

Arctic Corridors and Northern Voices

GOVERNING MARINE TRANSPORTATION IN THE CANADIAN ARCTIC

TUKTOYAKTUK NORTHWEST TERRITORIES



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ACKNOWLEDGEMENTS

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EXECUTIVE SUMMARY

Ship traffic in the Canadian Arctic nearly tripled between 1990 and 2015.¹ 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. 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, focus group discussions, and interviews with Tuktoyaktuk community members who were identified by local organizations 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...

- Potential impacts of marine vessels transiting through the Low Impact Shipping Corridors include
 - contamination of Arctic waters, plants, animals, and people by greywater, invasive species, unsecured cargo, garbage, and fuel and oil spills; and
 - behavioural changes in wildlife (whales, polar bears, caribou, muskox and birds);
- Icebreaking is a hazard for people travelling on the ice, and could impact the polar bear food chain in turn resulting in lost economic opportunities; and
- If an accident, grounding, or oil spill happened, Tuktoyaktuk is not equipped to respond.

COMMUNITY-IDENTIFIED RECOMMENDATIONS INCLUDE...

- Marine operators should let the Hunters and Trappers Committee (HTC) know icebreaking is occurring;
- Vessels should yield to marine mammals by detouring;
- Collaboratively develop regulations for marine mammal avoidance;
- Document 100% of the harvest information through the Inuvialuit Settlement Region community-based monitoring program;
- Provide emergency-response training and equipment for Tuktoyaktuk;
- Enforce boom deployment during refueling, and no dumping of greywater in Tuktoyaktuk Harbour, especially at the community dock;
- Install docking facilities and infrastructure to accommodate increased marine traffic;
- Track ships along the coast and report ship information to local organizations;
- Have marine monitors on ships to monitor marine mammals, and conduct community-based monitoring of the impacts of shipping;
- Revisit the definition of international waterways so Inuvialuit can better manage access;
- Restrict unaccompanied cruise ship passengers, tour operators and pleasure craft operators from grave sites and historical areas; and
- Invest in arts and crafts, and tourism-related activities and infrastructure.





BACKGROUND

Ship traffic in the Canadian Arctic nearly tripled between 1990 and 2015.¹ 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 Tuktoyaktuk community members' knowledge and extensive year-round use of important marine areas (ecological, socio-cultural, archaeological, and travel routes), the potential impacts of shipping on those areas and on community members, and recommendations for management of the Low Impact Shipping Corridors.

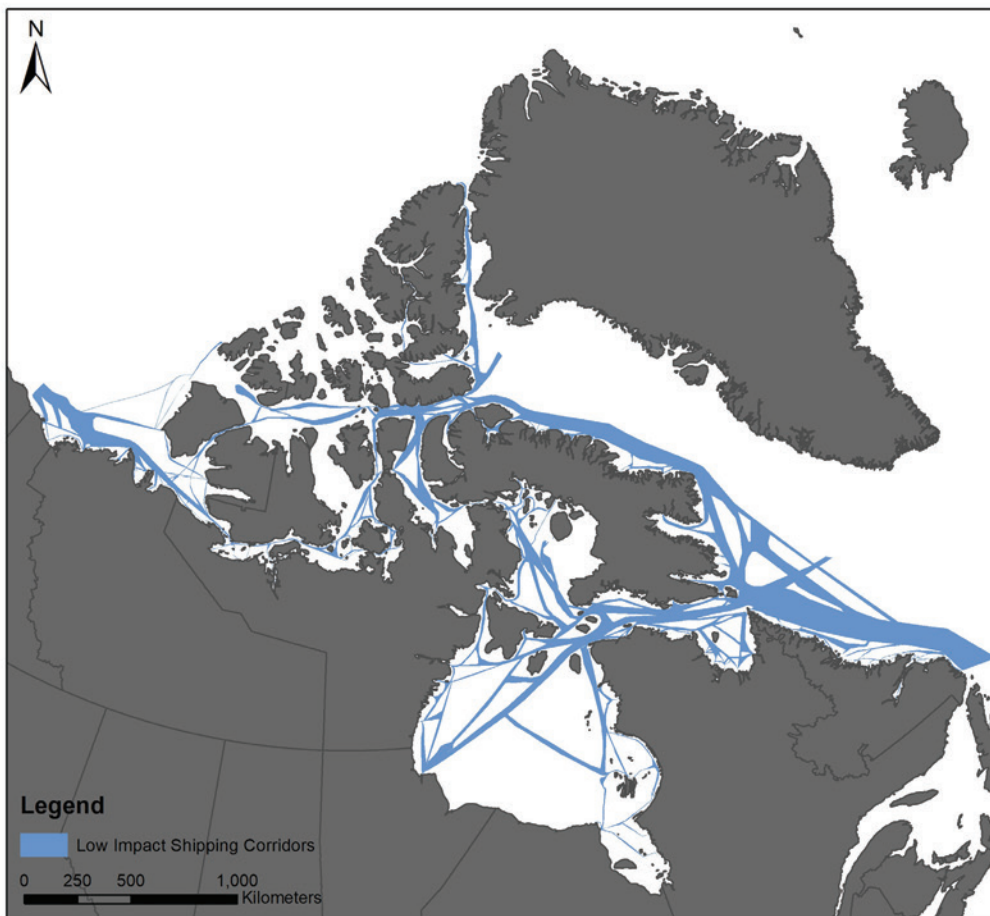


Figure 1. Example of Low Impact Shipping Corridors

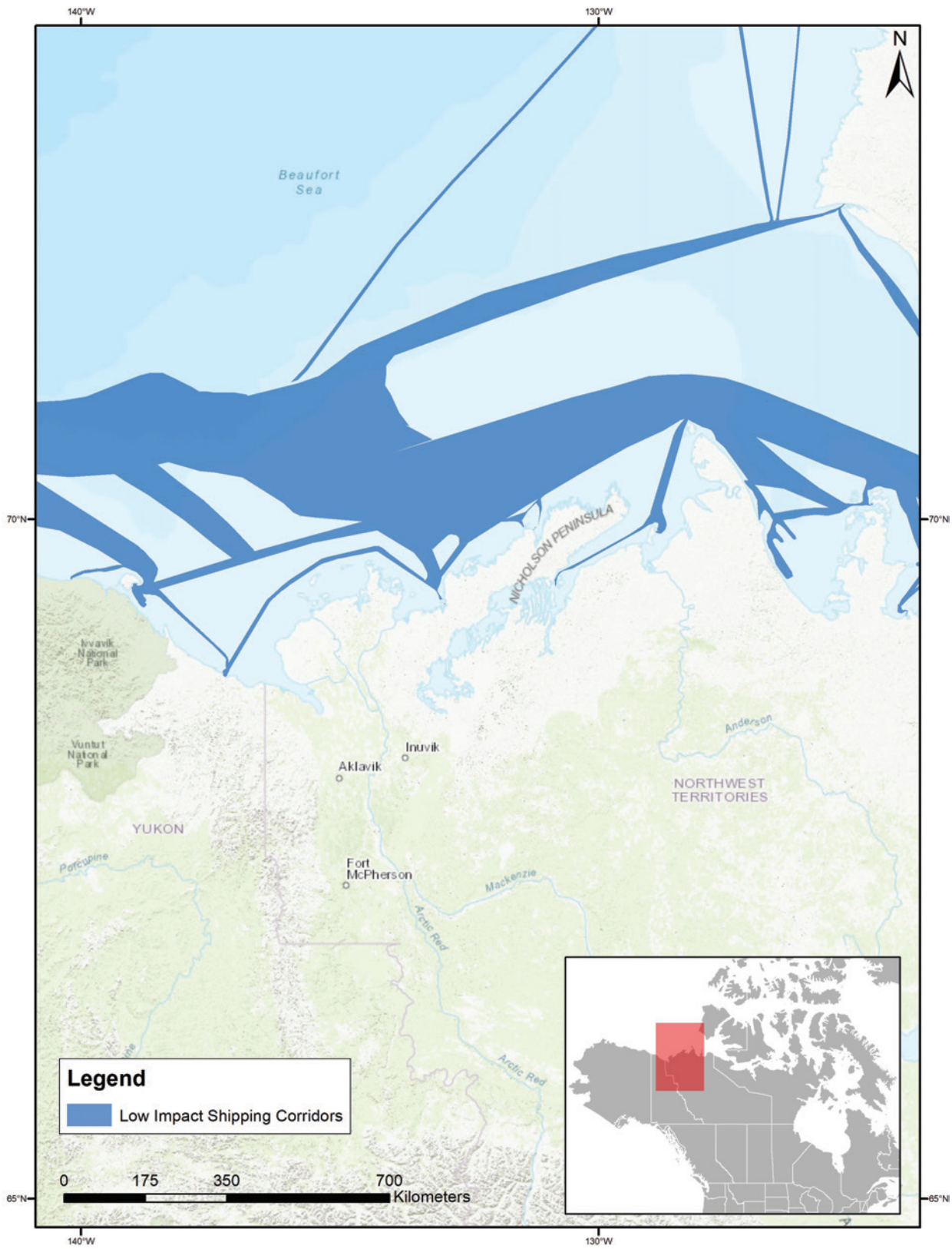


Figure 2. An example of Low Impact Shipping Corridors near Tuktoyaktuk, Northwest Territories



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).¹ 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, Arctic Bay, Eureka).¹ The Inuvialuit Settlement Region experienced a 6,497 km increase in shipping when comparing the average annual number of kilometres of shipping activity from 1990–2000 to the annual average from 2011–2015; and Tuktoyaktuk experienced a 2,583 km increase, the largest increase in the Inuvialuit Settlement Region (Figure 4).¹

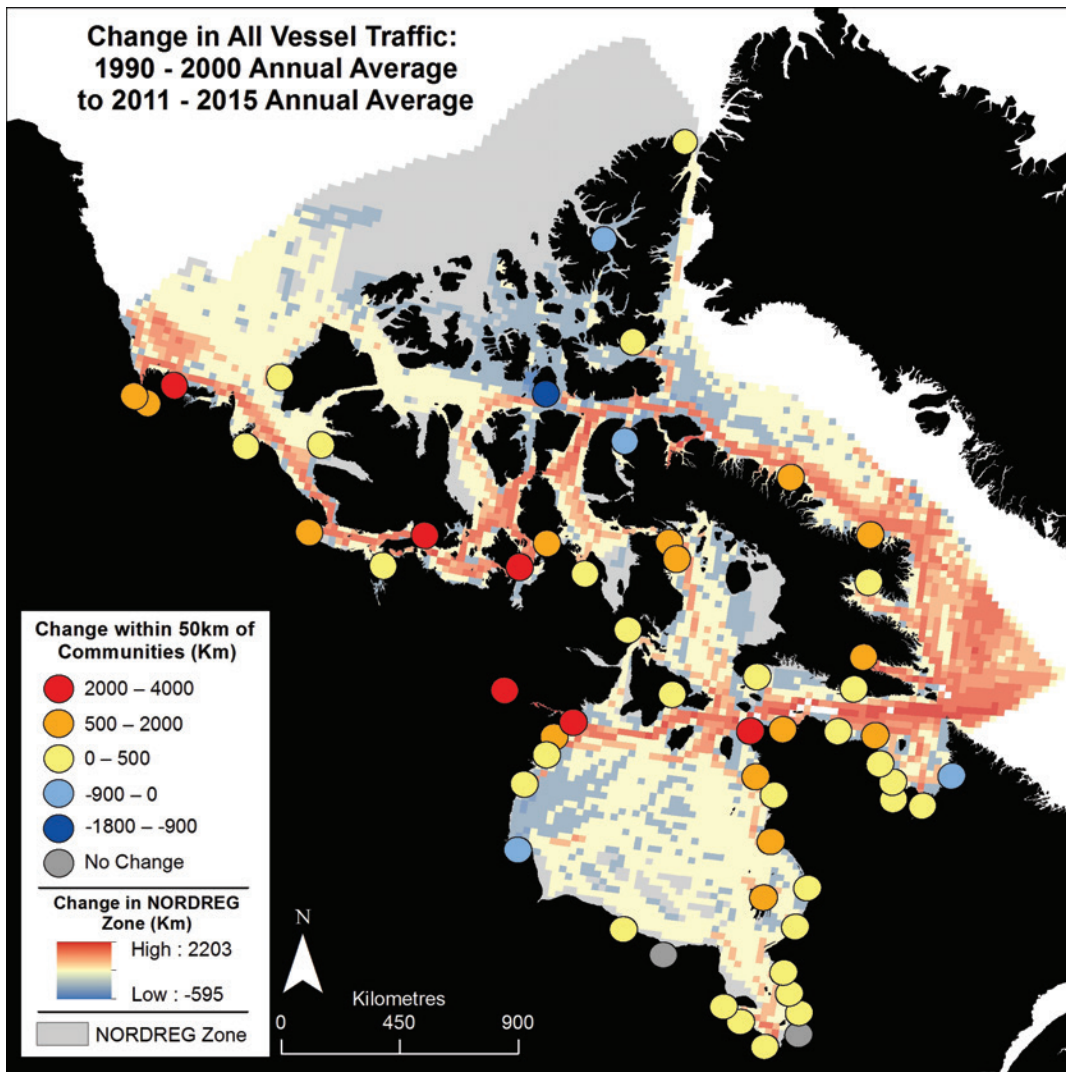


Figure 3. Change in shipping activity (km) in the Canadian Arctic: 1990–2000 annual average compared to 2011–2015 annual average¹

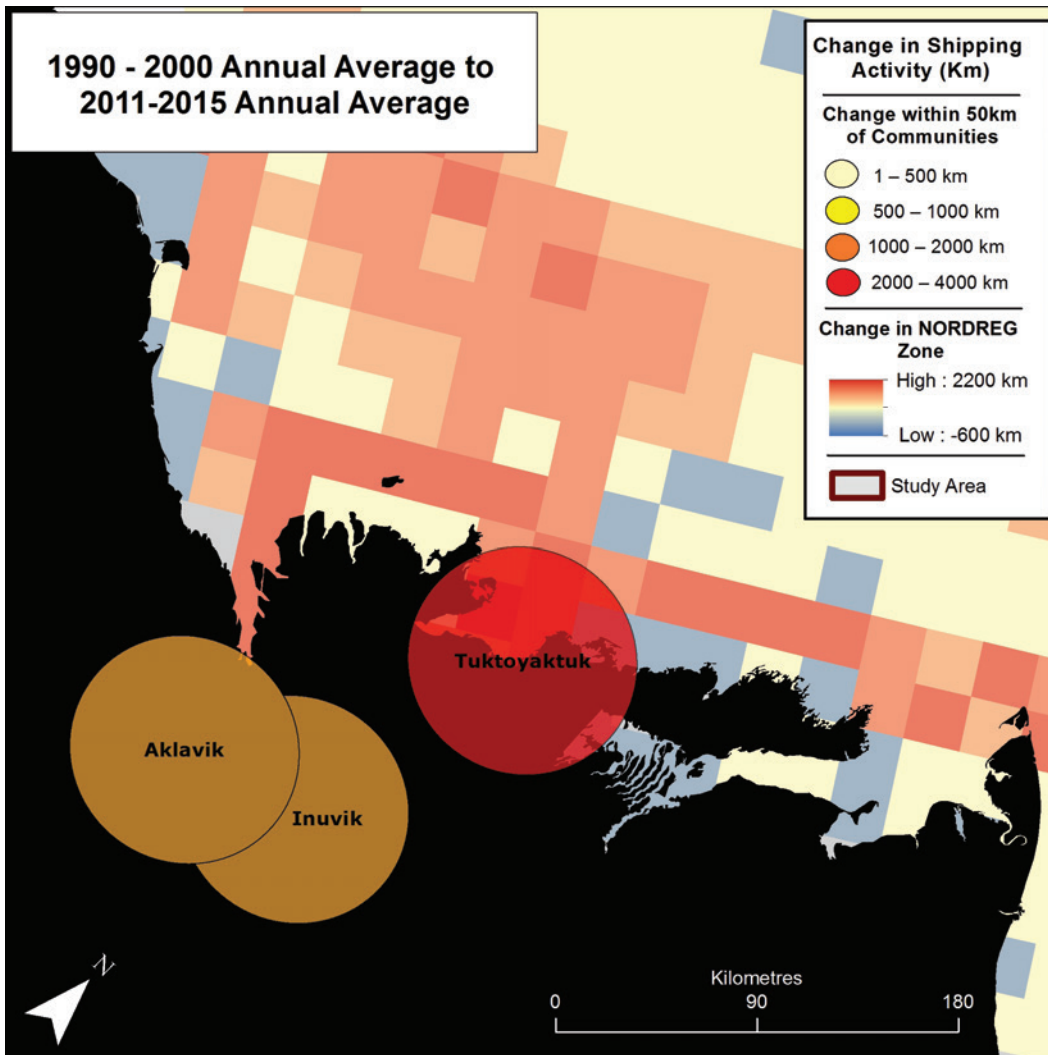


Figure 4. Change in shipping activity (km) Tuktoyaktuk, Northwest Territories: 1990-2000 annual average compared to 2011-2015 annual average¹

FOUR SEASONS

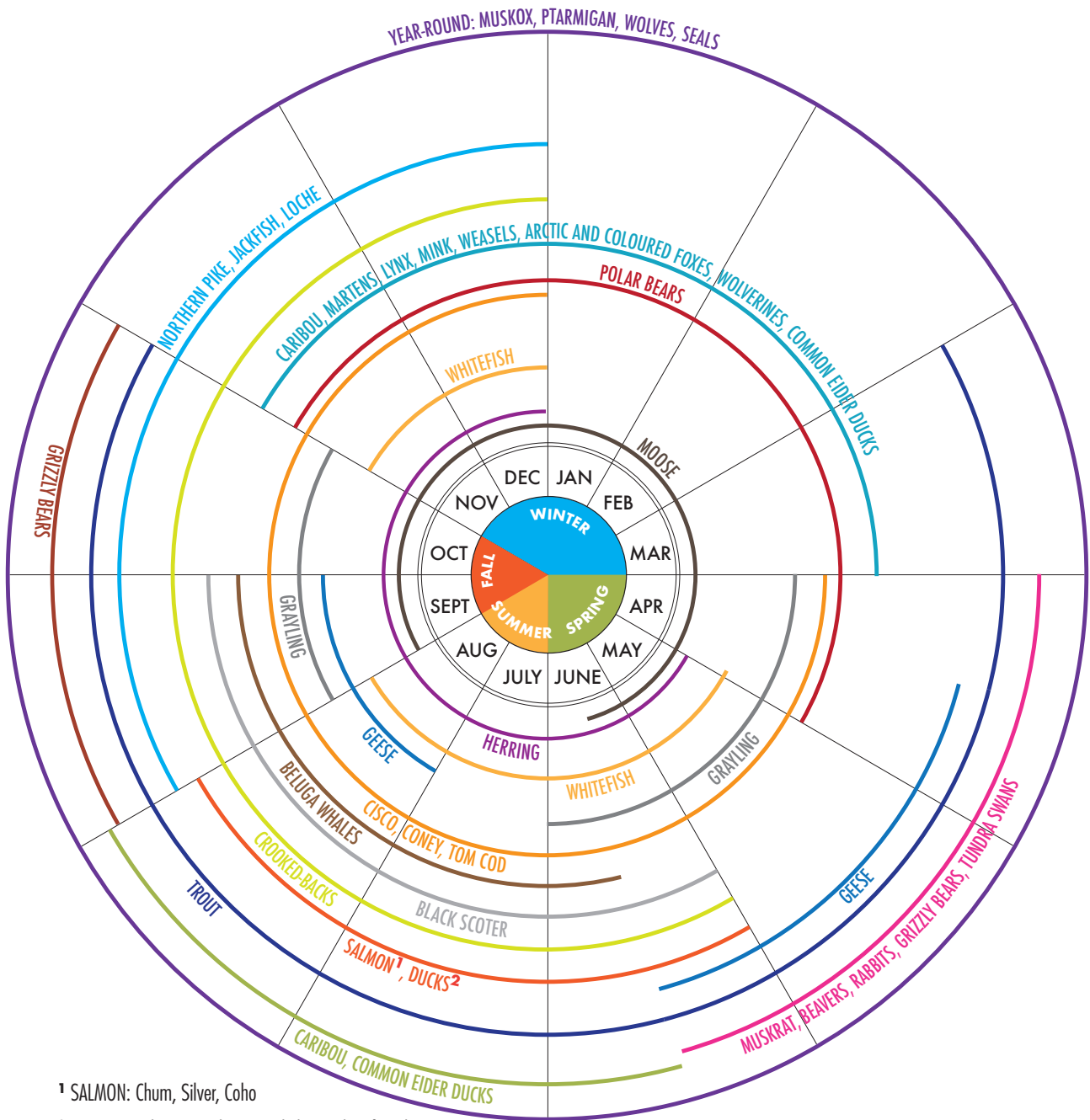
There are 4 main seasons in Tuktoyaktuk, Northwest Territories. The seasons are weather and ice dependent; therefore, the months each season happens in can be different each year. However, in general the seasons are:

SEASON	MONTHS IN WHICH THEY HAPPEN	OCEAN CONDITION
Spring	April to mid-June	Frozen and sea ice breakup
Summer	Mid-June to end of August	Open water
Fall	September and October	Open water
Winter	November to March	Freeze-up and frozen sea ice



SEASONAL HARVESTING CYCLE

Harvesting happens according to seasons and follows an annual cycle.



¹ SALMON: Chum, Silver, Coho

² DUCKS: Northern Pintail, Long-tailed (people referred to Long-tailed ducks by the old, no longer used name of Oldsquaw), Black, White Tail, Mallard, Mergansers

Figure 5a. Seasonal Cycle of Harvesting Activities in and near Tuktoyaktuk, Northwest Territories



SEASONAL HARVESTING CYCLE (continued)

Harvesting happens according to seasons and follows an annual cycle.

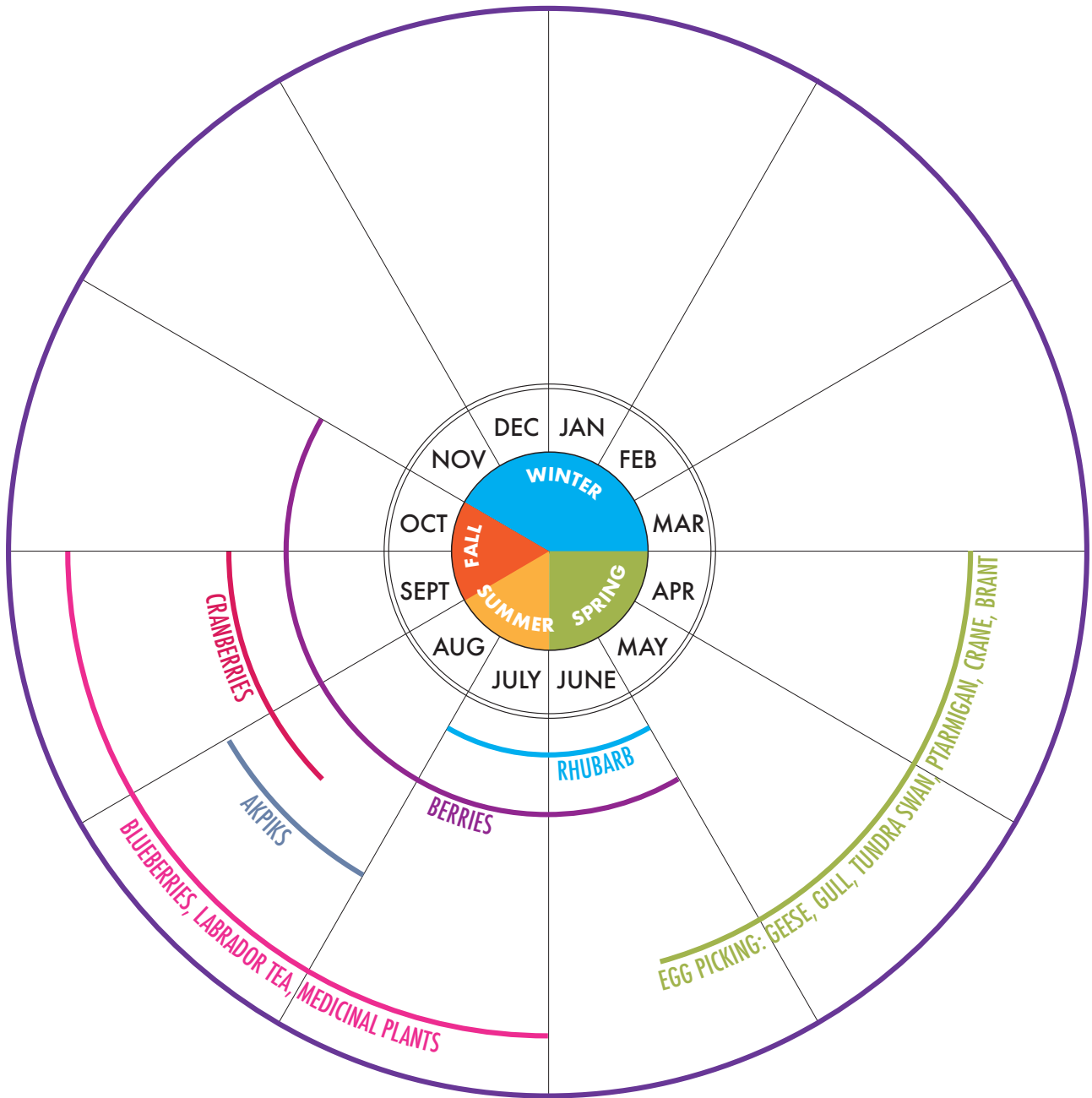


Figure 5b. Seasonal Cycle of Harvesting Activities in and near Tuktoyaktuk, Northwest Territories



MAPS OF CULTURALLY SIGNIFICANT MARINE AREAS

Maps include:

1. Locations of terrestrial and marine mammals, fish, plants, and birds;
2. Locations of community members' activities as well as camps and historic sites; and
3. Local travel routes and harvesting areas.

Maps will be available at www.arcticcorridors.ca, and in Tuktoyaktuk at the Tuktoyaktuk Hunters and Trappers, Community Corporation and Hamlet office.

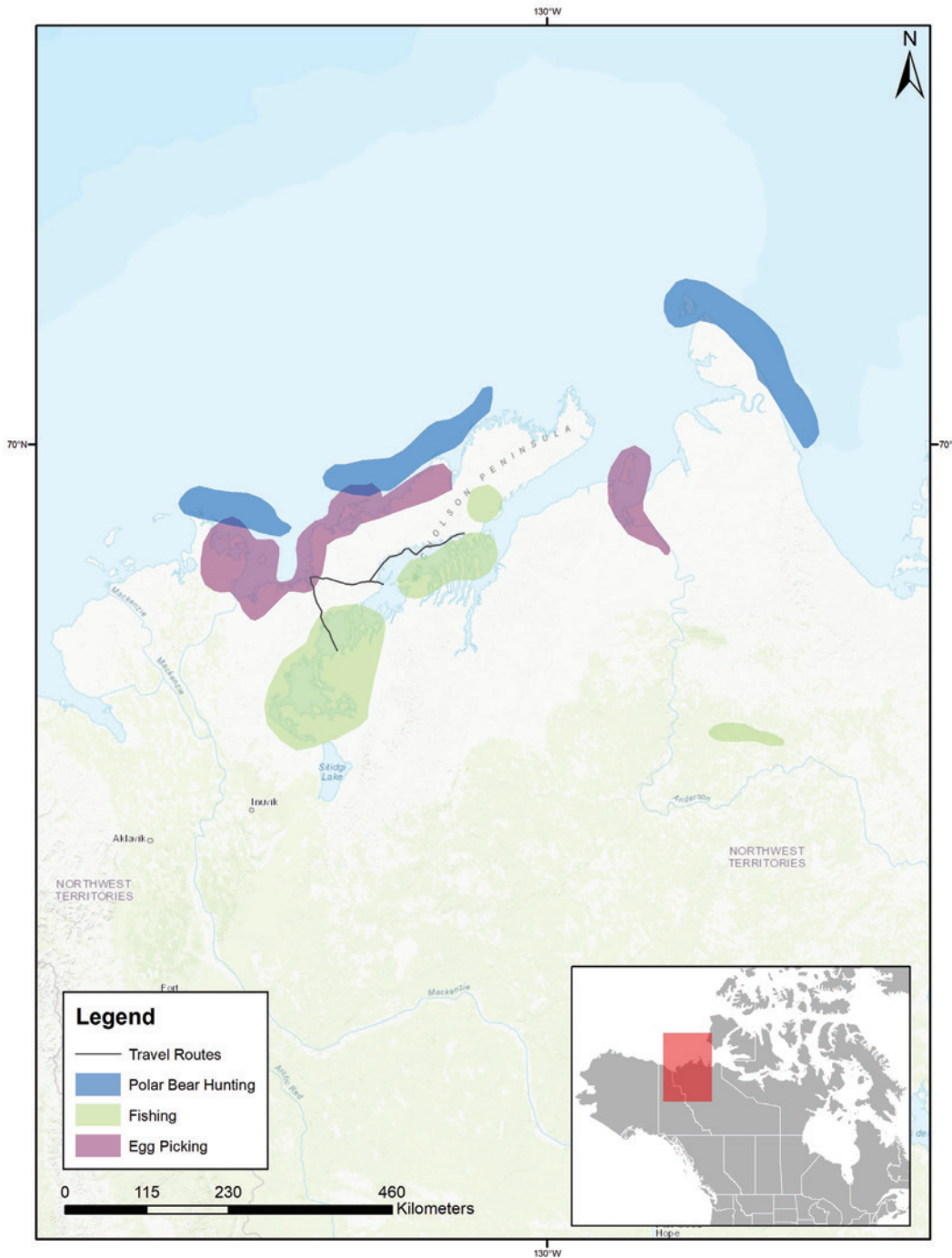


Figure 6. Location of community members' activities when the ocean is frozen and around the time of sea ice break-up

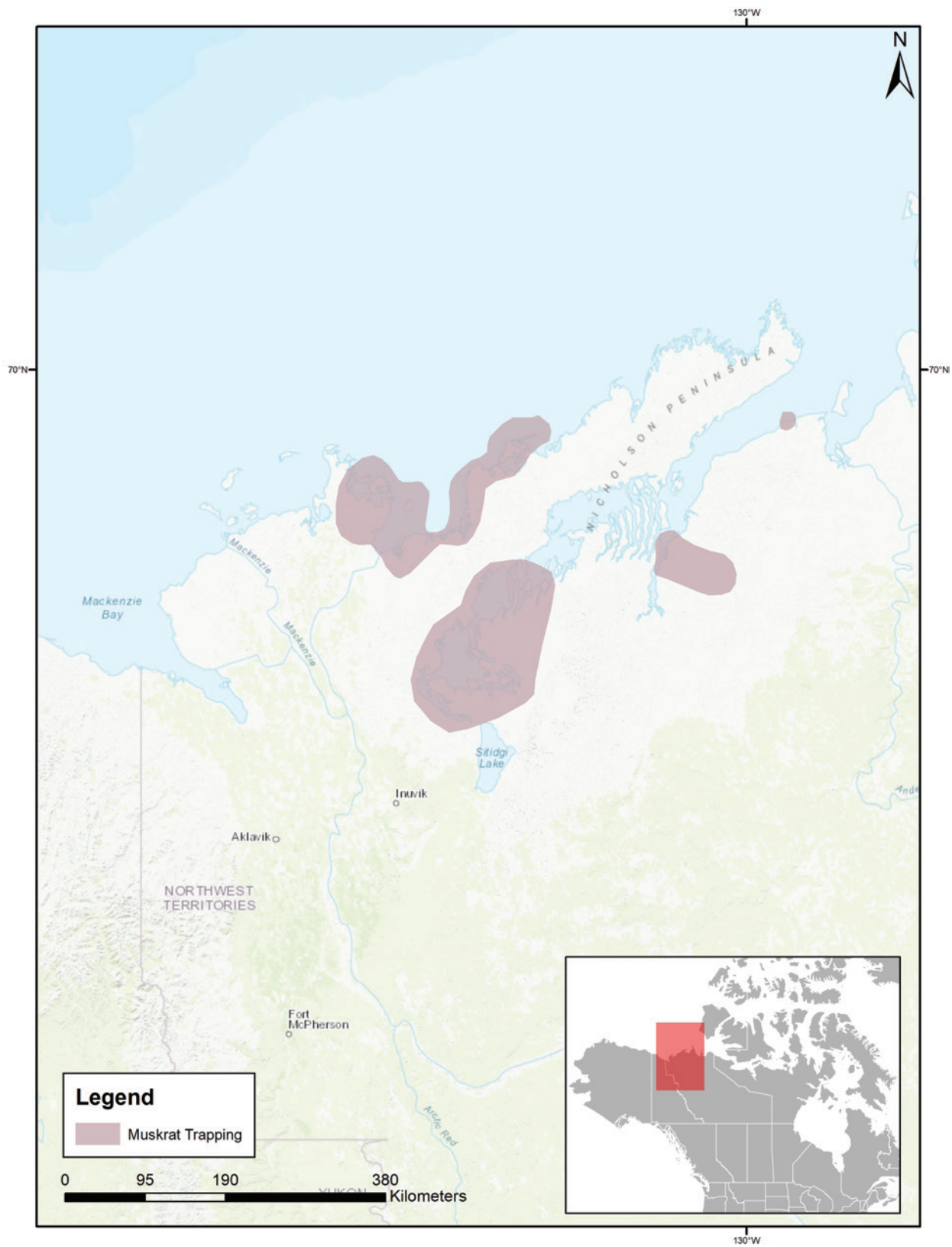


Figure 7. Location of community members' activities when the ocean is frozen and around the time of sea ice break-up

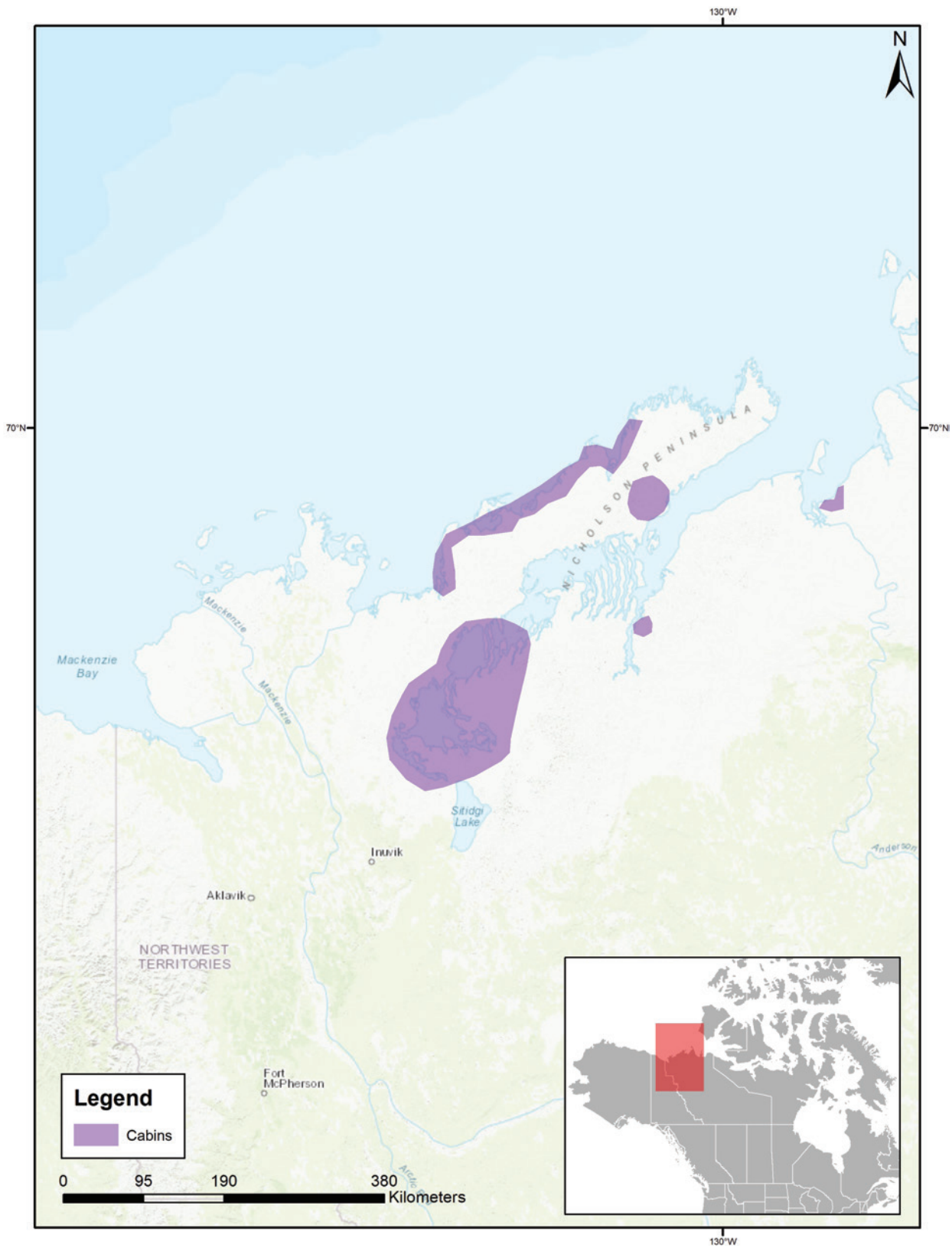


Figure 8. Location of community members' activities when the ocean is frozen and around the time of sea ice break-up

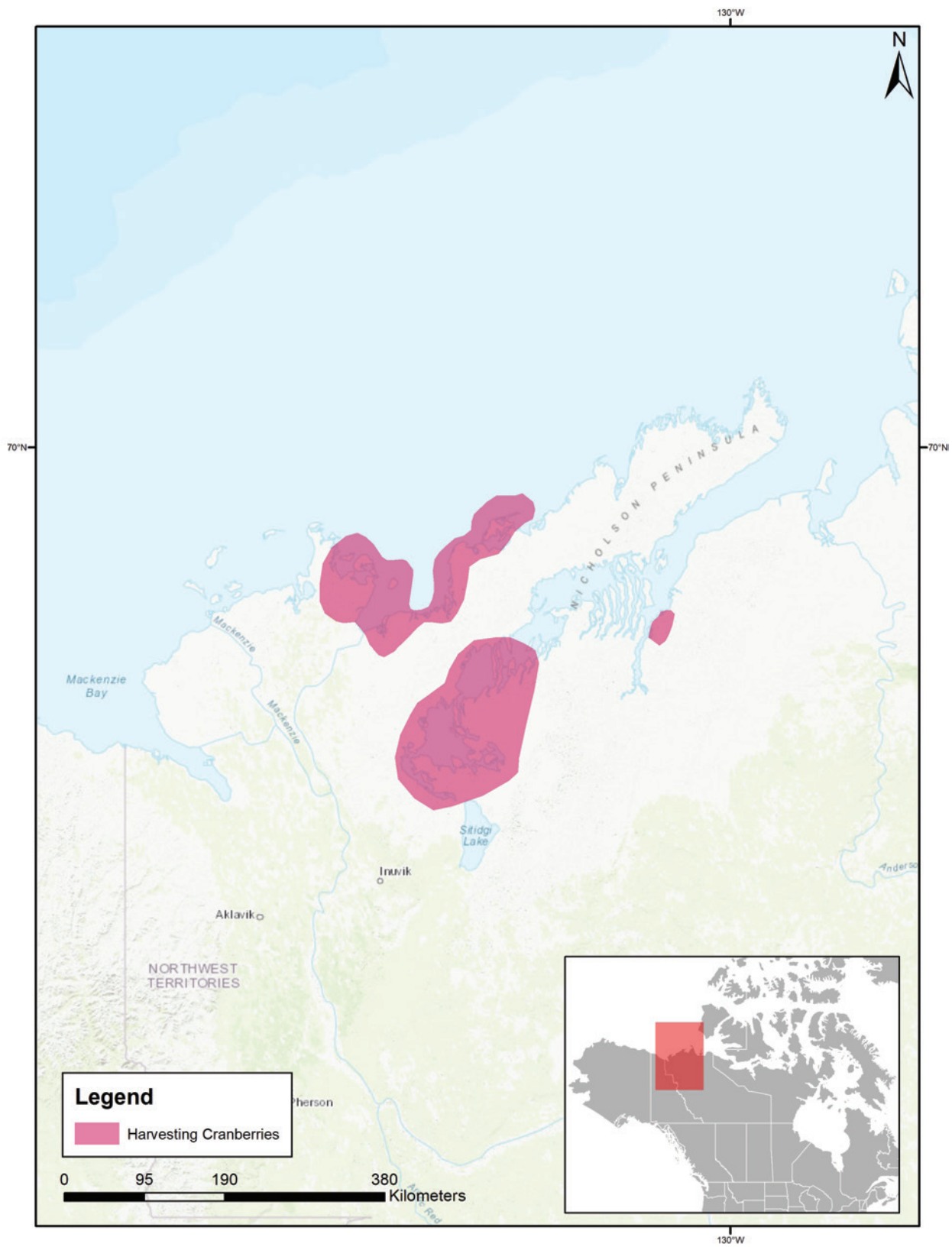


Figure 9. Location of community members' activities when the ocean is frozen and around the time of sea ice break-up

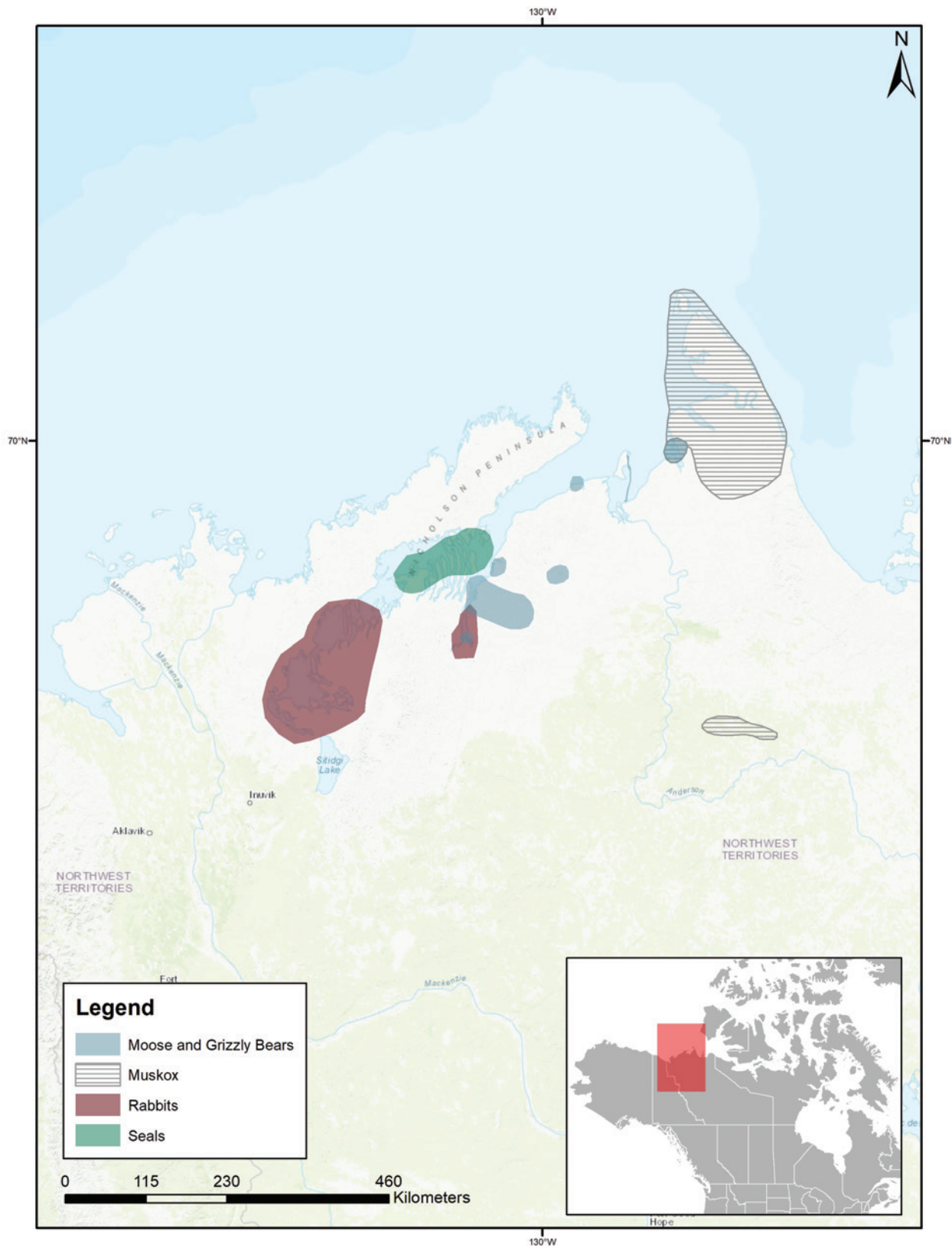


Figure 10. Location of wildlife when the ocean is frozen and around the time of sea ice break-up

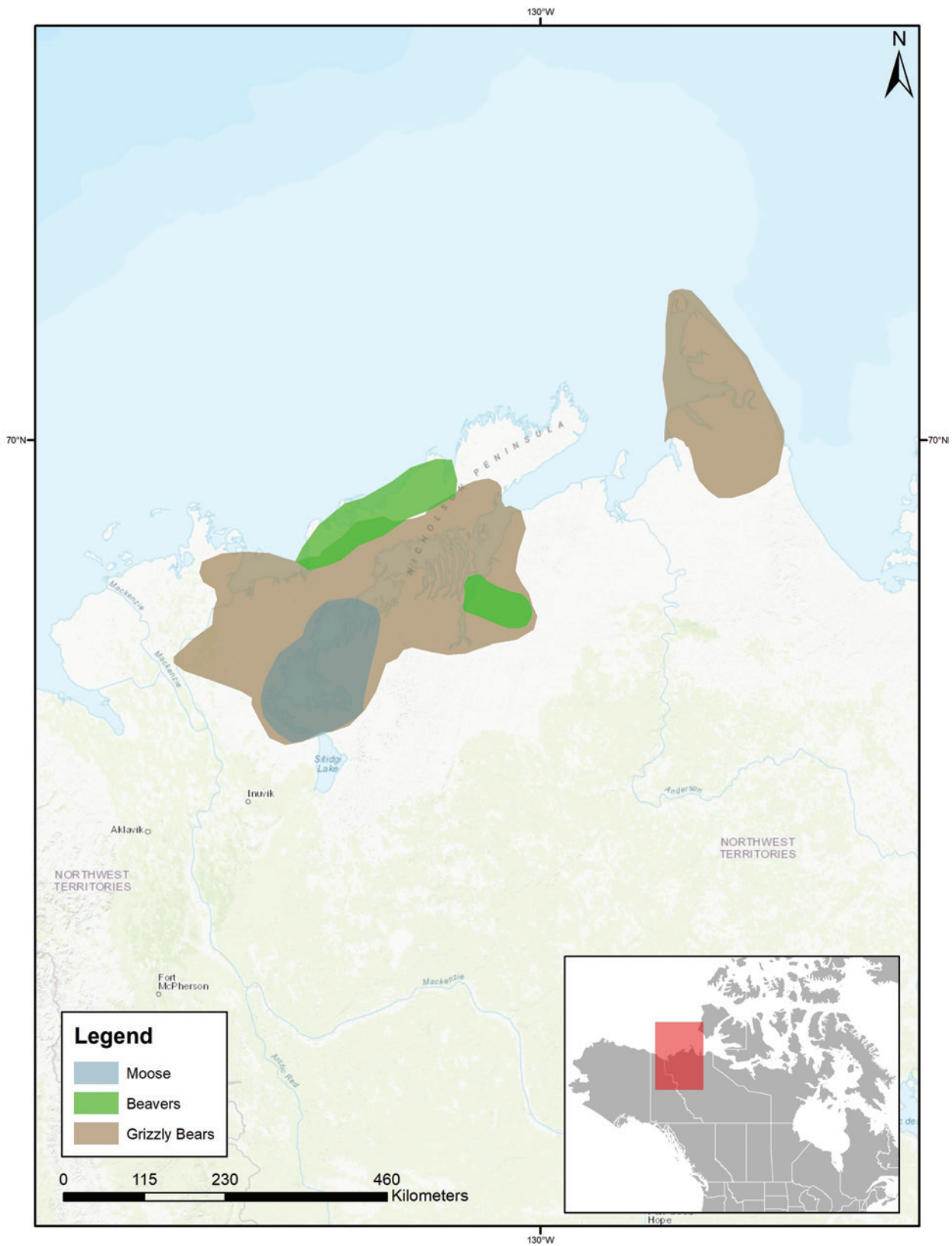


Figure 11. Location of wildlife when the ocean is frozen and around the time of sea ice break-up

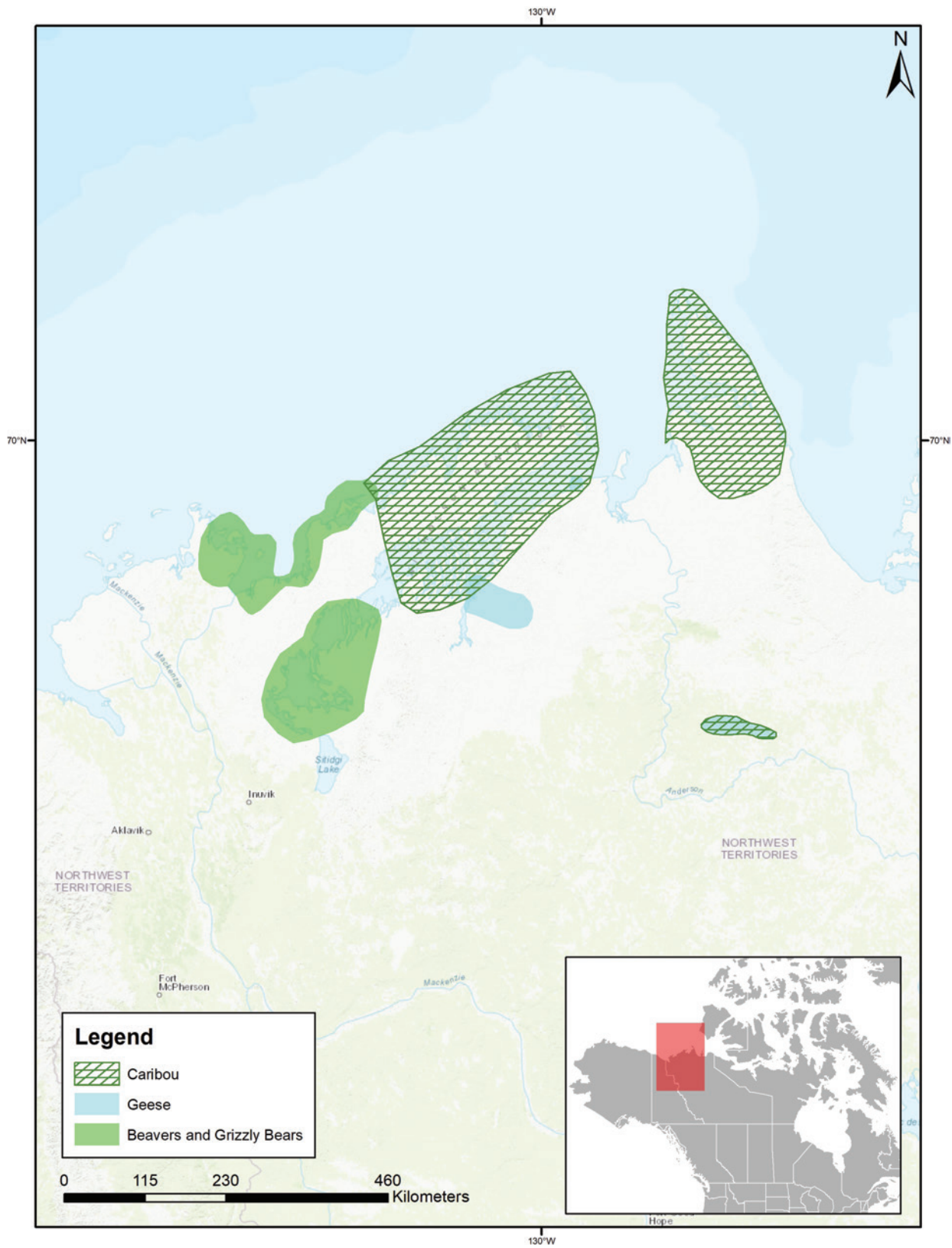


Figure 12. Location of wildlife when the ocean is frozen and around the time of sea ice break-up

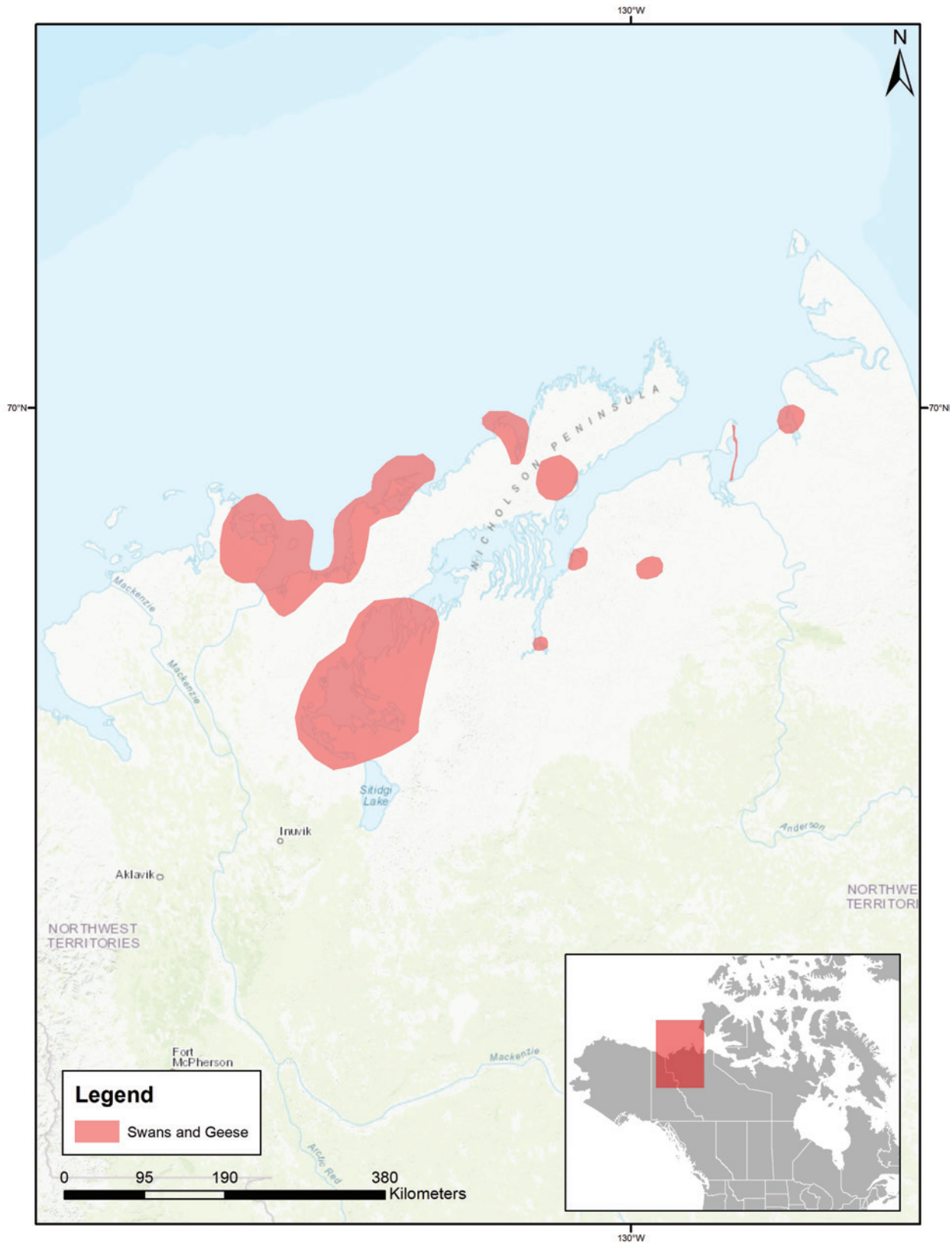


Figure 13. Location of wildlife when the ocean is frozen and around the time of sea ice break-up

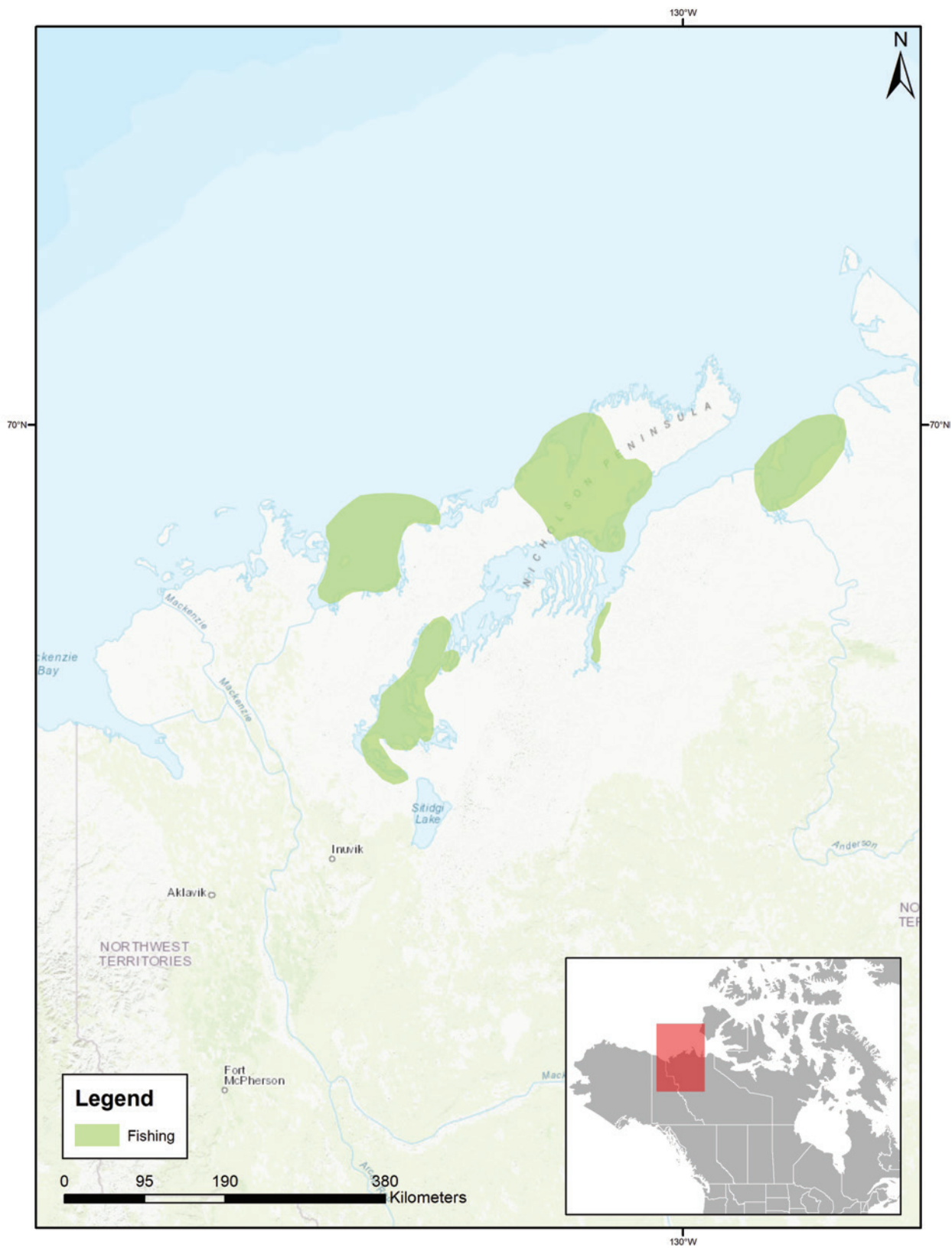


Figure 14. Location of community members' activities during open water

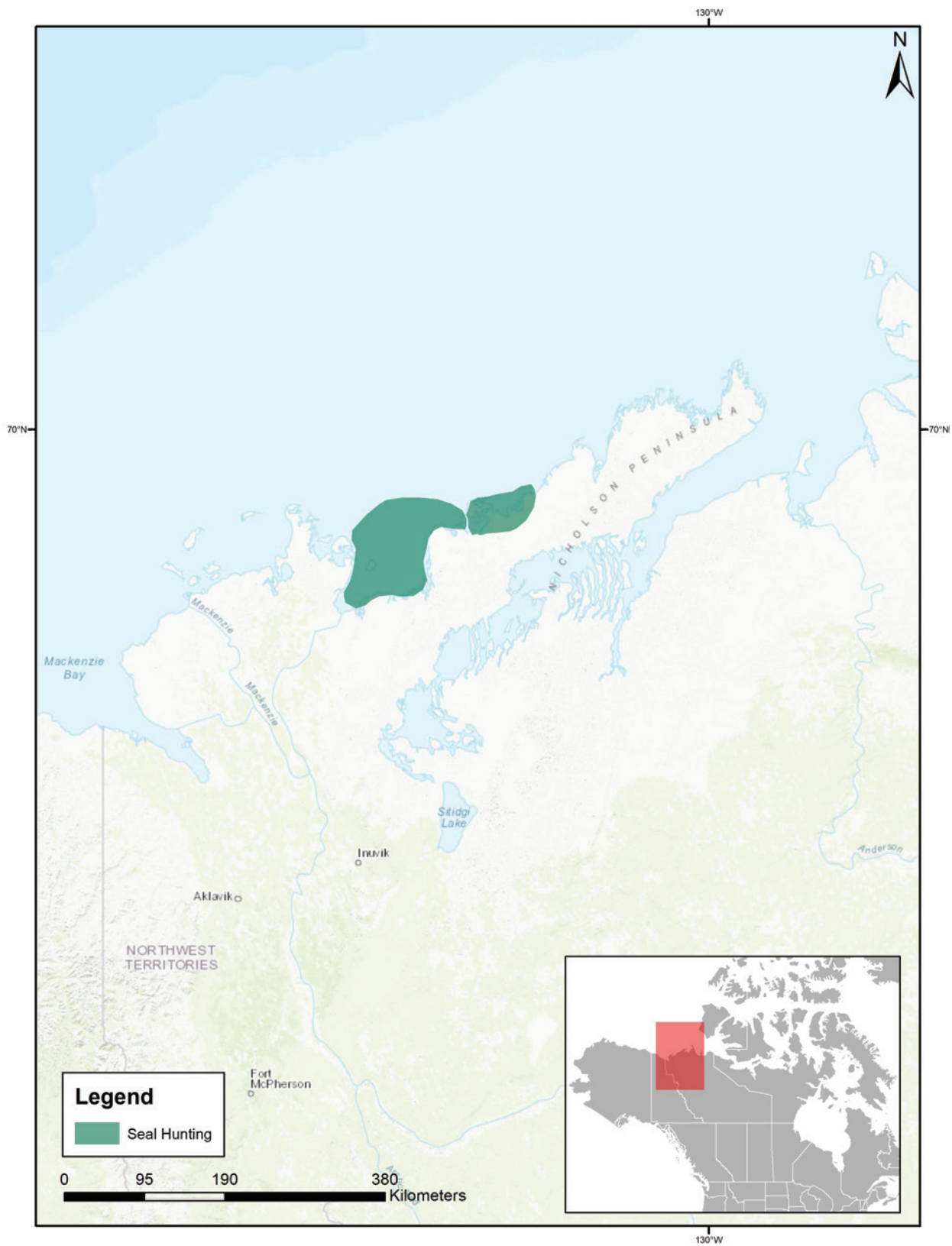


Figure 15. Location of community members' activities during open water

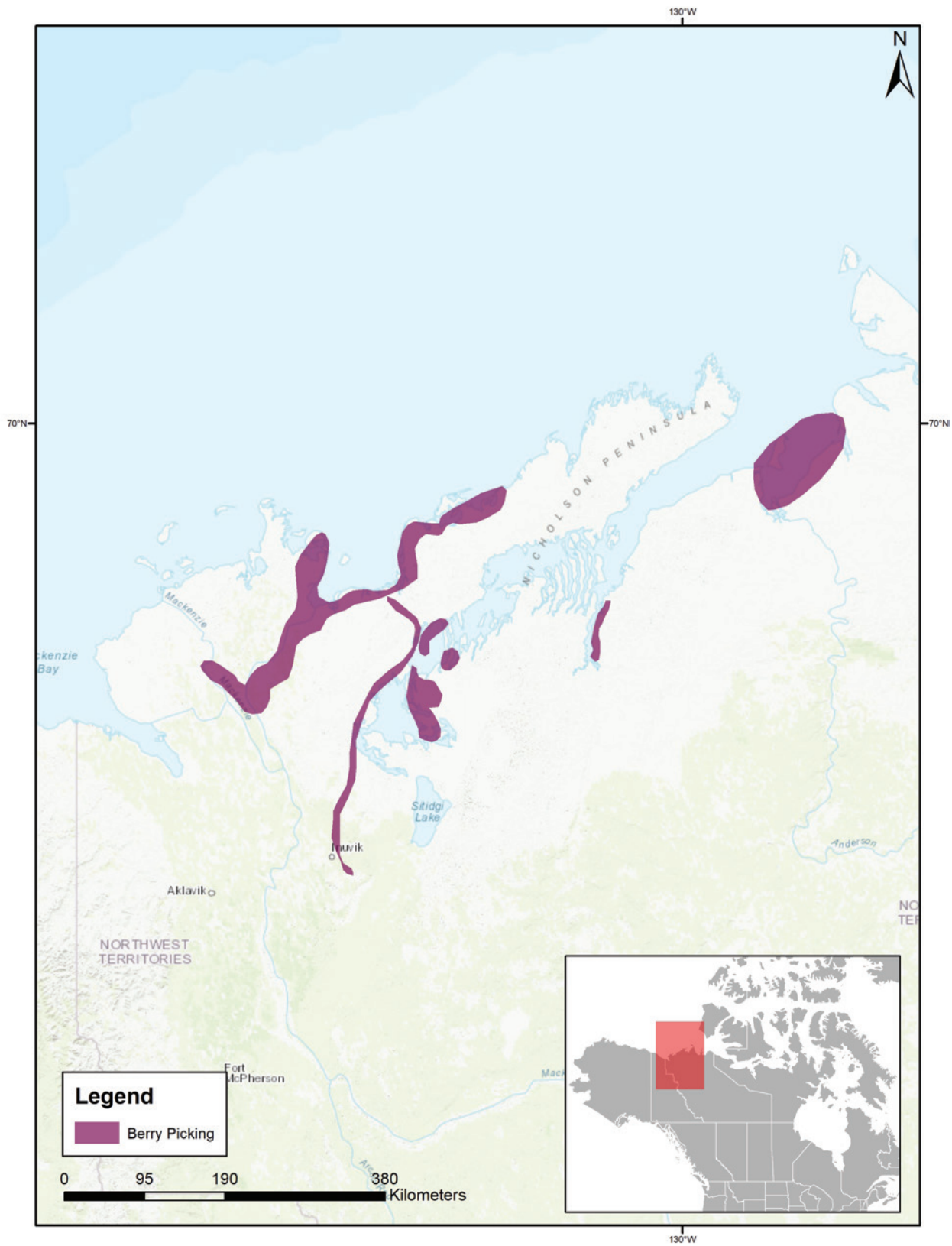


Figure 16. Location of community members' activities during open water

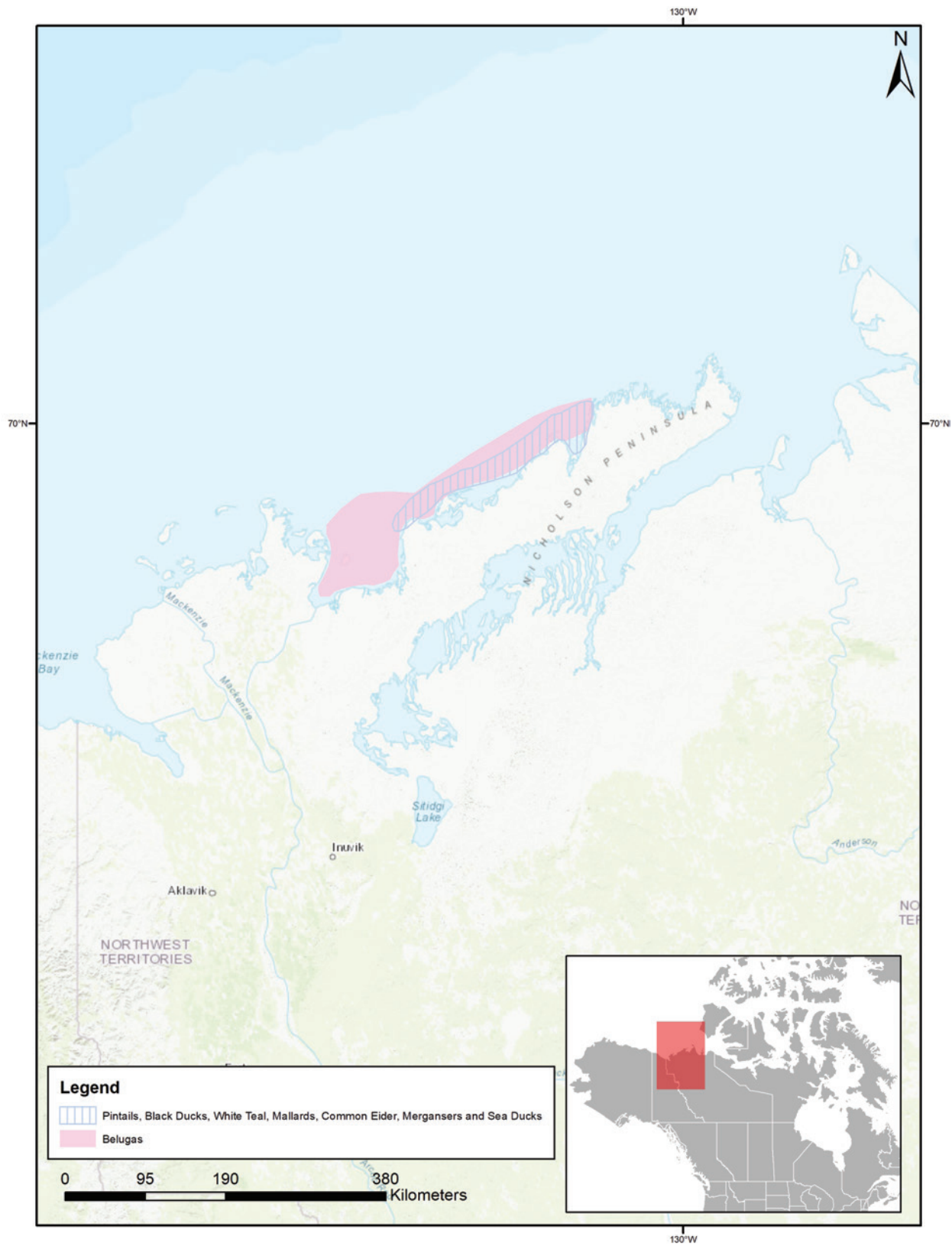


Figure 17. Location of wildlife during open water

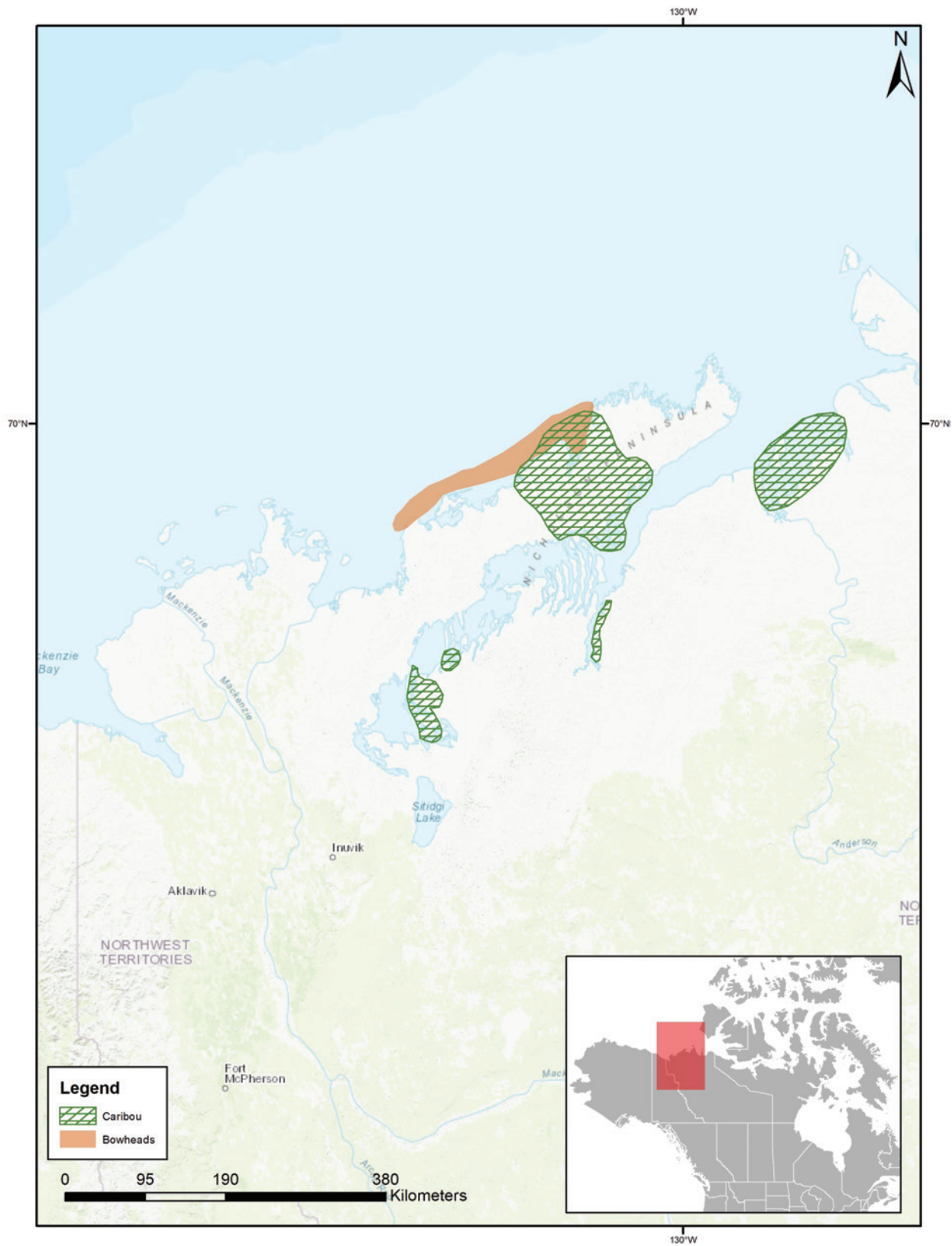


Figure 18. Location of wildlife during open water

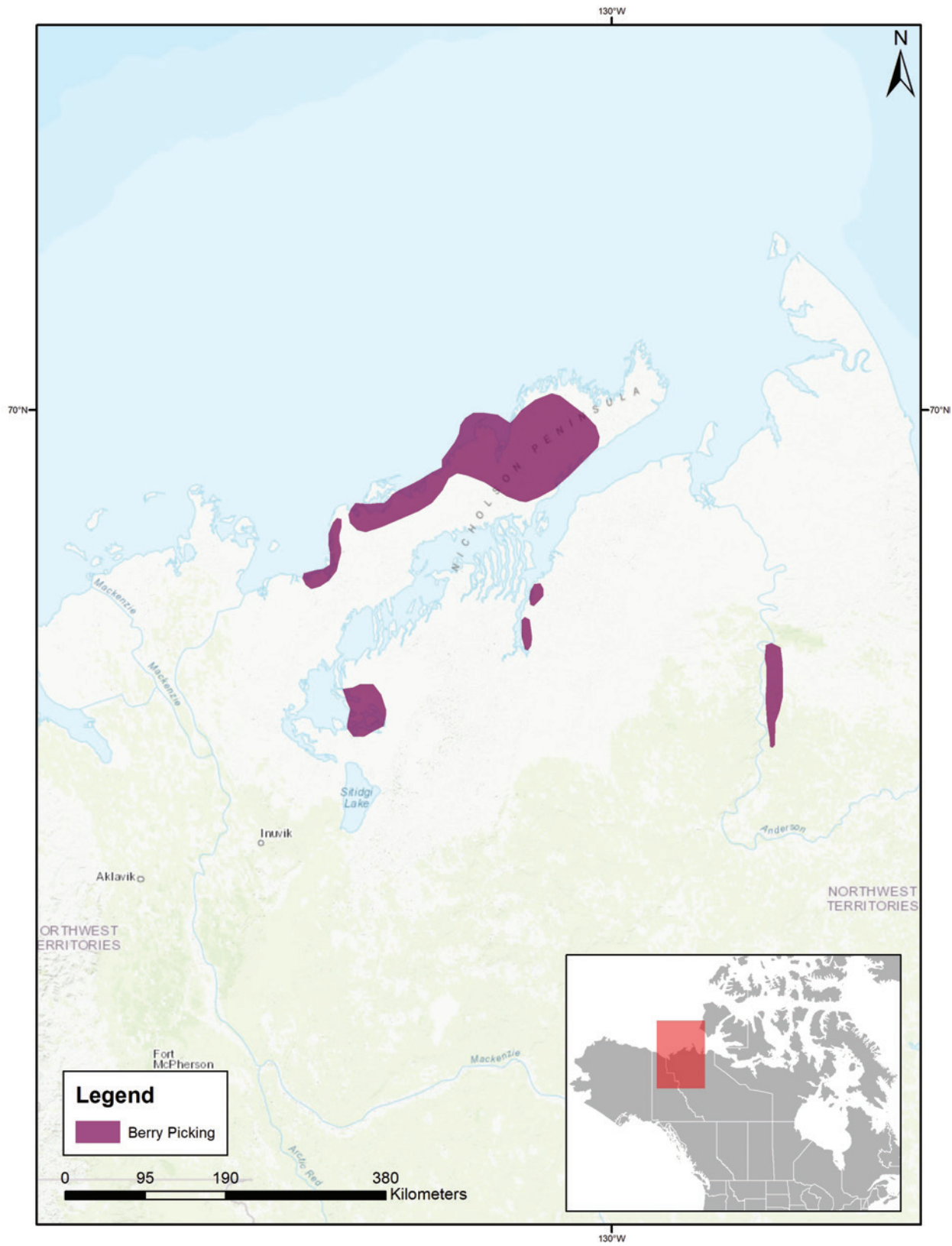


Figure 19. Location of community members' activities during open water

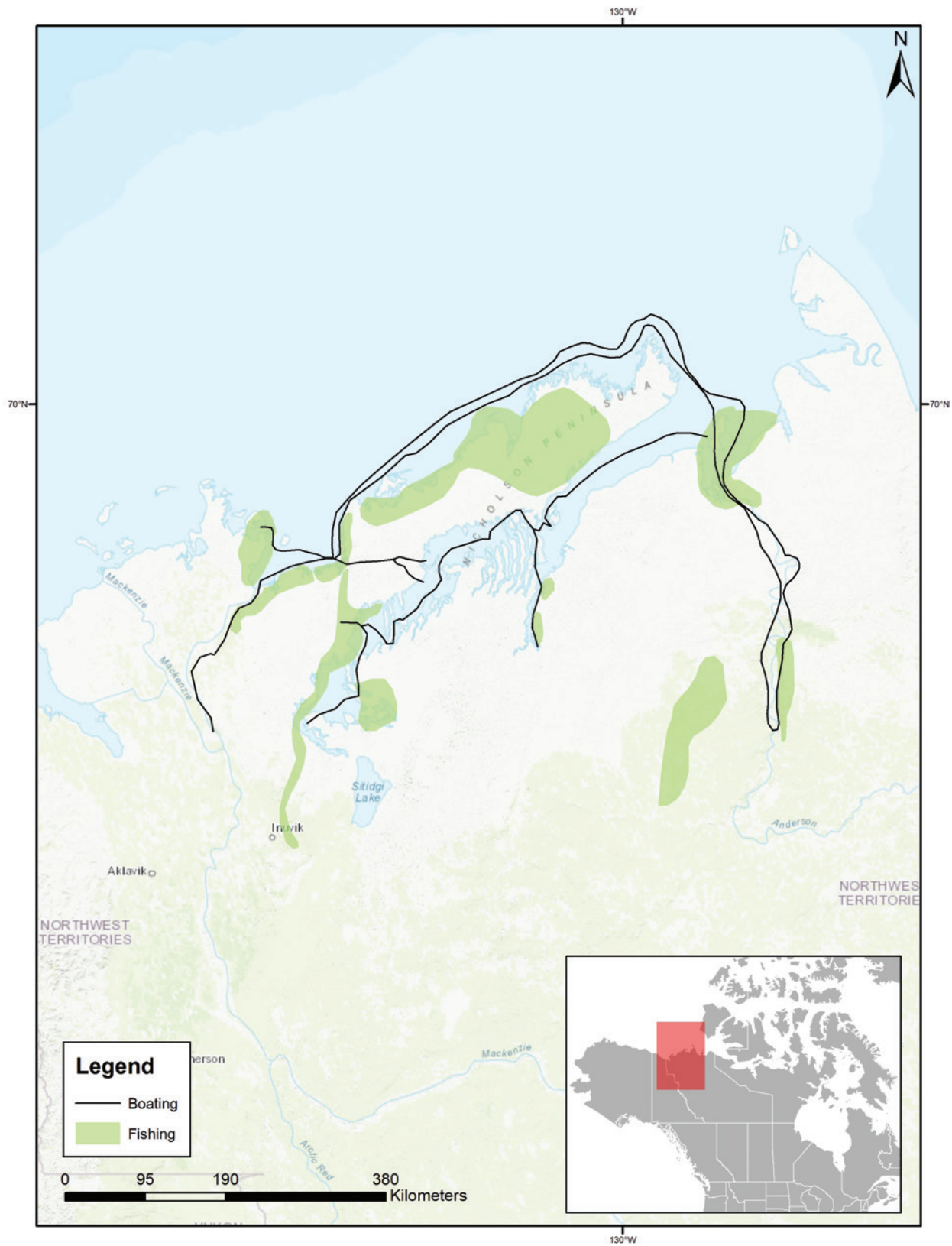


Figure 20. Location of community members' activities during open water

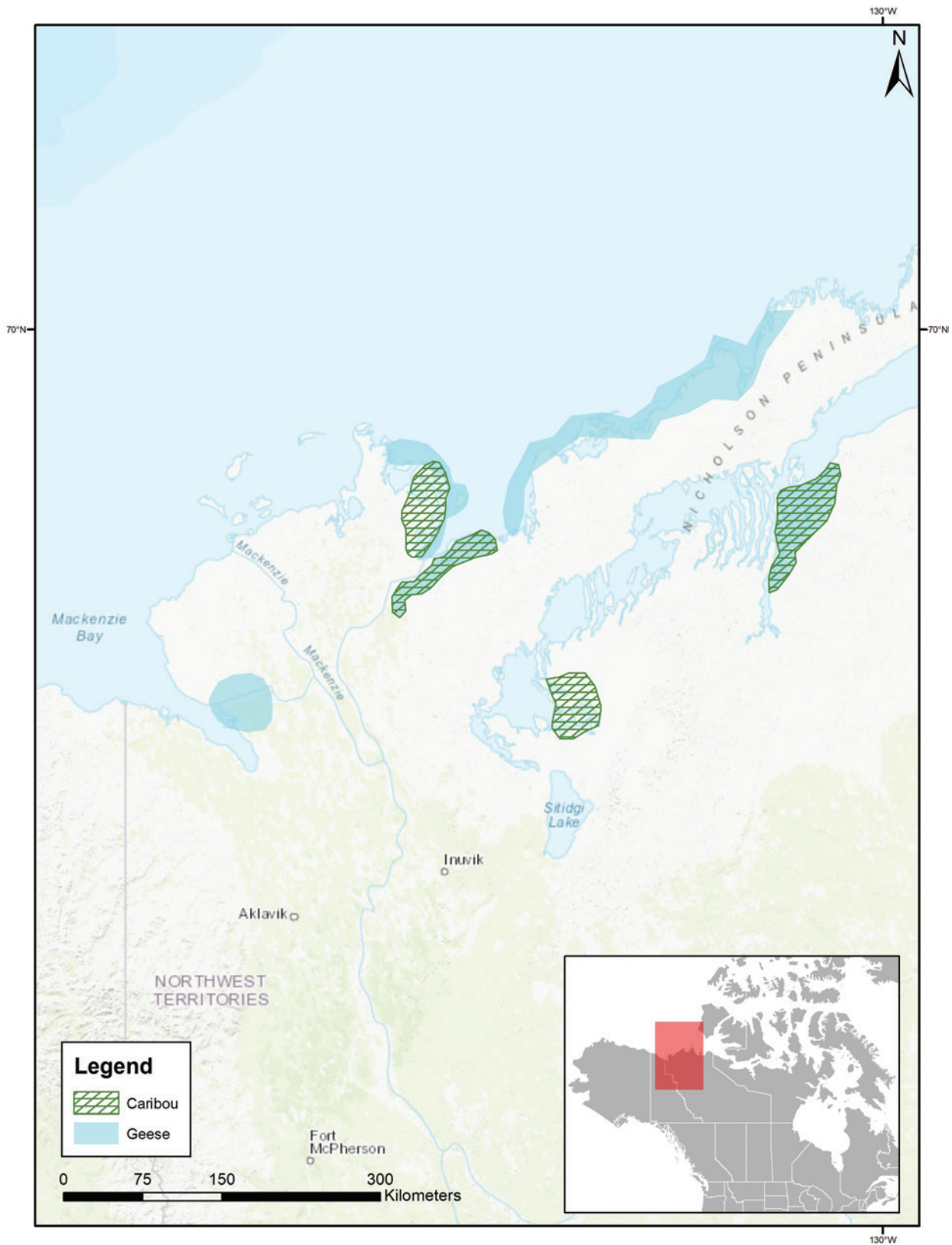


Figure 21. Location of wildlife during open water

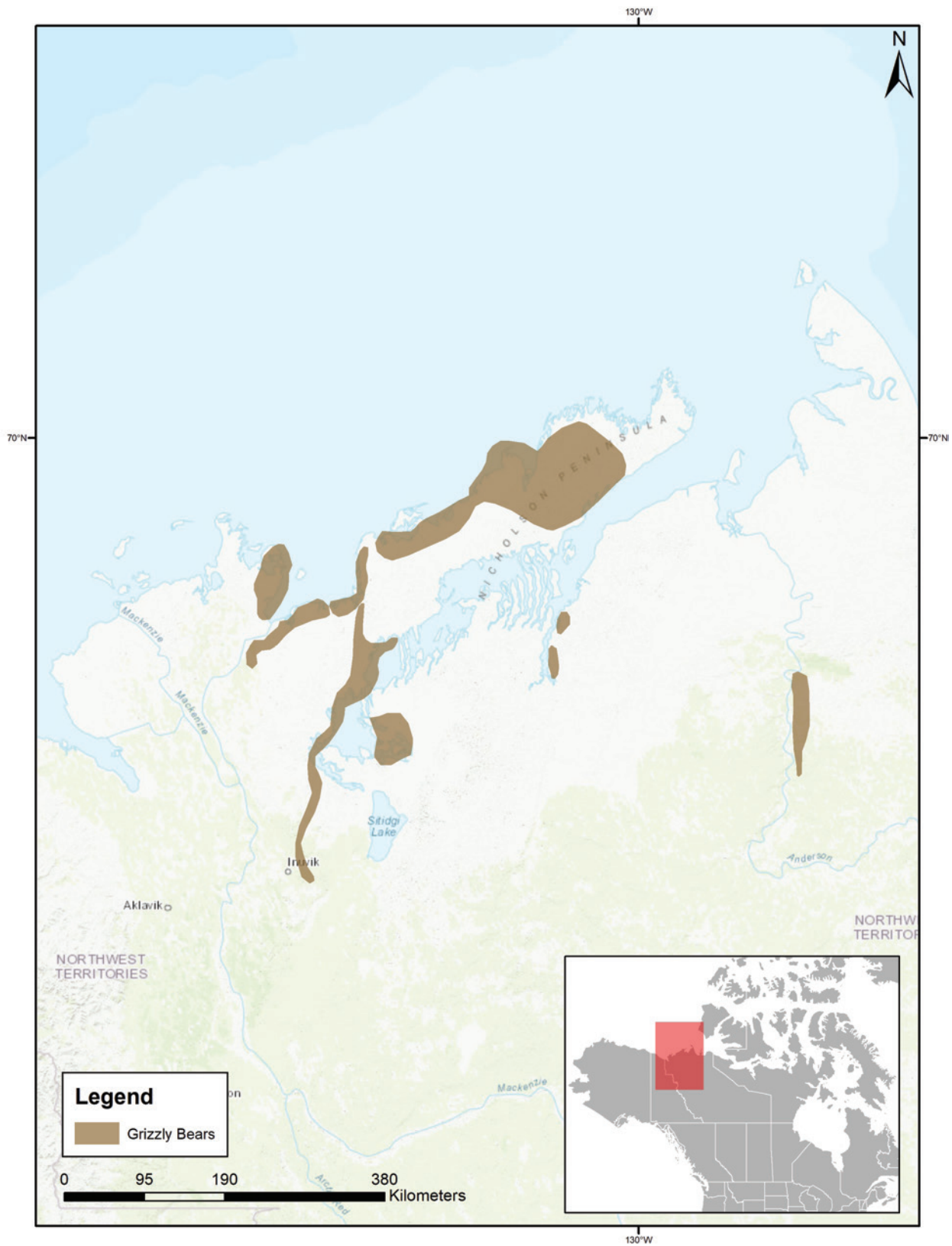


Figure 22. Location of wildlife during open water

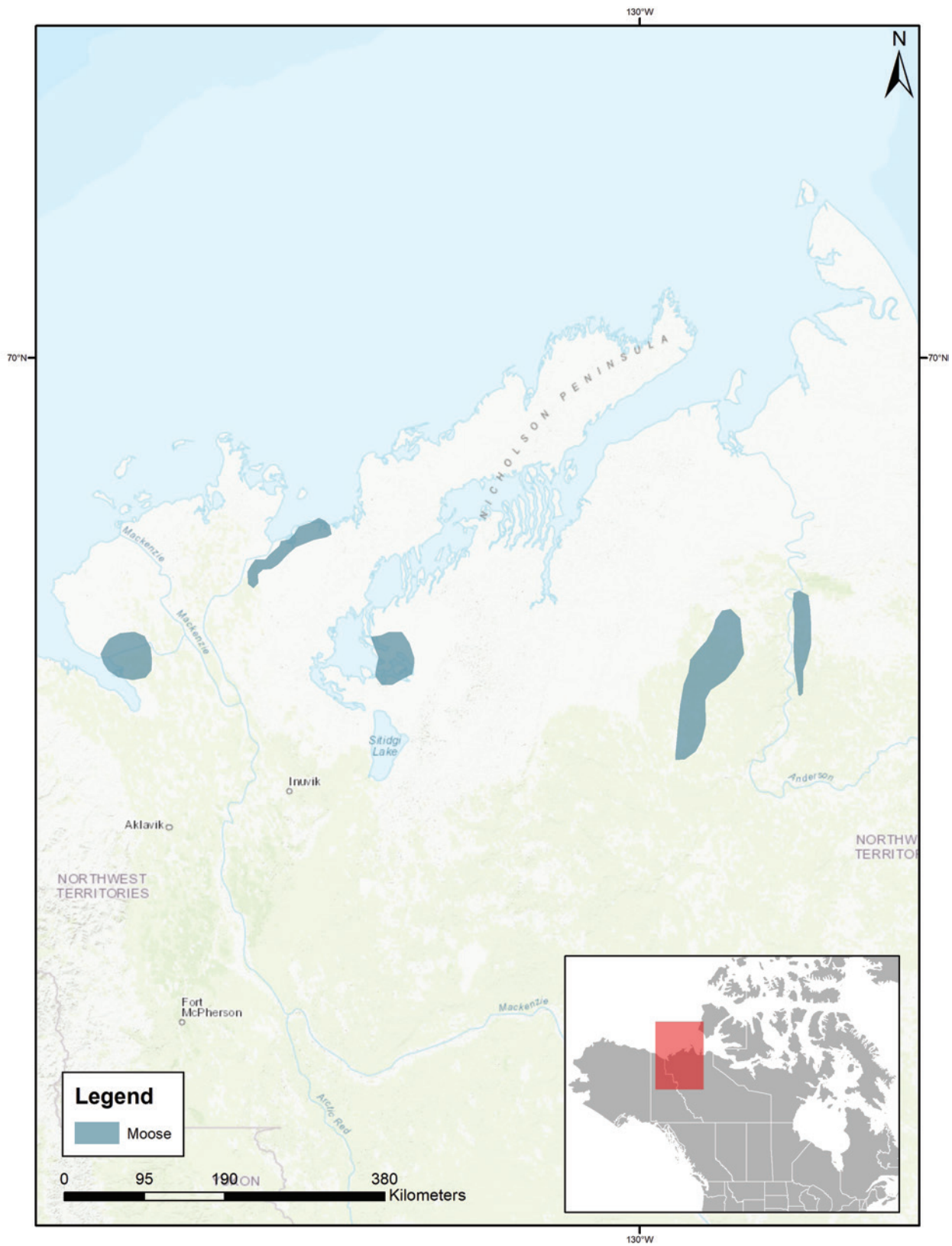


Figure 23. Location of wildlife during open water

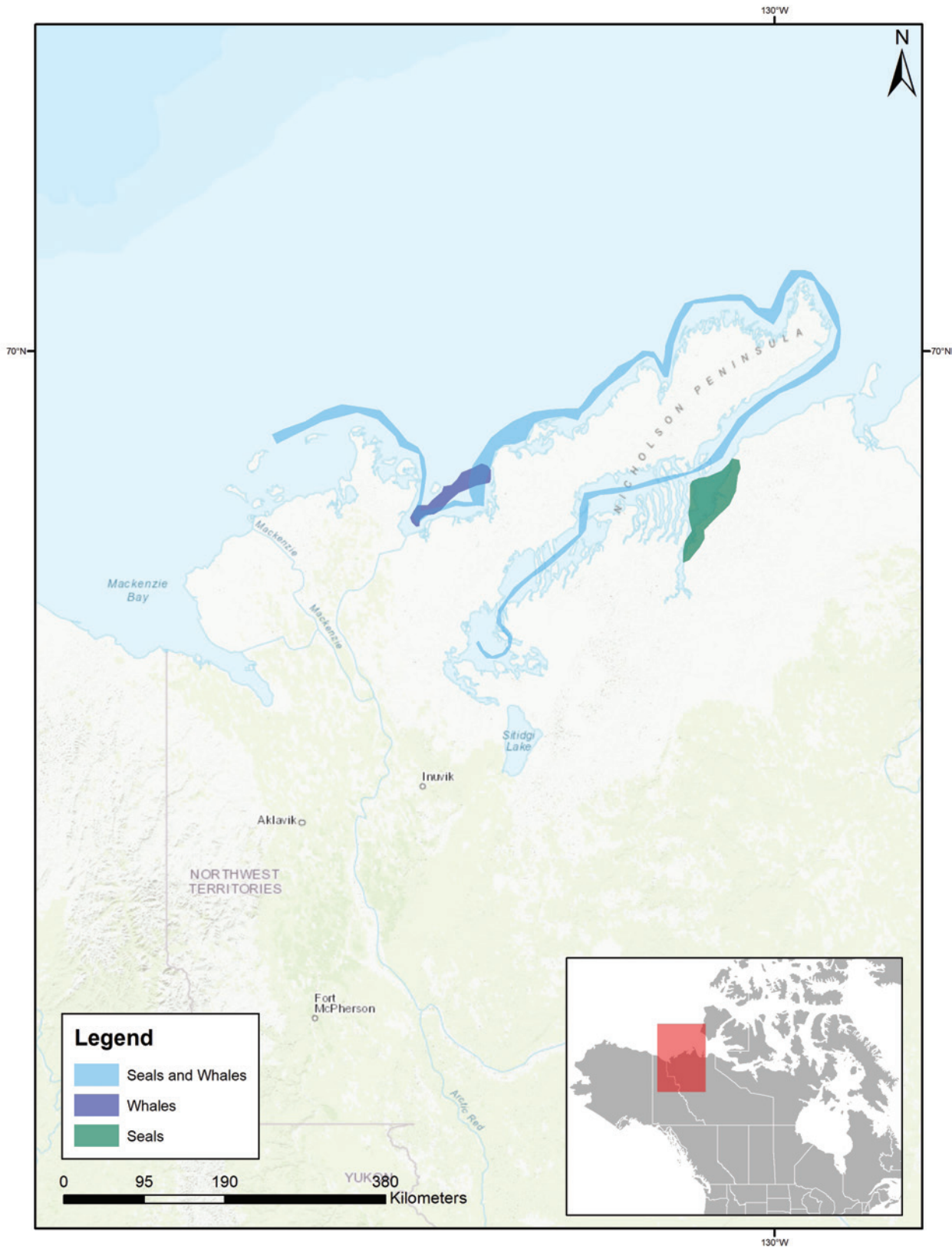


Figure 24. Location of wildlife during open water

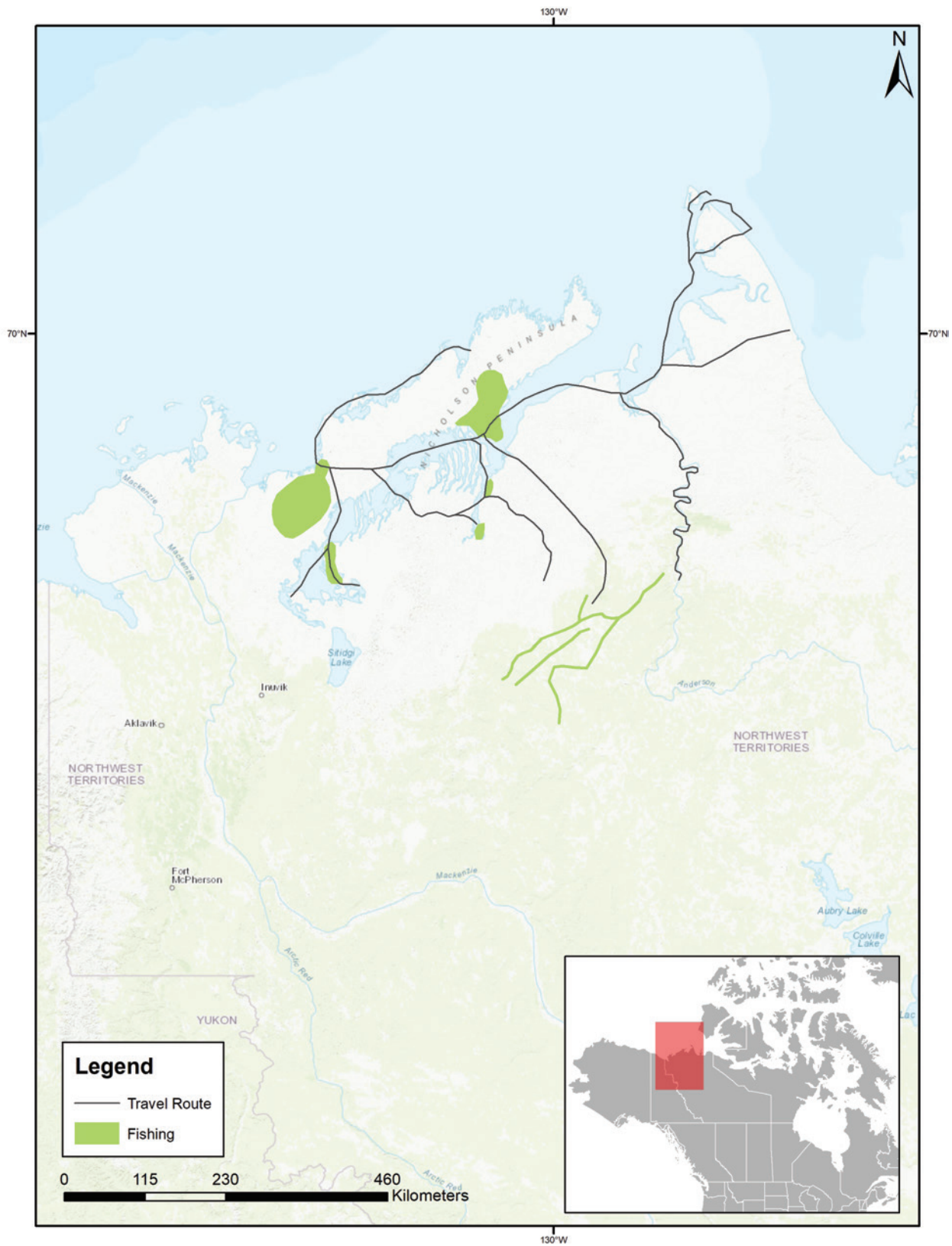


Figure 25. Location of community members' activities around time of sea ice freeze-up and when the ocean is frozen

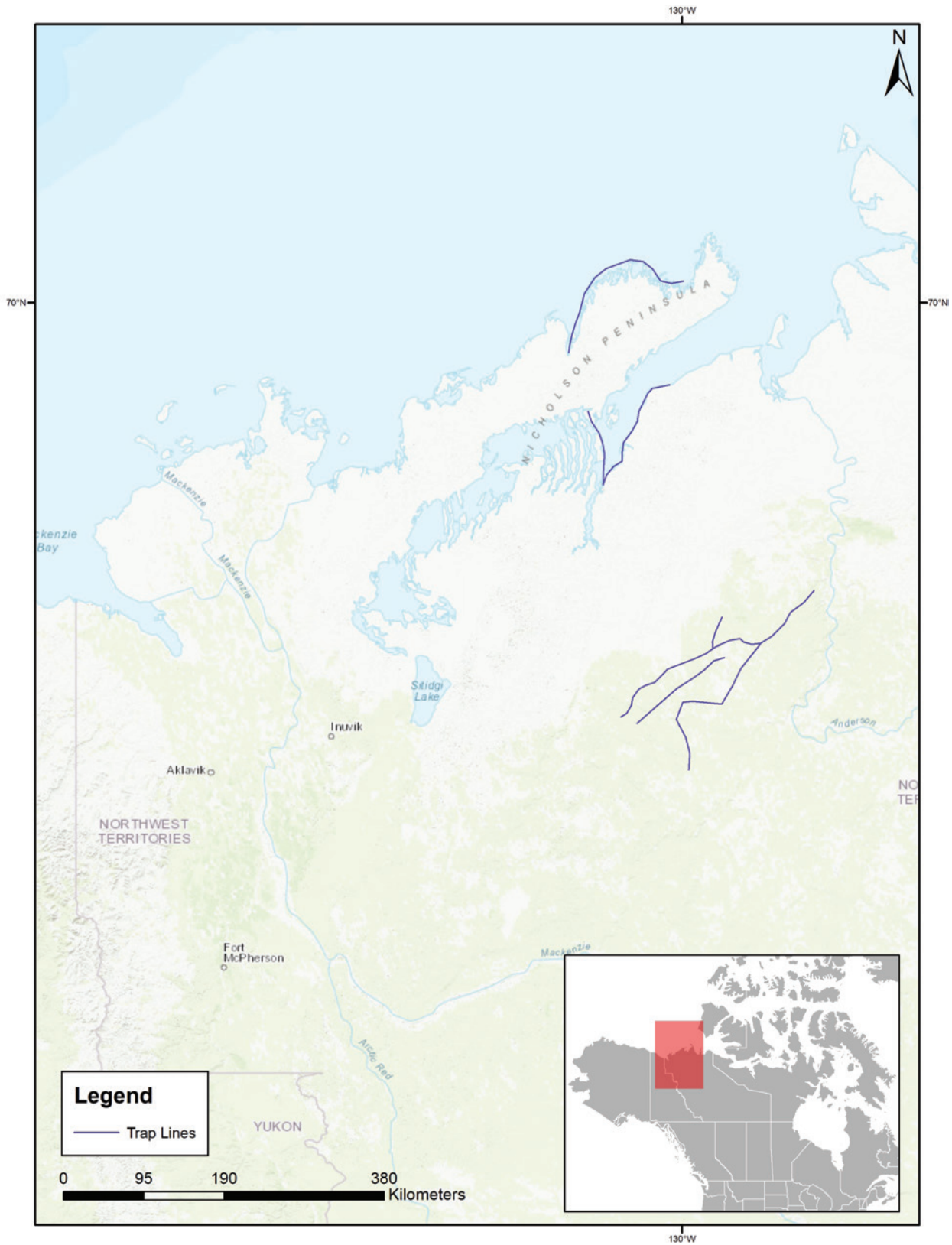


Figure 26. Location of community members' activities around time of sea ice freeze-up and when the ocean is frozen

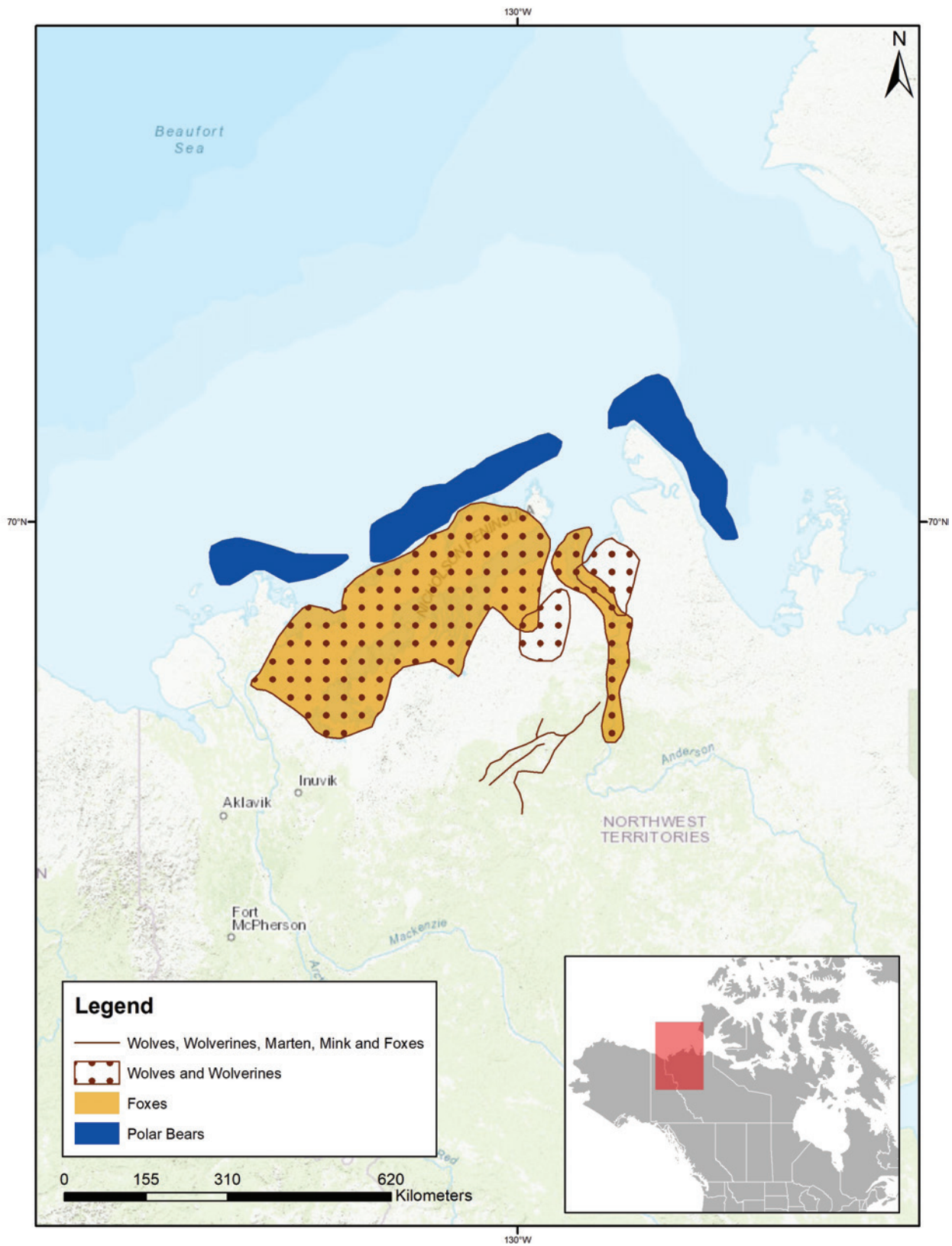


Figure 27. Location of wildlife around time of sea ice freeze-up and when the ocean is frozen

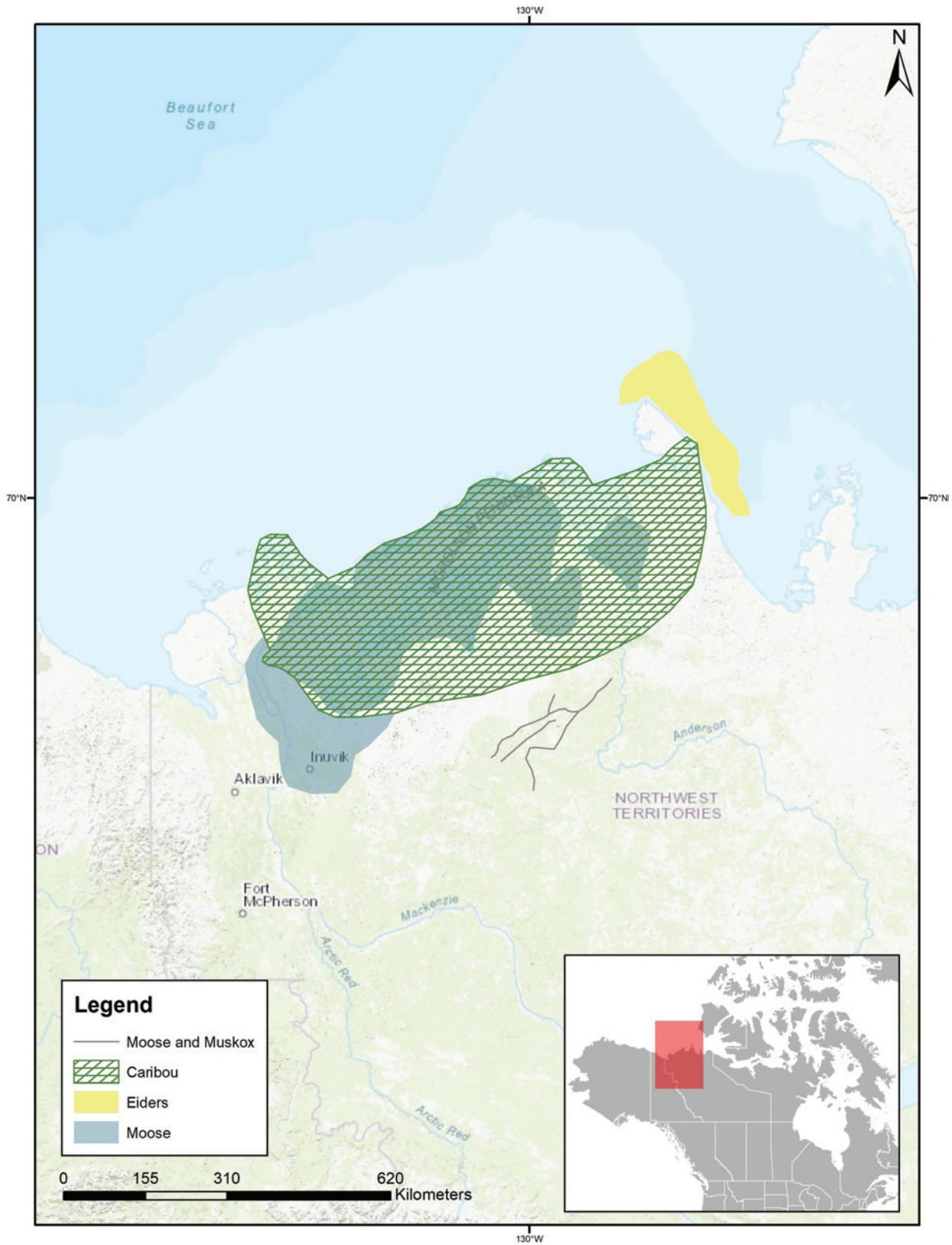


Figure 28. Location of wildlife around time of sea ice freeze-up and when the ocean is frozen

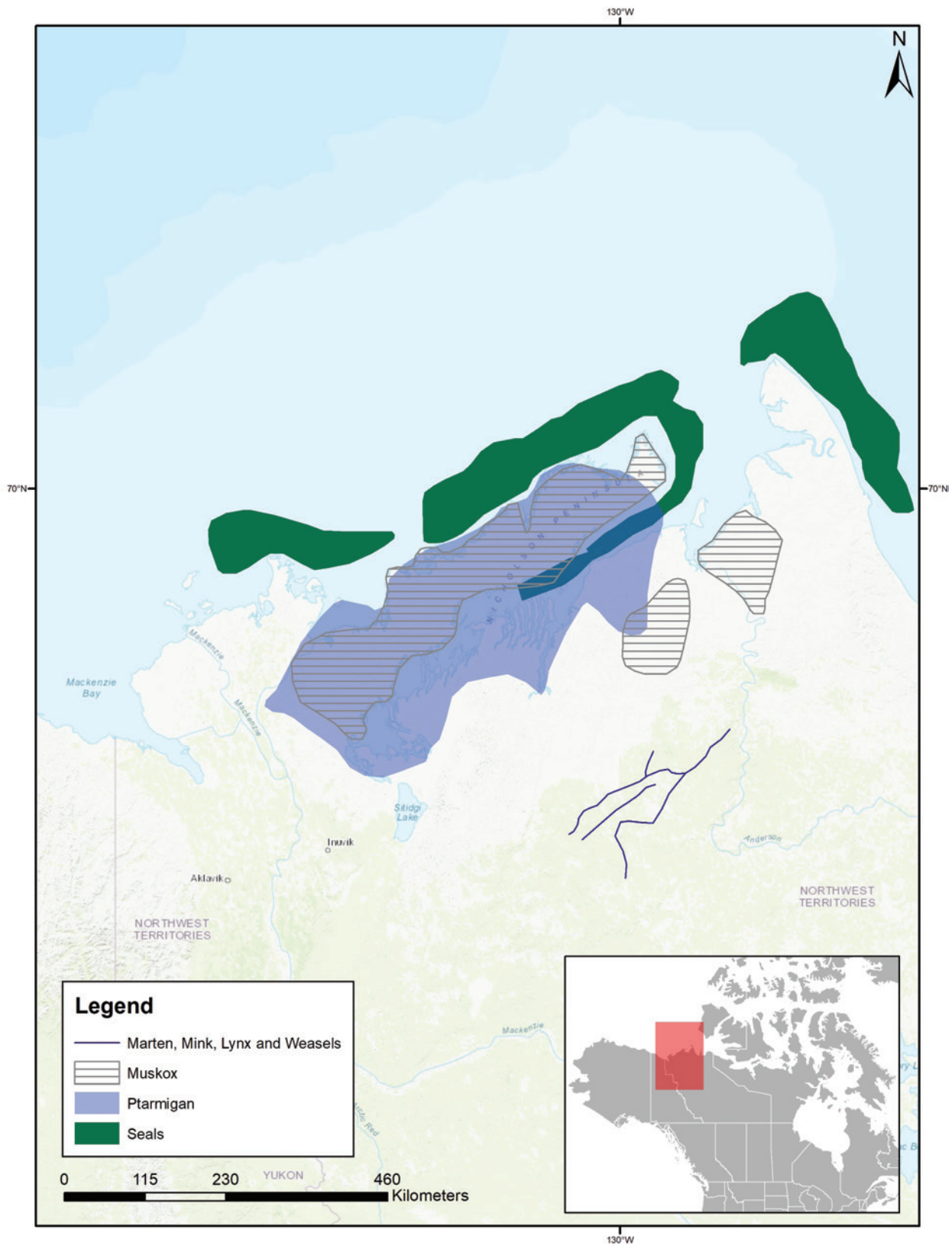


Figure 29. Location of wildlife around time of sea ice freeze-up and when the ocean is frozen

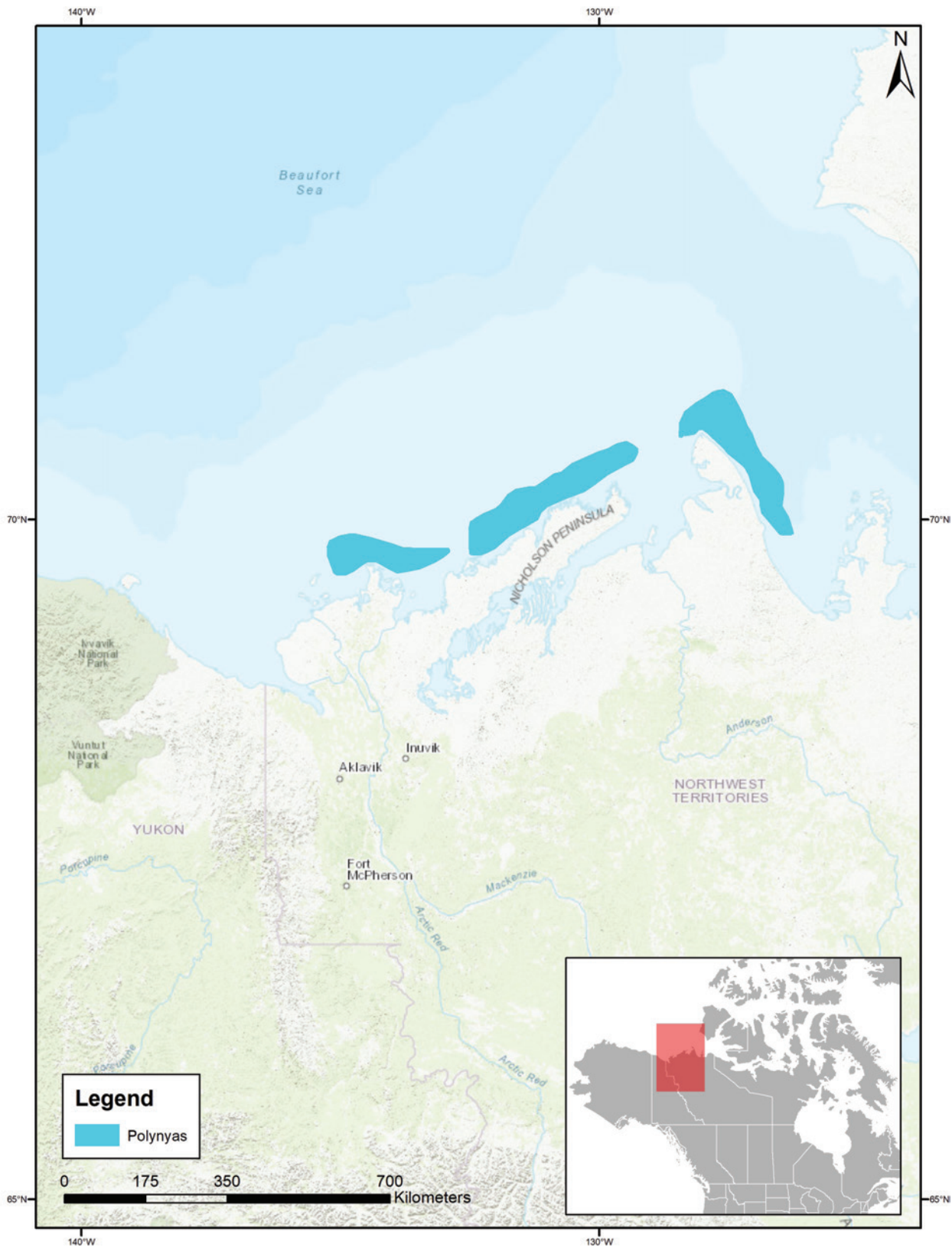


Figure 30. Location of polynyas around time of sea ice freeze-up and when the ocean is frozen

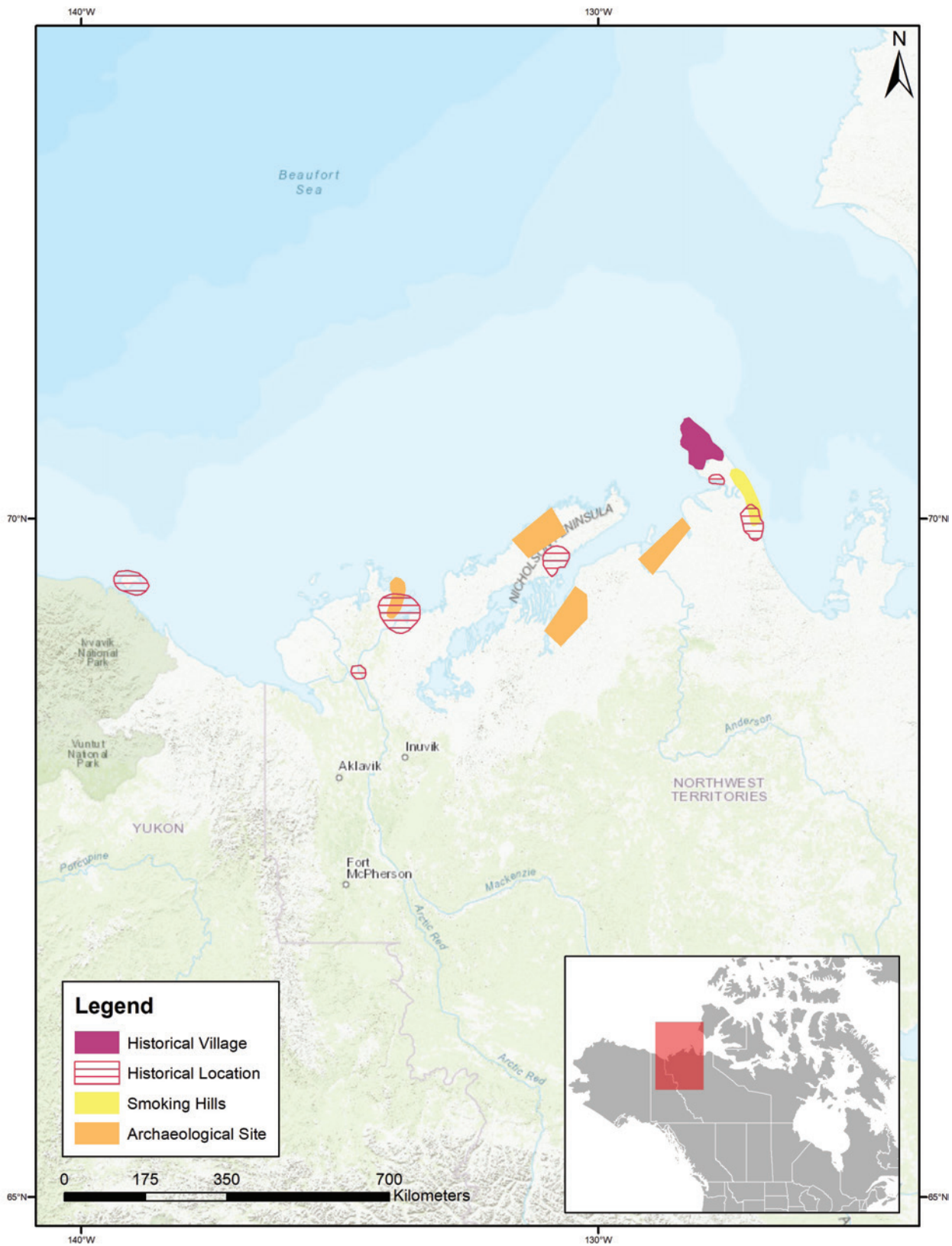


Figure 31. Location of historic sites year-round

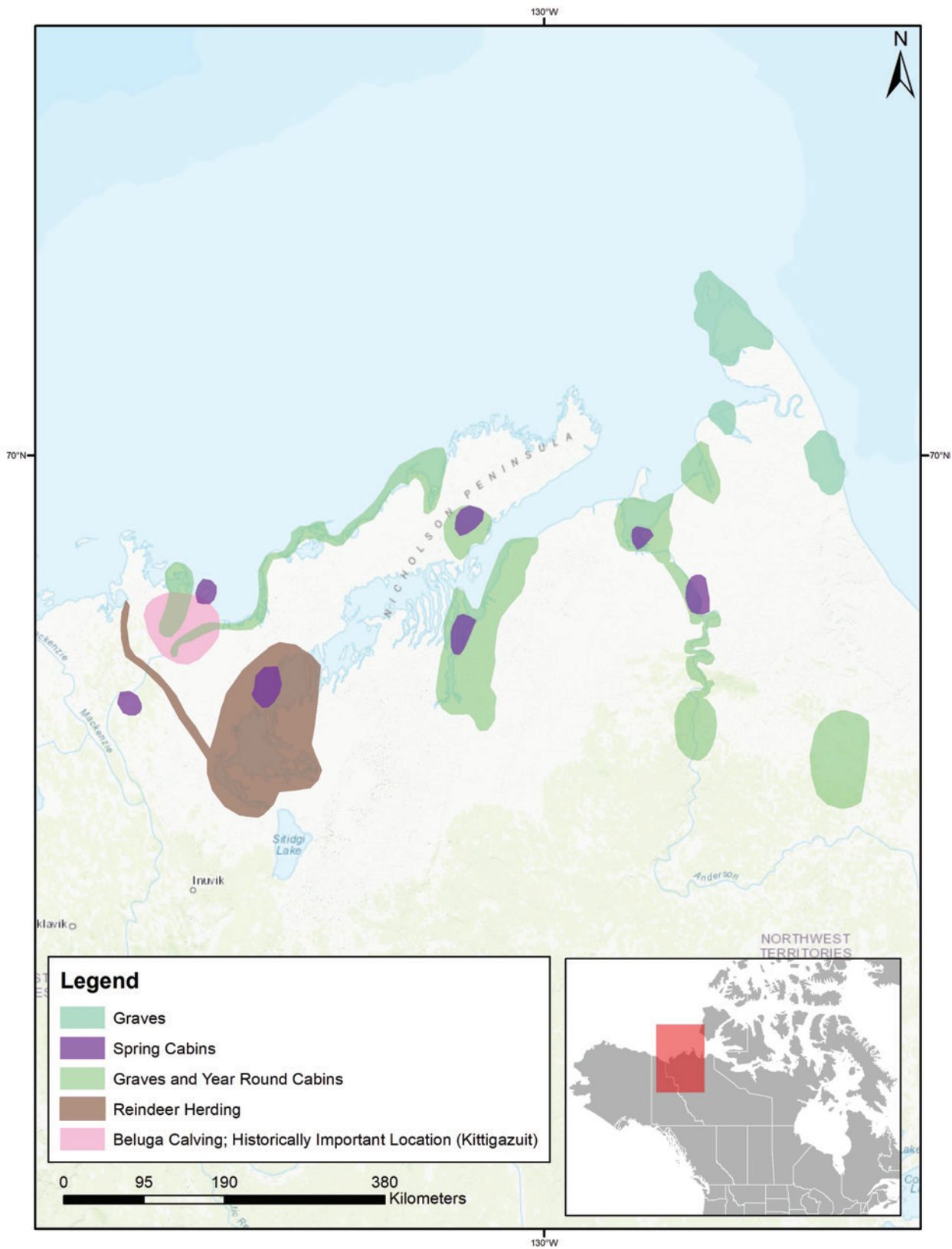


Figure 32. Location of historic culturally significant sites year-round



POTENTIAL IMPACT OF MARINE VESSELS

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

Table 1. Potential impacts of marine vessels using the Low Impact Shipping Corridors on the environment, wildlife, and community members

POTENTIAL IMPACT OF MARINE VESSELS	WHEN IT MAY HAPPEN
If the water is polluted or if there is a spill, it would have more than just a significant impact – it would be devastating! People’s way of life and food source would be impacted. Animals would die or be contaminated. People rely heavily on migratory species for food. There would be a food shortage or people might eat a contaminated animal. Animal species in the Arctic are very sensitive. The area around Tuktoyaktuk is like a nursery for migratory species such as waterfowl, fish, and whales.	Year-round
Storms are moving shoals so boats and ships may get hung up on them. Capsized ships may spill oil. There is no emergency-response capacity or equipment in Tuktoyaktuk. The community is not equipped to rescue or accommodate a large number of people in case of an emergency.	Summer
2.2 million litres of fuel are being held in Tuktoyaktuk via tankers and transported by B-train to Inuvik. Some years, 50 million litres were offloaded and disbursed by oil companies. 11 million litres of fuel and gas are transferred in Tuk Harbour and offshore by tanker. If any kind of spill happened of that magnitude, the community is not prepared.	Year-round
Dumping of greywater in the ocean or harbour is a concern. Foreign elements introduced into the water, including invasive species, may impact animals and the environment in unknown ways.	Year-round
Monitoring of unsecured cargo on vessels or garbage disposal from ships, and related enforcement, are needed. Currently, garbage and unsecured cargo wash up onto the shores.	Summer
Underwater noise can impact marine mammals. It may cause whales to alter the path where they are going – especially Hendrickson Island where people are harvesting. Tour operators and small crafts may chase away beluga whales, thus the beluga migration and timing of presence might change. Ship traffic may also disturb beluga whale and bird migratory routes and grizzly bear denning areas.	Summer
Caribou and muskox calving grounds near Baillie Island may also be impacted by ship traffic. Small pleasure craft operators may want to visit these areas, which may disturb the animals. Cruise ship passengers should also avoid these areas.	Summer
Icebreaking could impact the polar bears’ food chain because bears rely on seals that use the ice for denning. This in turn could impact polar bear hunting, which people rely on for income.	Winter



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

POTENTIAL IMPACT OF MARINE VESSELS	WHEN IT MAY HAPPEN
<p>Ice might not freeze completely after icebreaking. The thinner ice would be a safety risk for travelers. Partially frozen ice in the fall would cause people to use alternate routes to access harvesting sites. Harvesters get compensation for additional gas when ice breaking occurs but it is not enough and there is a timing component i.e., if there is a caribou in sight but hunters have to go around dangerous ice, the opportunity may be lost.</p>	Fall
<p>There is no way to deal with any kind of spill if it happened during ice breaking activities for barges transporting fuel. A spill-response plan, and clean up equipment (including a barge with shipping container pockets that can contain equipment) are needed.</p>	Year-round
<p>Cruise ships bring potential economic opportunities for crafters and local businesses. Local performing arts could be redeveloped (storytelling and dancing). This would reinvigorate the arts.</p>	Summer
<p>Cruise ships, passengers, support boats, and pleasure craft are a concern:</p> <ul style="list-style-type: none"> • Visitors might start camping wherever they please. They have access to 100 feet from the high-water mark. This would infringe on community members' use of the land; • Visitors might leave garbage, take artefacts, disturb or photograph graves, and invade community members' privacy; • Visitors might lack an understanding of the culture, and give a false, negative perception of it based on what they see. For example, visitors may feel that it is cruel to tie dogs up outside in the cold year-round, however the dogs are bred for the cold; and • Cruise ships that need water and fuel or need to dump greywater, sewage or garbage would impact and overstretch local infrastructure. 	Summer





Table 2. Recommendations for marine vessel management

RECOMMENDATIONS FOR MARINE VESSEL MANAGEMENT
Marine mammals, including polar bears, should have the right of way. Ships should yield to marine mammals by detouring.
Hunters, trappers, and scientists should collaboratively develop regulations and guidelines for ships regarding marine mammal avoidance.
Provide emergency response training and equipment for Tuktoyaktuk.
Enforce boom deployment during refueling through the presence of Department of Fisheries and Oceans (DFO) enforcement in the region.
Enforce no dumping of greywater.
Install docking facilities and infrastructure to accommodate increased marine traffic.
Track ships along the coast and report ship information to Tuktoyaktuk Hunters and Trappers Committee and Tuktoyaktuk Community Corporation and Hamlet. Track all ships carrying Automatic Identification System (AIS) and indicate commercial versus private vessels. Have marine mammal monitors on ships. Have community-based monitoring of the impacts of shipping including refueling activities, greywater dumping, number of ships, travel itineraries. Share this information with communities, stakeholders, Environment and Natural Resources (ENR), DFO, Tuktoyaktuk Community Corporation (TCC), Tuktoyaktuk Hunters and Trappers Committee (THTC), Hamlet and Inuvialuit Land Administration (ILA).
Revisit the definition of international waterways so Inuvialuit can better manage land and who has access. Land management needs to take place to be able to oversee who is camping and the impact they have. In the meantime, it is important that upon arrival in the community, campers notify the HTC, TCC, Hamlet and ILA of their plans.
Document 100% of the harvest information through harvest surveys under the community-based monitoring program, in case there is a disaster such as an oil spill, so that people can obtain full compensation for the damages that occur to our land and animals. Create a trust fund or disaster deposit as the source of funds.





Table 2 (continued). Recommendations for marine vessel management

RECOMMENDATIONS FOR MARINE VESSEL MANAGEMENT

Restrict cruise ship passengers, tour operators and pleasure craft operators from visiting grave sites, historical areas and Baillie Island. Guidelines for operators and cruise ship passengers should be developed (e.g., groups of 15 people or more should be accompanied by a guide and wildlife monitor).

Invest in arts and crafts, tourism-related activities and infrastructure (e.g., cultural centre, hotel, dock/wharf) so that the community can enjoy economic opportunities presented by cruise ships and tourism.

Charting should be prioritized around the Tuktoyaktuk peninsula, channel, regular NTCL routes and should be updated every year due to storm surges impacting sand bars.

Marine operators need to let the HTC know about icebreaking activities so that hunters can be made aware in advance.

An emergency response plan for all sizes of vessels is needed.





CONCLUSION

The number of marine vessels in Canadian Arctic waters continues to grow.¹ At the same time, the Northwest Passage is receiving unprecedented international attention related to sovereignty, interest from tourism operators, and the immense cost savings that a commercially navigable Arctic route would present. Tuktoyaktuk is an Inuvialuit Hamlet of about 965 people which is located on the shores of the Arctic Ocean. Residents of Tuktoyaktuk hunt for food, often travelling on the land to traditional hunting or fishing spots for harvesting purposes.² In recent decades, when compared to other communities in the Inuvialuit Settlement Region, Tuktoyaktuk has experienced the largest increase in marine vessel activity.¹ The marine areas that are most significant to community members' subsistence harvesting and livelihood activities, are located exactly where ship traffic has increased. The Tarium Nirjutait Marine Protected Area (MPA) is also located in this area. The purpose of the Tarium Nirjutait MPA is to "conserve and protect the biological resources within the MPA and to support the viability of a healthy population of beluga whales. This area is particularly important to the Beaufort Sea beluga whale stock that travels to the Mackenzie Estuary during the summer months. These whales come to this area for feeding, rearing calves, moulting, socializing, and for energetics (i.e., thermal advantage). The Tarium Nirjutait MPA has traditionally been

used by the Inuvialuit and is important from a cultural, subsistence and economic perspective. The MPA protects harvesting traditions central to the Inuvialuit culture in the communities of Aklavik, Tuktoyaktuk and Tuktoyaktuk."³ Given community members' concerns about marine vessel traffic and its implications for the ecology, environment, and Inuit way of life, the perspectives of Tuktoyaktuk community members and all communities, should be a fundamental consideration during the implementation and management of 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.

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 <http://www.tuktoyaktuk.ca>. Accessed May 15, 2018

³ Beaufort Sea Partnership Initiatives: Tarium Nirjutait Marine Protected Area 2018. <http://www.beaufortseapartnership.ca/initiatives/tarium-nirjutait-marine-protected-area/>.

