

Ice, Sovereignty, and the Opening Sea: The Northwest Passage in a Warming Arctic

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Introduction:

In the late summer of 1906, a small wooden sloop called the Gjøa motored out of the Canadian Arctic Archipelago and into open Pacific waters, completing the first successful transit of the Northwest Passage. (Figure 1) Her captain, Roald Amundsen, had spent three winters frozen in the ice to do it. He had survived partly because the Netsilik Inuit of King William Island taught him how. The voyage had taken three years, requiring the knowledge of people who had lived in those waters for time immemorial, and would not be repeated for another four decades (Royal Museums Greenwich, n.d.).

More than a century later, those terms are changing. Retreating sea ice, driven by accelerating Arctic warming, is making the Passage navigable for longer stretches each summer. In 2016, a luxury cruise ship carrying 1,700 passengers completed the transit escorted by a research vessel, but without icebreakers, and without the kind of intimate local knowledge that kept Amundsen alive. The contrast is stark: what once demanded three winters of hardship and environmental cruelty now attracts tourists seeking a vacation.

The Northwest Passage refers to the network of navigable routes threading through Canada's Arctic Archipelago, the roughly 36,000 islands that lie between the Canadian mainland and the North Pole, connecting the Atlantic and Pacific Oceans through waters that Canada claims as its own. (Figure 2) It is not a single channel but a branching set of routes, some deeper and more navigable than others, all running through one of the most remote and environmentally sensitive regions on Earth.

The Northwest Passage's future is shaped less by ice retreat itself than by the unresolved legal question of whether the Passage constitutes Canadian internal waters or an international strait. That dispute is also inseparable from Inuit self-determination, which no technical or commercial development can sidestep. Climate change is the catalyst forcing this question toward a reckoning; the sovereignty dispute and Inuit governance will ultimately determine how the Passage is governed.

The Past:

For centuries, the Northwest Passage was less of a route and more of a legend, and a deadly one at that. In 1845, the British explorer Sir John Franklin set out with 129 men and two ships, confident that modern Victorian technology and sheer determination would finally crack the Arctic. None of them made it back. The search for Franklin's lost expedition lasted decades and involved dozens of rescue missions, producing the most detailed maps of the Canadian Arctic to that point, but no survivors. What Inuit witnesses described, and what searchers eventually pieced together from physical evidence, was a slow, terrible unravelling: ships crushed by ice, men dying of starvation, exposure, and lead poisoning from poorly soldered food tins (Zuckerman-Vdovenko, n.d.). The Passage had made its terms clear. It would not be crossed on anyone's schedule but its own.

The man who finally crossed it understood that. Roald Amundsen left Norway in 1903 in a small converted herring boat, deliberately small because the shallow channels that had stopped larger ships would not stop him. He spent three winters frozen in the ice near what is now Gjøa Haven, Nunavut, and emerged into the Pacific in August 1906 as the first person to complete a full transit of the Northwest Passage. But what made Amundsen succeed where so many others had failed was not just his ship or his patience; it was who he learned from. During those three winters, he lived alongside the Netsilik Inuit, studying their techniques for travelling on sea ice, building shelter, handling sled dogs, and reading the channels that no European map had ever accurately recorded. In his own account of the voyage, he was straightforward about this: the Netsilik were not background figures in his story;

they were the reason he survived. This matters beyond the history books. The fact that Inuit people possessed and shared the knowledge that made the first transit possible is an early signal of something the sovereignty debate would later make explicit: you cannot understand the Northwest Passage without understanding the people who have always lived there.(Whitelaw, 2022)

Sovereignty:

The shift from exploration to actual Canadian control over the region happened slowly and not always smoothly. One of the ways Canada tried to demonstrate that it governed the Arctic was by establishing Royal Canadian Mounted Police posts across the High Arctic at remote outposts such as Pond Inlet and Craig Harbour. Under international law, "effective occupation" of a territory is part of what makes a sovereignty claim stick, and a police post, however isolated, was evidence of that occupation. But the most controversial expression of this logic came in the early 1950s, when the Canadian government relocated Inuit families from northern Quebec to Resolute Bay and Grise Fiord, two of the most remote and punishing environments in the country. The families were told the move was voluntary and that conditions would be manageable. Neither was true. They arrived without adequate shelter or supplies, in a landscape far harsher than anything they had known, essentially stranded. Canada's 2024 Arctic Foreign Policy now openly acknowledges these relocations as a colonial wrong (Global Affairs Canada, 2024). But the uncomfortable truth underneath that acknowledgment is that the government relocated Inuit families, at least in part, because it knew that Inuit presence was evidence of Canadian sovereignty. When natural presence was not enough, the government manufactured it at enormous human cost to the people involved.

The Cold War added yet another dimension to Canada's complicated relationship with its own Arctic. The Distant Early Warning Line, a chain of radar stations stretching across the top of North America, completed in 1957, was built largely with American money and staffed by American personnel, all on Canadian soil. The DEW Line made strategic sense for both countries: Canada got a defence system it could not have afforded alone, and the United States got an early warning network against Soviet bombers. But it also meant that American military personnel were operating throughout the Canadian Arctic with a degree of freedom that sat uneasily alongside Canadian sovereignty claims. A pattern was forming: the United States treating the Canadian Arctic as a space where it had legitimate operational interests, and Canada asserting sometimes firmly, sometimes not, that it had the right to govern what happened in its Arctic waters.

Given the geographic advantage of the Northwest Passage, the legal status of the waterway has drawn competing claims. Canada argues that because the passage runs through the Canadian Arctic Archipelago, it should have complete control over it. The Canadian Inuit state that the Northwest Passage lies within Inuit territory and should be regarded as an ecological zone, not merely a shipping lane. Other countries, primarily the United States of America, argue that the passage is an international shipping lane under Article 37 of the UNCLOS agreement.

These ongoing debates were temporarily simmered by the 1988 Arctic Cooperation Agreement between the US and Canada. While it wasn't a long-term resolution, it allowed Canada and the US to agree to disagree and postpone the debate for the future. However, with the changing climate and shifting political pressures, the time to take the pain out of the disagreement is coming faster than either party is ready for.

The Environment:

The data on Arctic sea ice is striking. The National Snow and Ice Data Center's Sea Ice Index, which has tracked Arctic-wide ice extent and concentration using satellite data since 1979, shows a clear long-term decline in both the extent and thickness of Arctic sea ice (NSIDC, 2026). In March 2026, Arctic sea ice reached one of its lowest yearly maximum extents in the entire satellite record. But raw extent figures can mislead, and it is worth being precise about what "the Passage is opening" actually means in practice. The northern route through the Archipelago still contains concentrations of multi-year ice; ice that has survived multiple summers, reaching thicknesses above four metres, which is impassable for almost all commercial vessels (Copernicus/EGUsphere, 2025).

Navigable-in-a-good-year is not the same as reliably open, and the difference matters enormously for anyone planning a shipping route. There is also a less intuitive problem. A 2024 study in the *Proceedings of the National Academy of Sciences* found that as sea-ice cover declines, wave hazards along the Passage increase significantly. Open water allows wind to generate larger waves over longer distances, exposing ships to conditions that packed sea ice had previously suppressed (PNAS, 2024). The passage becoming less icy does not straightforwardly make it safer.

The human stakes are just as significant. Inuit communities depend on sea ice for travel, hunting, and food security, all of which are disrupted as ice patterns shift unpredictably. The environmental risk of increased shipping is serious: an oil spill in Arctic waters, where cold temperatures slow biodegradation and no spill-response infrastructure exists, would cause damage on a generational scale. As the Belfer Center (2025) notes, this is also where climate and sovereignty intersect directly; if the Passage were classified as an international strait, Canada could only enforce internationally approved environmental standards, which are substantially weaker than Canadian domestic rules. What happens to the ice is therefore not just a climate question. It is a governance one.

Trade:

The use of the Northwest Passage is straightforward in theory: the route can save approximately 4,500 nautical miles compared to southern routes through the Panama or Strait of Mangelen, reducing fuel costs and transit times for ships travelling between Atlantic and Pacific ports. China's first containership transit of the Passage occurred in 2025, and overall Arctic polar waterway traffic reached more than 1,800 ships in 2025, a 40% increase from 2013. But the theory meets significant friction in practice. The Passage is navigable only for a short summer window, typically six to ten weeks. Insurance premiums for Arctic voyages are substantially higher than for established routes. An icebreaker escort may be required. There are no ports capable of handling large container ships along the route. A vessel that runs aground or suffers mechanical failure in the high Arctic faces a rescue operation measured in days, not hours. Against these costs, the distance savings look considerably less compelling for routine commercial shipping.

The current alternative route to the north-west passage is Russia's Northern Sea Route; yet, the differences are stark. The NSR has seen substantially more commercial traffic than the Northwest Passage, and the reasons illuminate what the NWP currently lacks: Russia has invested in a large nuclear icebreaker fleet capable of escorting vessels year-round, has developed ports along the route, and has established a regulatory framework for escorted transit. The NSR's advantage is not merely geographic but infrastructural and institutional. However, following Russia's invasion of Ukraine in

2022 and subsequent Western sanctions, COSCO, China's state shipping company, largely suspended its NSR operations, illustrating how geopolitical risk can override commercial logic even on a route with better infrastructure than the NWP currently offers.

China's 2018 Arctic Policy white paper positioned it as a 'near-Arctic state', a designation with no basis in international law but with clear strategic intent. China also proposed a 'Polar Silk Road' extending the Belt and Road Initiative into Arctic shipping. The April 2023 cooperation agreement between the Chinese and Russian Coast Guards and joint naval and bomber patrols near Alaska reflect a deepening Arctic interest between the two powers. However, the Arctic Institute's March 2026 analysis cautions against overstating the Polar Silk Road's centrality to Chinese strategy: it has had inconsistent priority in Chinese policy documents, and the gap between rhetorical ambition and operational reality remains wide. (Bandurski, 2026) An analytical balance requires acknowledging that the threat is real but frequently overstated in Western commentary.

Future:

Climate models project the possibility of ice-free Arctic summers, defined as sea-ice extent below one million km², around 2035. 'Ice-free summer,' however, could not be further from 'reliably navigable Northwest Passage': even in an Arctic without summer sea ice, multi-year ice driven by wind and current into the Passage's channels could still close routes for days or weeks. The variability that makes current navigation unpredictable will not disappear with the ice; it will take a different form. Instead of routine season closures, unpredictable climate events will dictate the safety and the ability for ships to utilize the passage.

Canada has announced significant Arctic defence investments: new icebreakers, upgrades to the Nanisivik naval facility at the northern tip of Baffin Island, enhanced surveillance through the NORAD modernization agreement with the U.S., and the overarching framework of the 2019 Arctic and Northern Policy Framework. The Macdonald-Laurier Institute's May 2025 analysis provides a useful corrective: the gap between announcement and delivery is wide. Nanisivik, intended as a refuelling station on the Northwest Passage, is emblematic of Ottawa's difficulty in converting Arctic rhetoric into operational capability. The planned submarine acquisition will not produce a first vessel until 2035 at the earliest. Canada's Arctic surveillance and response capacity today remains thin relative to the territory it controls; however, Canada has addressed perceived weakness with the purchase of 74 Saab JAS 39 Gripen fighters that will bring the total to over 100 jets in a mixed Arctic fleet (Brewster, 2026).

The Arctic Council, the primary multilateral forum for Arctic governance, has been significantly disrupted since 2022 by the suspension of Russia's normal participation following the invasion of Ukraine. The Council continues to function in a limited way, but its ability to produce binding agreements or manage emerging sovereignty tensions is reduced. The prospects for the Canada–U.S. sovereignty dispute being formally resolved are low; more likely, the question will be tested by incidents of a commercial transit that Canada objects to, a naval passage that neither side wants to litigate, rather than settled by negotiation.

The most durable stance for Canadian sovereignty in the Northwest Passage is not its icebreaker fleet or its naval facility at Nanisivik; it is the presence of Inuit peoples across the Archipelago. The Inuit representational organization, the Inuit Tapiriit Kanatami, June 2025 Vision for Arctic Sovereignty, Security and Defence, makes it clear that any investment into the Canadian north must genuinely benefit the populations living there and give the ITK a position of influence in the decision. Open

Canada's October 2025 analysis frames this as a revitalization of sovereignty itself: in the twenty-first century, sovereignty is less about flags and ships than about which systems human, ecological, and cultural are impossible to unravel. (Qaidari, 2025) In a world where almost every square centimetre above sea level has been claimed, one can no longer simply plant a flag. One must live in the land. Inuit Qaujimajatuqangit (traditional knowledge) and subsistence sharing networks are themselves resilience mechanisms. Canada's strongest argument for the Passage is the one that cannot be countered by a legal brief or a naval transit: people have lived here since time immemorial, governed themselves here, and will continue to do so.

Conclusion:

Climate change accelerates the commercial and strategic stakes. More ships are coming, more parties are interested, and more infrastructure investment is being contemplated. Heightened stakes intensify pressure on the legal dispute: the agree-to-disagree of 1988 was sustainable when the Passage was rarely transited; it becomes harder to maintain as traffic grows. And the legal dispute cannot be resolved, or even responsibly managed, without Inuit governance at the centre, because Inuit habitation is the empirical and moral foundation of Canada's claim.

Canada's position of sovereignty is vital to the ecological future of the passage. When a passage is under a country's territorial waters, that nation is able to deploy stricter environmental laws. If it were to remain as international waters, the unregulated crossings would put an environment that is already at risk under more pressure. And in the event of an accidental spill, the only parties impacted would be Canada and the Inuit people who inhabit the north. A level of self-governance in accordance with the Inuit people would also be important, as different views on the environmental side are very important for the ecological conservation of the area.

What is ultimately at stake is not just shipping lanes or naval access. It is whether international law, developed for a world in which the Arctic was effectively impassable, can adapt to a radically changed physical geography without simply privileging the navigational freedoms of powerful states over the territorial rights of smaller ones and the self-determination of Indigenous peoples. The Northwest Passage is a case in which, due to the rapidly warming and changing Arctic, it is easy to see the effects it will have on the future of shipping in the area. But the Northwest Passage is far from the only trade route going through critical changes. Sea trade pinch points like the Suez Canal and the Malacca Straits are already showing signs of impact from the changing climate. The future of seafaring trade and shipping will depend on the decisions and referendums on international law made in the next 5-10 years. There is no future where we can continue to use the outdated laws we have in place today.

International policy decisions made in the next five years will determine the next 100 years of the Northwest Passage, its people, and the environment that supports it all.

Bibliography:

Bandurski, D. (2026, January 19). Polar Silk Road. China Media Project.

https://chinamediaproject.org/the_ccp_dictionary/polar-silk-road/

Belfer Center for Science and International Affairs. (2025, July). Explainer: The Northwest Passage's shipping potential, legal status, and what's at stake. Harvard Kennedy School.

<https://www.belfercenter.org/research-analysis/explainer-northwest-passages-shipping-potential-legal-status-and-whats-stake>

Brewster, M. (2026, June 6). Ottawa's mixed fleet of F-35s and Gripens could total more than 100 aircraft, sources say. CBC News.

<https://www.cbc.ca/news/politics/f-35-gripen-saab-lockheed-martin-canadian-armed-forces-9.7225549>

Copernicus/EGUsphere. (2025). Near sea ice-free conditions in the northern route of the Northwest Passage [Preprint]. <https://egusphere.copernicus.org>

Global Affairs Canada. (2024). Canada's Arctic foreign policy. Government of Canada.

<https://international.canada.ca/en/global-affairs/corporate/reports/arctic-policy-2024>

Inuit Tapiriit Kanatami. (2017). Nilliajut 2: Inuit perspectives on the Northwest Passage, shipping and marine issues.

https://www.itk.ca/wp-content/uploads/2018/01/NilliajutTextPages_Draftv4_english_web.pdf

National Snow and Ice Data Center. (2026). Sea Ice Index: Daily and monthly image viewer.

University of Colorado Boulder. https://nsidc.org/data/seaice_index

Peng, G., et al. (2024). Evolving Arctic maritime hazards: Declining sea ice and rising waves in the Northwest Passage. *Proceedings of the National Academy of Sciences*, 121.

<https://doi.org/10.1073/pnas>

Qaidari, A. (2025, October 8). Sovereignty recast: Why Canada's Arctic future depends on resilience. Open Canada.

<https://opencanada.org/sovereignty-recast-why-canadas-arctic-future-depends-on-resilience/>

Royal Museums Greenwich. (n.d.). Roald Amundsen North-West Passage expedition 1903–06.

<https://www.rmg.co.uk/stories/maritime-history/roald-amundsen-north-west-passage-expedition-1903-06>

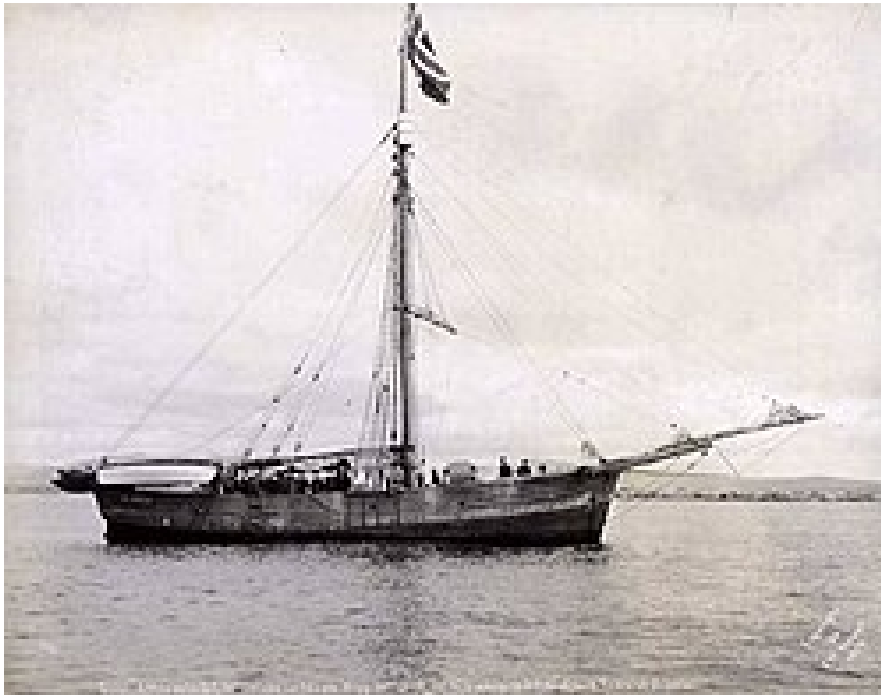
Whitelaw, M. (2022, December 30). *Roald Amundsen & what he learned from the Inuit*. Arctic Kingdom.

<https://resources.arctickingdom.com/roald-amundsen-what-he-learned-from-the-inuit>

Zuckerman-Vdovenko, A. (n.d.). John Franklin's quest for the Northwest Passage: The lost Arctic expedition. Secret Atlas.

<https://www.secretatlas.com/handbook/culture-and-history/arctic/john-franklin>

Figures:



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