

Backgrounder

The Ocean Tracking Network: An International Partnership

In June 2006, more than 40 of the world's leading international ocean scientists congregated at Dalhousie University in Halifax to participate in the genesis of the Ocean Tracking Network (OTN). The vision was to build a worldwide research network and infrastructure that would provide—for the first time in history—a clear and constant picture of marine life and ocean conditions around the globe.

The three-day conference generated a flurry of media coverage in more than 20 countries and seven different languages. This worldwide interest in the proposal underscored the urgency for a large-scale global initiative to comprehensively monitor the oceans, which account for more than 70 per cent of the earth's surface. While satellite and other technologies provide data on the surface of the water, not nearly enough is currently known about what happens below.

The OTN will collect data from the perspective of the ocean's inhabitants. Sea creatures, from salmon to whales, will be tagged with tiny transmitters, while a sophisticated network of sea-bottom acoustic receivers and other sensors will track their movements and behaviour, along with such ocean data as temperature, salinity and depth. Developed in Canada, this innovative technology has shown great success in a major pilot project on the west coast. The OTN will deploy this technology globally, allowing scientists on all seven continents to closely monitor their ocean environments. While some researchers track Atlantic salmon migration, or the effects of the polar ice cap melt on Greenland sharks, others may be monitoring king penguins as they feed in Antarctic waters.

There are many reasons for this ambitious effort. Since the advent of industrialized fishing in the 1950s, the world has seen a 90 per cent drop in the population of large oceanic fish such as bluefin tuna and giant blue marlin. The ongoing decline in biodiversity reduces the ocean's ability to filter pollutants and resist diseases and noxious algal blooms. A recent study led by Dalhousie scientists predicted the collapse of *all* species of wild seafood by 2048 unless fundamental changes to current fisheries management practices are implemented.

Furthermore, climate change is now widely acknowledged as a genuine threat to the health and survival of our planet. Oceans are intricately linked to climate change. They determine weather patterns and trigger some of the world's most devastating natural disasters. Monitoring our oceans more closely will shed critical light on the effects and potential solutions to this pressing global problem.

The OTN research program will focus on five multidisciplinary themes:

- 1- Ocean physics and modeling
- 2- The biology and behavior of highly migratory marine living resources
- 3- The impact of climate change
- 4- Resource management
- 5- The international social and legal framework for oceans.

Headquartered at Dalhousie University, the OTN will integrate research in 14 key regions spanning all five of the world's oceans: the Atlantic, Pacific, Indian, Southern and Arctic. Hundreds of researchers on all seven continents will participate, including leading experts in animal movement and behavior, physical oceanography, data management and analysis, and marine law. All of the data collected will be uploaded continually to OTN's central database, and made available worldwide.

Canadian Partners:

Dalhousie University's key Canadian collaborators include researchers at The Department of Fisheries and Oceans, Memorial University, Laval University, the University of Manitoba, the University of British Columbia, the University of Victoria, and the Huntsman Marine Science Centre in New Brunswick.

OTN data will also be used by policy-makers, decision-makers, planners and managers, industries, corporations, non-profit sectors, non-governmental organizations (NGOs), and government agencies throughout Canada, such as Environment Canada and Parks Canada in New Brunswick, and the Bedford Institute of Oceanography in Nova Scotia.

International Partners:

The full scope of this initiative stems from international partnership with many renowned scientists from universities and organizations around the world. They include the following:

Census of Marine Life (COML)
National Oceanic and Atmospheric Administration (NOAA), Washington DC
Pacific Ocean Shelf Tracking (POST), Vancouver
The Tagging of Pacific Pelagics (TOPP), California
Stanford University, California
Rhodes University, South Africa
Rutgers University, New Jersey
University of Tasmania, Australia
Hokkaido University, Japan
Universitat de Barcelona, Spain
University of Auckland, New Zealand
Universidade dos Açores, Portugal
University of Washington, Washington
University of Hawaii, Hawaii
University of Kentucky, Kentucky
University of California Santa Cruz, California
Mote Marine Lab, Florida
Centro de Ciencias do Mar (CCMAR), Portugal
Instituto Campechano, Mexico
Marine Research Institute, Iceland
Atlantic Salmon Federation (ASF), New Brunswick
Norwegian Institute for Nature Research (NINA), Norway
Intergovernmental Oceanographic Commission of UNESCO (IOC), Paris, France
Woods Hole Oceanographic Institute, Massachusetts
National Science Foundation, Virginia
Australian Institute for Marine Science, Australia
South African Institute for Aquatic Biology, South Africa
Alaska Fisheries Science Centre, Alaska
Kyoto University, Japan

For more details on the OTN and the full range of research plans around the world, please visit oceantrackingnetwork.dal.ca.