

## **Monitoring Canada's ocean, coasts, and killer whales through technology and data**

Submitted by Katie Shoemaker Fri, 2017-09-15 15:20

Ocean Networks Canada (ONC) technology and data continue to monitor our country's ocean, extensive coastlines, and endangered killer whale habitat through an underwater listening station, hydrophones, community observatories, and oceanographic radar systems.

In early September 2017, Fisheries and Oceans Canada and Transport Canada made two separate announcements on additional Oceans Protection Plan measures to protect our coasts, and the southern resident killer whales in the Salish Sea (*Figure 1*), and to study areas of high vessel traffic.



*Figure 1. The Salish Sea is home to both critical habitat for killer whales and busy shipping lanes.*

## **Partnering up on underwater listening station**

Since January 2015, ONC has participated in the Vancouver Fraser Port Authority's world-leading Enhancing Cetacean Habitat and Observation (ECHO) program with JASCO Applied Sciences, and other agencies and organizations in an effort to better understand and manage the impact of increasing marine traffic and underwater vessel noise on at-risk whale populations.

In September 2015, as part of the ECHO program, ONC helped install an underwater listening station in the Strait of Georgia located on a busy inbound shipping lane leading into the Port of Vancouver, the largest shipping hub in Canada.

Much of the commercial vessel activity that is destined for this hub crosses designated critical habitat for southern resident killer whales, as well as other whales and marine species. Marine animals rely on their sense of hearing for navigating, communicating, and feeding, which is impacted by escalating vessel noise.

The underwater listening station comprising four hydrophones (underwater microphones) is connected to ONC's VENUS observatory in the southern Strait of Georgia and is integrated into Oceans 2.0, ONC's data management system and JASCO's PortListen® acoustic analysis system deliver measurements in real time. There are two other hydrophones at the central and delta nodes that are also part of the southern Strait of Georgia observatory (*Figure 2*).



Figure 2. The underwater listening station and hydrophones in the southern Strait of Georgia deliver real-time acoustic measurements on marine mammal vocalizations and underwater vessel noise.

Monitoring and understanding sound, and its impact on marine mammals is critical to good ocean management, says ONC's President and CEO, Kate Moran. Ocean Networks Canada is proud to use our world-leading network of innovative technologies and expertise in our work with the Vancouver Fraser Port Authority, Transport Canada, Fisheries and Oceans Canada, and JASCO Applied Sciences to study the effects of underwater vessel noise.

Until 6 October 2017, ECHO and JASCO are working with marine industry partners to conduct a voluntary vessel slowdown trial in Haro Strait, an important summer feeding area for southern resident killer whales, to better understand and measure the level of noise reduction that can be achieved through reduced vessel speed.

There are numerous options available to reduce underwater vessel noise, including operating at lower speeds, maintaining clean hulls and propellers, absorbing ship engine vibrations, optimizing mechanical systems, and modifying shipping routes and timing to avoid marine mammal habitats.

The collaborative nature of the ECHO program is exemplified through the installation of the underwater listening station in the Strait of Georgia with support

from Ocean Networks Canada, JASCO Applied Sciences, Transport Canada, Fisheries and Oceans Canada, and the Vancouver Fraser Port Authority, says Vancouver Fraser Port Authority Environmental Programs Director, Carrie Brown. The ECHO program uses the data from the listening station to better understand and help manage the impact of shipping activities on at-risk whales throughout the southern coast of British Columbia.

## **Southern Resident Killer Whale symposium**

In October 2017, ONC will participate with partners and stakeholders in a southern resident killer whale symposium, co-hosted by Fisheries and Oceans Canada, Transport Canada, and Environment and Climate Change Canada.

The conference will bring together organizations and agencies to enhance programs such as ECHO, and contribute to greater understanding of the complex issues and shared responsibilities associated with protecting and supporting the recovery of southern resident killer whales.

British Columbia is uniquely positioned to build a successful recovery plan for the southern resident killer whales. We have the right knowledge and expertise, coupled with world-leading ocean technology to make the British Columbia coast the most listened to coastline in the world, says ONC's Corporate Operations Strategic Partnerships Officer, Jessica Stigant. Not one organization can do this alone. It will take coordination to leverage these ocean assets for the purpose of collecting and analyzing valuable ocean metrics for evidence-based decision-making.

## **Community observatories and the new Coastal Environmental Baseline Program**

ONC activities are also aligned with Fisheries and Oceans Canada's new Coastal Environmental Baseline Program, which aims to collect comprehensive data in areas of the country where there is existing or the potential for increasing vessel traffic, including the Port of Prince Rupert and in the Arctic.



Figure 3. ONC community observatories collect data where there is existing or the potential for increasing vessel traffic to help inform decision-making.

ONC hosts community observatories in Campbell River, Kitamaat Village, Prince Rupert, and Cambridge Bay, Nunavut (Figure 3). Data collected from these areas could be used to inform decisions on sensitive marine habitat and species.

### **Oceanographic radar systems and marine safety**

Other ONC instruments and data systems, such as land-based oceanographic radar and automatic identification system (AIS) sensors, also support the Oceans Protection Plan's goals of increased marine safety.

Oceanographic radar systems measure the speed and direction of ocean surface currents and waves in real time, which helps make Canada's coasts safer for shipping and navigation, provides enhanced marine incident response, and detects tsunami waves. ONC has nine oceanographic radar systems located along the coast of British Columbia, with two more planned for installation by March 2018.

AIS receivers provide data that track large ships and other marine vessels. These data,

combined with that from oceanographic radars, are used to monitor, understand, and mitigate the impacts of marine shipping activities. ONC has five AIS receivers in high traffic locations along the coast of British Columbia.

ONC's innovative technologies and expertise in cabled observatories, remote control systems, interactive sensors, and big data management enable informed, evidence-based decision-making for good ocean management, disaster mitigation and environmental protection.

## RELATED STORIES

[Collaborative stewardship for the Pacific coast](#)

[Listening station to study impact of ship noise on whales](#)

## Government of Canada News Releases and Backgrounders

[Government of Canada announces additional measures to protect our coasts](#)

[Southern Resident Killer Whales](#)

[New science program to study areas of high vessel traffic](#)

## Tags:

- [ECHO](#)
- [AIS](#)
- [sensors](#)
- [radar systems](#)
- [Oceans Protection Plan](#)

## Categories:

- [News Stories](#)
- [Science Highlights](#)

```
// FIXES AMPERSAND IN BREADCRUMB var ONC_breadcrumb =
document.getElementById("breadcrumb"); if (ONC_breadcrumb) { var ONC_innerHTML =
ONC_breadcrumb.innerHTML; ONC_innerHTML = ONC_innerHTML.replace("&", "&");
ONC_breadcrumb.innerHTML = ONC_innerHTML; }
```

## Highlights

- [Audio](#)
- [Data](#)
- [Learning](#)
- [Science](#)
- [Video](#)

## Reading Room

- [Active Research](#)
- [Backgrounders](#)
- [FAQs](#)
- [Glossary](#)
- [News Briefs](#)
- [News Stories](#)
- [Newsletters](#)
- [Publications](#)

## Cool Stuff

- [Apps](#)
- [Digital Fishers](#)
- [iBooks & e-Pubs](#)
- [Live Video](#)
- [Maps](#)
- [Images](#)
- [State of the Ocean](#)

## Data & Tools

- [Apps](#)
- [Data Plots](#)
- [Data Search](#)
- [Data Policy](#)
- [Data Help](#)
- [OPeNDAP Web Services](#)

## Opportunities

- [Calendar](#)
- [Educator Opportunities](#)
- [Global Partnerships](#)
- [Industry Network](#)
- [Jobs](#)
- [Staff List](#)
- [Technology Services](#)
- [Workshops](#)

## Sites & Instruments

- [Arctic Sites](#)
- [Northeast Pacific Sites](#)
- [Salish Sea Sites](#)
- [Notice to Mariners](#)

## Follow Us



[Sign up for our newsletter](#)

## Feedback

Send us your questions and comments \*

How could we improve this page?

Your Name

Your Email \*

Your Location

CAPTCHA

This question is for testing whether or not you are a human visitor and to prevent automated spam submissions.





What code is in the image? \*  
Enter the characters shown in the image.



[About Us](#) | [Contact Us](#) | [Media Relations](#) | [Legal Notices](#)

© Ocean Networks Canada. All rights reserved. 2474 Arbutus Road, Victoria, BC, V8N 1V8  
| 1.250.472.5400

```
(function () { var d = new Date; var year = d.getFullYear();  
document.getElementById("copyright-date").innerHTML = year; }());
```

---

**Source URL:** <http://www.oceannetworks.ca/monitoring-canada%E2%80%99s-ocean-coasts-and-killer-whales-through-technology-and-data>