

THE NORTHWEST PASSAGE: TRANSIT REALITIES

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The historic definition of the Northwest Passage (NWP) is an east or west voyage between the Atlantic and Pacific Oceans through the Canadian Arctic Archipelago. Starting in the Bering Strait, a vessel sails 2,800 to 3,400 nautical miles (nm) through one of seven navigable routes until reaching Baffin Bay or the Labrador Sea and then the Atlantic Ocean.

In the history of NWP transits, from the Norwegian sloop *Gjoa* led by the explorer Roald Amundsen in 1903 to 1906, to the end of the 2024 navigation season, 430 vessels have made successful transits. More than half have been private yachts, and 92 cruise ships have completed transits. The number of commercial cargo ship transits is more modest: only 63 have completed the NWP, with 44 doing so between 2019 and 2024, when there were longer summer periods of minimal sea ice. These statistics, compiled by historian Robert Headland at the Scott Polar Research Institute at Cambridge University, are the most comprehensive list of NWP transits.

In recent years, Royal Wagenborg, a Dutch shipping firm operating since 1898, has pioneered commercial voyages through the NWP using Polar Class 7 icebreaking bulk carriers. These vessels are shallow-draft icebreaking supply ships that use azipods, or electric propulsive units. They also are a “double-acting design” by Finland’s Aker Arctic, able to break ice ahead or astern.

The first Royal Wagenborg NWP transit was in 2016 by the *Africaborg* carrying carbon anodes from China to Quebec; the following year a sister ship, the *Atlanticborg*, sailed eastbound on an alternative NWP route also carrying carbon anodes from China to Quebec. Royal Wagenborg reported these voyages were approximately 3,750 nm shorter than the route through the Panama Canal, saving

more than two weeks’ voyage time and reducing stack emissions by 40 percent. Not mentioned were the substantial savings in Panama Canal fees.

Royal Wagenborg has continued to increase the number of summer NWP transits connecting ports in China, Japan, South Korea, and Taiwan with ports in Canada (Quebec), Finland, and the

or partially, for eight to nine months each year through midcentury. The NWP can be used for niche markets such as today’s voyages of Polar Class bulk carriers, but it remains ice-clogged and impassable except in late summer and autumn. The seasonal nature of access, shallowness of all but the most northern straits, lack of ports and infrastructure, need for ships to

In 2016, the *Africaborg* was the first Royal Wagenborg icebreaking bulk carrier to transit the Northwest Passage.



United States (Wilmington, North Carolina). From 2019 to 2024, six Royal Wagenborg ships sailed the NWP on return voyages during a three-month navigation season (August–October). The eastbound cargo has been exclusively carbon anodes and the westbound cargo pulp and timber. The export of timber from Wilmington to Taiwan is an example of a bulk cargo that can be stockpiled ashore and, when the time is right, sent through the NWP during the short navigation season. This creative use of the NWP for commercial shipping requires expert planning and that the ships meet the mandatory requirements of the International Maritime Organization’s Polar Code and follow all relevant Canadian rules.

There are many practical navigation factors that prevent the NWP from becoming a regular trade route. Most critical is the presence of Arctic sea ice. Global climate model simulations project the Arctic Ocean will be ice-covered, fully

comply with mandatory polar rules and regulations, and the vagaries of Arctic weather and sea ice make it improbable that large container ships will ever use the NWP for trans-Arctic navigation.

When Captain James Cook sailed into the Arctic Ocean off Wainwright, Alaska, in August 1778 all he could observe was ice to the east. He could not have foreseen the dramatic changes in the Arctic environment and the development of advanced ship technology. Although an “ice barrier” to navigation still exists for much of the year, Cook would be astonished that modern mariners have sailed specialized commercial ships through the NWP during the summer.

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