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Enhancing Cetacean Habitat and Observation (ECHO) Program

**Cetacean = order of whales, dolphins and porpoises*

EMA BC

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Overview

- Background to marine mammal-vessel interactions
- Rationale for and overview of the ECHO Program
- ECHO research project highlights
- Voluntary measures to reduce impacts
- Applications for Environmental Managers

Background to marine mammals in BC

Whales in our backyard

Many at-risk marine mammals species throughout the southern coast of British Columbia



Harbour Porpoise
(Special Concern)



Humpback
(Threatened)



Fin
(Threatened)



Sei
(Endangered)



Blue
(Endangered)



North Pacific Right whale
(Endangered)

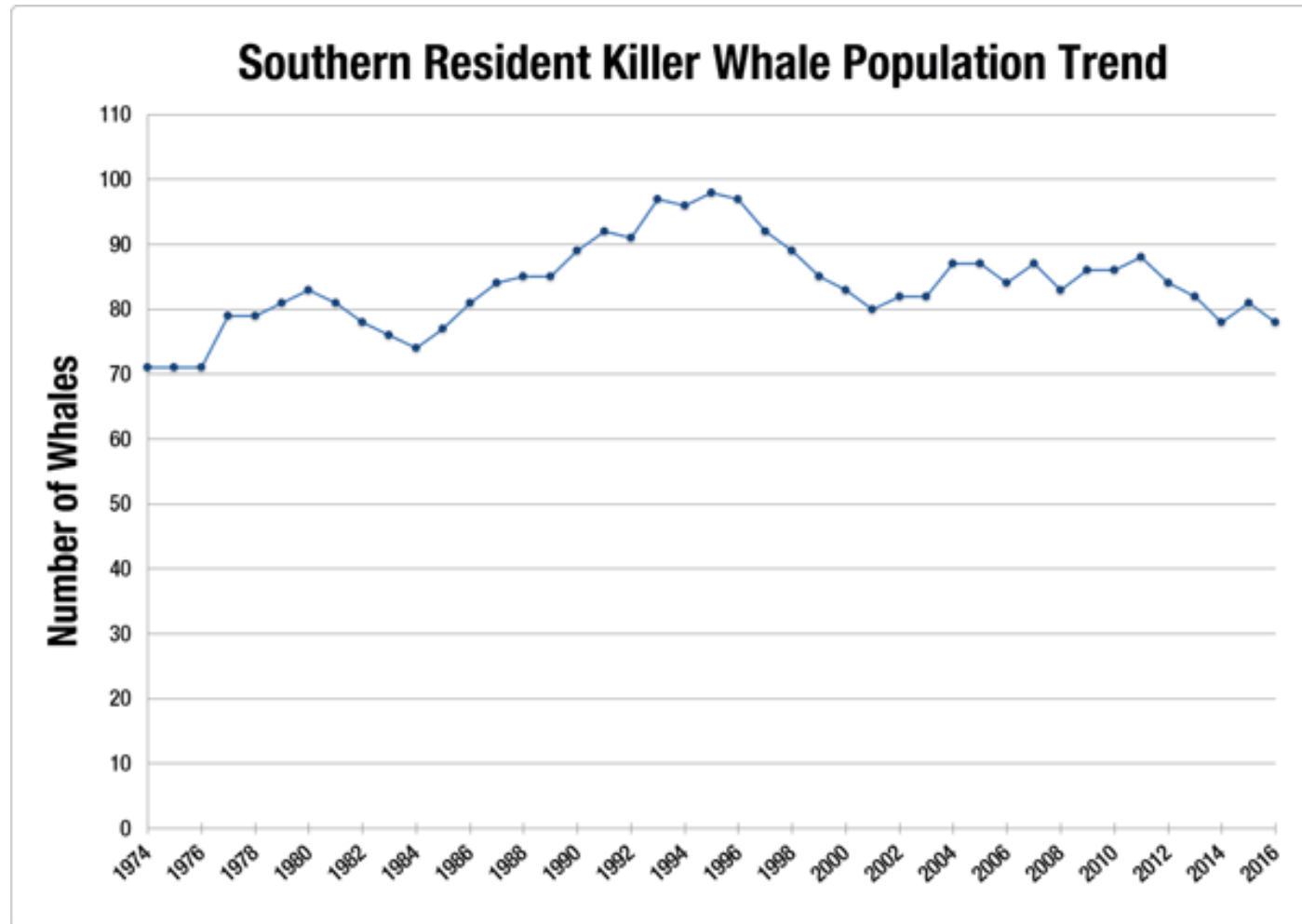


Biggs (transient) killer whale
(Threatened)



Resident killer whale
(Endangered)

Endangered Southern Killer Whale population trends



Known threats to marine mammals

DFO Recovery strategies identify key threat categories and linkages to vessels



Acoustic Disturbance



Physical Disturbance



Environmental Contaminants



Availability of prey

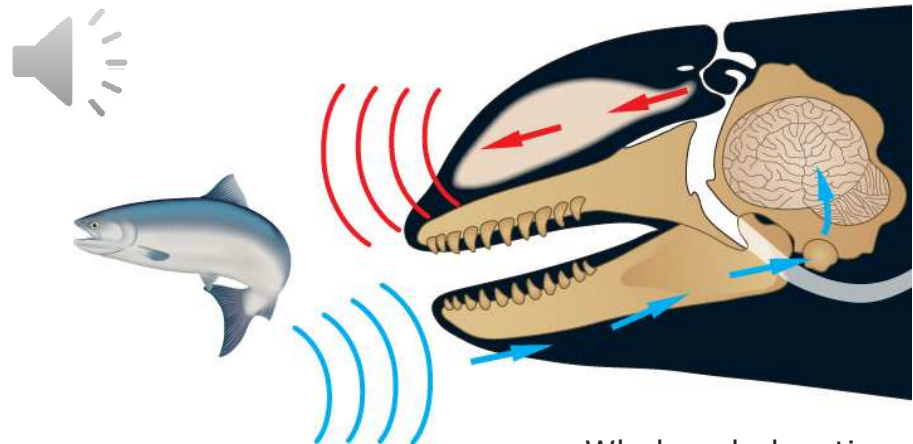


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Whales, acoustic disturbance and SARA

- SRKW are an iconic species and visit seasonally, primarily to feed
- Whales use sound to find food, mates, socialize and navigate
- Vessel noise can interrupt whales ability to hear returning echolocation clicks – “masking”
- Acoustic impacts may lead to “destruction of critical habitat”

Sound clip: Northern resident killer whale masking from passing commercial vessel. Credit: Orcalab



Whale echolocation

Rationale for & overview of the ECHO Program



ECHO program

ECHO: Enhancing Cetacean Habitat and Observation

What? A **collaboration** with marine transportation industries, conservation and environmental groups, First Nations, governments and scientists

Why? To **better understand and reduce the cumulative impacts** of commercial vessel activities on at-risk whales throughout the southern coast of British Columbia

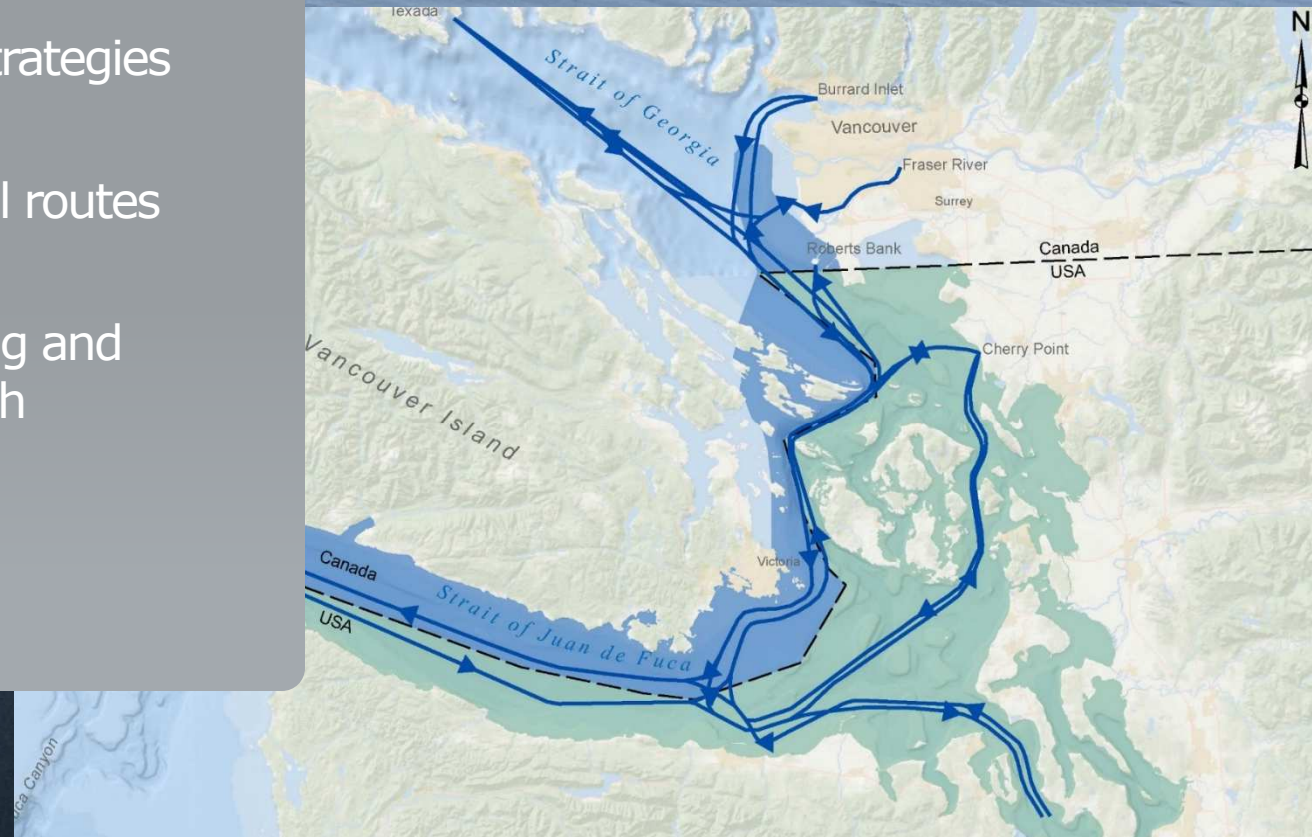
**Cetacean: order of whales, dolphins and porpoises*

Photo: Joan Lopez

ECHO program context

- *Canada Marine Act* mandate
- DFO Recovery Strategies identify threats
- Whale and vessel routes overlap
- Predicted shipping and population growth

Southern resident killer whale critical habitat in US and Canadian waters overlap international shipping lanes



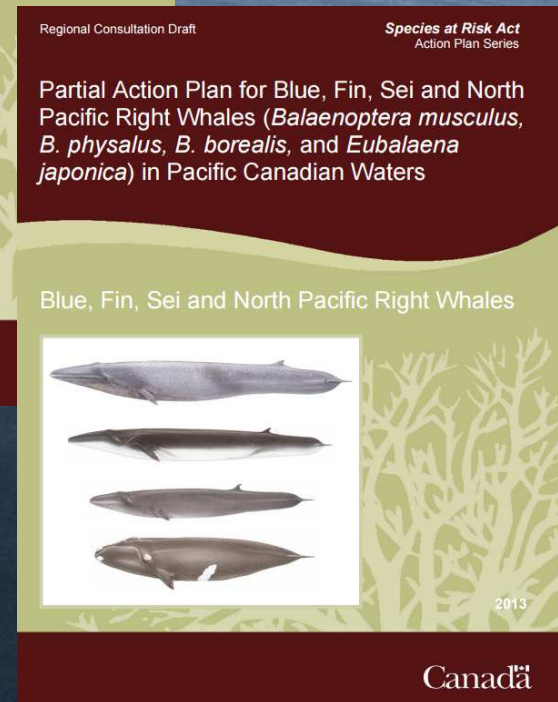
ECHO Program Collaborators



ECHO research project highlights

Alignment with Species at Risk Act Action plans

- 18 projects currently underway
- Alignment with DFO Action Plans
- Project categories align with three main threats
 - Acoustic disturbance
 - Physical disturbance
 - Environmental contaminants

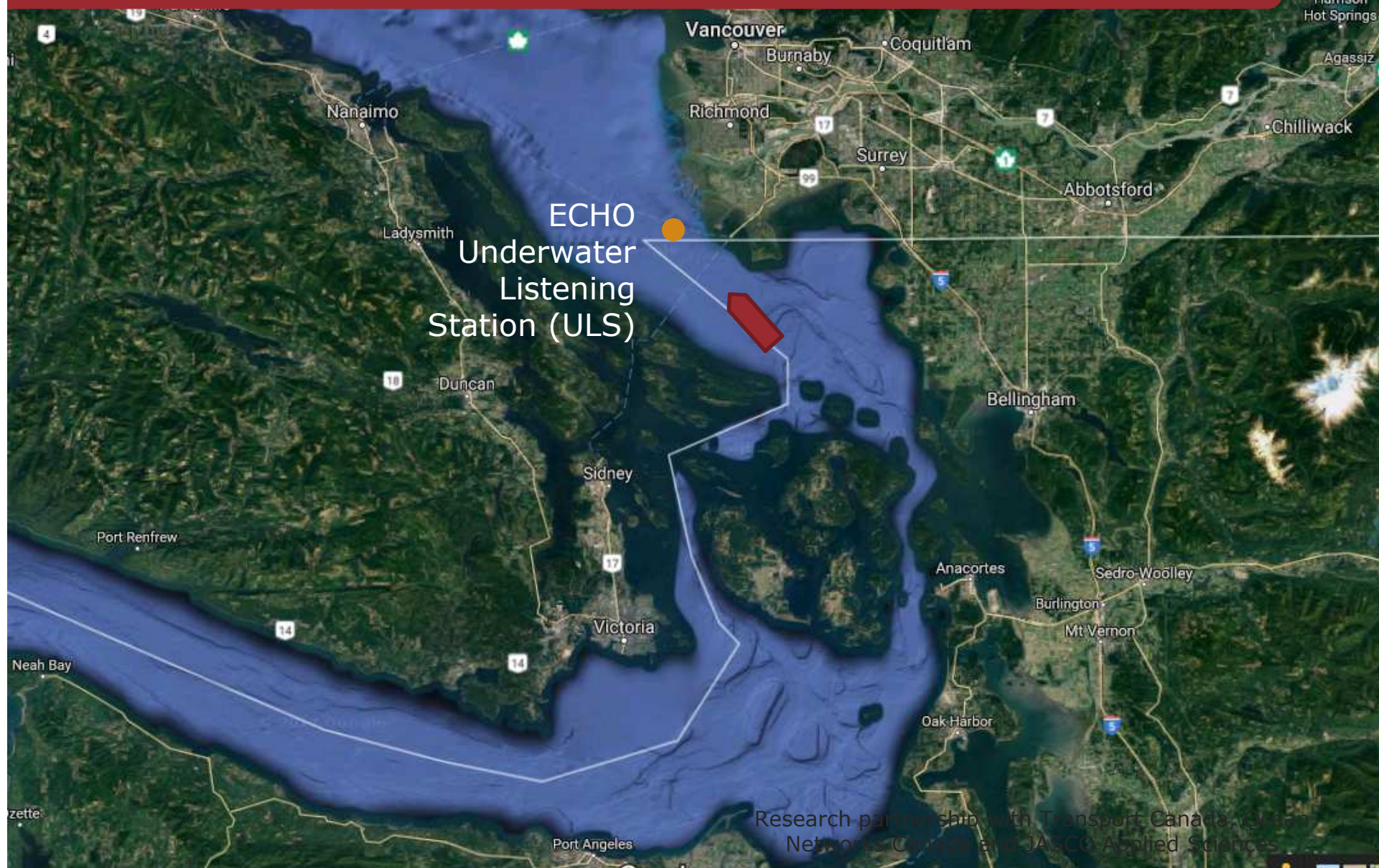


What do different vessels sound like?
How does speed impact noise?
What is the ambient noise level in the region?
How does noise effect whales?

ECHO Underwater Listening Station



ECHO Underwater Listening Station (ULS)



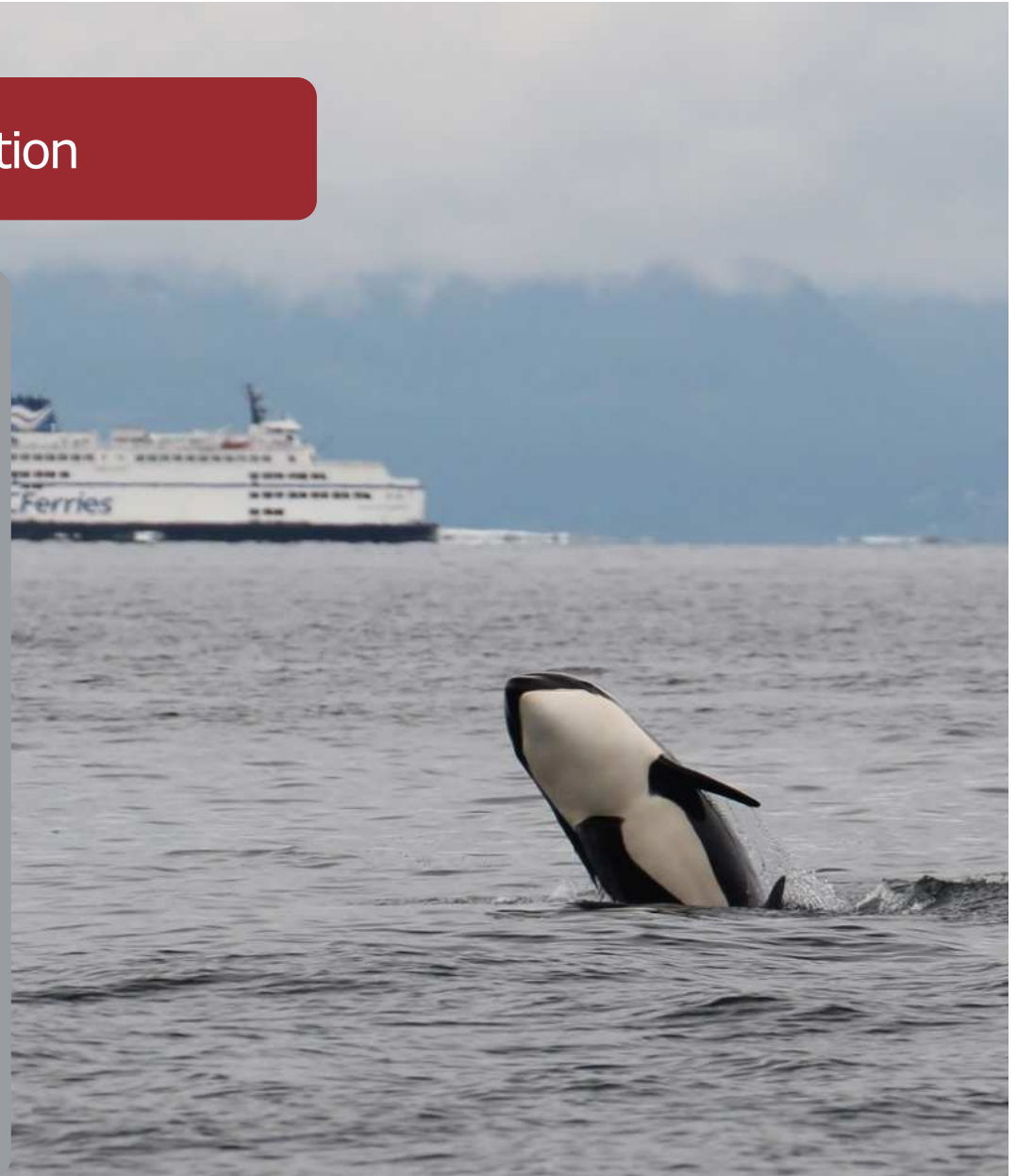
ECHO Underwater Listening Station

Listening for:

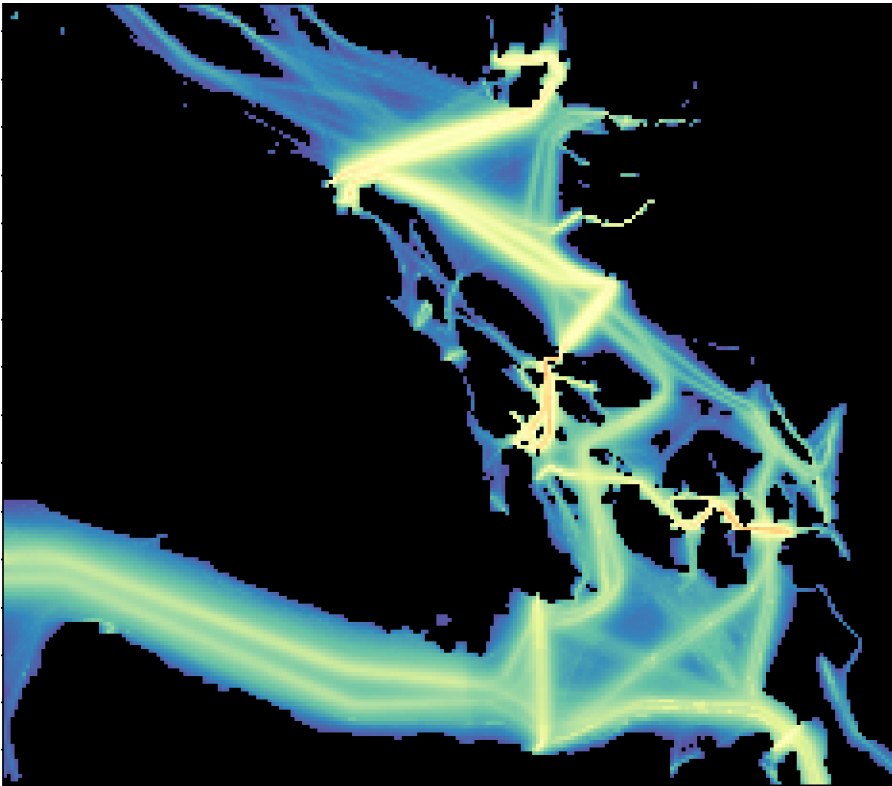
- Vessel source levels
- Marine mammal detections
- Ambient noise data

Utility of the data:

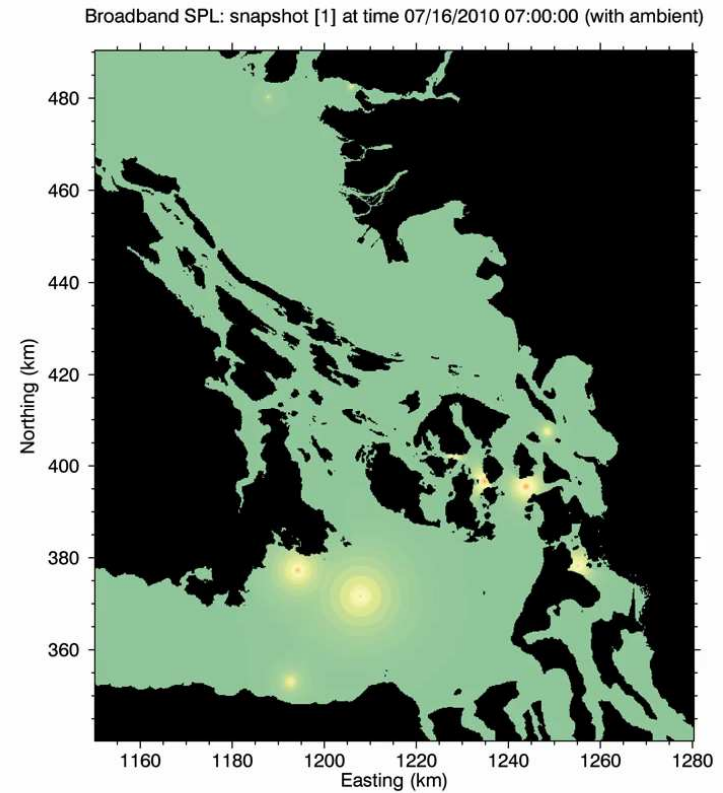
- Helps vessel owner/operators understand vessel noise
- Informs potential incentive
- Tests potential vessel noise reduction options



Vessel Traffic Hotspots

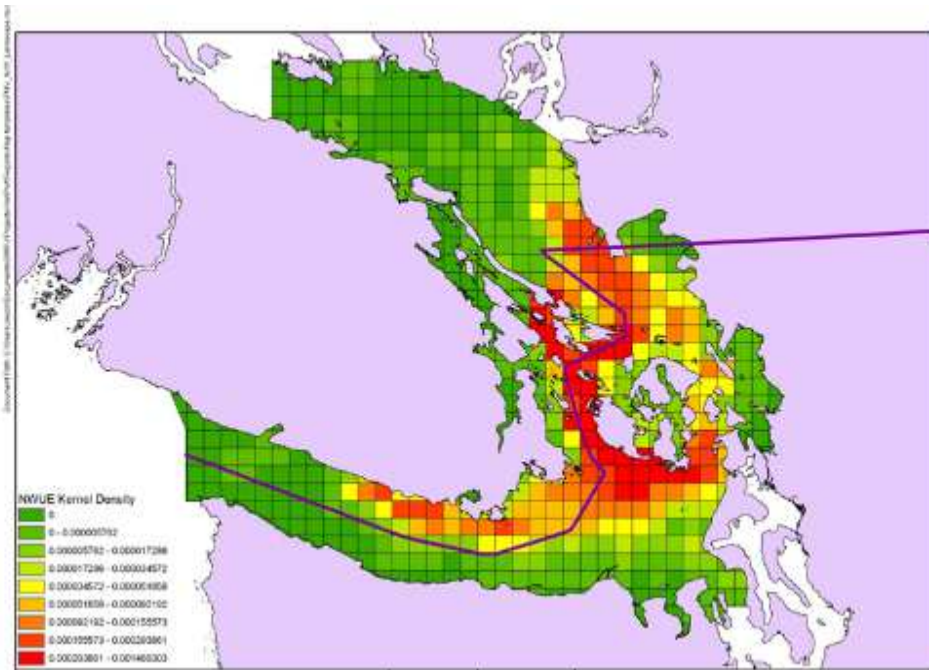


Monthly average sound pressure level
(July)

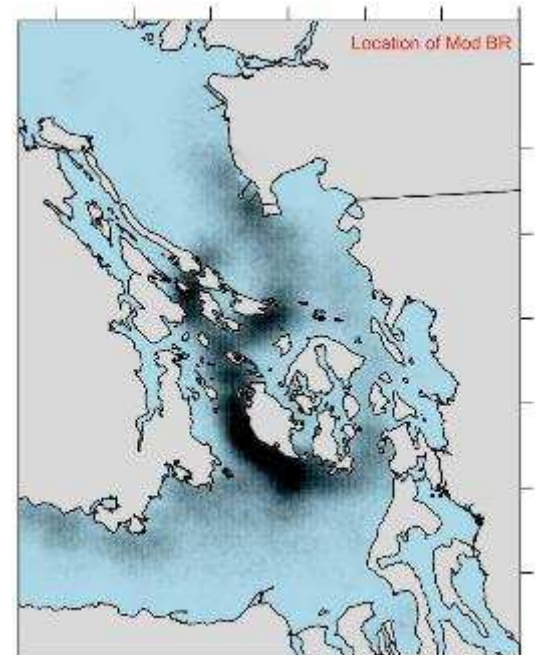


JASCO Consulting

Southern Resident Killer Whale & Vessel Interaction Hotspots



Relative SRKW density May – Sept



94% of SRKW behavioural responses in model area occur between May-Nov

Voluntary measures to reduce impacts

Vessel noise reduction options



Design options

- Hull and propeller design
- Classification society designations
- Efficiency technologies



Operational options

- Vessel slow downs
- Route alterations
- Quiet maneuvering training
- Quiet or compensation areas

Design options: VFPA EcoAction incentive program



Quiet vessel notations

Gold (47% discount)



Wake and cavitation reduction technologies

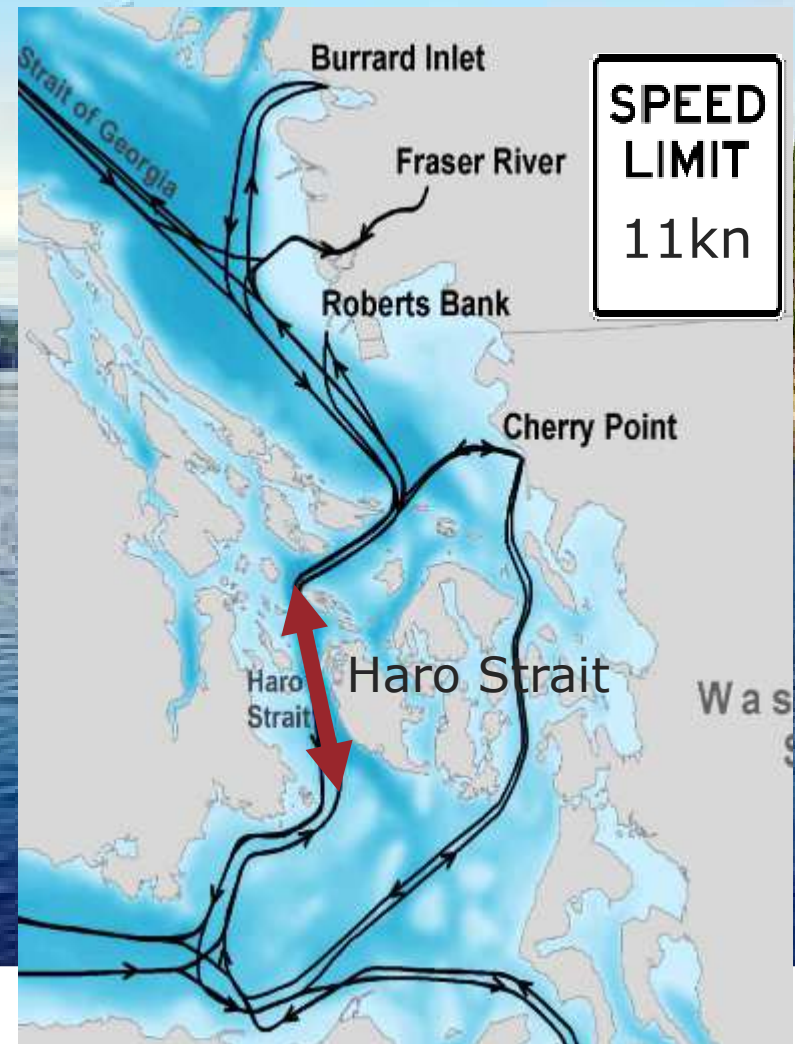
Bronze (23% discount)



Port of Vancouver award recognizing vessel operators who go above and beyond environmental regulatory requirements.

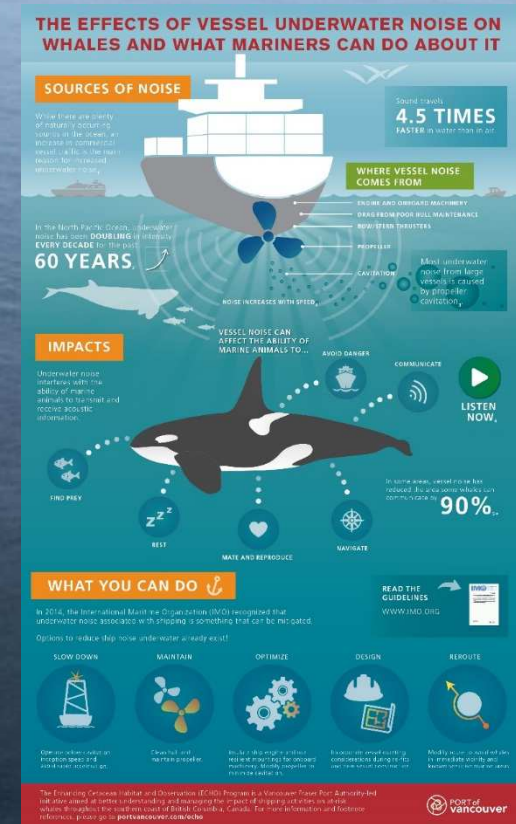
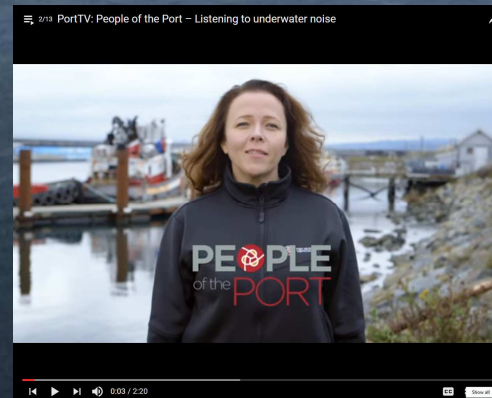
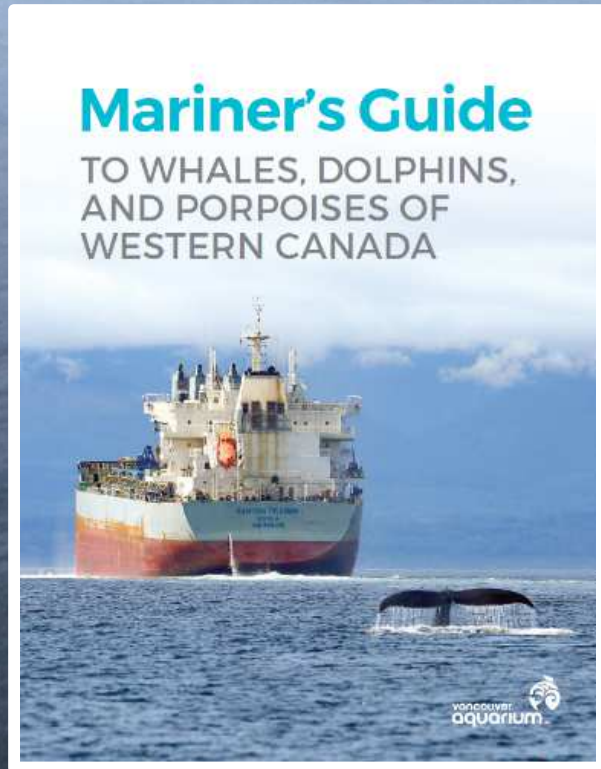
Operational options: Proposed slow down trial

- A voluntary vessel slow down trial is proposed for summer 2017
- Allow real-world data to be gathered
- Vessel operator committee convened to advise on trial planning
- Economic Impact Assessment



Ongoing educational outreach

Education resources



Applications for Environmental Managers

- Underwater noise & whales is a new and emerging issue
- Requires a collaborative approach to build trust and momentum

A photograph of two orcas swimming in the ocean. The orca in the foreground is larger and closer to the camera, showing its dark back and white underbelly. The second orca is slightly behind and to the right. The water is a deep teal color.

Wrap up

Learn more at www.portvancouver.com/echo
Or email echo@portvancouver.com