



A Species at Risk Act Section 11
Conservation Agreement to support the
recovery of the southern resident killer whale

Annual report

Year 1: May 2019 – May 2020



October 2020

Photo: Jeanne Hyde

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Purpose of this report

The purpose of this annual report is to summarize progress and findings related to recovery measures undertaken during Year 1 (May 2019 to May 2020) of the five-year *Species at Risk Act Section 11 Conservation Agreement to Support the Recovery of the Southern Resident Killer Whale* (the “Conservation Agreement” or “agreement”).

As outlined in section 7.4 of the agreement, each year the parties to the agreement will evaluate the completed actions and propose additional commitments to increase the likelihood of achieving reductions to any acoustic and physical disturbance from large commercial vessels to support the recovery of southern resident killer whales.

The Vancouver Fraser Port Authority is the lead author of this report with review and input provided by the Enhancing Cetacean Habitat and Observation (ECHO) Program’s advisory working group and Conservation Agreement management committee.

Acknowledgements

The ECHO Program and the signatories of the Conservation Agreement would like to recognize the members of the ECHO Program’s advisory working group, vessel operators committee, acoustic technical committee and all other partners for their support in the planning and implementation of the commitments and recovery measures of the agreement. For a full list, please see the ECHO Program [website](#).

Parties to the Conservation Agreement



Fisheries and Oceans
Canada
Pêches et Océans
Canada



Transport
Canada



Background

Context

The Enhancing Cetacean Habitat and Observation (ECHO) Program is a collaborative research initiative led by the Vancouver Fraser Port Authority and guided by the input and advice of an advisory working group comprising of government agencies, the marine transportation industry, Indigenous individuals and environmental and conservation organizations. The ECHO Program was developed to better understand and reduce the cumulative impacts of shipping activities on at-risk whales throughout the southern coast of British Columbia.

The guidance provided by the ECHO Program advisory working group and associated technical committees, including a vessel operators committee and acoustic technical committee, assists the ECHO Program team in identifying which research, educational and threat reduction initiatives should be advanced and what targets should be set to best meet project the program goals and objectives. The long-term goal of the ECHO Program is to quantifiably reduce threats to whales as a result of shipping activities. More information about the ECHO Program, including annual reports which describe the key annual activities of the program, are available at portvancouver.com/echo.

Since 2014, the ECHO Program, with the input of key advisors and with the support of several funding partners, has facilitated the design and implementation of research studies and voluntary management measures focused primarily on reducing underwater vessel noise from large commercial vessels within key foraging areas of southern resident killer whales (SRKW) critical habitat. Measure selection and design considered a range of cultural, economic and environmental factors.

References to the actions of the ECHO Program in this document generally refer to efforts led by the ECHO Program team, with support and inputs from relevant program advisors.



Conservation Agreement

To build on the ECHO Program's initial success and establish a longer-term time horizon for further threat reduction efforts, on May 10, 2019, the Minister of Fisheries, Oceans and the Canadian Coast Guard entered into a five-year agreement entitled [*A Species at Risk Act Section 11 Conservation Agreement to Support the Recovery of the Southern Resident Killer Whale*](#), along with eight other parties.

The agreement formalizes the participation of all parties in the ECHO Program, with the shared goal of reducing acoustic and physical disturbance resulting from large commercial vessels operating in southern resident killer whale critical habitat in the Pacific Canadian waters. The agreement outlines each party's commitment to the continuation of existing efforts and measures and the development of new voluntary threat reduction measures. These measures are described in detail in Appendix A of the agreement.

The agreement also formalizes the port authority's commitment to continue managing the ECHO Program and working collaboratively with its program advisors and partners over a five-year term.

The nine parties to the agreement ('the parties') are:

1. Chamber of Shipping
2. Council of Marine Carriers
3. Cruise Lines International Association – North West & Canada
4. Fisheries and Oceans Canada
5. International Ship-Owners Alliance of Canada
6. Pacific Pilotage Authority
7. Shipping Federation of Canada
8. Transport Canada
9. Vancouver Fraser Port Authority

Appendix A of the Conservation Agreement highlights five key focus areas which support southern resident killer whale recovery:

- A. Regional engagement and collaborative efforts
- B. International engagement and collaborative efforts
- C. Data collection and research
- D. Initiatives to reduce underwater noise from large commercial vessels
- E. Initiatives to reduce physical disturbance from large commercial vessels

Under these five key focus areas, Appendix A outlines 26 measures. Some of the measures are further broken down into sub-measures in Year 1 of the agreement, resulting in a total of 36 measures and sub-measures listed in Appendix 1 of this report. Year 1 of the agreement refers to the timeframe between May 2019 and May 2020.

Conservation Agreement management committee

In line with Section 6.1 of the agreement, the parties established a committee (Conservation Agreement management committee) to oversee the implementation and the effectiveness of the agreement and to provide a collaborative forum to discuss and resolve any issues that may arise over the term of the agreement.

The inaugural meeting of the committee was convened in September 2019 to discuss the terms of reference for the committee. Committee members met again in May 2020, along with interested ECHO Program advisory working group members, to look ahead and plan for Year 2 of the agreement.

The role of the port authority and ECHO Program advisory working group

As outlined in section 5.2.1 of the agreement, the Vancouver Fraser Port Authority has committed to continuing to manage the ECHO Program. This includes supporting the engagement of the Conservation Agreement parties and other ECHO Program participants. In particular, the ECHO Program advisory working group plays a key role in supporting the development and implementation of the agreement and annual work plans that support the goals of the agreement.

Monitoring and reporting

As described in Section 7 of the agreement, as part of the ECHO Program's annual work planning and evaluation process, a monitoring and assessment framework was developed and implemented to facilitate measurement of progress on measures identified in Appendix A of the Conservation Agreement. Clear targets, metrics and timelines were assigned to each measure, as well as designated lead Conservation Agreement parties and associated contacts assigned to report on the progress of

measures. Three times each year, the ECHO Program shared updates and information with the ECHO Program advisory working group to communicate progress and seek input on measures requiring attention.

In Year 1, key performance indicators (KPIs) and associated targets, were also developed for evaluating the effectiveness of the Conservation Agreement as a whole over the duration of the agreement.

The status of the implementation of the agreement's Year 1 measures and commitments, as well as key performance indicators are summarized in the following sections and Appendix 1 of this report.

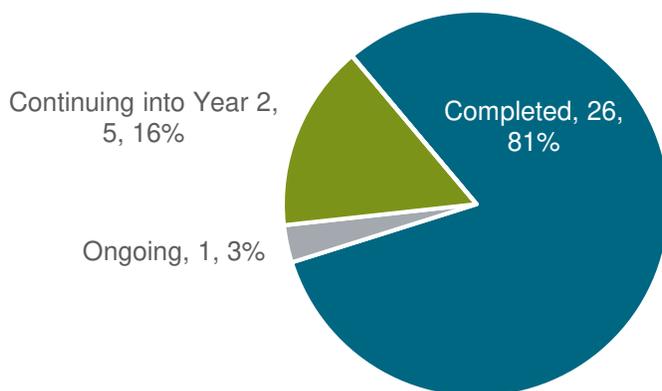
Year 1 highlights

Measure implementation status

The 26 measures included in Appendix A of the Conservation Agreement, and the additional 10 Year 1 sub-measures are described in Appendix 1 of this report, along with a summary of their status. The measures and sub-measures are grouped and listed into one of the five key focus areas (Area A to E) identified as supporting southern resident killer whale recovery.

Of the 36 measures and sub-measures outlined in Appendix 1, 26 measures (81%) are complete, work on five measures (16%) will continue into Year 2 and one measure (3%) is ongoing over the duration of the agreement. Of the five measures continuing into Year 2, the set deadline or metric was not reached within the Year 1 period but it is anticipated that the measures will be completed in the coming year. Figure 1 shows the status of Year 1 measures.

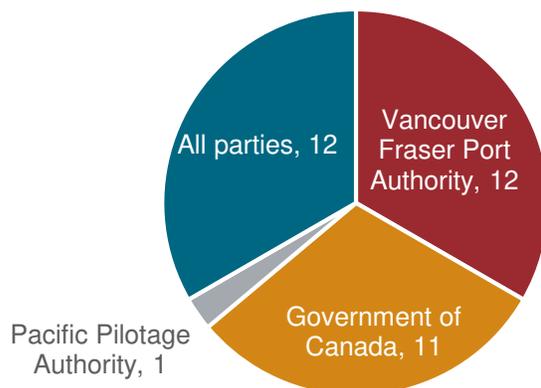
Figure 1: Conservation Agreement Appendix A measures: Summary of Year 1 status



Leading measure implementation

The 26 measures included in Appendix A of the Conservation Agreement, and the ten additional Year 1 sub-measures described in Appendix 1 of this report all identify which party to the agreement is responsible for leading the implementation of the individual measures and sub-measures. In Year 1, Vancouver Fraser Port Authority was responsible for leading 12 measures, Government of Canada was responsible for leading 11 measures, 'all parties' were responsible for leading 12 measures and Pacific Pilotage Authority was responsible for leading one. Figure 2 shows the breakdown of the parties leading Year 1 measures.

Figure 2: Conservation Agreement Appendix A measures: Parties leading Year 1 measures



Measuring overall Conservation Agreement effectiveness

At the beginning of Year 1, the ECHO Program team, ECHO Program advisory working group and Conservation Agreement management committee identified the need to develop key performance indicators (KPIs) to evaluate the effectiveness of the Conservation Agreement as a whole over the duration of the agreement, in terms of supporting the recovery of the southern resident killer whale.

The Conservation Agreement recognizes the need for an adaptive approach to guide and adjust over time those conservation measures developed and implemented pursuant to the agreement. Accordingly, and through the lens of adaptive management, continuous improvement, maximizing conservation benefit, safety, operational and commercial feasibility, KPI targets associated with these measures are set annually based on the best available information at the time. These targets will be refined as appropriate through a process of continuous evaluation and reflection on whether a target was met, along with a clear explanation and justification for why any targets were modified or adapted on the basis of what has been learned.

The KPIs selected and the targets set for each of the KPIs in Year 1 are described in Table 1.

KPIs fall into three categories of desired outcomes which are closely aligned with the purpose and goals of the Conservation Agreement:

Conservation Agreement Desired Outcome 1 (KPI 1.1 - 1.3)

ECHO Program advisory working group members and other regional interests continue to remain engaged, informed and working together to implement measures which quantifiably reduce threats to southern resident killer whales from larger commercial vessels through integrated consideration of biological, cultural, economic and safety impacts and benefits.

Conservation Agreement Desired Outcome 2 (KPI 2.1 - 2.3)

Quantifiable reduction in threats from large commercial vessels are measured and/or modelled in key areas of southern resident killer whale critical habitat as a result of threat reduction initiatives implemented through the agreement.

**Conservation Agreement Desired Outcome 3
(KPI 3.1 - 3.2)**

National and international awareness about the need to reduce underwater noise from vessels is growing, and the number of ports with quiet vessel incentive programs, as well as vessels with quiet design, technologies and/or notations is increasing.

The outcomes of Year 1 KPIs are included in Table 1 and show that targets were achieved or exceeded in all of the seven KPIs where targets were set. These results provide a very positive indication of the overall effectiveness of the agreement in Year 1.



Table 1: Conservation Agreement key performance indicators (KPI) for Year 1

KPI	KPI description	Metric/goal	Year 1 outcome
1.1	<p>Maintain effective engagement of advisory working group (AWG) members: 75% of AWG members (or alternates) attend ECHO Program AWG meetings and AWG meeting evaluations score a minimum average 4 out of 5 ranking, reflecting a high level of satisfaction with respect to the meeting quality.</p>	75% attendance	78.5%
		Average 4 out of 5 score on meeting evaluation forms	4.43 out of 5
1.2	<p>Maintain or improve commercial vessel participation rates: Vessel participation rates meet or exceed the participation goals for threat reduction initiatives (such as the Haro Strait and Boundary Pass slowdowns and Strait of Juan de Fuca (SJDF) lateral displacement trials) set by the ECHO Program AWG each year.</p>	Meet or exceed vessel participation goal	Haro Strait and Boundary Pass slowdown Goal: 80% Actual: 82%
			SJDF lateral displacement Goal: 80% Actual: 77%
1.3	<p>Regional commercial mariners actively use whale awareness and educational tools: The ECHO Program undertakes at least 4 promotional activities per year to actively communicate with regional commercial mariners to encourage their ongoing use of available whale awareness and educational tools.</p>	Four promotional activities	4 of 4 completed
2.1	<p>Maintain or improve ambient noise reduction levels: Underwater noise reduction initiatives in SRKW critical habitat (such as slowdowns and lateral displacement trials) meet or exceed the ambient noise reduction goals set by the ECHO Program AWG each year.</p> <p><i>NOTE: Sound is measured on a logarithmic scale therefore a 3.0 dB reduction is the equivalent to reducing the sound intensity by 50%. The change in ambient noise resulting from the slowdown is measured by hydrophones and filtered to include times when a large commercial vessel is the closest vessel to the hydrophone and to exclude times of elevated wind, tidal currents and small boat presence. Ambient noise results are presented as median reduction in broadband received sound pressure level.</i></p>	Reduce ambient underwater noise levels in key SRKW foraging areas by an amount comparable to that achieved in Haro Strait in 2017 (a 2.5db reduction or 44% reduction in sound intensity)	Haro Strait slowdown: 3dB ambient noise reduction (50% reduction in sound intensity)
			Boundary Pass slowdown: 3.5dB ambient noise reduction (55% reduction in sound intensity)
			SJDF lateral displacement: each tug transit reduces noise contribution by 4-7dB (60 - 80% reduction in sound intensity)
2.2	<p>Decrease affected SRKW foraging time: For threat reduction initiatives (such as slowdowns and lateral displacement trials) in areas where behavioral response modelling exists, decrease the amount of time SRKW foraging may be affected by vessel noise, to meet or exceed the goals set by the ECHO Program AWG each year.</p> <p><i>NOTE: The percent decrease in affected SRKW foraging time is estimated using a behavioral response model which combines inputs from a 24-hour noise model and uses SRKW sightings data to determine habitat use, coupled with two behavioural response and masking functions that affect foraging. The Year 1 results are presented as improvements in affected foraging time for an average traffic day in Haro Strait only.</i></p>	<i>This KPI was added near the end of Year 1, therefore no metric set by ECHO AWG in Year 1</i>	Haro Strait slowdown: 20%
2.3	<p>Explore new threat reduction measures: The ECHO Program advances at least one new research project annually intended to reduce underwater noise or physical disturbance threats from large commercial vessels in SRKW critical habitat.</p>	One new research project annually	Boundary pass slowdown
3.1	<p>Encourage application of quiet vessel design and technology: The Government of Canada, supported by the ECHO Program, convenes and/or participates in at least five meetings/initiatives per year with IMO member states, ship classification societies, ship owners, technical experts and industry experts to encourage consistency in, and uptake of, quiet vessel notations and application of quiet vessel design and technology internationally.</p>	Five meetings / initiatives with international stakeholders	5 of 5 completed
3.2	<p>Increase uptake of quiet vessel incentive programs: The Government of Canada, supported by the ECHO Program, engages with at least four Canadian port authorities and/or international ports per year to advise on the implementation of quiet vessel incentive programs, with a view to catalyzing an increase in the total number of ports that offer quiet vessel incentive programs annually.</p>	Engage four+ ports	4+ of 4 completed

Highlights of selected measures

A complete list of the Conservation Agreement measures and their status can be found in Appendix 1 of this report. Five Year 1 measures from the five focus areas supporting the recovery of the killer whales are highlighted below.

The measure numbers referenced below relate to the letter/number used in the Conservation Agreement. The KPI numbers relate to those presented in Table 1 and the 'lead' status refers to the Conservation Agreement party or parties that were assigned to lead the implementation and report on the status of the measure.

Focus Area A: Regional engagement and collaborative efforts – Maintain management of ECHO Program

Measures #:	KPI #:	Lead:
A1	1.1	Vancouver Fraser Port Authority
Year 1 measure objectives:	Convene 3-4 ECHO Program Advisory Working Group meetings per year to seek input and guidance. Convene ECHO Program Conservation Agreement management committee and technical committee meetings on an as needed basis throughout the year to seek input and advice. Rely on input and advice to adaptively manage program.	
Outcome:	The engagement of ECHO Program advisors is vital to the timely development and implementation of measures and ongoing monitoring and refinement of Appendix A of the Conservation Agreement. ECHO Program advisory committees supported the implementation of the Conservation Agreement through the convening of several in-person meetings and teleconferences. Satisfaction levels were measured for the advisory working group using attendance and meeting surveys. At least 75% of advisory working group member organizations were represented at each meeting and based on completed evaluation forms, meeting effectiveness ratings exceeded the goal of 4 out of 5.	

Focus Area B: International engagement and collaborative efforts - Promote quiet ship design

Measures #:	KPI #:	Lead:
B2	3.1	Government of Canada
Year 1 measure objectives:	Conduct an international workshop to share findings on quiet ship designs and technology to inform next steps.	
Outcome:	Workshop was held in London. A summary report was published through International Maritime Organization (IMO) and made available to all participants. In addition, a policy workshop on a potential IMO underwater noise work item took place in November 2019 in Vancouver. ECHO Program images and video were included in an exhibit "Baleinopolis: Les sociétés secrètes des cétacés", at the "l'Aquarium tropical du Palais de la Porte Dorée à Paris".	

Focus Area C: Data collection and research – Evaluate ECHO Program vessel source level database

Measures #: C4	KPI #: N/A	Lead: Vancouver Fraser Port Authority
Year 1 measure objectives:	Advance project to evaluate how different vessel design characteristics may be driving the noise profile of vessels. Identify key characteristics/commonalities of quietest and loudest vessels	
Outcome:	Project was advanced and final report is available on the ECHO Program webpage. Using vessel source level data collected from the ECHO Program's underwater listening stations between September 2015 to April 2018 the project looked at which key vessel design characteristics drive underwater noise differences between different vessels independently and as a vessel class; which key vessel design characteristics result in the lowest underwater noise emissions and whether a vessel's operational draft affects its underwater noise emissions and whether. Key findings indicate a strong correlation between underwater noise, vessel length and operational draft. The report and its findings will be key in informing ongoing discussions around quiet vessel design, technologies and operations.	

Focus Area D: Initiatives to reduce underwater noise from large commercial vessels - Haro Strait and Boundary Pass voluntary vessel slowdown

Measures #: D1, D2 and D3	KPI #: 1.2, 2.1, 2.2	Lead: All parties
Year 1 measure objectives:	<p>D1. Review noise reduction levels achieved during previous slowdown year and revisit voluntary maximum speed targets and slowdown duration as needed for implementation in future year.</p> <p>D2. Based on assessment of safety and evaluation of feasibility, impacts and benefits of implementing a voluntary vessel slowdown in Boundary Pass, implement a trial voluntary vessel slowdown in Boundary Pass and evaluate vessel noise reduction levels relative to those achieved in Haro Strait or in line with underwater noise reduction targets when they are developed.</p> <p>D3: Identify main barriers to implementation (to support full participation); prioritize actions needed to eliminate such barriers; begin implementation of such actions, starting in the 2019 season, to the extent possible; and, establish framework for compensation for those negatively affected, where barriers to implementation cannot be otherwise eliminated.</p>	
Outcome:	Boundary Pass, identified as another important killer whale foraging area, was selected as an additional slowdown area, doubling the distance of the voluntary slowdown from 2018. Speed through water targets by vessel type were reduced slightly from the 2018 targets. Transport Canada introduced a reimbursement program to address additional pilotage costs resulting from the slowdown and to help reduce barriers to participation. The participation rate target of 80% was exceeded with a reported participation rate of 82% being achieved overall despite longer the slowdown transit distance and reduced speed targets. Ambient noise reductions of between 3-3.5 dB were achieved during the slowdown period which represents a reduction in sound intensity of between 50-55%. Finally, predictive modeling results indicate an estimated 20% improvement to killer whale foraging in Haro Strait resulting from the slowdown.	

Focus Area E: Initiatives to reduce physical disturbance from large commercial vessels - *Ocean Wise Whale Report Alert System*

Measures #: E1

KPI #: 1.3

Lead: Vancouver Fraser Port Authority and Government of Canada (in partnership with Ocean Wise)

Year 1 measure objectives:

Roll out and test the Whale Report Alert System (WRAS) mobile app and desk-based system and seek feedback from users to evaluate its functionality, utility and effectiveness.

Outcome:

Ocean Wise launched the Whale Report Alert System in July 2019 with funding support from the ECHO Program and Prince Rupert Port Authority. With additional funding from the Government of Canada to support outreach and engagement efforts, and with the ongoing support of the ECHO Program and industry partners, WRAS has 290 registrants from 45 different organizations as of May 2020, exceeding the Year 1 goal of 200 users.

Challenges and lessons learned

During the first year of the Conservation Agreement, some key lessons were learned.

Shortly after the signing of the Conservation Agreement at the June 2019 advisory working group meeting, some members expressed concerns that, although the notion of a Conservation Agreement was broadly supported by advisory working group members, no opportunities had been created for certain members to provide input to the agreement as it was being developed, or to be considered as signatories to the agreement. More generally, some members expressed concern that the advisory working group was not as engaged in voluntary slowdown and lateral displacement measure selection, planning and design to the degree it had been in the past, and that decisions on these matters were made in winter-spring 2019 by the ECHO Program vessel operators committee.

In response to these concerns, between July and October 2019, the advisory working group independent facilitator held check-in interviews with each member to seek input on what they felt was working well with the ECHO Program and where there could be improvements, in particular, what could be done to ensure that all advisory working group members' voices had ample opportunities to be heard with respect to important matters such as Conservation Agreement KPI selection, target-setting and the selection, planning and design of voluntary measures. Input was also sought on whether there were any adjustments needed to the advisory working group membership and to outreach and engagement of external interests, specifically Indigenous and environmental non-profit organization interests. Members also discussed practices that could serve to enhance the collaborative spirit of the ECHO Program overall.

The facilitator made several recommendations to the advisory working group, which were unanimously supported.

Recommendations with respect to the advisory working group were focused on strengthening its engagement in supporting implementation of the Conservation Agreement. Advisory working group in-person meeting frequency increased from three to four per year and a commitment was made to communicate with members more actively between meetings, as appropriate.

Other lessons learned in Year 1 included the importance of:

- the investment in time and resources to develop and reach agreement on KPIs
- maintaining regular communications with the Conservation Agreement leads that were assigned to report on the status of the measure to ensure timely updates to the advisory working group
- practicing adaptive management, for example responding to COVID-19 with a change in format and increased frequency of advisory working group meetings, as well as providing additional time to reach agreement on the parameters for 2020 voluntary measures

Looking forward

The outcomes of Year 1 KPIs show that targets were achieved or exceeded in seven of the eight KPIs where targets were set, providing a very positive indication of the overall effectiveness of the agreement in the first year of its implementation.

The ECHO Program team, with the invaluable support of the advisory working group and various committees, will continue to provide ongoing leadership and coordination support in the implementation, tracking and progress reporting of the agreement in the years ahead, continually building on previous work and lessons learned.

Planning for Year 2 measures commenced during Year 1 of the agreement. Twenty-four measures are under consideration for Year 2, including three new measures and twenty one measures which either continue on from Year 1 or are ongoing across all years of the Conservation Agreement.

Annually, through the lens of adaptive management, continuous improvement, maximizing conservation benefit, safety, operational and commercial feasibility, the ECHO Program will continue to work with the advisory working group and the Conservation Agreement management committee to refine and enhance measures in Appendix A of the Conservation Agreement as necessary, to reduce the acoustic and physical disturbance from large commercial vessels and support the recovery of the southern resident killer whales.

Appendix 1: Year 1 Conservation Agreement measures tracking document

Tracking framework for Year 1 Conservation Agreement measures and activities

Measure	Party leading activity	Activity	Objective over the term of the agreement	Period 1 = 1 year from agreement signing	Metric/target	Deliverable date	Status	Summary
A1	Vancouver Fraser Port Authority	Maintain management of ECHO Program	Maintain framework for ongoing engagement and collaboration; advancing research; coordinating, development, implementation, evaluation and reporting of voluntary southern resident killer whale (SRKW) threat reduction measures; and, promoting and raising awareness of research and threat reduction measures.	Convene ECHO Program Conservation Agreement management committee (CAM) and technical committee [vessel operator committee (VOC) and acoustic technical committee (ATC)] meetings on an as needed basis throughout the year to seek input and advice. Rely on input and advice to adaptively manage program.	1 ATC meeting	Sep-19	Completed	Acoustic technical committee meeting took place in September. Acoustic technical committee reviewed the ambient noise report and provided advice on a best practices document for standardizing ambient noise collection.
A1	Vancouver Fraser Port Authority	Maintain management of ECHO Program	Maintain framework for ongoing engagement and collaboration; advancing research; coordinating, development, implementation, evaluation and reporting of voluntary southern resident killer whale (SRKW) threat reduction measures; and, promoting and raising awareness of research and threat reduction measures.	Convene ECHO Program Conservation Agreement management committee (CAM) and technical committee [vessel operator committee (VOC) and acoustic technical committee (ATC)] meetings on an as needed basis throughout the year to seek input and advice. Rely on input and advice to adaptively manage program.	1 CAM meeting	Sept 2019 May 2020	Completed	A Conservation Agreement management committee meeting took place in September 2019. Proposed terms of reference were reviewed and the purpose and scope of the committee was confirmed. Conservation Agreement management committee members also participated in an ECHO advisory working group meeting to plan for Year 2 measures in May 2020.
A1	Vancouver Fraser Port Authority	Maintain management of ECHO Program	Maintain framework for ongoing engagement and collaboration; advancing research; coordinating, development, implementation, evaluation and reporting of voluntary southern resident killer whale (SRKW) threat reduction measures; and, promoting and raising awareness of research and threat reduction measures.	Convene ECHO Program Conservation Agreement management committee (CAM) and technical committee [vessel operator committee (VOC) and acoustic technical committee (ATC)] meetings on an as needed basis throughout the year to seek input and advice. Rely on input and advice to adaptively manage program.	>6 VOC meetings	May 2019 June 2019 July 2019 Aug 2019 Sept 2019 Nov 2019 February 2020 March 2020 April 2020	Completed	Held nine vessel operators committee meetings in Year 1.
A1	Vancouver Fraser Port Authority	Maintain management of ECHO Program	Maintain framework for ongoing engagement and collaboration; advancing research; coordinating, development, implementation, evaluation and reporting of voluntary southern resident killer whale (SRKW) threat reduction measures; and, promoting and raising awareness of research and threat reduction measures.	Convene 3-4 ECHO Program Advisory Working Group (AWG) meetings per year to seek input and guidance.	3-4 meetings	June 2019 October 2019 February 2020 April 2020 May 2020	Completed	Held five advisory working group meetings in Year 1.

Measure	Party leading activity	Activity	Objective over the term of the agreement	Period 1 = 1 year from agreement signing	Metric/target	Deliverable date	Status	Summary
A2	Government of Canada	Government of Canada continue to engage with Indigenous groups and stakeholders on vessel related threats to SRKW and implementation of threat reduction measures	Continue to enable involvement of Indigenous groups in the development and implementation of SRKW-related initiatives. Identify annual forums for engagement.	Maintain engagement with Indigenous groups to facilitate collaboration in the development and implementation of SRKW-related initiatives. Review and update identified annual forums for engagement.	Ongoing engagement with Indigenous groups	May-20	Ongoing	Transport Canada, in coordination with Fisheries and Oceans Canada, as well as Environment and Climate Change Canada and Parks Canada has continued to engage with multiple Indigenous groups and stakeholders about vessel related threats on southern resident killer whales. In addition to consulting Indigenous groups on 2020 seasonal recovery measures, Transport Canada is engaging with Indigenous groups where appropriate and when there is interest, including through bilateral meetings, at workshops, meetings about related topics, or consultation meetings for major projects where the impacts of vessels on southern resident killer whales are a concern.
A3	All	Provide relevant input to broader initiatives around the development of underwater noise targets	Contribute to ongoing discussions on the development of underwater noise reduction targets.	Share technical perspective and relevant data/evidence from existing ECHO research projects and participate in initiatives to advance the development of underwater noise targets.	Investigate if revolutions per minute (RPM) targets could be set to achieve noise reduction targets	Mar-20	Completed	Briefing note / tech memo on RPM as a potential target is finalized and will be included in ECHO Program's 2019 slowdown report summary. In addition, Transport Canada has prepared a draft terms of reference and scoping paper for a National Working Group on Underwater Vessel Noise Reduction Targets (UVNRTs). The work of this group will inform future policy recommendations on operationally-feasible noise reduction approaches and targets for vessels and/or fleets. Transport Canada is currently finalizing the terms of reference and scoping paper with input from stakeholders with the intention of convening a first meeting in summer 2020.
B1	Government of Canada	Engage US authorities, on vessel related threats to SRKW and implementation of threat reduction measures	Establish commitments on recovery measures from US authorities in shared waterways in SRKW critical habitat.	Identify and conduct joint US-Canada consultative fora on SRKW recovery in shared waterways, using where possible the ECHO Program as a consultative forum for matters relating to large commercial vessels.	4-5 meetings held	May-20	Completed	Transport Canada continues to engage with authorities and partners in the US with respect to vessel related impacts on southern resident killer whales and recovery measures in shared waters. The joint coordinating group established under the Cooperative Vessel Traffic Services Agreement (CVTSA), and its related procedures committee, remain a forum to seek input on and coordinate efforts around recovery measures with the Canadian Coast Guard and the United States Coast Guard. Both agencies also participate actively in the ECHO Program and contribute to efforts there. Additionally, Transport Canada regularly attends and discusses measures at the joint meetings of the Puget Sound Harbour Safety Committee and the Pacific Coast Marine Advisory Review Panel (PACMAR). Transport Canada is in regular contact with other authorities in the United States and Washington State and is exploring opportunities to build on the existing collaboration and coordination for the management of vessel traffic in shared waters.
B2	Government of Canada	Encourage dialogue and technical discussions on reducing ship generated noise through the International Maritime Organization (IMO) and other international for a	Propose a new work output that may result in updates to IMO Marine Environment Protection Committee (MEPC).1/Circ.833 (April 2014) guidelines for the reduction of underwater noise from commercial shipping.	Conduct an international workshop to share findings on quiet ship designs and technology in early 2019 to inform next steps.	Host workshop; publish results of workshop	Jan-2019	Completed	Workshop was held in London. Summary of the report has been published through IMO and made available to all participants. Work on the Year 2 measure for the conservation agreement is already underway. A policy workshop on a potential IMO underwater noise work item also took place in Nov 2019 in Vancouver. ECHO Program images and video were included in an exhibit "Baleinopolis: Les sociétés secrètes des cétacés", at the "l'Aquarium tropical du Palais de la Porte Dorée à Paris".

Measure	Party leading activity	Activity	Objective over the term of the agreement	Period 1 = 1 year from agreement signing	Metric/target	Deliverable date	Status	Summary
B3	Government of Canada	Encourage Canadian and other relevant international ports to consider implementing incentives for quiet vessels	Increase the number of vessels with quiet vessel design, technologies and/or notations.	Conduct consultation on implementation of green port incentives at the national levels (for all Canadian port authorities)	2-3 meetings held	May-20	Completed	<p>Transport Canada has completed a scan of Canada Port Authorities and Harbour Authorities to determine which ports have existing incentive programs or existing environmental initiatives, including identifying underwater noise to be addressed in their self-assessment of Green Marine. Based on this scan Transport Canada has identified several ports which could benefit from the adoption of underwater noise reduction plans or incentives.</p> <p>Transport Canada also met with Green Marine about port incentive possibilities and made a presentation to an ACPA Environment Committee meeting in March 2020 to promote port incentives with domestic ports.</p>
B4	Government of Canada	Convene vessel classification societies and technical experts to develop and align category-specific quiet vessel notations	Establish consistent measurement and analysis procedures, and quiet vessel notations between ship classification societies such that incentives offered at Port of Vancouver and elsewhere are also consistent.	Conduct assessment of different quiet vessel notations.	Report on quiet notations comparison to ECHO dataset	Mar-20	Completed	Results of an assessment comparing quiet vessel notations from different ship classification societies was presented in London & to the Canadian Marine Advisory Council (CMAC).
B4	Government of Canada	Convene vessel classification societies and technical experts to develop and align category-specific quiet vessel notations	Establish consistent measurement and analysis procedures, and quiet vessel notations between ship classification societies such that incentives offered at Port of Vancouver and elsewhere are also consistent.	Conduct assessment of different quiet vessel notations.	Develop proposed approach for standardizing	May-20	Continuing into Year 2	The first draft of the class society alignment is complete, but the next version (to be distributed to class societies) is due in June 2020. The intent is to host an on-line workshop in October 2020 to discuss a proposed approach for standardizing class society quiet notations.
C1	Government of Canada	Support the development and maintenance of an underwater hydrophone network in SRKW critical habitat	Measure ambient underwater noise levels throughout SRKW critical habitat, assess contributions of large commercial vessels, support whale detection activities, and monitor the effectiveness of implemented mitigation measures for large commercial vessels.	Engage with regional partners with existing/planned hydrophone capacity to explore opportunities for resource/information sharing. Initiate identification and mapping of existing hydrophones and linkages available on the west coast, including format, calibration, temporal and spatial distribution, and investigate opportunities for data sharing.	Produce template of hydrophone information to be collected	May-20	Continuing into Year 2	<p>Template and summary of Government of Canada hydrophone information is being prepared.</p> <p>Map of Government of Canada underwater listening station moorings and functionality from February 2018 to May 2020 is prepared. Complete list to be finalized.</p>
C1	Government of Canada	Support the development and maintenance of an underwater hydrophone network in SRKW critical habitat	Measure ambient underwater noise levels throughout SRKW critical habitat, assess contributions of large commercial vessels, support whale detection activities, and monitor the effectiveness of implemented mitigation measures for large commercial vessels.	Engage with regional partners with existing/planned hydrophone capacity to explore opportunities for resource/information sharing. Initiate identification and mapping of existing hydrophones and linkages available on the west coast, including format, calibration, temporal and spatial distribution, and investigate opportunities for data sharing.	Potential regional partners identified	May-20	Continuing into Year 2	Overview of identified potential regional partners to contact is being prepared.

Measure	Party leading activity	Activity	Objective over the term of the agreement	Period 1 = 1 year from agreement signing	Metric/target	Deliverable date	Status	Summary
C2	Vancouver Fraser Port Authority	Evaluate ECHO regional ambient noise data which was collected in 2016-2017	Establish what factors are contributing to existing ambient noise levels within SRKW critical habitat and determine ongoing monitoring needs for evaluating changes and trends into the future	Advance project to establish what are the factors (anthropogenic and environmental) that contribute to ambient noise and what data needs to be collected and analyzed to understand if mitigation measures are effective. Convene ECHO ATC to evaluate results and input to final report which will include recommendations for standards of future monitoring methodology, calibration, metadata collection and analysis.	Summarize study findings and present recommendations to the acoustic technical committee	Sep-19	Completed	Acoustic technical committee meeting was held in September 2019. Study findings were summarized and ATC provided recommendations, including a recommendation to prepare a best practices document for standardizing ambient noise collection and analysis.
C2	Vancouver Fraser Port Authority	Evaluate ECHO regional ambient noise data which was collected in 2016-2017	Establish what factors are contributing to existing ambient noise levels within SRKW critical habitat and determine ongoing monitoring needs for evaluating changes and trends into the future	Advance project to establish what are the factors (anthropogenic and environmental) that contribute to ambient noise and what data needs to be collected and analyzed to understand if mitigation measures are effective. Convene ECHO acoustic technical committee to evaluate results and input to final report which will include recommendations for standards of future monitoring methodology, calibration, metadata collection and analysis.	Finalize and publish ambient noise project report & draft best practices document	Dec-19	Completed	Acoustic technical committee meeting recommendations were incorporated into report. Best practices document on data collection and analysis was completed in March 2020.
C3	Government of Canada	Establish underwater listening station in SRKW critical habitat	Implement listening station infrastructure to allow vessel operators to measure the individual noise profiles of their vessels; facilitate research testing of vessel quietening technologies/operations; and, allow the ECHO Program to continue gathering and analyzing vessel noise data for research purposes and to evaluate the potential for offering new port incentives	Identify suitable location(s) for underwater listening station (ULS), obtain funding and deploy infrastructure.	Funding secured for hydrophone provider and management of infrastructure and data	Dec-18	Completed	Contract awarded to JASCO Applied Sciences in December 2018 to install the underwater listening station in Boundary Pass off Saturna Island.
C3	Government of Canada	Establish underwater listening station in SRKW critical habitat	Implement listening station infrastructure to allow vessel operators to measure the individual noise profiles of their vessels; facilitate research testing of vessel quietening technologies/operations; and, allow the ECHO Program to continue gathering and analyzing vessel noise data for research purposes and to evaluate the potential for offering new port incentives	Identify suitable location(s) for underwater listening station, obtain funding and deploy infrastructure.	Feasibility study completed in 2017. Confirmed Boundary Pass location in 2018	May-19	Completed	Boundary Pass was selected as the ideal location for a long term cabled underwater listening station.

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C3	Government of Canada	Establish underwater listening station in SRKW critical habitat	Implement listening station infrastructure to allow vessel operators to measure the individual noise profiles of their vessels; facilitate research testing of vessel quietening technologies/operations; and, allow the ECHO Program to continue gathering and analyzing vessel noise data for research purposes and to evaluate the potential for offering new port incentives	Identify suitable location(s) for underwater listening station, obtain funding and deploy infrastructure.	Deploy underwater listening station	May-20	Completed	Autonomous Multichannel Acoustic Recorders (AMARs) have been used (from December 2018-April/May 2019) while the underwater listening station was being built. The listening station in Boundary Pass was delayed to its original schedule mainly due to COVID19. The Boundary Pass underwater listening station (ULS) was successfully deployed in May 2020.
C4	Vancouver Fraser Port Authority	Evaluate existing ECHO Program database of vessel source level measurements	Evaluate how different vessel design characteristics may be driving the noise profile of vessels. Identify key characteristics/commonalities of quietest and loudest vessels	Advance project to establish key drivers. Share findings and conclusions.	Finalize and publish report	Feb-20	Completed	Final report is available on the ECHO Program webpage.
C5	All	Advance research studies to explore new underwater noise reduction measures for large commercial vessels (to be updated annually based on agreement of new/emerging potential measures)	Test/trial new design, technologies and/or operational measures that may reduce underwater noise from vessels, particularly in SRKW critical habitat and within key southern resident killer whale foraging areas	Government of Canada to advance feasibility study to evaluate potential for changing portions of the traffic separation scheme in SRKW critical habitat.	Contract awarded for shipping lane study; preliminary report delivered on factors to be included in study	Feb-20	Continuing into Year 2	Multiple proposals were received in March for the traffic separation scheme (TSS) feasibility study. Proposals are under review. Additional studies to be identified on an on-going basis. Other studies are also being considered by the Transport Canada Innovation Centre and may be added to this throughout the year.
C6	Vancouver Fraser Port Authority	Test noise profiles and fuel consumption rates of three ocean-going vessels before and after hull cleaning	Determine whether hull cleaning reduces a vessel's underwater noise profile and improves its fuel efficiency	Release study findings, along with recommendations in a report.	Post summary report to ECHO web page	Sep-19	Completed	Final summary document has been posted to the ECHO Program website.
C7	Vancouver Fraser Port Authority	Through computer modelling, predict how the underwater noise levels from different types of large commercial vessels change with distance from the source	Generate visual representations of the noise footprint around different commercial vessels at different speeds to help inform vessel operators of the areal extents of potential vessel noise impacts to SRKW	Create and distribute educational materials for professional mariners to use on the bridge.	Finalize web tool for industry	Oct-19	Completed	Vessel noise footprints web tool shared with the ECHO Program advisory working group in October 2019. Use of the tool is ongoing.
D1 - Vessel slow downs	All	Establish voluntary seasonal slowdown of large commercial vessels in Haro Strait	Reduce ambient underwater noise levels at the Lime Kiln hydrophone by an amount comparable to that achieved in 2017 or in line with underwater noise reduction targets when they are developed.	Review noise reduction levels achieved during previous slowdown year and revisit voluntary maximum speed targets and slowdown duration as needed for implementation in future year.	Modify 2019 slowdown speeds, duration and participation targets to achieve 2017 noise reduction levels.	Mar-19	Completed	2019 speed targets were reduced to 11.5 knots and 14.5 knots speed through the water. The slowdown duration was also extended with the monitoring period beginning on June 1st, 2019. Achieved 82% voluntary participation.

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D1 - Vessel slow downs	All	Establish voluntary seasonal slowdown of large commercial vessels in Haro Strait	Reduce ambient underwater noise levels at the Lime Kiln hydrophone by an amount comparable to that achieved in 2017 or in line with underwater noise reduction targets when they are developed.	Review noise reduction levels achieved during previous slowdown year and revisit voluntary maximum speed targets and slowdown duration as needed for implementation in future year.	Investigate revolutions per minute (RPM) as a replacement target for achieving noise reduction in 2020	Feb-20	Completed	Preliminary results of RPM study were shared at the February 2020 ECHO Program advisory working group meeting. Briefing note / tech memo on RPM will be incorporated into the 2019 slowdown report. It was determined that RPM targets are not feasible for implementation during the 2020 slowdown.
D2 - Vessel slow downs	All	Based on SRKW usage and subject to navigational safety and operational considerations, identify other possible candidate areas within SRKW critical habitat to implement voluntary seasonal slowdowns of large commercial vessels	Reduce underwater noise from large commercial vessels in other key SRKW foraging areas comparable to that achieved in Haro Strait in 2017 or in line with underwater noise reduction targets when they are developed.	Based on assessment of safety and evaluation of feasibility, impacts and benefits of implementing a voluntary vessel slowdown in Boundary Pass, implement a trial voluntary vessel slowdown in Boundary Pass and evaluate vessel noise reduction levels relative to those achieved in Haro Strait or in line with underwater noise reduction targets when they are developed.	Add Boundary Pass to slowdown area	Mar-19	Completed	Boundary Pass was selected as an additional slowdown area for the 2019 voluntary slowdown.
D3 - Vessel Slow downs	All	Address commercial and operational constraints to expanding the area and/or duration of vessel slowdowns	Eliminate barriers to full participation and/or compensate those that are negatively affected economically such that they can fully participate.	Identify main barriers to implementation (to support full participation); prioritize actions needed to eliminate such barriers; begin implementation of such actions, starting in the 2019 season, to the extent possible; and, establish framework for compensation for those negatively affected, where barriers to implementation cannot be otherwise eliminated	Evaluate participation data and develop reimbursement program for additional pilotage costs	Dec-19	Completed	Transport Canada established a reimbursement program for additional pilotage costs incurred as a result of participating in the 2019 slowdown.
D4 - Vessel slow downs	All	Improve direct effect of vessel speed reductions by implementing real-time tracking and notification of SRKW locations year round	Provide SRKW presence notification tools to professional mariners, to potentially reduce speed and associated noise impacts to SRKW in real time and year round.				No action required in Year 1	
D5 - Lateral displacement	All	Evaluate effect of lateral displacement outbound in Strait of Juan de Fuca based on 2018 trial results	If results indicate a positive reduction of ambient underwater noise levels at DFO hydrophones in key SRKW foraging areas and where it is safe and operationally feasible to do so, work collaboratively with Indigenous groups and transboundary partners to consider continuing implementation of similar seasonal lateral displacement measures in future years.	Review automatic identification system (AIS) track data for all vessels during the [2018] trial period. Identify any safety concerns and obtain results of underwater noise levels at key foraging areas to determine noise reductions as a result of the trial.	Publish 2018 lateral displacement report to ECHO web page	Oct-19	Completed	2018 lateral displacement trial report was published to the ECHO Program webpage in November 2019.

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D5 - Lateral displacement	All	Evaluate effect of lateral displacement outbound in Strait of Juan de Fuca based on 2018 trial results	If results indicate a positive reduction of ambient underwater noise levels at DFO hydrophones in key SRKW foraging areas and where it is safe and operationally feasible to do so, work collaboratively with Indigenous groups and transboundary partners to consider continuing implementation of similar seasonal lateral displacement measures in future years.	If positive underwater noise reduction results and agreement with Indigenous groups and transboundary partners are reached, implement a voluntary lateral displacement in the Strait of Juan de Fuca, with any adjustments deemed appropriate based on results.	Implement 2019 lateral displacement inshore trial, publish findings.	May-20	Completed	2019 lateral displacement trial report was completed and will be published to the ECHO Program webpage in June 2020.
D6 -Lateral displacement	All	Based on the effectiveness of 2018 Strait of Juan de Fuca trial results, SRKW usage and subject to navigational safety and operational considerations, identify other possible candidate areas within SRKW critical habitat to implement large commercial vessels lateral displacement measures	Reduce underwater noise from large commercial vessels in other key SRKW foraging areas in line with underwater noise reduction targets when they are developed.				No action required in Year 1	
D7 - Incentives	Vancouver Fraser Port Authority	Continue to offer and potentially expand available Vancouver Fraser Port Authority EcoAction incentives for those who have taken action to reduce underwater noise from their vessel	Continue to promote the availability of EcoAction incentives to vessels calling Port of Vancouver with the goal of reducing underwater noise from large commercial vessels in SRKW critical habitat.	Work with partners, including class societies and Green Marine, to promote availability of EcoAction incentives.	5 promotional communication efforts	May-20	Completed	<ol style="list-style-type: none"> 1. Green Marine <i>Green Wave</i> newsletter story, March 2019 2. Celebrity Eclipse social media posts, April 2019 3. Blue Circle awards ceremony, June 2019 4. Korean ship builders meetings, fall 2019 5. Additional engagement with Ports of Halifax, Yokohama, Rotterdam, Hamburg and regional industry meetings and presentations are ongoing throughout the year.
D8 - Incentives	All	Evaluate the potential for offering 'quiet vessels' an option to opt out of voluntary noise reduction operational mitigations such as slowdowns	Evaluate appropriate source level thresholds for 'quiet vessels', encourage and drive innovation towards application of quiet vessel technology and design.				No action required in Year 1	
D9 - Other	All	Work to better understand and seek opportunities to test the optimization of vessel sailing times within existing shipping regime.	Subject to assessing benefits of such an approach, optimize existing sailing schedules to create longer windows where commercial vessels are not present in key SRKW foraging areas, when whales are present.				No action required in Year 1	
E1	Vancouver Fraser Port Authority & Government of Canada	Test a real-time whale notification system for professional mariners called WhaleReport Alert System (WRAS) and evaluate its utility, benefits and effectiveness	Provide a notification tool to professional mariners which provides real time information on the location of whales with the goal of reducing threats from commercial vessels in SRKW critical habitat.	Roll out and test the WRAS (mobile app and desk based system) and seek feedback from users to evaluate its functionality, utility and effectiveness.	Launch WRAS app and register >200 users	Dec-19	Completed	Whale Report Alert System (WRAS) was launched in July 2019. As of May 2020, 290 WRAS users approved from 45 different marine organizations.

Tracking framework for Year 1 Conservation Agreement measures and activities

Measure	Party leading activity	Activity	Objective over the term of the agreement	Period 1 = 1 year from agreement signing	Metric/target	Deliverable date	Status	Summary
E2	Vancouver Fraser Port Authority	Develop online training module for professional mariners to help them identify whales, reduce vessel related threats and safely navigate in their presence.	Make online training tutorial available to all mariners on ECHO Program website and encourage regional vessel operators to build the tutorial into their corporate training programs.	Make final tutorial available to users on ECHO Program website.	Post tutorial online and register >200 users	Jun-19	Completed	The Whales in our Waters tutorial was publically released online in early 2019. As of February 2020, there were 495 registrants with 52% of registrants having completed and passed the tutorial test.
Section 5.2.2 E	Pacific Pilotage Authority	Explore opportunities to improve efficiencies to the pilotage system to reduce barriers to participation in the voluntary initiatives.		Develop preliminary list of issues warranting further attention/discussion.	Convene relevant meetings Sept 2019	May-20	Continuing into Year 2	Work is underway to identify the main sources causing delays in terminals that may be affecting pilotage hours. Goal is to meet with key stakeholders in the coming months to better understand the process and areas where improvements can be made.