Attachment 5.1.2.4

THE EFFECTS OF VESSEL UNDERWATER NOISE ON WHALES AND WHAT MARINERS CAN DO ABOUT IT

SOURCES OF NOISE

While there are plenty of naturally occurring sounds in the ocean, an increase in commercial vessel traffic is the main reason for increased underwater noise[1].

Sound travels **4.5 TIMES** **FASTER** in water than in air.

WHERE VESSEL NOISE COMES FROM

- ENGINE AND ONBOARD MACHINERY
- DRAG FROM POOR HULL MAINTENANCE
- BOW/STERN THRUSTERS
- PROPELLER
- CAVITATION

NOISE INCREASES WITH SPEED[4]

In the North Pacific Ocean, underwater noise has been **DOUBLING** in intensity **EVERY DECADE** for the past **60 YEARS**[2].

Most underwater noise from large vessels is caused by propeller cavitation[3].

IMPACTS

Underwater noise interferes with the ability of marine animals to transmit and receive acoustic information.

VESSEL NOISE CAN AFFECT THE ABILITY OF MARINE ANIMALS TO...

- AVOID DANGER
- COMMUNICATE
- FIND PREY
- REST
- MATE AND REPRODUCE
- NAVIGATE

LISTEN NOW[6]

In some areas, vessel noise has reduced the area some whales can communicate by **90%**[5].

WHAT YOU CAN DO

In 2014, the International Maritime Organization (IMO) recognized that underwater noise associated with shipping is something that can be mitigated.

Options to reduce ship noise underwater already exist!

READ THE GUIDELINES

WWW.IMO.ORG

SLOW DOWN

Operate below cavitation inception speed and avoid rapid acceleration.

MAINTAIN

Clean hull and maintain propeller.

OPTIMIZE

Insulate ship engine and use resilient mountings for onboard machinery. Modify propeller to minimize cavitation.

DESIGN

Incorporate vessel quieting considerations during re-fits and new vessel construction.

REROUTE

Modify route to avoid whales in immediate vicinity and known sensitive marine areas.

The Enhancing Cetacean Habitat and Observation (ECHO) Program is a Vancouver Fraser Port Authority-led initiative aimtanding and managing the impact of shipping activities on at-risk whales throughout the southern coast of British Columbia, Canada. For more information and footnote references, please go to **portvancouver.com/echo**

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