Apr 28th, 8:30 AM - 10:00 AM

The ECHO Program: Key learnings at 5-year anniversary of vessel slowdown for at-risk whales off BC's southern coast

Ryan Ford

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The ECHO Program: Key learnings from 5 years of voluntary vessel slowdowns for at-risk whales

Ryan Ford
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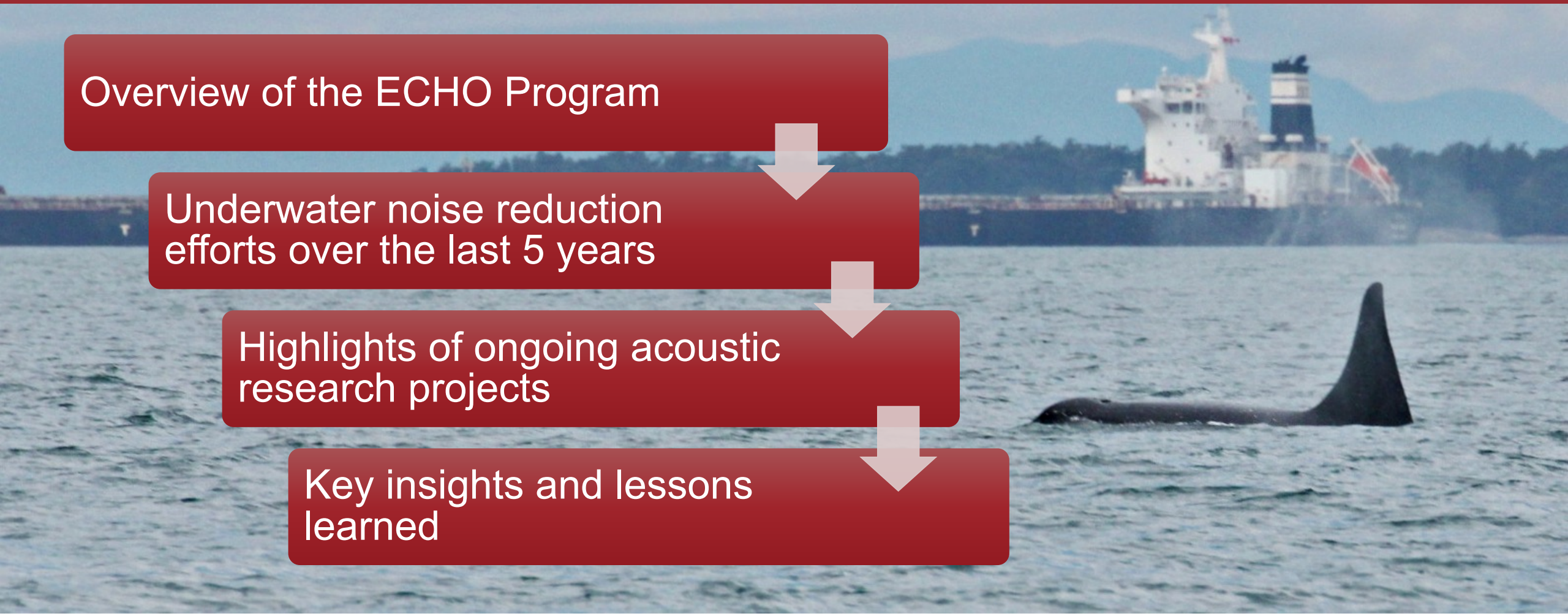
Presentation to Salish Sea Ecosystem Conference

April 28, 2022

Canada

Overview



- Overview of the ECHO Program
- Underwater noise reduction efforts over the last 5 years
- Highlights of ongoing acoustic research projects
- Key insights and lessons learned

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What is the ECHO Program?

A **collaborative** regional initiative launched in 2014 by the Vancouver Fraser Port Authority to better understand and reduce the cumulative effects of shipping on at-risk whales.

Key ECHO Program focus areas:

- Convening regular program meetings
- Supporting national and international initiatives
- Trialing and implementing threat reduction measures
- Advancing research projects

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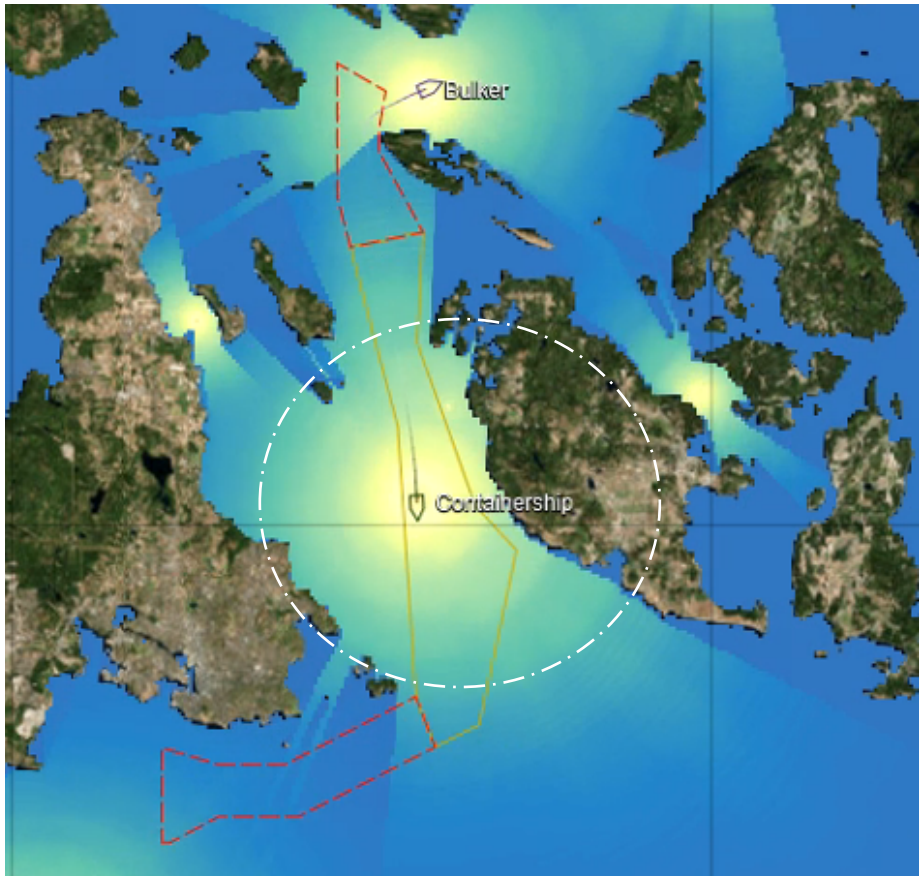
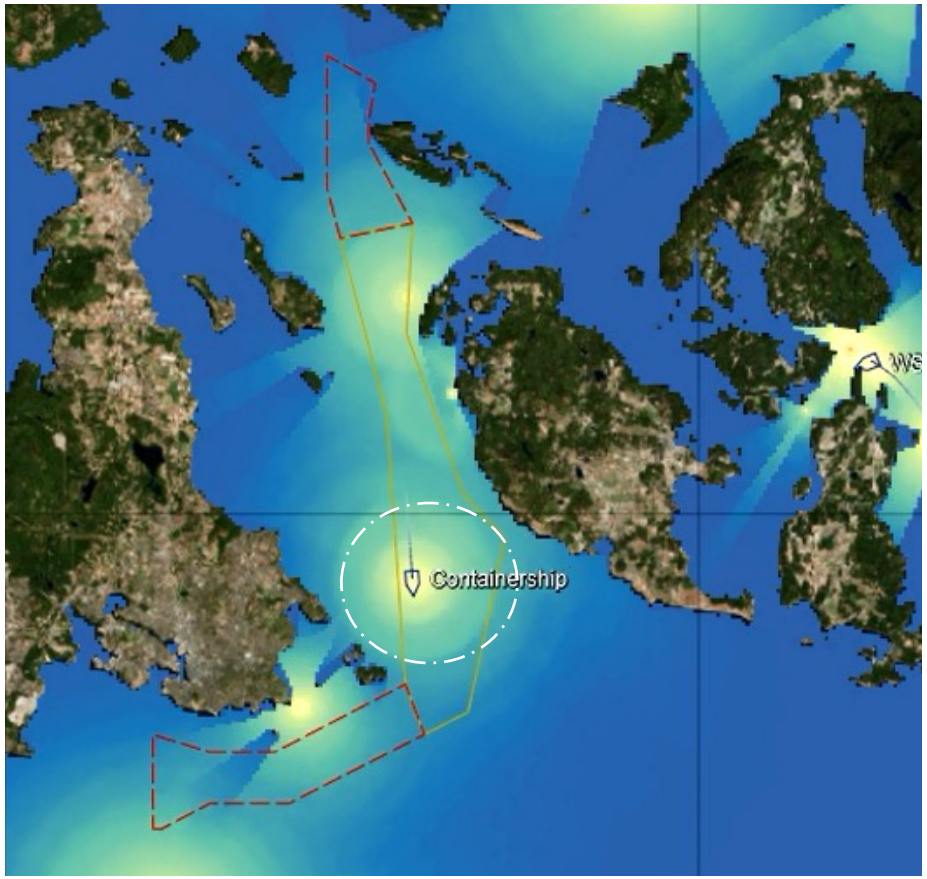
Underwater noise reduction efforts over the last 5 years

Slowing down makes a difference

Baseline speed (19.4 knots) – 193 dB



Trial speed (10.6 knots) – 179 dB



Comparison of underwater noise from a container ship
Source: JASCO Applied Sciences

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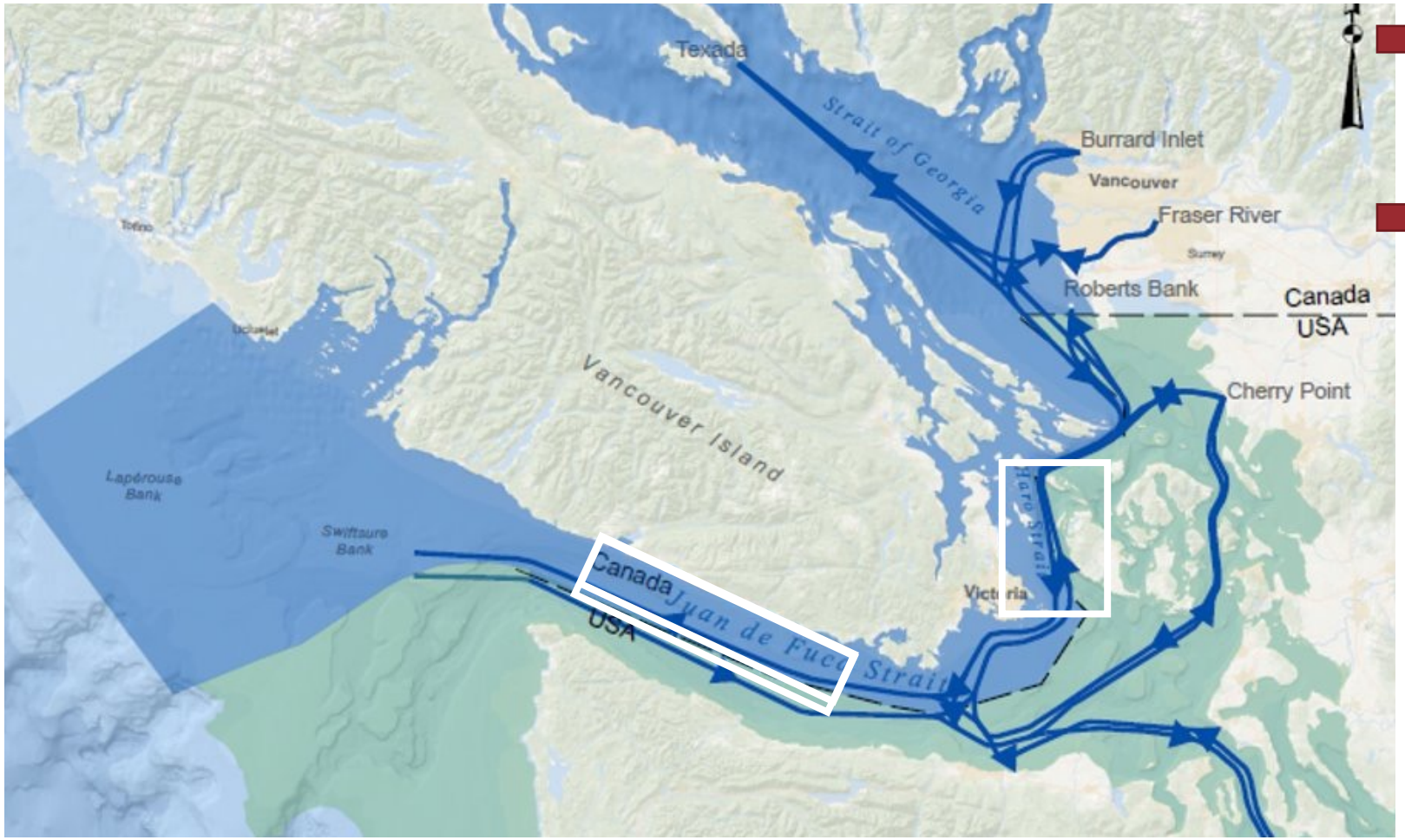
Underwater noise reduction initiatives: 5-year history



2017
Haro Strait slowdown launched

2018
SJDF lateral displacement outbound and inshore added

2019
Boundary Pass slowdown added - only inshore lateral displacement in SJDF

2020
Swiftsure Bank outbound slowdown added

2022
Swiftsure Bank inbound slowdown added

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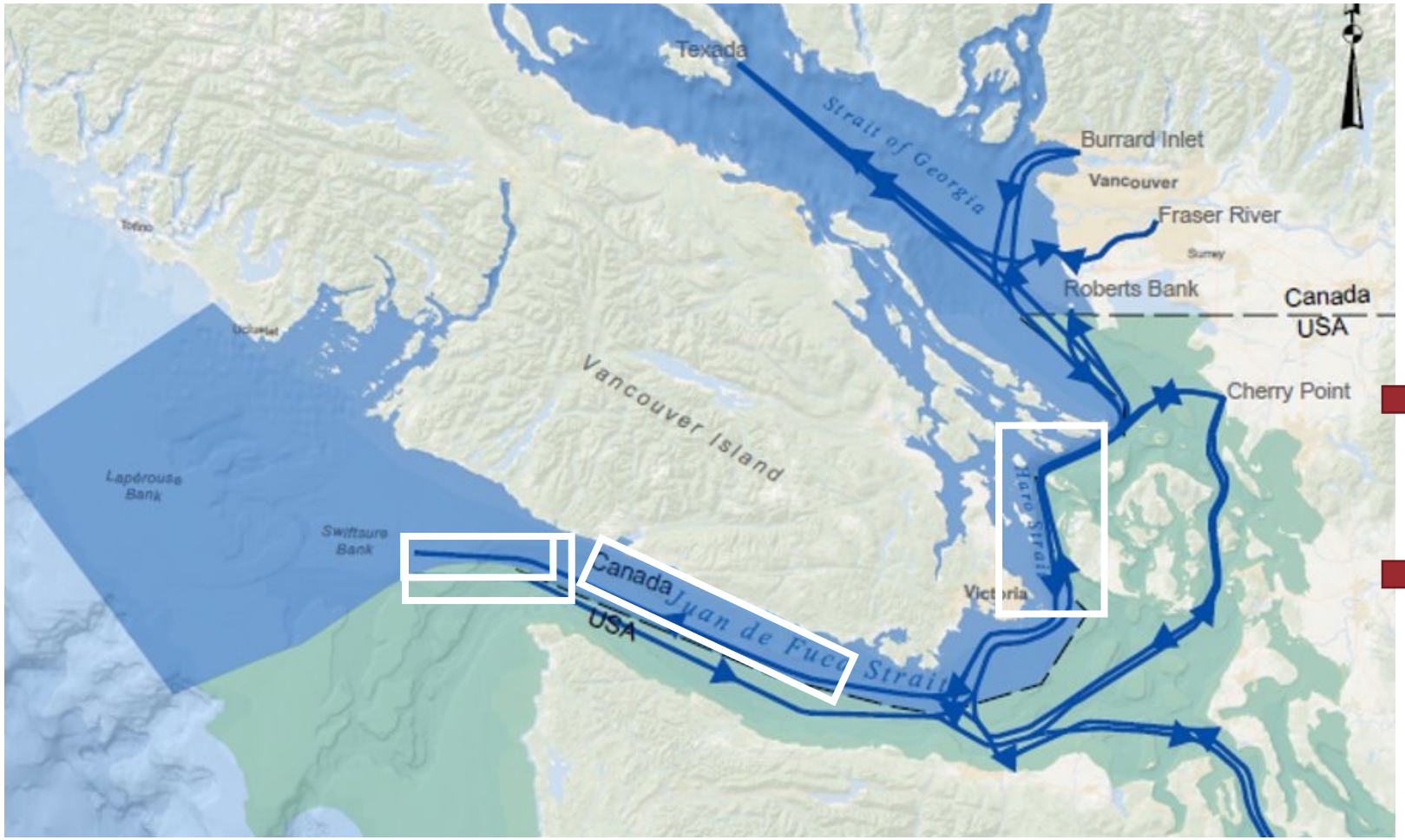
Underwater noise reduction initiatives: 5-year history



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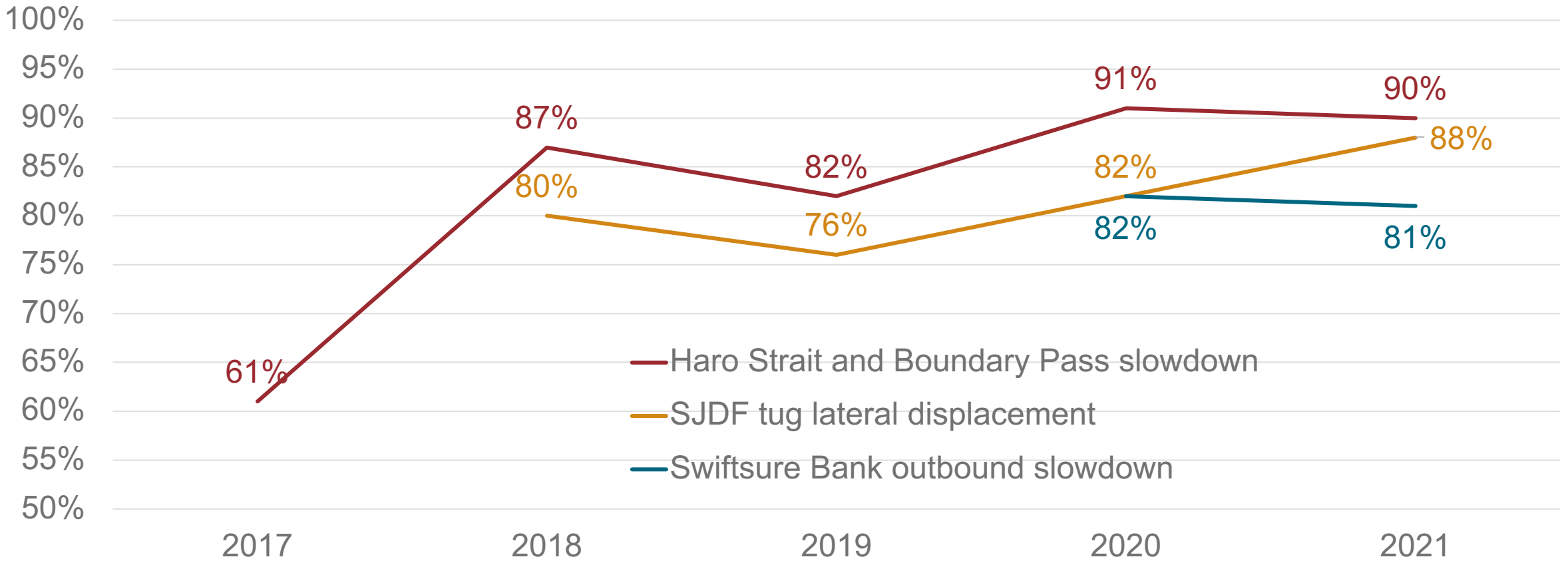
Participation rates for all years of voluntary measures



Note: 2017 and 2018 are Haro Strait only.
Haro Strait and Boundary Pass pilot reported participation.
SJDF tug lateral displacement participation are tugs which spent ≥ half of their transit in either the outbound shipping lane or the inshore lateral displacement zone.
Swiftusre Bank participation is met speed target within one knot buffer.

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Underwater noise reductions achieved in each voluntary initiative

Haro Strait and Boundary Pass slowdown		**>3dB** reduction in ambient noise in 2021	**~55%** reduced sound intensity
Strait of Juan de Fuca lateral displacement		**~4-7dB** reduction in ambient underwater noise per tug transit	**~70%** reduction in underwater sound intensity per tug transit
Swiftsure Bank outbound slowdown		**~2dB** reduction in ambient noise in 2020	**~37%** reduction in underwater sound intensity in 2020

Acoustic research projects

Acoustic research projects: 5-year highlights

Key research questions:

Ambient noise

What does it sound like underwater in the Salish Sea?

Are the mitigation measures reducing noise?

Ship noise

How do different ship types contribute to underwater noise?

What causes underwater noise on a ship?

How can we reduce ship noise?

Marine mammal monitoring

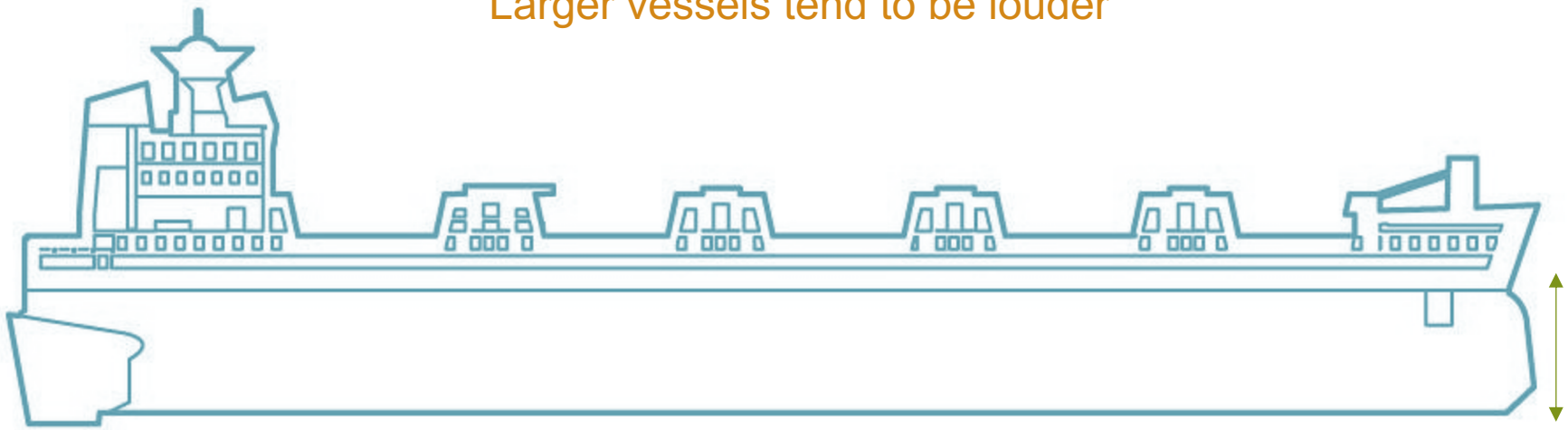
Where and when are the whales around?

Multi-hydrophone array being deployed in the Strait of Georgia, 2015

What vessel characteristics drive differences in noise emissions?

Findings from our vessel noise correlations study

Larger vessels tend to be louder



Each vessel has variations in sound, even under the same conditions

At mid to higher frequencies, cargo ships with deeper draft tend to be louder

Speed is the most significant factor related to noise emissions

The model can predict general levels and trends in noise emissions

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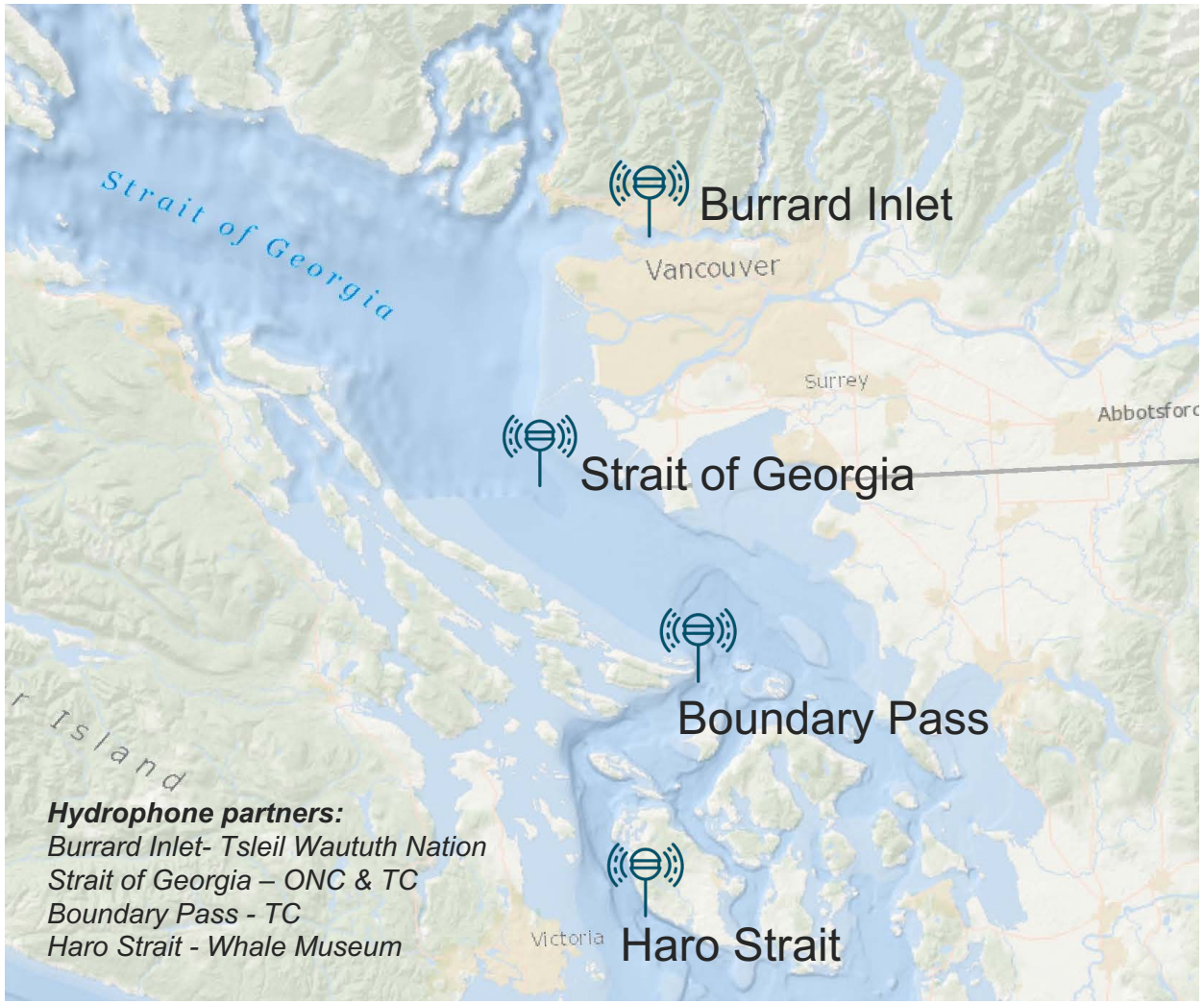
What influences ambient noise levels in the region?

- Multiple hydrophones along the shipping route and within SRKW critical habitat
- Key factors affecting ambient noise are:
  - Vessel traffic: large (AIS) and small
  - Equipment noise
  - Weather and tidal currents
  - Seasonal temperature and salinity layers
  - Biological presence
- Noise levels vary between sites
- Identifying a specific "ambient noise level" or threshold is challenging



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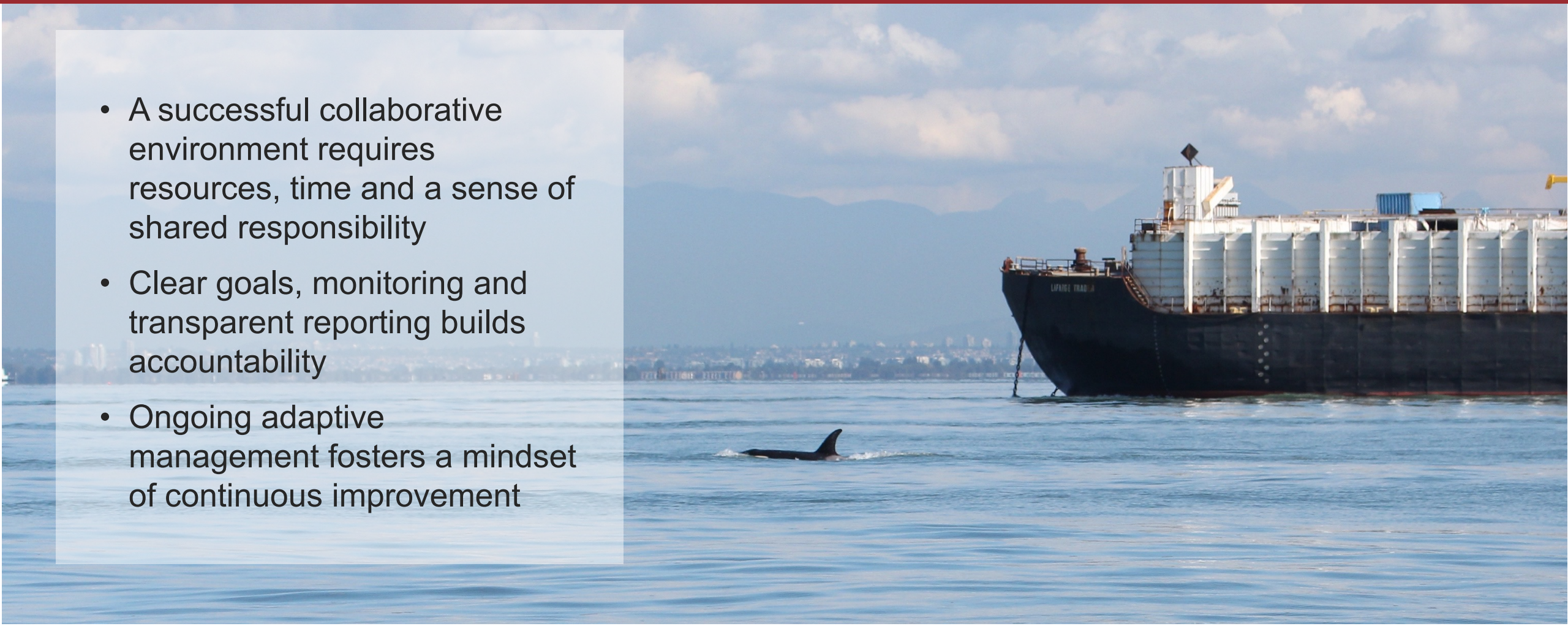
Key insights and lessons learned

Lessons learned

- A successful collaborative environment requires resources, time and a sense of shared responsibility
- Clear goals, monitoring and transparent reporting builds accountability
- Ongoing adaptive management fosters a mindset of continuous improvement



Thank you

Photo: Joan Lopez