

Informing Arctic shipping governance

Declining sea ice has created new risks and opportunities in Canada's Arctic, specifically for marine trade and transportation. Research grounded in practices that include Indigenous communities as part of active reconciliation seeks to better understand the human dimensions of environmental change in the Arctic.

The researcher

Jackie Dawson is a full professor and Canada Research Chair in Environment, Society and Policy at the University of Ottawa, as well as the Co-Scientific Director of the Network of Centres of Excellence ArcticNet. Dawson has won several research awards, including the Governor General's Innovation Award for her work on innovative integration of Traditional Inuit Knowledge and western science. She is an applied scientist working on the human and policy dimensions of environmental change in ocean and coastal regions and is considered an expert in Arctic shipping, Arctic tourism and Arctic oceans governance.



The research

Arctic shipping traffic in Canada has almost tripled since 1990. In response and as part of the federal government's Oceans Protection Plan, a project was developed by Dawson to establish a network of low-impact transportation corridors in the Arctic. The goal is to encourage ships to use routes that will reduce impact on and present fewer risks to communities and the environment.

Arctic Corridors and Northern Voices (ACNV) is a pioneering research project that **connects western science with Inuit Knowledge**. The project relies on two complementary datasets: ship traffic and Inuit Knowledge of culturally significant marine areas (CSMAs). The ACNV has made the region a global leader in research that supports Indigenous self-determination in science. Working with nearly 60 Inuit and Northern researchers and over 130 Inuit Knowledge Holders, the ACNV team has:

About the Canada Foundation for Innovation

Since its creation in 1997, the CFI has committed more than \$10.5 billion in support of more than 13,000 research infrastructure projects in all disciplines at 174 institutions in 81 municipalities across Canada.

- Combined high-tech geographic information systems (GIS) analysis with community members and researchers' collective knowledge to identify CSMAs in the Arctic for the first time
- Developed an historical geo-spatial ship track database for Arctic Canada
- Developed recommendations for designating areas where ships are forbidden, must go slowly or may not drop anchor
- Developed the first-ever database of Inuit Knowledge of key wildlife areas, local use areas and traditional hunting areas in the Arctic.

The ACNV has resulted in over **25 peer-reviewed articles, 20 reports, 50 presentations and 30 media articles**, as well as newsletters in English, Inuktitut and Inuinnaqtun, to ensure that findings are shared with communities. Inuit community members and youth have been cited as co-authors on many of these papers, and several youth have presented their work at international conferences and workshops. Further, the ACNV website includes a wealth of publicly available information, data management strategies and interactive maps.

The research infrastructure

In 2011, the Canada Foundation for Innovation (CFI) awarded the University of Ottawa approximately **\$64,000** through the Leaders Opportunity Fund (now known as the John R. Evans Leaders Fund). Funding was used to build a 50-square-metre laboratory at the University of Ottawa. Key equipment housed in this laboratory (also supported by the CFI) included video communications and collaboration equipment, computers and field equipment to support data collection activities. While little of this initial infrastructure remains in use today, Dawson stresses the importance of the funding in setting up her lab and facilitating the subsequent directions of her research.

The impacts

Supported by the CFI's initial contributions in her work, Dawson's research has evolved over the years while always remaining centred on better understanding and managing the impacts of climate change in the Arctic, including the impacts on Arctic communities, shipping patterns and the marine environment.



Contributing to reconciliation through science

Dawson's research practices are grounded in the principles of Inuit self-determination and co-creation. This includes having Inuit communities, associations and governance agencies helping to define research questions and to participate in data analysis. Examples of reconciliation through science include the following:

- Inuit Knowledge Holders **retain ownership of sensitive knowledge**, and all research data and results are first validated by community partners, and then shared back to them.
- Dawson has worked with the Aqqiumavvik Society in Arviat to explore how weather, water, ice and climate information is currently being used and produced by **local hunters and harvesters** in order to create a roadmap for future information needs.
- Also in collaboration with the Aqqiumavvik Society, and as part of the Canada-Inuit Nunangat-United Kingdom Arctic Research Programme, data has been collected on sound pollution, ship discharge, water quality and microplastics to document the **impact of shipping** on such things as **food sovereignty**.
- Project data has also been leveraged by Northern communities in **negotiating Inuit impact and benefit agreements** for such things as resource development decisions, mining operations and the establishment of protected areas. For example, research findings from Pond Inlet were used to develop the boundaries and interim management plan for the Tallurutiup Imanga National Marine Conservation Area (in consultation with Parks Canada and the Qikiqtani Inuit Association) and to create boundaries for the Tuvaijuittuq Marine Protected Area.



Engaging the capacity of Inuit youth

Through the ACNV project, 59 Inuit and Northern youth have been trained in the facilitation of community mapping workshops, data validation and outreach activities. Approximately 25 percent of these youth have since been hired by federal agencies as marine monitors or data technicians. Others are stepping into leadership positions within the ACNV and are better able to **ensure the project's alignment with local research agendas**. Further, a training manual was created so that Inuit youth can do future research themselves and train others in their communities.



Finding impact beyond Canada's shorelines

The **governance frameworks** being used in the ACNV are being modelled by other Arctic nations, including the United States, which are interested in supporting sustainable development in the North. Dawson has had discussions with the United States Coast Guard and the National Oceanic and Atmospheric Administration, which are seeking to do more work in the Arctic.

Dawson was the lead author of the G7 Science Academies' Joint Statement 2018, The Global Arctic: Sustainability of Communities in the Context of Changing Ecosystems and made important contributions to several United Nations initiatives.



Informing shipping policy

The Northern Low-Impact Shipping Corridors initiative is an initiative under the Oceans Protection Plan, which is co-led by the Canadian Coast Guard, Transport Canada and Canadian Hydrographic Service. This initiative used ACNV results to integrate CSMA's into the governance framework to ensure that federal policy took them into account in its guidance.

Dawson has also provided **expert witness testimony** during the Standing Senate Committee on Transport and Communications hearing for Bill C-48 (the Oil Tanker Moratorium Act). This committee studied the regulation of vessels that transport oil to or from ports located along British Columbia's north coast.

Through workshops facilitated by Transport Canada's Northern Transportation Adaptation Initiative Program, Dawson connected with shipping operators to better understand their needs and concerns, and to share information about her research. Information about CSMA's and hunting grounds has been shared with private shipping companies, including Irving Shipbuilding, Desgagnés and Fednav, which make efforts to avoid those routes.