

OH-001-2104
Trans Mountain Pipeline ULC
Trans Mountain Expansion Project
File OF-Fac-Oil-T260-2013-03 02

**Raincoast Conservation Foundation Information Request to
Fisheries and Oceans Canada**

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AUTHORS OF EVIDENCE

1. Identification and qualifications of evidence authors and contributors

References: i) A4L7S4, Written Evidence of Fisheries and Oceans Canada

Preamble: The written evidence of Fisheries and Oceans Canada does not identify the individual(s) within Fisheries and Oceans Canada who authored, edited, or otherwise contributed to the evidence. As a result, neither intervenors nor the Board can assess the qualifications and expertise of the authors(s) or of editors of or other contributors to the document.

Request: Please provide the names of the individual author(s) and other contributors or editors, and the nature of their contribution, including the specific sections they authored (if sections were authored separately). For each individual, please specify their job title and provide their qualifications.

MARINE FISH AND FISH HABITAT

2. Project impacts on marine fish and fish habitat

- References:**
- i) A4L7S4, Written Evidence of Fisheries and Oceans Canada.
 - ii) A3S5F4-A3S5F8, Application Vol 8C TR 12, Termpol 3.15 General Risk Analysis and Intended Methods of Reducing Risks, Prepared By Det Norske Veritas for the Trans Mountain Pipeline Expansion Project.
 - iii) A3S5G2-A3S5G5, Vol 8C TR12 TRS7: A Study of Fate and Behaviour of Diluted Bitumen Oils on Marine Waters: Dilbit Experiments – Gainford, Alberta. Prepared for Trans Mountain Pipeline ULC by Witt O’Brien’s, Polaris Applied Sciences, and Western Canada Marine Response Corporation. November 22, 2013. 163 pp.
 - iv) A3S5G7, Vol 8C TR12 TRS8: A Comparison of the Properties of Diluted Bitumen Crudes with other Oils. Prepared by Polaris Applied Sciences for Trans Mountain Pipeline ULC. 26p.
 - v) A3S5G9, Vol 8C TR12 TRS9: Modelling the Fate and behavior of marine oil spills for the Trans Mountain Expansion Project. Prepared for Trans Mountain Pipeline ULC by EBA Engineering. 756 p.
 - vi) A3S513-A3S517, Vol 8C TR12 TRS10: Modelling the Fate and behavior of marine oil spills for the Trans Mountain Expansion Project:

Summary Report. Prepared by EBA Engineering for Trans Mountain Pipeline ULC. 96p.

vii) A3S5I8, Vol 8C TR12 TRS11: Methods for estimating shoreline retention prepared for EBA Engineering Vancouver, BC prepared by John R. Harper, Coastal & Ocean Resources Victoria, BC. May 2013. 20p.

viii) A3S5I9, Vol 8C TR12 TRS12: Review of Trans Mountain Expansion Project Future Oil Spill Response Approach Plan: Recommendations on Bases and Equipment. Prepared by Western Canada Marine Response Corporation and Trans Mountain Pipeline ULC November 2013, 81 p.

ix) A3S5J0-A3S5J5, Vol 8C TR12 TRS13: Trans Mountain Expansion Project Oil spill Response Simulation Study: Arachne Reef and Westridge Marine Terminal Prepared by EBA Engineering for Trans Mountain Pipeline ULC. 82p.

Preamble: Fisheries and Oceans Canada states (Reference (i)) that it has not addressed pipeline spill impacts on fish or fish habitat due to the December 2013 Memorandum of Understanding between the National Energy Board and Fisheries and Oceans Canada for Cooperation and Administration of the Fisheries Act and the Species at Risk Act Related to Regulating Energy Infrastructure (the “Memorandum of Understanding”). Fisheries and Oceans Canada says that, due to the Memorandum of Understanding, the Board is reviewing the effects of the pipeline component of the Project on fish and fish habitat, and Fisheries and Oceans Canada therefore “focuses only on Project components that interact with the marine environment,” specifically the Westridge Marine Terminal and marine shipping lane components.

Reference (i) (pages 3 and page 6) describes the Trans Mountain Expansion Project, which would increase oil tanker shipments of crude oil from Westridge Marine Terminal in Burnaby from 5 to 34 vessels per week through the Marine Local Study Area (Marine LSA) and Marine Regional Study Area (Marine RSA). Figure 3 of Fisheries and Oceans Canada’s evidence shows the LSA and RSA for marine fish and fish habitat.

Reference (i) (page 10) states that all 5 species of Pacific salmon, including chum, Chinook, pink, coho, and sockeye use nearshore habitats in Burrard Inlet, and at least 17 streams in the Inlet are known to be used by salmon for conducting their life-history activities (i.e., spawning, rearing, foraging etc.). In addition to salmon, other fish species which are important to commercial, recreational and Aboriginal fisheries, including Pacific herring and anchovy are also found in Burrard Inlet.

Reference (i) (page 14) states that there are more than 400 species of marine fish in BC's Pacific coastal waters, many of which are important commercial, recreational and Aboriginal fisheries including pink, coho, chum, sockeye, and Chinook salmon, and pelagic fish species including Pacific herring. Fisheries and Oceans Canada describes the Marine RSA to include foraging, spawning and migration habitats for these fish species. Fisheries and Oceans Canada categorizes these habitats broadly into marine riparian (backshore) habitat, intertidal habitat, and subtidal habitats.

Reference (i) (page 15) examines the Proponent's assessment of potential effects of construction and operation of the Westridge Marine Terminal, and the proposed increase in Project-related marine vessel traffic on marine fish and fish habitat. It states that: "Fisheries and Oceans Canada's review examined all potential effects considered by the Proponent".

Request:

- a. Please explain why Reference (i) does not address the potential impacts of oil spills in the Marine RSA, either at the Westridge Marine Terminal or from Project-related tankers, on fish and fish habitat.

- b. Is Fisheries and Oceans Canada concerned that oil spills from Project-related vessels – such as those described in References (ii)-(ix) that examine oil spills scenarios in Georgia Strait and the Fraser estuary, Race Rocks, Burrard Inlet, and Boundary Pass, and which depict intertidal shoreline oiling in the Marine RSA – could result in serious harm to:
 - 1) intertidal and nearshore rearing, foraging, and migrating habitats of Canadian juvenile salmon important to commercial, recreational or Aboriginal fisheries;
 - 2) intertidal and nearshore rearing, foraging, migrating and spawning habitats Canadian pelagic fish important to commercial, recreational or Aboriginal fisheries, including herring, other smelts, and sandlance;
 - 3) any or all of the 5 juvenile Pacific salmon species important to commercial, recreational or Aboriginal fisheries, if present; and
 - 4) embryos, larvae, and juvenile life stages of pelagic fish important to commercial, recreational or Aboriginal fisheries, including Pacific herring, other smelts and sandlance, if present.

- c. Is it Fisheries and Oceans Canada's position that the Memorandum of Understanding precludes it from presenting evidence of the impacts of a release of oil from the pipeline component of the Project on fish or fish habitat?

d. Has Fisheries and Oceans Canada studied the impacts of a release of oil from the pipeline component of the Project on fish and fish habitat, including impacts on any Species at Risk Act listed species or fish important to commercial, recreational or Aboriginal fisheries? If so, please provide the results of this research.

3. Impacts of vessel noise on fish

References: i) A4L7S4, Written Evidence of Fisheries and Oceans Canada.

ii) Engås, A., Misund, O.A., Soldal, A.V., Horvei, B., Solstad, A. 1995. Reactions of penned herring and cod to playback of original, frequency-filtered and time-smoothed vessel sound. *Fisheries Research*. 22(3): 243-254, attached as Schedule A to this Information Request.

iii) Graham, A.L., Cooke, S.J. 2008. The effects of noise disturbance from various recreational boating activities common to inland waters on the cardiac physiology of a freshwater fish, the largemouth bass (*Micropterus salmoides*). *Aquatic Conservation: Marine and Freshwater Ecosystems*. 18(7):1315-1324, attached as Schedule B to this Information Request.

iv) Slabbekoorn, H., Bouton, N., van Opzeeland, I., Coers, A., ten Cate, C., Popper, A. N. 2010. A noisy spring: the impact of globally rising underwater sound levels on fish. *Trends in Ecology & Evolution*. 25(7):419-427 attached as Schedule C to this Information Request.

v) Whitfield, A.K., Becker, A. 2014. Impacts of recreational motorboats on fishes: a review. *Marine Pollution Bulletin*. 83(1):24-31, attached as Schedule D to this Information Request.

Preamble: Reference (i) describes the Proponent's assertion that marine fish and invertebrates might react to vessel noise of tankers, but that large-scale displacement of fish populations is unlikely, given the existing overlap of high levels of shipping activity with salmon migration routes. Reference (i) does not assess the reasonableness of this statement.

Reference (i) (page 17) states that the existence and magnitude of a residual effect from underwater noise generated by Project-related marine vessels in addition to the existing underwater noise environment in the Marine RSA is uncertain, as limited information is available on species-specific behavioural responses of marine fish to marine vessel noise in the Marine RSA and importantly, no Canadian standards or thresholds have been established for assessing such effects.

- Request:**
- a. What is Fisheries and Oceans Canada’s opinion as to the reasonableness of the assumption described above which is based on the existing overlap of shipping and salmon migration routes?
 - b1. Has Fisheries and Oceans Canada considered the research identified in the references listed?
 - b2. If not, does this literature change Fisheries and Oceans Canada’s opinion about the level of uncertainty or the likelihood that the risk is low?
 - b3. If not, please explain how Fisheries and Oceans Canada reached its conclusion of “likely low risk” given the uncertainty it cites and given recent research?
 - c. Fisheries and Oceans Canada state that the effect of Project-related vessel noise on fish is “uncertain but likely to be of low risk”. Is Fisheries and Oceans Canada referring only to the residual impacts of the Project-related vessels, or is it referring to cumulative effects?

MARINE MAMMALS

4. Quality of Southern Resident Killer Whale critical habitat

- References:**
- i) A4L7S4, Written Evidence of Fisheries and Oceans Canada.
 - ii) Fisheries and Oceans Canada. 2011. Recovery Strategy for the Northern and Southern Resident Killer Whales (*Orcinus orca*) in Canada. *Species at Risk Act Recovery Strategy Series*, Fisheries & Oceans Canada, Ottawa, ix + 80 pp.
 - iii) Fisheries and Oceans Canada. 2014. Action Plan for the Northern and Southern Resident Killer Whales (*Orcinus orca*) in Canada [Draft]. *Species at Risk Act Action Plan Series*. Fisheries and Oceans Canada, Ottawa. iv + 21 pp.

Preamble: Page 29 of Reference (i) states that “the poor survival and birth rates of Southern Resident Killer Whales over the past 20 years suggest that current habitat quality, including that of designated Critical Habitat within the Marine RSA, may be insufficient to allow for recovery of this population.”

- Request:**
- a. The above statement is not reflected in Fisheries and Oceans Canada’s Recovery Strategy (Reference (ii)). On what basis does Fisheries and Oceans Canada make this statement?

b. Please specify which elements of critical habitat may not, in Fisheries and Oceans Canada's opinion, be of sufficient quality to allow for recovery of recovery of the endangered Southern Resident Killer Whales.

c. If Fisheries and Oceans Canada is of the opinion that critical habitat within the RSA may be too degraded to allow for the recovery of Southern Resident Killer Whales, does it believe that critical habitat would be further degraded by impacts from a Project-related oil spill or other impacts of Project-related vessel traffic?

5. Current research on the effects of ocean noise on marine mammals

References: i) A4L7S4, Written Evidence of Fisheries and Oceans Canada.

ii) A4L9G0, Attachment D to the Written Evidence of Raincoast Conservation Foundation, Dr. Christopher Clark, Potential Acoustic Impacts of Vessel Traffic from the Trans Mountain Expansion Project on Southern Resident Killer Whales

Preamble: Reference (i) addresses the Proponent's review of the scientific literature on the effects of ocean noise on marine mammals (Reference (i)). Reference (ii) suggests that the Proponent did not address the best and most recent science on this subject.]

Request: a. Is the scientific literature cited in Reference (ii) the most recent research on this subject?

b. If so, was it adequately addressed in the Proponent's Application?

6. Effects of contaminants on marine mammals, including oil spill impacts on Southern Resident Killer Whales

References: i) A4L7S4, Written Evidence of Fisheries and Oceans Canada.

ii) Fisheries and Oceans Canada. 2011. Recovery Strategy for the Northern and Southern Resident Killer Whales (*Orcinus orca*) in Canada. *Species at Risk Act* Recovery Strategy Series, Fisheries & Oceans Canada, Ottawa, ix + 80 pp.

iii) Order Designating the Minister of the Environment as the Minister Responsible for the Administration and Enforcement of Subsections 36(3) to (6) of the Fisheries Act, SI/2014-21.

Preamble: Fisheries and Oceans Canada’s Recovery Strategy for the Southern Resident Killer Whales (Reference (ii), page 34) states that “[w]hile the probability of either northern or southern resident killer whales being exposed to an oil spill is low, the impact of such an event is potentially catastrophic.”

Fisheries and Oceans Canada has not addressed the impact of exposure of Southern Resident Killer Whales to an oil spill in its evidence (Reference (i)).

Reference (i) (pages 26-27) that “potential effects on marine mammals associated with contaminants [...] associated with accidental release from vessels (e.g. bilge water containing fuels, oils and/or lubricants” are not reviewed in the evidence submission because “the deposition of deleterious substances (i.e. contaminants or pollutants), is outside of DFO’s mandate”.

- Request:**
- a. Is Fisheries and Oceans Canada’s statement at pages 26-27 of Reference (i), described in the paragraph above, based entirely on Reference (iii), which makes the Minister of Environment responsible for a provision of the Fisheries Act which prohibits the deposit of a deleterious substance into water frequented by fish or in any place under conditions where it may enter such water? Please explain any other basis for this statement.
 - b. Please explain why Reference (i) did not examine or consider the potential effects of an oil spill, such as those described in the spill scenarios presented by the Proponent in its Application Volume 8C –TR12 and its Technical sub reports TRS 7- 13 (IR No. 2 above, References (ii)-(ix)), on Southern Resident Killer Whales or their designated critical habitat within the Marine RSA or LSA.
 - c. Has Fisheries and Oceans Canada considered the potential effects of an oil spill from a Project-related tanker in the Marine RSA on Southern Resident Killer Whales and their habitat? If so, what was the outcome?
 - d. Is it Fisheries and Oceans Canada’s opinion that, in addition to accidental releases into water from vessels, air pollution from vessels also affects marine mammals?

7. Mitigation of Project impacts on marine mammals

- References:**
- i) A4L7S4, Written Evidence of Fisheries and Oceans Canada.
 - ii) A3S7C6, Report of the Joint Review Panel for the Enbridge Northern Gateway Pipeline Project, Appendix 1: The Panel’s Conditions, page 368.

Preamble: Reference (i) (page 2, lines 11-12) states that Fisheries and Oceans Canada is not aware of any specific mitigation measures that the Proponent could implement to mitigate impacts of vessel noise or ship strikes on marine mammals.

Reference (i) (page 2, lines 26-33) describes two programs which Fisheries and Oceans Canada identifies as being potentially useful in mitigating impacts of marine shipping: the Enhancing Cetacean Habitat and Observation (ECHO) led by Port Metro Vancouver, and the Green Marine Environmental Program. Fisheries and Oceans Canada states that it is “supportive” of these multi-stakeholder programs, which Fisheries and Oceans Canada describes as “necessary” for ensuring recovery of Southern Resident Killer Whales.

- Request:**
- a. Is the opinion set out in lines 11-12 of page 2 of Reference (i) consistent with Reference (ii), in which there is a condition requiring Northern Gateway to require tankers to modify their speed to reduce the risk of marine mammal strikes?
 - b. Is Fisheries and Oceans Canada aware of any specific mitigation measures that it, as a regulator, could implement to mitigate effects of underwater noise and ship strikes on marine mammals?
 - c. What mitigation measures could Fisheries and Oceans Canada, or other federal agencies, in their role as regulators, implement to reduce impacts from Project-related vessels on Southern Resident Killer Whales?
 - d. What role, if any, does Fisheries and Oceans Canada play in the ECHO or Green Marine program?
 - e. How will the ECHO or Green Marine program decrease impacts from Project-related vessel traffic?
 - f. Does Fisheries and Oceans Canada intend to ensure that voluntary programs such as Green Marine achieve their stated objectives? What will Fisheries and Oceans Canada do if this program does not achieve the hoped-for compliance?