

Collaborative Action for a Quieter Ocean

How the Vancouver Fraser Port Authority-led ECHO Program is managing the impacts of commercial shipping on an iconic whale species in the Salish Sea

By Vancouver Fraser Port Authority



Located off Canada's scenic Pacific coast, the Port of Vancouver is Canada's largest port, and the third largest in North America by tons of cargo. Every day, the port facilitates trade with countries across the world, generating nearly \$12 billion towards the national GDP per year.

Situated in the Salish Sea, the port operates within a richly diverse ecosystem made up of islands, estuaries, rivers, and creeks that collectively support an abundance of wildlife, including more than 20 species of marine mammals.¹ Among the many marine species that call this treasured habitat home are the southern resident killer whales (or SRKWs)—an endangered species of significant cultural importance.

Since 2001, the SRKW have been listed as endangered in Canada, with the current population size at 74 individuals. In 2008, the Canadian government developed a recovery strategy outlining key threats to the whales, which included low availability of prey, environmental contaminants, ship collisions, and acoustic disturbances caused by marine vessel activity.²

Recognizing that acoustic disturbances to whales were likely to increase alongside growing marine traffic, in 2014, the Vancouver Fraser Port Authority—the federal agency responsible for the lands and waters within the Port of Vancouver's jurisdiction—launched the Enhancing Cetacean Habitat and Observation (ECHO) Program, a collaborative initiative focused on better understanding and reducing the cumulative impacts of commercial vessel traffic on endangered whales.

To begin monitoring vessel-generated underwater noise and total ambient underwater noise, in 2015, the port authority worked with its partners to support the installation of the first underwater listening station beneath the busy commercial shipping lanes in the Salish Sea. Monitoring is ongoing to this day, and the associated data amounts to the largest known non-military vessel noise database in the world, with over 20,000 vessel measurements recorded.

Towards the program's goal of better understanding how vessel-generated underwater noise affects SRKW behavior, in 2016, a study was commissioned that found that underwater noise from whale watching boats and commercial vessels could result in a cumulative loss of foraging time of up to 23 percent—or up to 5.5 hours a day.³

Building on these findings, in 2017 the ECHO Program organized a first-of-its-kind "voluntary ship slowdown trial," in which it asked commercial vessels to reduce their speeds when transiting through an important SRKW feeding area. Over the course of the two-month period, over 500 commercial vessels transited at reduced speeds, leading to significant reductions in underwater noise during the trial.⁴

Since its first successful trial four years ago, the ECHO Program has expanded its voluntary seasonal underwater noise reduction initiatives each year to now include two slowdowns and a lateral displacement initiative, where commercial vessels are asked to either slow down or move out of key SRKW feeding areas.

The program's yearly initiatives are designed and implemented in collaboration with over a hundred U.S. and Canadian partners and advisors from across government agencies, the marine transportation industry, Indigenous communities, environmental groups and scientists.

Timed around the seasonal presence of SRKW, the program's initiatives typically run from June through November, when SRKW return to the Salish Sea to feed on Chinook salmon. In 2020, these voluntary initiatives extended for approximately 74 nautical miles, helping to reduce underwater noise in just under half of the designated SRKW critical habitat areas that directly overlap the commercial shipping lanes.⁵

Despite being entirely voluntary, the marine shipping industry's participation in these initiatives frequently exceeds participation rate goals. Last year, for example, over 2,800 large



In the Salish Sea's Strait of Georgia, southern resident killer whales share their waters with commercial vessels. Photo credit: Joan Lopez

commercial vessels took action to reduce underwater noise, reaching record-high voluntary participation rates of over 80 percent in all three of the ECHO Program's underwater noise reduction initiatives.

To measure the impact of the program's voluntary initiatives on underwater noise, data is collected by hydrophones placed at various locations along the Salish Sea's floor. The data from these hydrophones is analyzed, with results publicly reported out at the end of each season.

Importantly, in addition to measurably reducing acoustic disturbance from vessels during the program's seasonal measures, the program has also helped increase awareness of the broader issue of underwater noise. As a result, in 2017, the Vancouver Fraser Port Authority began offering financial incentives for ships that take measures to reduce their underwater

noise, making Canada the first country in the world to offer incentives for quieter ships.⁶

Looking ahead, the ECHO Program is focused on advancing its longer-term vision of increasing the adoption of quiet vessels both at the Port of Vancouver and beyond. Towards this goal, the program is working with ship classification societies across the globe to align the measurement and analysis of underwater noise emissions and associated 'quiet' ship notations in order for them to be more uniformly incentivized by ports.

While commercial vessel traffic along Canada's west coast will remain a necessity to facilitating the country's trade and connecting it to the rest of the world, the ECHO Program offers a hopeful demonstration of how meaningful collaboration can drive change towards quieter oceans while reducing the short-term threats facing the endangered species that call it home.



Listen to the difference between a ship at regular speed and at a reduced speed. These audio recordings were captured by hydrophones placed below a commercial shipping lane during the 2017 voluntary slowdown trial.

AUDIO: Before the slowdown

AUDIO: During the slowdown

Endnotes:

1. Vancouver Fraser Port Authority, *Mariner's guide to whales, dolphins, porpoises in Western Canada* /www.portvancouver.com/wp-content/uploads/2017/07/Mariners-Guide-to-Whales-Dolphins-Porpoises-of-Western-Canada.pdf
2. Fisheries and Oceans Canada, *Recovery Strategy for the Northern and Southern Resident Killer Whales (Orcinus orca) in Canada*. www.sararegistry.gc.ca/virtual_sara/files/plans/Rs-ResidentKillerWhale-v00-2018Aug-Eng.pdf
3. Vancouver Fraser Port Authority: *A study to estimate the effect of noise from whale watch boats and commercial vessels and on killer whales* www.portvancouver.com/wp-content/uploads/2017/01/2017-07-ECHO-Program-Estimating-the-effects-of-noise-from-commercial-vessels-and-whale-watch-boats-on-SRKW.pdf
4. Vancouver Fraser Port Authority: *Haro Strait slowdown trial summary* www.flipsnack.com/portvancouver/echo-haro-strait-slowdown-trial-summary/full-view.html
5. Vancouver Fraser Port Authority, *ECHO Program celebrates success of 2020 voluntary initiatives to reduce underwater noise*. www.portvancouver.com/about-us/information-updates/echo-program-celebrates-success-of-2020-voluntary-initiatives-to-reduce-underwater-noise/
6. Vancouver Fraser Port Authority: *Port authority expands noise reduction criteria to encourage quieter waters for endangered whales*. /www.portvancouver.com/news-and-media/news/vancouver-fraser-port-authority-expands-noise-reduction-criteria-to-encourage-quieter-waters-for-endangered-whales/

