2023 ANNUAL REPORT

message from the directors

As we transition into a new year, we're excited to reflect on the Network's accomplishments and all that is to come in the newest phase of the Ocean Tracking Network (OTN).

We are thrilled to have entered a new phase of OTN after receiving $38.5 million from the Canada Foundation for Innovation's (CFI) Major Science Initiatives (MSI) Fund, commencing April 2023. This continuation of funding is allowing OTN to expand core operations and activities, including growing its marine glider program and subsea robotics activities, as well as supporting the integration of satellite-derived animal movement data into the OTN data system as part of its partnership with the global Animal Borne Ocean Sensors (AniBOS) Network. Also, this funding has allowed OTN to expand its headquarters team, with six new staff hires in 2023 to support core operations and activities, and another two planned for 2024.

Robert Lennox also began his term as OTN's incoming scientific director at the start of 2023. Throughout the year, Rob transitioned into his role, taking over more leadership and administrative responsibilities from Sara, while actively establishing his faculty and research program within Dalhousie's biology department and pursuing collaborative grants with colleagues from around the world. Although Sara officially stepped down as scientific director at the close of 2023, she will remain intricately connected to OTN through scientific advisory and research roles—and as a forever OTN family member.

The OTN Council underwent a significant transition this past year. After more than a decade of service, Peter Harrison stepped down from his position as chair, though he remains on the council as a general member. Peter's contributions to OTN have been substantial: his expert guidance and steadfast leadership have helped shape OTN into the facility it is today. We also wholeheartedly welcomed Doug Bliss as our new council chair.

COVER: Hammerhead sharks, Yonaguni, Japan
Masayuki Agawa / Ocean Image Bank

Fred Whoriskey, Sara Iverson, and Robert Lennox

With over three decades in the federal public service, most recently as executive director of the Atlantic Science Enterprise Centre with Fisheries and Oceans Canada in the Gulf region, and as the current head of the Canadian delegation for the North Atlantic Salmon Conservation Organization, Doug brings a rich perspective and experience to his role as chair. We look forward to his contributions for the years to come.

On the granting front, OTN recently received $2 million from CFI's Innovation Fund to facilitate upgrades and replacements to its tracking infrastructure, which is essential for enhancing existing research capacity and enabling OTN to maintain and evolve its world-class platform. New equipment purchases will expand OTN's unique equipment loaner program, add an additional Slocum glider to OTN's glider fleet and support essential upgrades to aged infrastructure.

OTN was also awarded a $1.5 million Alliance grant from the Natural Sciences and Engineering Research Council (NSERC) in 2023 to support the continuation of Apoqnmatulti'k (Mi'kmaw for 'we help each other') for an additional five years. This research collaboration is pairing Mi'kmaw, local and western scientific ways of knowing to study the movements and seasonal habitat use of key species of interest to Mi'kmaw and coastal communities in the Bay of Fundy (Pekwitapa'qek) and Bras d'Or Lake (Pitu'pa'q) ecosystems. This next phase of the project will build upon the scientific findings and partnerships previously forged, extend the data time series critical to assessing changing environments, introduce

several new study species of importance to Mi'kmaw and local communities in Nova Scotia, and continue to train students and other highly qualified personnel in Two-Eyed Seeing (Etuaptmumk).

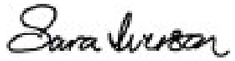
Dalhousie University's application to the Canada First Research Excellence Fund (CFREF; Ocean Frontier Institute (OFI)-led)—a $154 million federally-funded program to investigate the ocean's role in climate change—was also successful. As part of the proposal, OTN participated in two clusters: ocean sensing, which focuses on animal oceanographers via instrumentation of deep-diving large marine predators to collect oceanographic data in conjunction with gliders; and, ocean change, which focuses on estimating species abundance and tracking movements over large areas by using novel RAFOS Ocean Acoustic Monitoring (ROAM) technology.

As OTN plans its operations for 2024-2029, a new strategic plan is poised to meet the challenges posed by emerging trends and needs within the national and international research landscapes. Under this plan, OTN will stay true to its core priorities from the last five years, and continue to: strengthen relationships with Indigenous and other underserved communities to support research in places and led by people most impacted by climate change; expand the use of real-time data collection, and other complementary data streams, to enable responsive decision-making for the health and safety of people and the planet; increase the amount of data available in open data repositories and link these data for secondary users who are modelling key changes in our oceans and waterways; leverage resources and funding to help deliver the science needed to address the challenges outlined by the UN Decade of Ocean Science for Sustainable Development; advance partnerships with Canada's ocean technology sector and inform the development of new products for global markets; and respond to immediate threats and adapt to unforeseen challenges facing aquatic ecosystems around the globe.

As always, we hope this note finds our readers well, and we excitedly welcome the next phase of OTN as we continue to foster the relationships and collaborations that have made the Network so impactful in Canada and across the globe.

Fred, Sara, Rob and the OTN headquarters staff

FRED WHORISKEY, Executive Director



SARA IVERSON, Outgoing Scientific Director

ROBERT LENNOX, Incoming Scientific Director

about OTN

OTN is a global aquatic research, data management and partnership platform headquartered at Dalhousie University in Halifax, Nova Scotia, Canada.

OTN's mission is to inform the conservation and management of aquatic species by tracking their movements, habitats and survival in the context of changing global environments.

Since 2008, OTN has been deploying state-of-the-art ocean monitoring equipment and marine autonomous vehicles (gliders) in key ocean locations and inland waters around the world. OTN's technical capabilities have since expanded with the addition of remotely operated vehicles (ROVs) and side scan sonar systems.

OTN is changing the way oceans and freshwater systems, and the life that moves within them, are understood. New technologies are providing a window into the underwater world; at the same time, the way this information is stored, managed, shared and visualized is creating and sustaining research networks around the globe.

Knowledge generated through OTN collaborations is used provincially, federally and internationally to help guide the conservation and management of aquatic species and the sustainable use of ocean and freshwater resources.

Together, the Network and its collaborators are tracking animals, connecting people and transforming how aquatic ecosystems are understood and managed worldwide.

School of fish, Australia.
Matt Curnock / Ocean Image Bank

strategic plan 2024-2029

In association with its MSI funding renewal, OTN has created a new strategic plan that documents its vision, mission, guiding principles, and key goals and objectives for 2024-2029.

Animal movements are changing at an unprecedented rate due to anthropogenic and natural stressors—never has it been so critical to adopt multi- and interdisciplinary research approaches to generate the knowledge required to inform the conservation and management of aquatic species and ecosystems. With these issues in mind, OTN will enhance its Canadian research facility and continue its transformative global impact; provide innovative and nimble infrastructure and data management services that enable research excellence; and develop partnerships to answer priority questions at local, national and global scales.

The plan's goals and objectives are grouped by the three core aspects of OTN's work—to track, connect and transform—within which it details organizational objectives and how they will be achieved, the associated key actions and the expected impacts.

Over the next five years, OTN will:

- Strengthen relationships with Indigenous and other underserved communities to support research in places and led by people most impacted by climate change.
- Expand the use of real-time data collection, and other complementary data streams, to enable responsive decision making for the health and safety of people and the planet.
- Increase the amount of data available in open data repositories and link these data for secondary users who are modelling key changes in ocean regions and waterways.
- Leverage resources and funding to help deliver *the science we need for the ocean we want*, in support of Canada's commitment to the UN Decade of Ocean Science for Sustainable Development.
- Advance partnerships with Canada's ocean technology sector and inform the development of new products for global markets.
- Respond to immediate threats and adapt to unforeseen challenges facing aquatic ecosystems around the globe.

Hammerhead sharks.
Masayuki Agawa / Ocean Image Bank

TRACK

... aquatic animals across the globe in support of conservation and management by maintaining a world-class facility and enabling critical research on a scale that would not be possible otherwise. OTN will:

Foster and promote excellence in animal tracking, and elevate high quality and impactful science by:

- Identifying and investigating ecological hotspots, movement pathways, conservation areas and other biologically significant areas.
- Prioritizing support for research and conservation initiatives led by Indigenous and other historically underrepresented groups in science.
- Deploying infrastructure to support ecosystem-based management and sustainable fisheries.

Optimize the performance of OTN platforms and promote their compatibility with established and novel technologies by:

- Expanding and aligning geographic coverage to detect observed and anticipated changes to animal distribution.
- Expanding the scientific capabilities of OTN platforms by increasing the use of cost-effective and complementary technologies, such as gliders and remotely operated vehicles, and introducing new sensors for aquatic observation.
- Working with industry partners to test and integrate technology and inform novel features that bring new capabilities to market.

Manta rays, Maldives.
Vincent Kneefel / Ocean Image Bank

CONNECT

... researchers across the globe to answer pressing questions in aquatic science through partnership building, knowledge exchange, capacity building and an internationally certified data management centre. OTN will:

Expand the global network of individuals working in synergy to advance our collective understanding of aquatic ecosystems by:

- Establishing and maintaining collaborative relationships with Indigenous peoples based on capacity sharing, knowledge exchange and respect.
- Leading and supporting high impact collaborations that leverage OTN's equipment, data products and expertise.
- Maintaining and strengthening connections to affiliate networks and promoting the creation of new regional data nodes and partnerships.
- Fostering the training and development of highly qualified personnel, and supporting early- and mid-career researchers in establishing themselves in aquatic sciences.

Maintain and advance OTN's data repository as a sustainable and trustworthy data infrastructure by:

- Adopting new data streams, such as satellite telemetry, to meet the needs of current and potential users.
- Enhancing the findability and accessibility of data housed within the OTN data system.
- Expanding the use of complementary data sets through shared standards, collaboration and innovation.

Conny Schneider / Unsplash

TRANSFORM

... the way oceans and connected inland waters are understood to help guide better stewardship and sustainability of aquatic species and resources. OTN will:

Fulfill the information needed for science-based decision-making in the face of unprecedented environmental change by:

- Partnering with Indigenous communities and organizations to co-develop and execute research, and generate knowledge to inform the co-management and governance of fisheries and aquatic ecosystems.
- Increasing the amount of telemetry and associated environmental data available in open data repositories and federated data systems, such as the Ocean Biodiversity Information System and the Canadian Integrated Ocean Observing System.
- Informing national and global conservation initiatives by flowing OTN data and expertise into management and decision-making processes.
- Partnering with government, industry and regulators to better understand the potential environmental impacts of aquatic resource development projects.

Expand the OTN platform to include new technologies that advance how marine and freshwater environments are studied by:

- Informing and enabling the development of new technologies through innovative partnerships with industry.
- Integrating additional and novel real-time capabilities and facilitating their widespread implementation.
- Positioning OTN to adapt to anticipated advancements in artificial intelligence and the ways it can be positively implemented to explore and understand aquatic ecosystems.

A lemon shark in the mangroves in the Bahamas.
Anita Kainrath / Ocean Image Bank / Mangrove Photography Awards

OTN's strategic plan was developed by OTN's senior management team, in close collaboration with core team leads. Guidance was provided by the OTN Council, International Science Advisory Committee and International Data Management Committee. Input was also generously provided by OTN's staff and network of researchers from around the world.

Scan the QR code to read the plan in full.

headquarter highlights

An OTN Teledyne Webb Research Slocum glider.
Nick Hawkins

gliders

The glider team has collaborated with partners across various sectors and disciplines to send OTN's fleet of marine autonomous vehicles (aka gliders) to new areas in a continuous effort to detect tagged animals off the beaten path. This was a year of personal bests for the team, with nine gliders deployed at one time, 31,000+ km travelled and a combined total of more than 900 days at sea!

OCEAN AWARE WAVE GLIDER DEPLOYMENT

The glider team and industry partners at Innovasea built on previous efforts to integrate the Mobile RX—a new prototype animal telemetry receiver—into both the Slocum and Wave Gliders in support of the Ocean Supercluster's Ocean Aware project. These new sensor integrations can now allow both platforms to receive real-time animal telemetry detections. The gliders successfully performed range test missions and surveys to track acoustic animal tags on salmon and crabs, respectively. The Wave Glider was also equipped with sensors to measure the concentration of carbon dioxide in the ocean. When paired with additional sensors, gliders serve as a platform of opportunity (akin to scientific sensors that are mounted on ferries to collect data)—a win-win! Special thanks to the Memorial University glider team for their support with the Slocum glider work, making this a truly collaborative project!

NORTH ATLANTIC RIGHT WHALE MONITORING

OTN and partners—including Transport Canada and the University of New Brunswick (UNB)—continued operating Slocum gliders to monitor for North Atlantic right whales in the Gulf of the St. Lawrence. In 2023, right whale detections by the gliders were used to impose vessel slowdowns. This marked the first year that a glider was present in at least one of the three zones that make up the study site for continuous monitoring between April to November.

WAVE AND SLOCUM GLIDERS IN THE LABRADOR SEA

In late fall, a Wave Glider and a Slocum glider were deployed from the RV Maria S. Merian, a German research vessel, to collect data in support of an international study of air-sea exchange—Bubble

Exchange in the Labrador Sea (BELS). The Wave Glider measured various ocean chemistry and meteorological variables, such as the partial pressure of CO2, pH, oxygen concentration and the concentration of total dissolved gas. The glider was also equipped with a new sensor to measure ocean turbulence. Together, these measurements are helping researchers understand how the Labrador Sea uptakes CO2 and other environmentally important gases.

CUTLASS FURY

In late summer, an OTN Teledyne Webb Research Slocum glider was equipped with an externally mounted JASCO Ocean Observer—a passive acoustic hydrophone with real-time data processing capabilities—to provide near real-time marine mammal detections before and after the Royal Canadian Navy's Cutlass Fury 2023 exercise. During its observations, the Observer detected dolphins, but no whales. After the Cutlass Fury exercise, the glider assisted Defence Research and Development Canada by supporting FAVA—a trial designed to compare ocean models against observations to improve sonar performance predictions for submarine operations. Additionally, the glider was used to provide timely information on ocean temperatures in the water column to assist the Navy in forecasting the intensity of Hurricane Lee.

An OTN Liquid Robotics Wave Glider at its home base at the COVE in Dartmouth, N.S.
Nicolas Winkler Photography

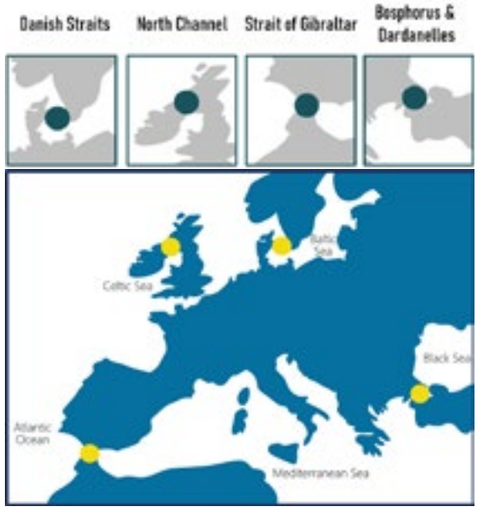
ANIMAL TRACKING

This year, both types of gliders were used for dedicated tracking surveys to collect data for partners from Emera, the University of Windsor, Fisheries and Oceans Canada (DFO) and UNB. In addition to surveys, the Wave Gliders were used to offload VR4 receivers in the North Atlantic from the Northern Cod Acoustic Telemetry project (NCAT), Gully, HaliBT and OTN Halifax arrays.

field ops

STRAITS

A new research project funded by Horizon Europe is tracking aquatic animals across all four corners of Europe in support of conservation and management. The Strategic Infrastructure in European Seas (STRAITS) project is a four-year, 3.5-million-euro initiative that will deploy tracking equipment in major swim ways across Europe to monitor the movements of aquatic animals at a pan-European scale. This research is building on SeaMonitor (2019 – 2022)—an EU INTERREG VA Programme that was established to advance the conservation and management of the seas around Ireland, Western Scotland and Northern Ireland. STRAITS consists of 10 organizations—including OTN—who are working to advance the understanding of aquatic animal movements and changing the way biodiversity is monitored in European waters to support conservation and policy initiatives.

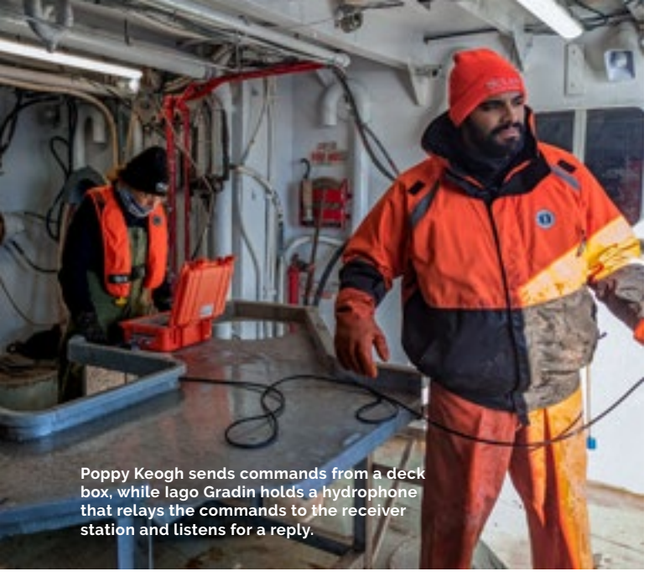


Locations of the STRAITS tracking arrays.
Images courtesy of the European Tracking Network

An OTN receiver unit encased in a custom float collar.
Nicolas Winkler Photography

ESRF

As part of the Environmental Studies Research Fund (ESRF)—led by DFO and in collaboration with other partners including the Unama'ki Institute of Natural Resources (UINR) and the Atlantic Salmon Federation—OTN deployed an additional 110 acoustic receiver stations off Newfoundland and Labrador to capture movement data from the spring salmon smolt run. The array is also situated in a key area for tracking northern Atlantic cod.



Poppy Keogh sends commands from a deck box, while Iago Gradin holds a hydrophone that relays the commands to the receiver station and listens for a reply.

FIRST ROV INTERN

OTN welcomed its first ROV-focused intern from the Nova Scotia Community College's (NSCC) Oceans Technology program—which prepares students to work in the field of ocean technology—for a six-month placement to assist with ROV recoveries and equipment maintenance. The successful candidate, Sean Potter, proved immediately invaluable and was offered a full-time position upon completion of his internship. OTN has been hosting NSCC Oceans Technology students since the program began, in addition to collaborating in other ways with the program.

Since 2019, NSCC has maintained a small, deployed array for teaching purposes with gear on loan from OTN.

ROV

Over the past few years, OTN has added and increased its subsea infrastructure, including upgrading its remotely operated vehicle (ROV) to increase the depth range from 500 metres to 1000 metres, enhancing OTN's ability to retrieve lost equipment and recover valuable data that would otherwise be lost. In addition to a full-featured observation class ROV, OTN's suite of ROVs includes several highly portable, compact ROVs and an EdgeTech side-scan sonar to support lost equipment recovery and marine habitat mapping. Using OTN's suite of ROVs, the field team was able to recover four VR2 acoustic receivers, six V4R acoustic receivers, two ice sonars and one baited remote underwater video (BRUV) system in 2023!

"The NSCC Oceans Technology program continues to receive outstanding support from OTN and its staff. We extended our array in 2023 from three stations to seven stations, allowing us to expand geographically. This effort could not have been possible without the continued technical and equipment support from OTN. It is a pleasure to interact with OTN staff for their technical expertise and understanding of our educational objectives."

– Stefane Kirchoff and Alfred White,
NSCC Oceans Technology program

The research team equips fish with acoustic and floy tags in Norway.

TRACKING COD IN NORWAY

OTN technician, Nathan Glenn, travelled to Svalbard, Norway to assist local partners in the deployment of a new receiver array supported by an OTN equipment loan. This new project—a collaboration between the Norwegian Research Centre, Akvaplan-niva, and the University Centre in Svalbard is tracking Atlantic cod in a high Arctic fjord experiencing climate-driven Atlantification—a phenomenon where Atlantic water is warming the temperature and changing the fish community composition. Researchers tagged 30 cod with open protocol Sonotronics tags equipped with depth, temperature and acceleration sensors, and deployed 24 Innovasea receivers throughout the fjord to track cod movements over the next year.

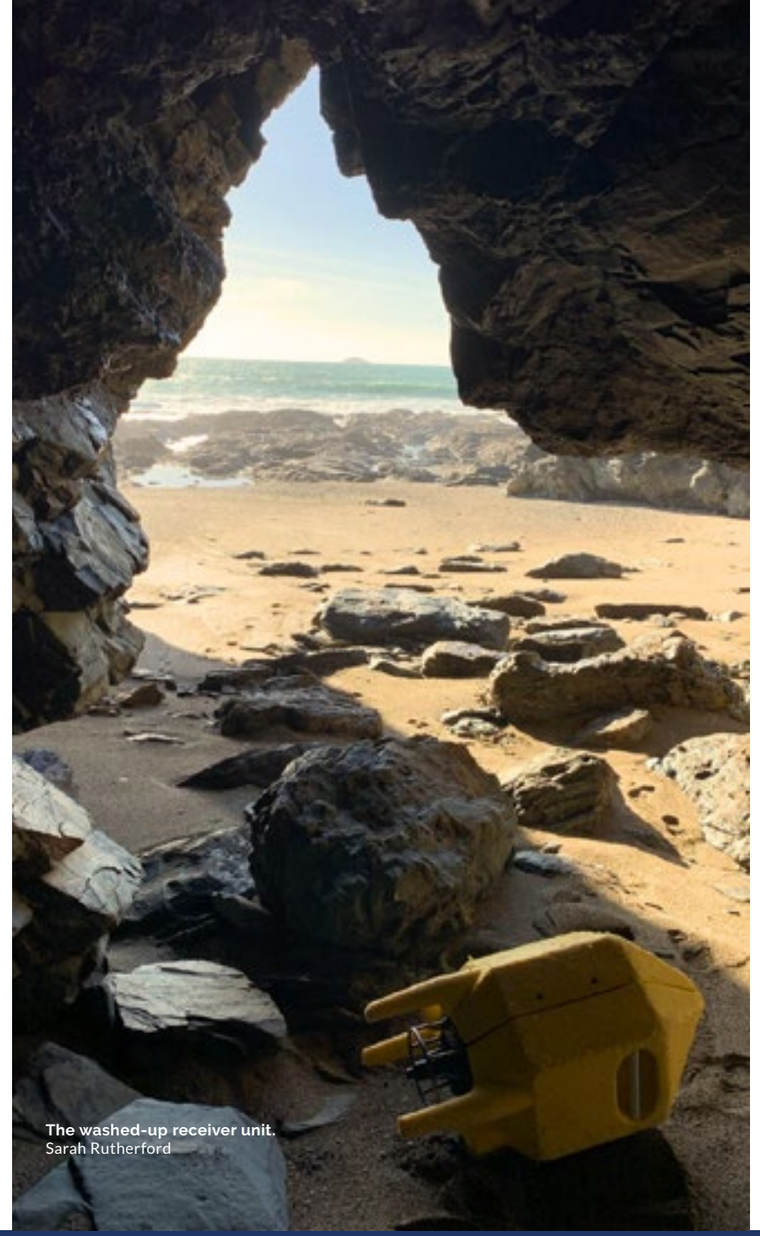
LOST & FOUND

After crossing the Atlantic Ocean, one of OTN's VR4 acoustic receivers was found washed up in a cave in Polzeath—a village on the north Cornwall coast in the United Kingdom! The receiver was discovered by Sarah Rutherford from the Polzeath Marine Conservation Group and Centre, which supports many community initiatives like beach clean-ups and other ocean education events. Sarah maneuvered the heavy unit about a half a mile out of the cave and over rocks before engaging the help of other centre volunteers to help carry it the rest of the way down the beach before the tide came up again. The receiver originated from OTN's Halifax Line—the longest acoustic array

in the world, which is made up of more than 250 receivers and spans over 200 kilometres from Halifax to the Scotian Shelf break. Since 2008, the array has been tracking the movements of a variety of acoustically tagged marine species moving along the East Coast continental shelf, as well as year-round and seasonal resident species.

LOST & FOUND

In early 2023, OTN's field team recovered two washed up acoustic receivers along the Bay of Fundy, Nova Scotia. These units were found by Karen Jenner of the Nova Scotia Beach Garbage Awareness initiative. The recovered receivers came from two different projects and Fundy regions! One was part of OTN's Minas Passage Line, located between Cape Sharpe and the Blomidon Peninsula, which is used to study the many marine species that travel in and out of the Minas Basin. The other unit drifted ~100 kilometres from the Musquash Marine Protected Area (MPA) in New Brunswick, which was deployed for a collaborative project with DFO to monitor the presence of migratory species in the MPA. The field team was able to offload animal movement data from both receivers.



The washed-up receiver unit.
Sarah Rutherford

data

CORE TRUST SEAL CERTIFICATION

With dedication from the OTN data and project management teams, OTN was successfully certified as a CoreTrustSeal (CTS) trustworthy data repository. CTS replaces established certifications by the World Data System, as well as the Data Seal of Approval, and is recognized across a wide range of academic and industry data repositories as a mark of excellence—further establishing OTN's trustworthiness, reliability and stability to a global community of researchers. The CTS certification was recently recognized by UNESCO's International Oceanographic Data and Information Exchange (IODE) as a necessary component of quality management certification for its Associate Data Units (ADU), removing the need for maintenance of a separate certification under IODE's Quality Management Framework.

OBIS PUBLICATION

The OTNDC published 2.1 million occurrence records into the Ocean Biodiversity Information System (OBIS). These records are summaries of detection events identifying individual animals being tracked by OTN partners. Data managers for the FACT Network were also able to use the OTN-authored workflow to publish their first projects to OBIS in this format in 2023.

NEW R PACKAGE FROM IMOS

Work on extending the utility of the exciting new remora package authored by the Animal Tracking Facility at the Integrated Marine Observing System (IMOS) was undertaken to help OTN and its partners benefit from the quality control routines and environmental data collection it currently provides for Australian datasets.

Courtesy of: https://github.com/IMOS AnimalTracking/remora

CONFERENCES: OTN was a participant in the 27th session of the IODE General Assembly in its role as a representative of an IODE ADU, and in the 11th session of the OBIS Steering Group as a participating OBIS node. Staff from the OTN data team attended several key international conferences including the Taxonomic Databases Working Group (TDWG) 2023 Symposium to see how standards used at OTN are developed and applied in other fields; and the US Integrated Ocean Observing System (US-IOOS) Data Management and Cyberinfrastructure meeting in Silver Spring, MD, to present on nodes and data pipelines to OBIS.

WORKSHOPS

Together with partners at US-IOOS, the Marine Biodiversity Observation Network (MBON), OBIS-USA, the Canadian Integrated Ocean Observing System (CIOOS), and Hakai, OTN data team staff conducted a wide-ranging data mobilization workshop that trained 80+ participants across a broad range of countries in how to format and publish their biodiversity datasets into OBIS. OTN data team staff delivered telemetry data management and analysis workshops for early career researchers at the annual meetings of partner networks the Atlantic Cooperative Telemetry Network (ACT) and the Great Lakes Acoustic Telemetry Observation System (GLATOS). Data team staff also hosted two successful workshop series for in-person and virtual attendees—one on Python for Ecologists, and another on R for Ecologists. The workshops were hosted in collaboration with ACENET and were extremely well received.

Coral reef in Sharm el Sheikh, Egypt.
Renata Romeo / Ocean Image Bank

events

In 2023, OTN participated in and coordinated a total of 29 events, including presentations, booths, receptions and exhibits. More than 1400 attendees participated in these events!

ICFT

OTN both sponsored and participated in the 6th International Conference on Fish Telemetry in Sete, France from June 11-16, 2023. OTN had three accepted abstracts for the event—one presentation and two posters—and had organizational representation from several staff members. This international conference gives researchers from all over the world the opportunity to network, discuss the latest in telemetry research and promote collaborations across the world.

GLATOS x OTN FRESHWATER LUNCH SOCIAL

In conjunction with one of its partner networks, the Great Lakes Acoustic Telemetry Observation System (GLATOS), OTN hosted a lunch social during the American Fisheries Society meeting in Grand Rapids, Michigan, in August 2023 to connect with freshwater telemetry researchers in the American Midwest and offer data warehousing services to researchers outside of the GLATOS catchment.

ECR WORKSHOP WITH CANSSI

OTN, in partnership with the Canadian Statistical Sciences Institute (CANSSI), facilitated a workshop for early career researchers (ECRs) who have experience working with continuous-time animal movement datasets. The workshop—hosted at Dalhousie University—offered ECRs the opportunity to network with researchers from around the world and dive into visualizing and manipulating data.

BELOW: The OTN X CANSSI ECR workshop

MUIWATMNEJ ETUAPTMUMK

OTN participated in the Muiwatmnej Etuaptmumk Conference 2023 hosted by the Bras d'Or Lakes Collaborative Environmental Planning Initiative (CEPI) by both sponsoring the event and facilitating a workshop on Apoqnmatulti'k. The event sought to equip participants with the knowledge and tools necessary to effectively apply Etuaptmumk (Two-Eyed Seeing) principles to their own work by welcoming organizations to collaborate and share their experiences and valuable lessons. Project partners highlighted different aspects of Apoqnmatulti'k, including project origins and processes, lessons learned, navigating conflict and building relationships, community involvement and liaising, and achievements to date.

COASTAL CONNECTIONS PODCAST

Apoqnmatulti'k was featured on the Coastal Connections podcast as an example of a project guided by Etuaptmumk (Two-Eyed Seeing). In the episode, project partners Darren Porter (MINAS), Alanna Syliboy (Confederacy of Mainland Mi'kmaq/Mi'kmaw Conservation Group), Shelley Denny (Unama'ki Institute of Natural Resources), and Evelien Vanderkloet (OTN), reflected on stories and lessons learned from the first phase of the project.

DISPLAYS

OTN has several semi-permanent exhibits displayed across the province—including at the Fisheries Museum (Lunenburg), Shubenacadie Canal Commission (Dartmouth) and Back to the Sea Society (Dartmouth), giving visitors of every age the opportunity to learn about OTN-supported studies happening on local to global scales!

An American lobster—one of the Apoqnmatulti'k study species.
Lloyd Bond

oceans week

ORCA

In June, Apoqnmatulti'k project partners Shelley Denny (UINR), Alanna Syliboy (CMM/MCG), and Maggie Sutherland (OTN) presented the initiative as a model for working together through meaningful collaboration at the Ocean Research in Canada Alliance (ORCA) National Meeting in Newfoundland and Labrador. Reflecting on this partnership, the presentation explored how different knowledge systems strengthen research, inform stewardship and management decisions, and contribute to a healthy ocean, while providing insight on how to build relationships and establish trust in collaborative research.

TYI FUNDING

Since 2017, 50 cents from every can of Big Spruce Brewing and OTN's Tag! You're It! (TYI) conservation financing beer have been allocated to non-profit organizations and charities in Canada that support healthy aquatic ecosystems. In tandem with Oceans Day 2023, TYI funds were allocated to five organizations committed to marine research, conservation and education: the Canadian Network for Ocean Education, Coastal Action, Diversity of Nature, Friends of Sable Island and the Terranaut Club. Since its inception, this colla'beer'ation has raised more than $130,000 and counting!

From left to right: Shelley Denny, Maggie Sutherland and Alanna Syliboy at the 2023 ORCA National Meeting.

Diversity of Nature participants on a field trip in Nova Scotia.
Nicolas Winkler Photography

Caliyena Brown, a marine biology student at Dalhousie University, joined the OTN communications team for the summer through Dalhousie University's John Dingle Science Communication Internship program. Cali spent the summer gaining practical experience in science communication and assisting with outreach activities. OTN was awarded the internship by the Faculty of Science for the third year in a row—the only host organization to receive the fellowship every year since its inception.

"The funds from Tag! You're It! will help support our annual shark tagging expedition. By providing these experiences free of cost and targeting underrepresented audiences, we can collectively work towards making marine science more inclusive."

– **Suchinta Arif**, Director, Diversity of Nature

The 2022/2023 TYI can design.

OCEANS WEEK BOOTH

OTN participated in an Oceans Week event hosted by the Nova Scotia Underwater Council on the Halifax Waterfront. More than 40 visitors stopped by OTN's booth to learn about acoustic animal tracking, marine autonomous vehicles and some of the exciting aquatic research projects taking place in Atlantic Canada.

SHARK PANEL AT DAL

Dalhousie's Faculty of Science hosted its third annual oceans-focused panel, which featured experts from Dalhousie University and the community—including OTN's executive director Fred Whoriskey—to explore topics related to shark conservation and research in Nova Scotia.

Hammerhead shark, Mikomoto, Japan.
Masayuki Agawa / Ocean Image Bank

INNOVATION
Canada Foundation for Innovation
Fondation canadienne pour l'innovation

NSERC
CRSNG

RESEARCH NOVA SCOTIA

Fisheries and Oceans Canada
Pêches et Océans Canada
Transport Canada
Transports Canada

Marine Life

OBIS
OCEAN BIODIVERSITY INFORMATION SYSTEM

2021 2030 United Nations Decade of Ocean Science for Sustainable Development

DALHOUSIE UNIVERSITY