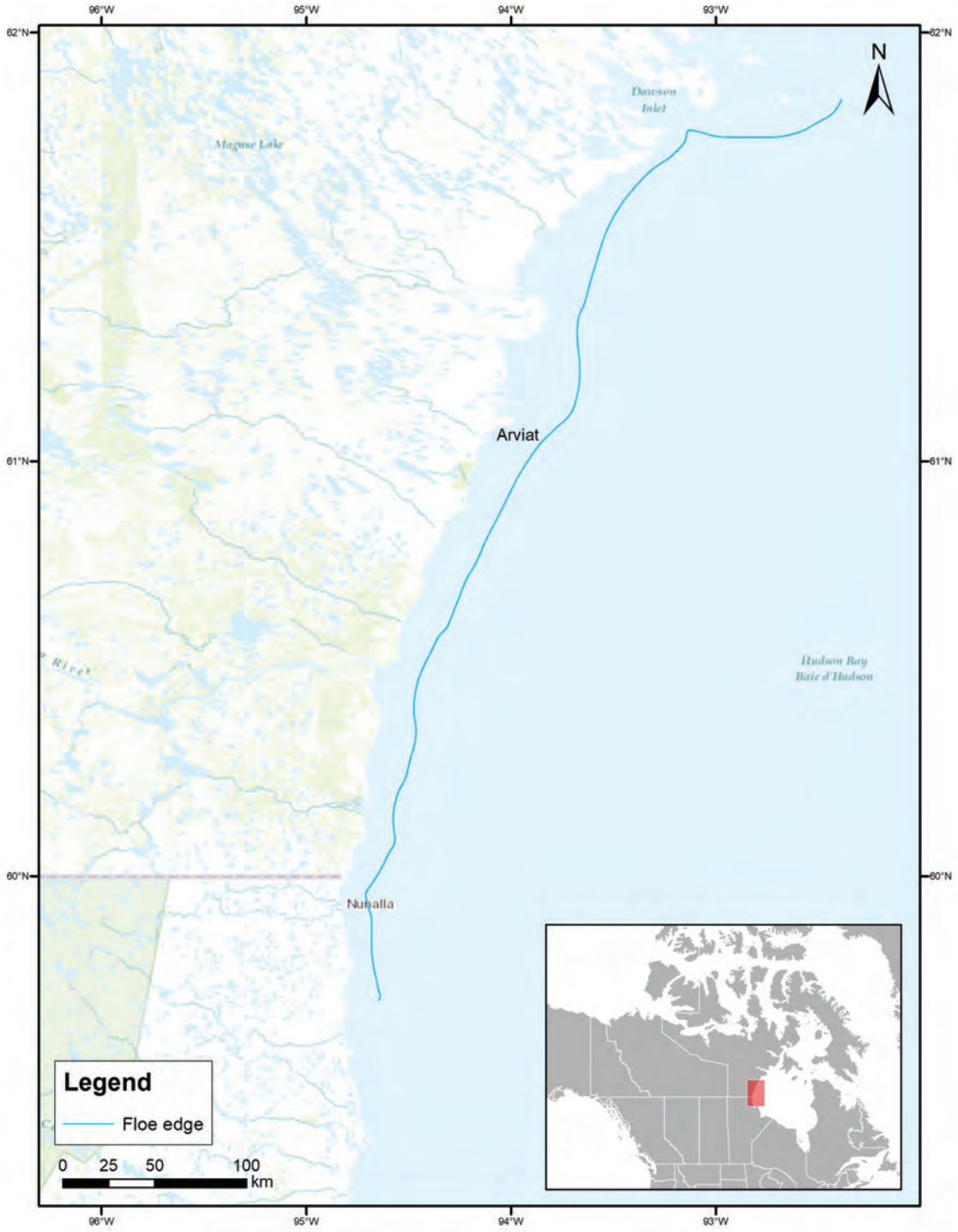

Figure 8. Location of significant marine features around the time of sea ice break-up

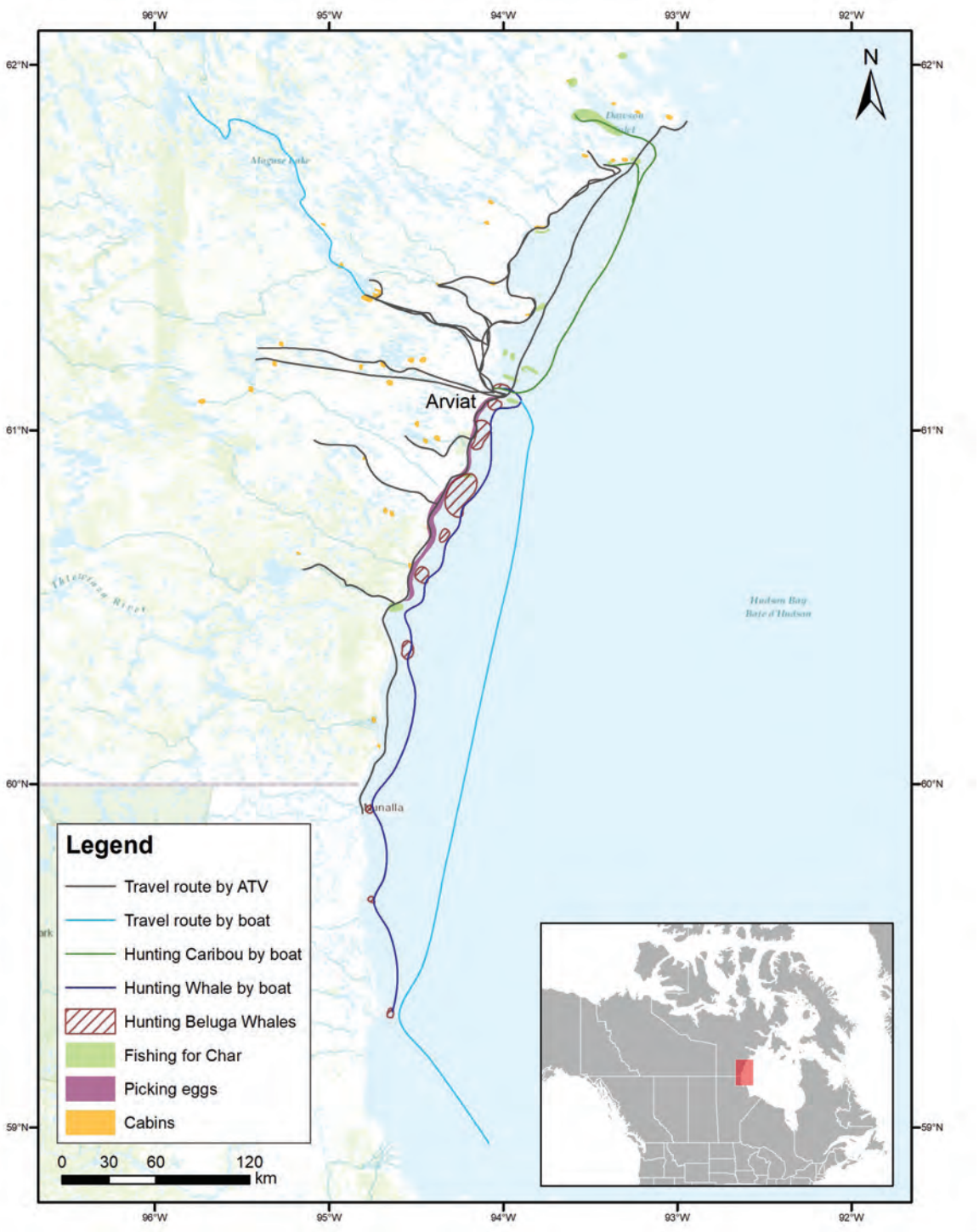

Figure 9. Location of community members' activities during open water

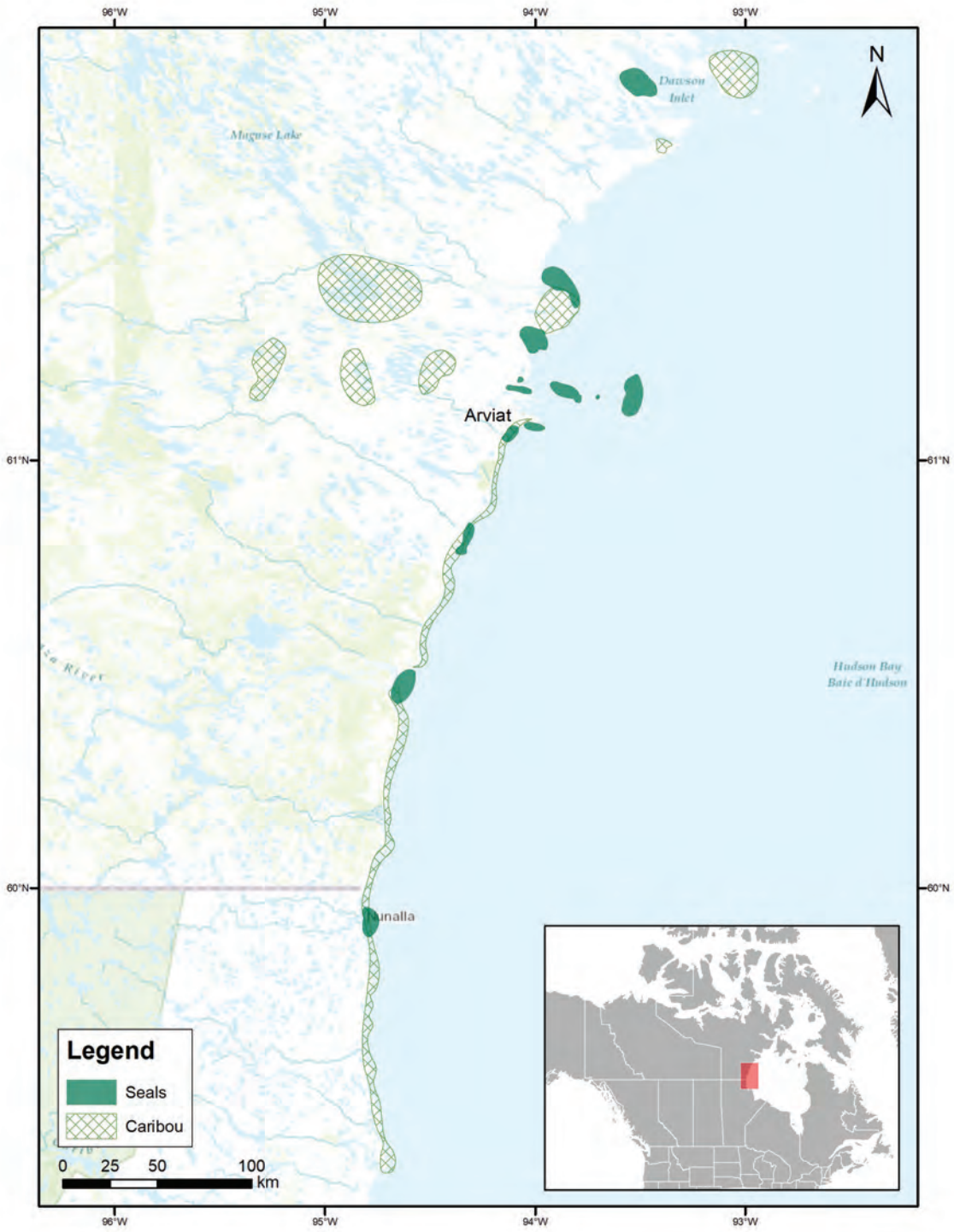

Figure 10. Location and behavioural activities of wildlife during open water

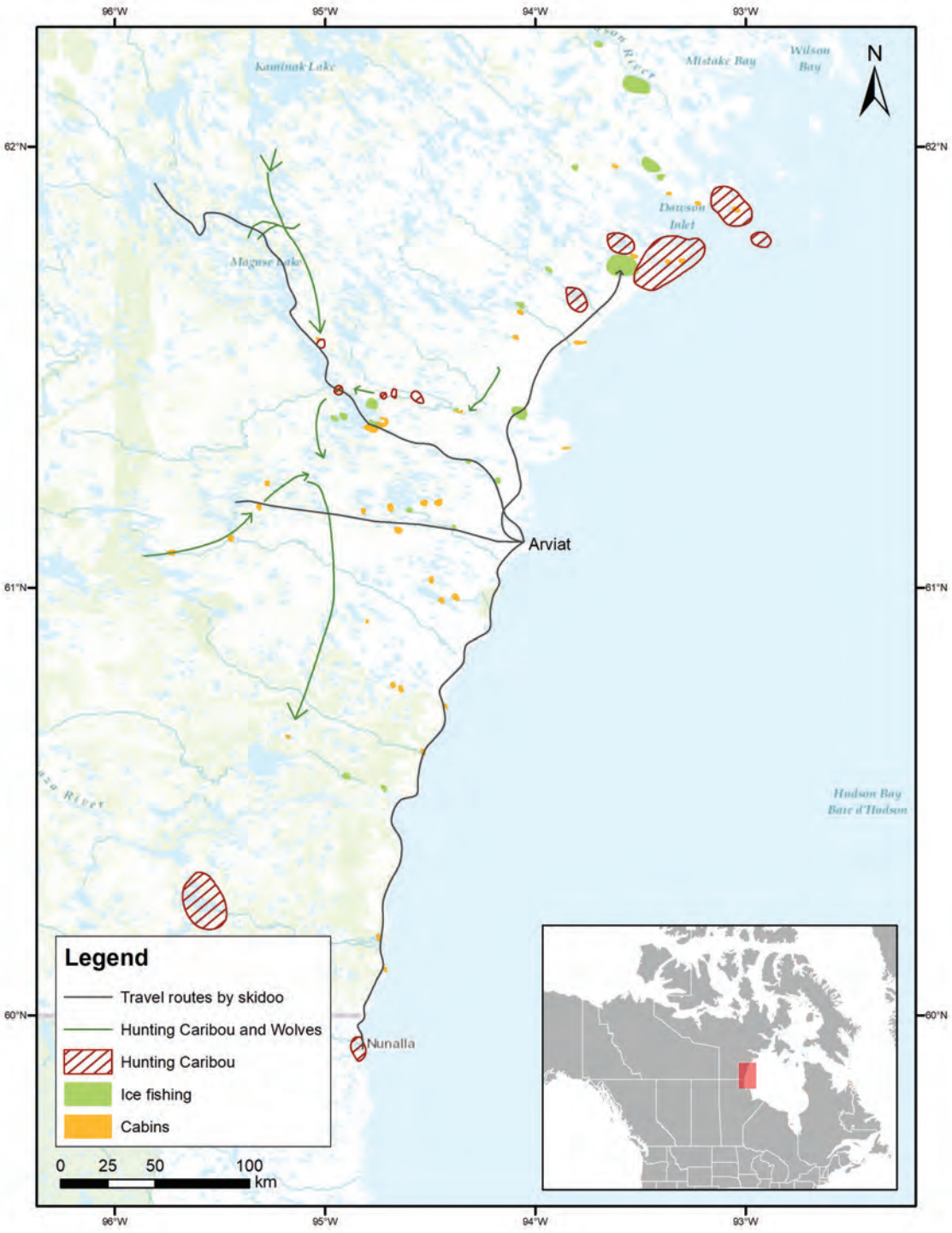

Figure 11. Location of community members' activities during freeze-up and frozen ocean

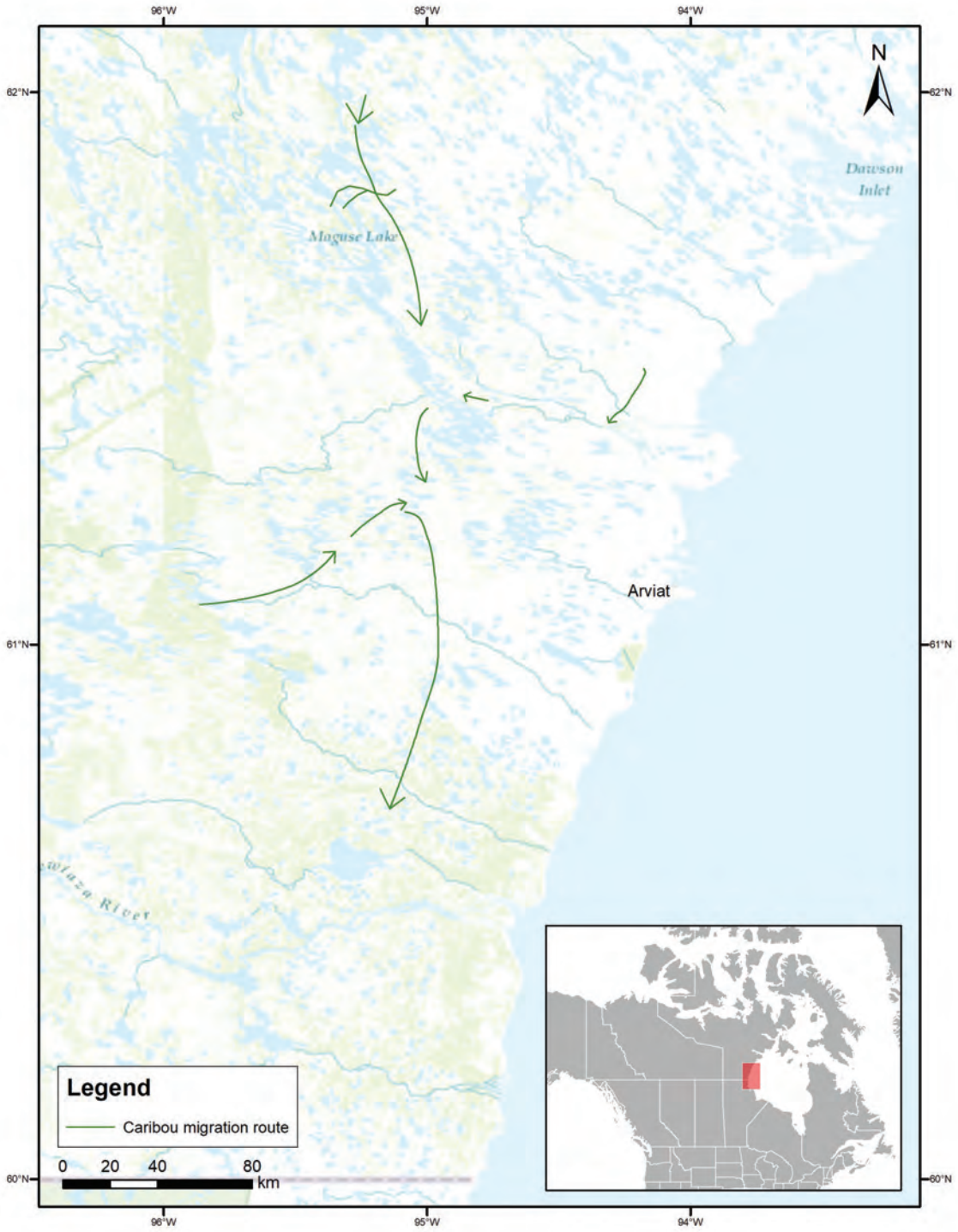

Figure 12. Location and behavioural activities of wildlife during freeze-up and frozen ocean

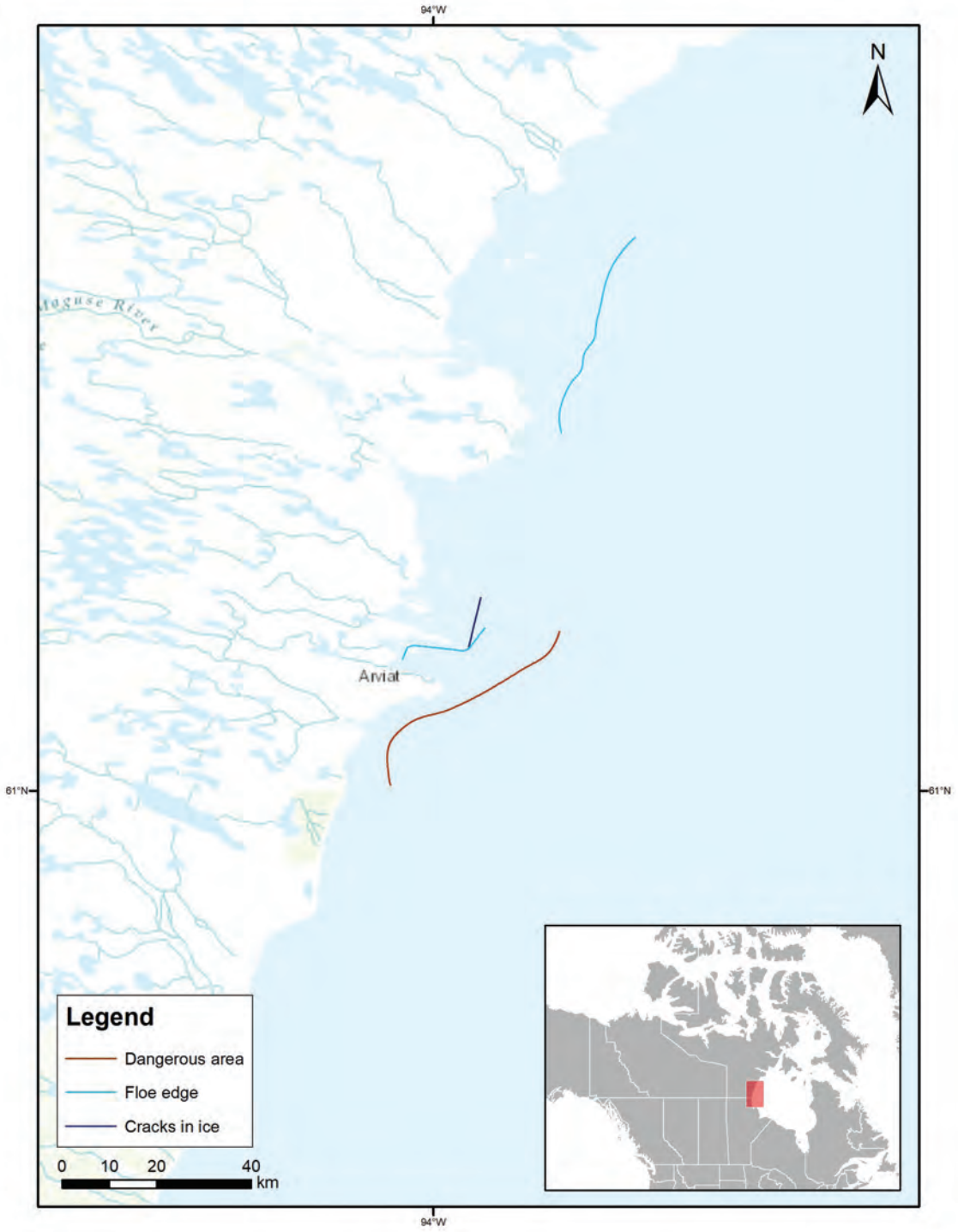

Figure 13. Location of significant marine features during freeze-up and frozen ocean

POTENTIAL IMPACT OF MARINE VESSELS

Marine vessels using the Low Impact Shipping Corridors may impact the ecology and environment **(Table 1)** and community members **(Table 2)**. Related recommendations are provided **(Table 3)**.

Table 1. Potential impacts of marine vessels using the Low Impact Shipping Corridors on ecology and the environment

POTENTIAL IMPACT OF MARINE VESSELS	WHEN IT MAY HAPPEN
The corridors are right where there is wildlife in the water. If ships keep travelling in the corridors closest to the west shore of Hudson Bay, sea mammals (beluga whales, seals) will have to flee both toward shore, and out into deeper water.	Summer and Fall
Already there are fewer sea mammals found around Arviat because: • ships are very noisy, so sea mammals flee from their usual habitat toward shore or far out into deeper water; • sea mammals will move away from ship noise and wake or if they sense something is wrong or detect a bad odour (such as an oil spill); • some hunters are leaving carcasses lying around which contaminates the sea. Animals are very sensitive to smell so they have moved away; • animals are moving to new areas. Belugas are moving into warmer, shallow areas. Fish are moving toward colder, deeper areas; and • small animals and small fish that the bigger animals eat are affected by ship noise. The bigger animals may be following the smaller ones in order to eat.	Summer and Fall
When they are not disturbed by human activity and noise, seals are more active, have better reproduction, and their meat tastes better. Noisy ships and ships passing by cause marine mammal to flee which stresses them. Stress might change the taste of marine mammal meat (e.g., when caribou are chased, the taste of the meat becomes less pleasant).	Summer and Fall
Animals are getting used to human behaviour, including ships. This could be good or bad. Belugas are used to ships near Churchill because they see ships so often and they know they are not going to get harvested (because of whale watching tourists). Before there was so much noise and activity, belugas were very sensitive and would react by turning or moving away.	Summer and Fall
Regardless of where ships travel they are having an effect and leaving contaminants in the sea. The sea around Arviat is getting shallower. In shallower water, the effect of contaminants on animals and the people who eat them will be greater.	Summer and Fall

Table 1 (continued). Potential impacts of marine vessels using the Low Impact Shipping Corridors on ecology and the environment

POTENTIAL IMPACT OF MARINE VESSELS	WHEN IT MAY HAPPEN
Sonar may cause sea mammals to die, just as it has with sharks in the Caribbean. Sonar may also shock and stun sea mammals.	Open water
Blasting in Churchill, Manitoba to accommodate larger ships caused beluga whales to scatter everywhere. There is fear that the same thing will happen to animals and mammals in this area.	Year-round
The effect icebreakers might have on marine mammals is unknown as icebreakers in this area have never been experienced before. In Newfoundland and Labrador, where there is ice-breaking and people harvest seals, the seal population does not seem to be affected. There is not much concern about icebreakers. A positive thing about icebreaking is that there may be more ships coming in the winter. It might make it easier to go seal hunting. People would adjust their travel routes and go inland instead of using the ice.	N/A
If an oil spill happened it would affect all types of animals and sea mammals. It would take a long time for sea mammals to adapt (new habitat, and new feeding grounds). Even if there is an oil spill very far way it will affect this sea area and animals.	Year-round
Ship waves are causing shoreline erosion.	Summer and Fall

Table 2. Potential impacts of marine vessels using the Low Impact Shipping Corridors on community members

POTENTIAL IMPACT OF MARINE VESSELS	WHEN IT MAY HAPPEN
There has been no experience with any kind of hassle or harassments from ships.	Year-round
A positive impact is that when a ship arrives, marine mammals flee toward the land, so hunters go out to search for and harvest them.	Summer and Fall
Animals are being affected and when they are affected, the people are also affected. For example, animal populations seem to be declining and they are moving away.	Year-round
Ship noise makes beluga whales flee. • If they flee closer to shore than usual it will be easier to harvest them because they will be easier to see. Harvesters will spend less money on fuel; and • If they flee farther out to sea than usual, harvesters and hunters will have to travel farther to harvest on the sea. Harvesters will spend more on fuel.	Summer and Fall
Arviat hunters are a big team and communicate about where animals are which is necessary because the location of animals has changed. Hunters must sometimes travel farther distances than they are used to, to find and harvest wildlife.	Year-round
Local boaters might run into the partly-submerged fuel pipe between the fuel barge and land. Boaters do not know it is there. There are no lights or obvious markers on the fuel pipe to make it visible especially in the dark and when there is ice. Markers need to be closer together and light up. It would not be good if a boat hit and broke the fuel pipe.	Fall (usually October)

RECOMMENDATIONS FOR THE LOW IMPACT SHIPPING CORRIDORS

Table 3. Recommendations for the Low Impact Shipping Corridors

The corridors closest to the west shore of Hudson Bay • Should be no-go zones for all ships (Figure 14); • If no-go is not possible then this area should be limited to essential travel only e.g., re-supply, military, search and rescue (Figure 14); and • If no-go is not possible then sonar activity, noise pollution, and the impact of waves on the shoreline (erosion) should be reduced (Figure 15).
Revised corridor option 1* (Figure 14) is: • The corridors closest to the west shore of Hudson Bay should be no-go zones; • All ships should travel in one main corridor further out on Hudson Bay and in community access routes; and • Only charted access routes to communities should be used to travel to and from communities.
Revised corridor option 2* (Figure 14) is: • The corridors closest to the west shore of Hudson Bay should be no-go zones; • All ships should travel in one main, wider corridor further out on Hudson Bay; and • The main corridor should be widened to accommodate ship traffic.
New and improved charting is needed (Figure 15). • The ocean around Arviat is changing and getting shallower; • Even in the corridors farther out to sea there are shallow areas and reefs; and • Well-defined routes, especially for fuel re-supply ships, are needed.
Planes always use the same routes when they are flying. Community members would appreciate ships do the same by staying within the Low Impact Shipping Corridors.
Permanent, lighted, navigational markers (buoys) or GPS co-ordinates to mark reefs and guide ships into the community are needed (like those in Churchill, Manitoba).
The sea is becoming shallower, so the bay will soon be too shallow for ships. The reefs are a hazard and have been for a long time. A different dock/unloading system/wharf is needed.
The corridors are right where there is wildlife in the water. We would like ships to be aware that seals, narwhal, and beluga whales are in the corridors (especially those near the west shore of Hudson Bay).

* The revised corridor options are conceptual drawings only and should be developed in communication with Canadian Hydrographic Service (charting) and shipping companies to ensure the development of the safest, most cost-effective revised corridor. The community does not want to incur increased shipping costs if the revised corridor options are implemented.

Table 3 (continued). Recommendations for the Low Impact Shipping Corridors

Shipping companies are encouraged to have a communication protocol wherein the community is notified if their schedule and/or route changes, and if spills happen. It would be helpful if Hamlet Council and HTO were informed and would then alert the community in a timely fashion via radio, posting notices around town, and Facebook.
There is a need for ships to be prepared to respond to and contain spills (trained crew, equipment), communicate immediately with the community, and incorporate local knowledge in spills response and containment.
Community members have expertise about the water, ice, and land. It is recommended that search and rescue and spills response seek input from the community so local knowledge can contribute to operations.
Arviat is not prepared to respond to spills. Arviat needs to be prepared (e.g., training, equipment).
Research about the impact of waves on shoreline erosion is needed.
Monitoring and documentation of the impact of increased shipping in northern waters, by the federal government or by Nunavummiut funded by the federal government, is needed.
A committee that is involved with the corridors in the north and involves hunters, the community, and the territory is needed. That way everyone can participate and join in and help each other deal with this situation. It would not only involve Arviat because the corridors involve the whole north.
Participants plan to ask Arviat Hunters and Trappers Organization (HTO) to approach Nunavut Planning Commission (NPC) in Arviat, about getting involved with the Nunavut Marine Council, and finding out how the HTO will be involved in the corridors development, and what is going to happen about the issues raised during these discussions.
A process is needed at the community level for organizations to review reports (e.g., from the Government of Nunavut, NPC, or researchers), summarize the reports, and share the key messages so that the information in the reports gets filtered to the community.
It would be helpful for community members to be made aware of any changes made to the corridors, and/or any efforts made to limit sonar, noise pollution, and impact of waves on shore erosion.
The preferred methods of communication include: writing by email, local radio, regionally and territorially through CBC, on Facebook, and notices posted in the community.
Arviat community members should be and wish to be actively involved on an on-going basis in the development and management of the Low Impact Shipping Corridors.

MAPS OF RECOMMENDATIONS FOR THE LOW IMPACT SHIPPING CORRIDORS

Maps (Figures 14 and 15) include:

- preferred revised corridors including wider corridors located farther from shore and community-access routes,
- no-go zones,
- essential-travel-only zones,
- key areas where new or improved charting is needed, and
- restricted-use zones (limited sonar, and reduced wake and noise).

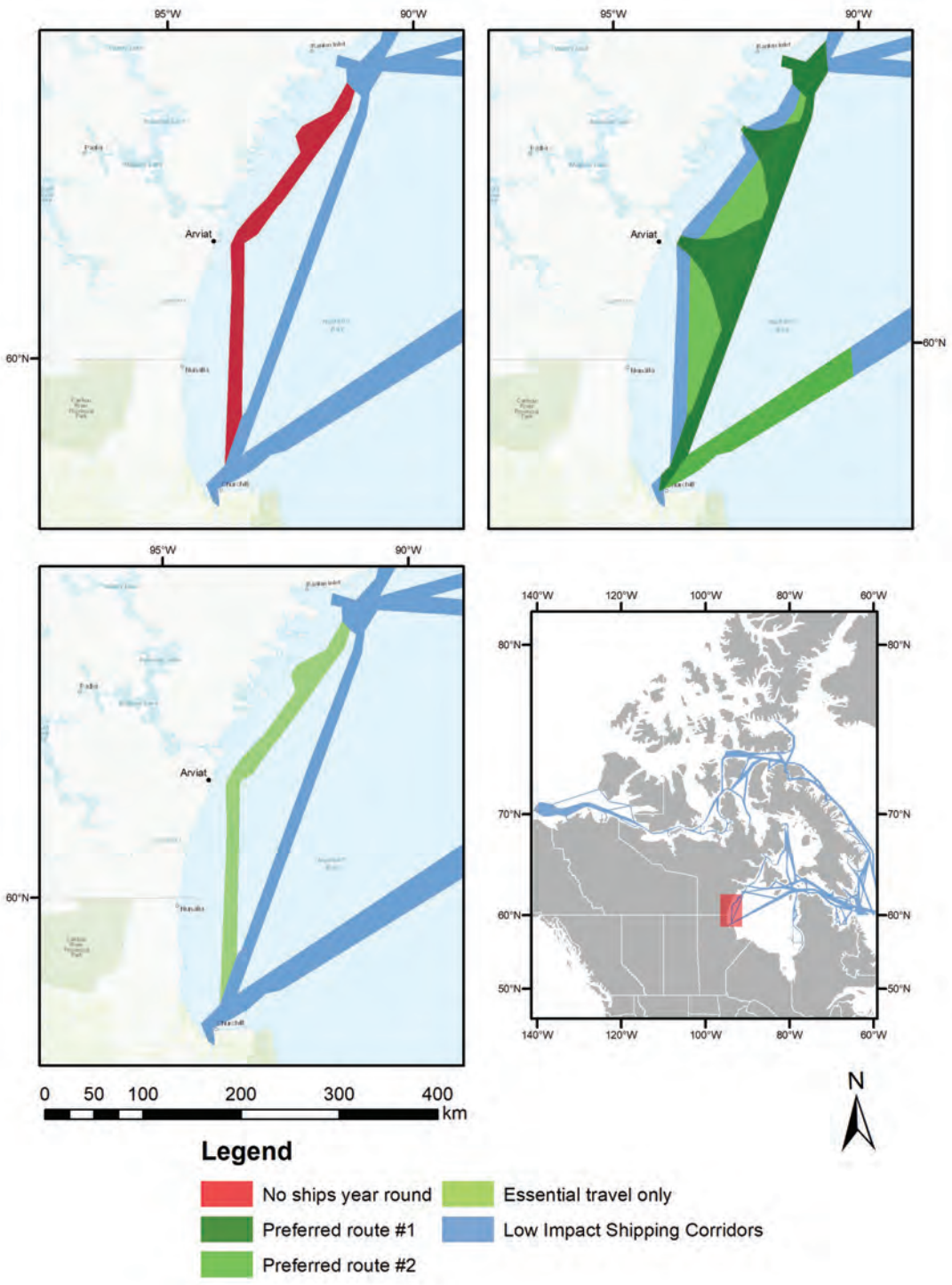

Figure 14. Recommendations for Low Impact Shipping Corridors

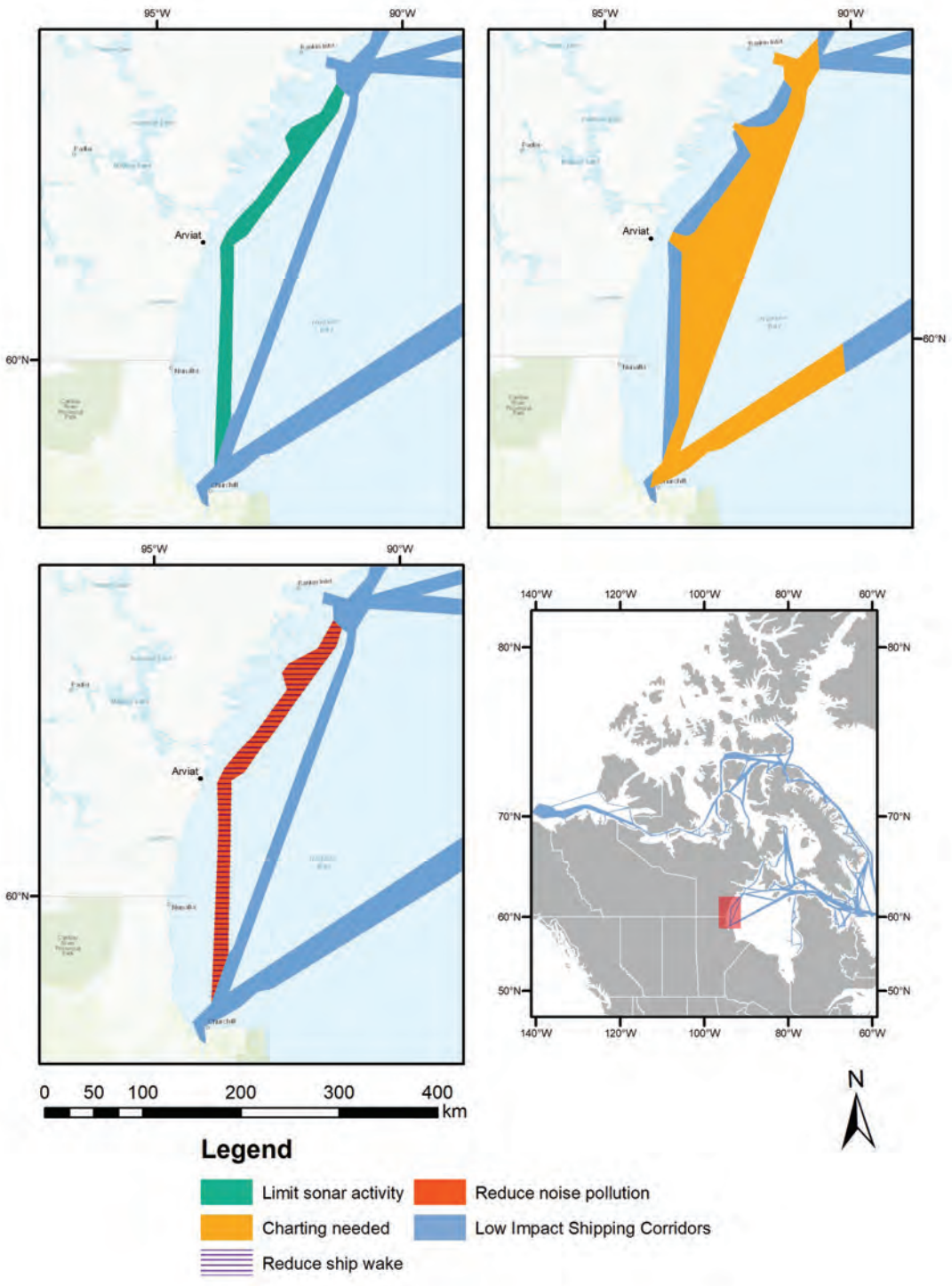

Figure 15. Recommendations for Low Impact Shipping Corridors

REQUESTS FOR ADDITIONAL INFORMATION

Community members request additional information about the following subjects:

- If any level of government is prepared to keep an oil spill from spreading through the sea, and if so which government is prepared;
- The rules and regulations around ships dumping sewage and waste in Hudson Bay;
- If the federal government knows if ships are dumping waste in Hudson Bay, and how the federal government knows this;
- If animals in shallow water are affected more by ships than animals in deeper water are;
- If the cost of goods for people in Arviat will increase if the corridor revisions proposed in this report, are implemented; and
- If there is an organization responsible for shipping regulations and corridors in the Canadian Arctic.

CONCLUSION

Although Arviat has experienced one of the smaller increases in marine vessel activity in Nunavut in recent decades, the marine areas that are most significant to community members' subsistence harvesting and livelihood activities are located directly in the Low Impact Shipping Corridors. As well, a phenomenon called uplift, wherein the land and ocean floor slowly rise, is pushing sandbars upwards in the ocean at a rate of 9.3 mm per year, creating shallower water and new hazards for vessels to navigate in the waters around Arviat.[2] Thus, the risk of groundings and marine incidents including spills (oil, fuel, dangerous cargo) is increasing. Given community members' concerns about the changing ocean conditions, and the need for modern charting and improved spills-response capacity, as well as the implications for the ecology, environment, and Inuit way of life, the perspectives of Arviat 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 would have deep, lasting, and potentially irreversible ecological, environmental, and cultural impacts. Combining scientific 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 Arviat 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.

[2] Simon, K.M., James, T.S., Forbes, D.L., Telka, A.M., Dyke, A.S., & Hinton, J.A. 2014. A relative sea-level history for Arviat, Nunavut, and implications for Laurentide Ice Sheet thickness west of Hudson Bay. *Quaternary Research 82* (1). 185-197. DOI:10.1016/j.yqres.2014.04.002.

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