Research collaboration key to ocean and Arctic success

Tight government budgets mean it's a major challenge to fund needed infrastructure to do ocean research. Allies are working together to maximize resources.

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Off the coasts of four continents, in strategic ocean regions around the globe, Canadian scientists are "listening" to the world beneath the waves.

The Ocean Tracking Network, started in 2008, uses a system of Canadian-built acoustic receivers arranged along the sea floor to record the movement of sea animals as small as crabs and as large as whales which are fitted with tiny acoustic transmitters. Each time one of the creatures passes over a line of receivers, it is recorded and the world's most comprehensive picture of the movements of ocean life emerges.

The same sensors can also measure ocean temperature, depth, salinity, currents, chemistry, and more, making the sea creatures themselves intrepid gatherers of important ocean data. All of these data are freely available online, positioning the science of marine animal tracking as a truly global and collaborative discipline.

Large projects like the Ocean Tracking Network and others are providing unprecedented insight into the underwater realm. Yet so much is still unknown, and so much global research capacity is still required to access new information about this critical ecosystem.

Conducting research in the oceans is a massive challenge requiring dedication, skill, and significant resources, the cost of which is often far beyond the capacity of any one nation.

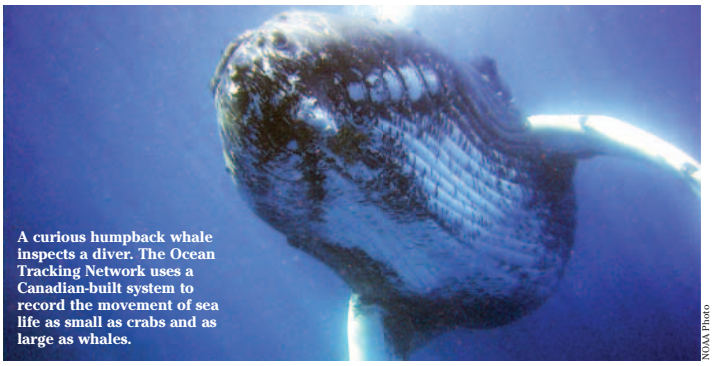
Research, however, is essential to mitigate the impacts of human activity on the marine environment. And we must do so if we expect to continue to revel in the many provisions of the sea, including food, oxygen, water, and climate regulation, valued at over $21 trillion US globally according to the World Economic Forum.

In today's tough fiscal environment, funding the infrastructure necessary to conduct research in the ocean—things like research vessels, high-tech underwater networks, and deep-sea submersibles—is also a major challenge for all nations interested in both exploiting and protecting marine resources. Many countries, including Canada, are investing in such infrastructure, but it will only be through collaboration in the development and use of this expensive and often unique equipment that we can obtain the knowledge we seek.

Research partnerships

To help stimulate and foster this collaboration, the Canada Foundation for Innovation is partnering with the European Commission and the United States National Science Foundation to hold a symposium on the development and use of both marine and Arctic research infrastructure.

To be held in Rome this September, the symposium will bring together many of the world's leading experts in marine and Arctic science, the managers of the large-scale infrastructures these experts need to conduct their work, and the senior funding agency decision-makers who allocate the financial resources.



A curious humpback whale inspects a diver. The Ocean Tracking Network uses a Canadian-built system to record the movement of sea life as small as crabs and as large as whales.

NOAA Photo

Addressing marine and Arctic research together makes sense for two reasons: marine and Arctic environments are both often hostile, remote, and difficult working environments; and the infrastructure required to conduct research in both environments has a tendency to be large-scale and exceptionally expensive.

Ensuring that all nations involved can use the research infrastructure they fund to the maximum extent possible is the central goal of the symposium. The participants also hope to identify current trends in marine and Arctic research and the development of the associated infrastructure; articulate the contributions that infrastructure can make to scientific research and innovation capacity; and share experiences, lessons learned, and best practices.

Canada, along with the United States and the European Union, recently took a significant step towards these goals by together signing the Galway Statement on Atlantic Ocean Cooperation on May 24. The agreement aims to align the ocean observation efforts of the three partners to gain a better understanding of the Atlantic Ocean, including its interplay with the Arctic Ocean in the context of climate change. The pact will also provide the overarching policy framework for the discussions that will take place in Rome.

The symposium will be a first step toward greater understanding of the priorities, pressures, and scientific potential around research infrastructure. Ultimately, it will lead to recommendations that allow all nations to address the policy, program, financial, and operational barriers to collaboration.

The symposium will also foster an ongoing exchange between Europe, Canada, and the United States on how best to support their researchers as they explore the oceans and the Arctic and develop the technologies we need to operate in such challenging environments. In taking this step, we will get the maximum amount of useful knowledge out of our investments.

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