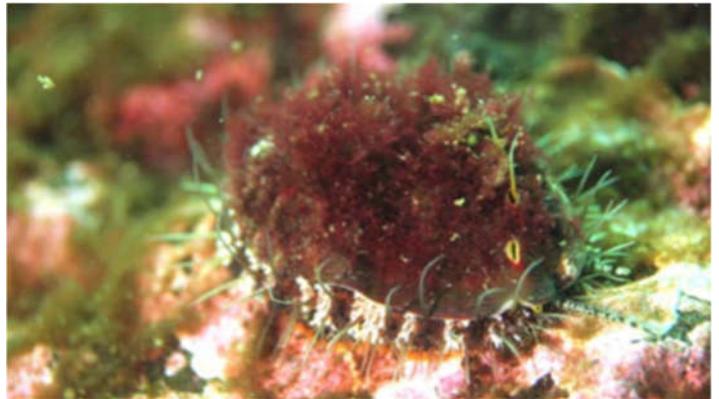


Aquatic Species at Risk

Field Guide

For the Trans Mountain Pipeline Route and
Associated Marine Shipping Areas

January 2021



Fisheries and Oceans
Canada

Pêches et Océans
Canada

Canada



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Abbreviations

B.C.	British Columbia
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
DFO	Fisheries and Oceans Canada
DU	Designatable Unit
ECCC	Environment and Climate Change Canada
IAMC	Indigenous Advisory and Monitoring Committee
kHz	Kilohertz (measurement of sound frequency)
SAR	Species at Risk
SARA	<i>Species at Risk Act</i>
sp.	Species
sp. cf.	Species “conferre” (species is similar to a given species, but the identification has not been confirmed)
ssp.	Subspecies
TMX	Trans Mountain Expansion Project



Glossary

Adfluvial	Life process in which adult fish spawn and juveniles then rear in streams, but migrate to lakes for feeding as subadults or adults.
Anadromous	Life process by which fish are born in freshwater, but spend most of their lives in saltwater and return to freshwater to spawn (e.g., Pacific salmon and some species of sturgeon).
Brackish (water or fish)	Of or found in waters that have a greater salinity than freshwater, but less salinity than seawater (e.g., waters in estuaries)
Cephalopods (Class: Cephalopoda)	Class, in the phylum Mollusca, which includes squid, octopus, cuttlefish and nautilus. The name derives from the Greek words for 'head-feet'.
Cetaceans (infraorder: Cetacea)	Infraorder of marine mammals that comprises whales, dolphins and porpoises. From Latin word for 'whale' and Ancient Greek for 'large fish'.
Crustaceans (Subphylum: Crustacea)	Crustaceans are a subphylum of arthropods that have a hard exoskeleton, e.g., crab, lobster, crayfish, shrimps, prawns, krill, barnacles and copepods.
Dorsal	The back or upper side surface of an organism. From Latin, word for 'back'.
Endangered (Species at Risk status)	A wildlife species facing imminent extirpation or extinction.
Estuarine	Of, found in, or produced by estuaries (i.e., partially enclosed coastal body of brackish water with one or more watercourses flowing into it, freely connected to the sea).
Extinct (Species at Risk status)	A wildlife species that no longer exists.
Extirpated (Species at Risk status)	A wildlife species that no longer exists in Canada, but exists elsewhere in the wild.
Fluvial	Of or found in a river.
Gastropod (Class: Gastropoda)	A large taxonomic class of invertebrates, in the phylum Mollusca, commonly referred to as snails and slugs.
Hypoxia	Low or depleted dissolved oxygen concentrations, often as a result of high nutrient levels and associated overgrowth of algae.



Intertidal (zone or species)	Of or denoting the area of seashore that is covered at high tide and uncovered at low tide
Lacustrine	Relating to or associated with lakes.
Marine	Of, found in, or produced by the sea.
Pelagic	Relating to the open sea (e.g., fish that inhabit the upper layers of the open sea).
Perennial (watercourse)	A perennial watercourse is one that had a constant stream throughout the year through parts of its streambed during years or normal rainfall.
Pinnipeds (Clade: Pinnipedia)	Clade of semi-aquatic marine mammals that comprise seals, sea lions and walruses. From Latin for 'fin foot'.
Plankton (planktonic)	Passively floating, drifting, or somewhat motile organisms occurring in a body of water, primarily comprising microscopic organisms.
Resident (species or population)	A species or population that remains living in the same water body or place on a long term basis.
Riparian	Of, on or situated on the banks of a watercourse.
Riverine	Relating to or situated on a river or riverbank.
Special Concern (Species at Risk status)	A wildlife species that may become threatened or endangered based on a combination of biological characteristics and identified threats.
Subtidal (zone, waters or species)	Of or relating to the area of marine or estuarine seabed that is deeper than the level of mean low water for spring tides (i.e., seabed that remains underwater at all states of tide).
Threatened (Species at Risk status)	A wildlife species that is likely to become endangered if nothing is done to reverse the factors leading to its extirpation or extinction.



Introduction

This *Aquatic Species at Risk Field Guide* was prepared by Fisheries and Oceans Canada (DFO) for members of the Indigenous Advisory and Monitoring Committee (IAMC) and is relevant to waters crossed or near to the pipelines and facilities of the Trans Mountain Expansion Project (TMX) and the existing Trans Mountain Pipeline. The purpose of the guide is to provide members of the IAMC with information on the characteristics, habitats and threats of aquatic species at risk found in areas relevant to the pipelines and facilities. The guide forms an accompaniment to Environment and Climate Change Canada's (ECCC's) and DFO's Species at Risk training course that was first offered through the IAMC in late 2020.

This guide was prepared based on written reports, plans and designations relevant to the *Species at Risk Act* (SARA) at the time of revision. The listed status of species, under SARA, may change periodically. As such, DFO recommends visiting the species at risk public registry (at: <https://www.canada.ca/en/environment-climate-change/services/species-risk-public-registry.html>) to search a species and verify its status at the time of reading. Changes to threats, management plans, recovery strategies, and critical habitat may also occur over time. The SARA public registry is an online service that provides timely access to key information and documents including status reports, species assessments, response statements, recovery strategies, action plans and management plans. The registry enables the public to monitor the progress of documents from draft stages to final publication, and provides the public with opportunities to provide comments and feedback. More information about the registry can be found at species at risk public registry.

Definitions: Species at Risk Status

Extinct – A wildlife species that no longer exists.

Extirpated – A wildlife species that no longer exists in Canada, but exists elsewhere in the wild.

Endangered – A wildlife species facing imminent extirpation or extinction.

Threatened – A wildlife species that is likely to become endangered if nothing is done to reverse the factors leading to its extirpation or extinction.

Special Concern – A wildlife species that may become threatened or endangered based on a combination of biological characteristics and identified threats.

What is the purpose of SARA?

The *Species at Risk Act* (SARA) was created to prevent wildlife species from being extirpated or becoming extinct, to provide for the recovery of wildlife species that are extirpated, endangered or threatened as a result of human activity and to manage species of special concern to prevent them from becoming endangered or threatened.



DFO's Role in Implementing SARA

Environment and Climate Change Canada (ECCC) has the lead responsibility for SARA except where the Act gives responsibility to DFO. DFO is responsible for protection and recovery of aquatic species at risk, other than for individuals found in national protected areas, which are managed by Parks Canada Agency.

Structure of Field Guide

The field guide is split into three sections. The sections provide information on aquatic species at risk in areas relevant to the pipelines and facilities, and include: 1) freshwater aquatic species at risk in Alberta; 2) freshwater and anadromous species at risk in British Columbia; and 3) marine species at risk around the Westridge Marine Terminal and marine shipping route (Burrard Inlet and the Salish Sea).

Resources for Aquatic Species at Risk

General Resources

Regularly updated information regarding species at risk may be found on the public registry at: <https://www.canada.ca/en/environment-climate-change/services/species-risk-public-registry.html>.

For an online aquatic species at risk map viewer please visit: <https://www.dfo-mpo.gc.ca/species-especies/sara-lep/map-carte/index-eng.html>.

Reporting Cetacean and Sea Turtle Sightings or Incidents

For information on how to report a sighting of, or incident involving, cetaceans (whale, dolphin or porpoise) or sea turtles please visit: <https://www.dfo-mpo.gc.ca/species-especies/mammals-mammiferes/report-rapport/pacific-pacifique-eng.html>.

Sightings of cetaceans may be made to the BC Cetacean Sighting Network by calling **1-866-I SAW ONE (472-9663)** or by installing and reporting through the WhaleReport App (available for iOS or Android). For a list of information to be included in the report please visit: <https://wildwhales.org/sightings/>. Sightings of Leatherback Sea Turtles may be reported to Vancouver Aquarium at turtles@vanaqua.org.



Freshwater Species at Risk along the Pipeline Route in Alberta

Bull Trout (*Salvelinus confluentus*) – Western Arctic populations

SARA: Special Concern

SARA Listing Year: 2019

COSEWIC: Special Concern

Most Recent COSEWIC Assessment: November 2012

Management Plan: Under development



Figure 1: Bull Trout Image

Source: Species at risk public registry (<https://species-registry.canada.ca/index-en>)

Description:

The Bull Trout belongs to the salmon and trout family (Salmonidae) and is part of the char subgroup that also includes Dolly Varden, Lake Trout, Brook Trout and Arctic Char. Bull Trout have a long and slender body, a large broad head, a prominent upper jaw, and a slightly forked tail fin. Its back is olive-green to blue-grey in colour and its belly is pale in colour. The Bull Trout's sides are silvery with small pink, lilac, yellow-orange or red spots.

In Canada the distribution of Bull Trout extends throughout British Columbia and western Alberta, with a northern limit into the southern Yukon and the central portion of the Northwest Territories. Based on genetic analysis and range, Bull Trout have been divided into five designatable units (DUs). The Western



Arctic populations (DU2) include those populations in the Mackenzie River system and major tributaries, such as the Liard, Peace and Athabasca rivers.

Habitat:

- Requires cold (generally below 18°C, but most commonly below 12°C) clean, and clear water
- Bull Trout are best adapted to low productivity waters with complex forms of cover
- Have three important life history strategies that are dependent on different environments:
 - Resident, non-migratory bull trout that are found in small streams and headwater tributaries that grow slowly, are smaller at maturity (average length 250 mm, max 400 mm) and are shorter-lived.
 - Fluvial or riverine bull trout that complete their life cycle in rivers and streams, overwintering and maturing (average length 400 mm, max 730 mm) in large streams, and migrating to small tributaries to spawn.
 - Adfluvial or Lacustrine bull trout that overwinter and mature (average length 400 mm, max 900 mm) in large lakes and migrate to small tributaries to spawn.
- Bull Trout spawn in the fall, with females digging a 'redd' in clean loose gravels where they deposit eggs, after which the males fertilize them. Preferred spawning areas are usually cold (~5 to 10C).

Threats:

- Habitat degradation and fragmentation
- Sedimentation of habitat
- Reduced groundwater
- Interactions with introduced species, particularly brook trout.
- Over-exploitation/over-harvest

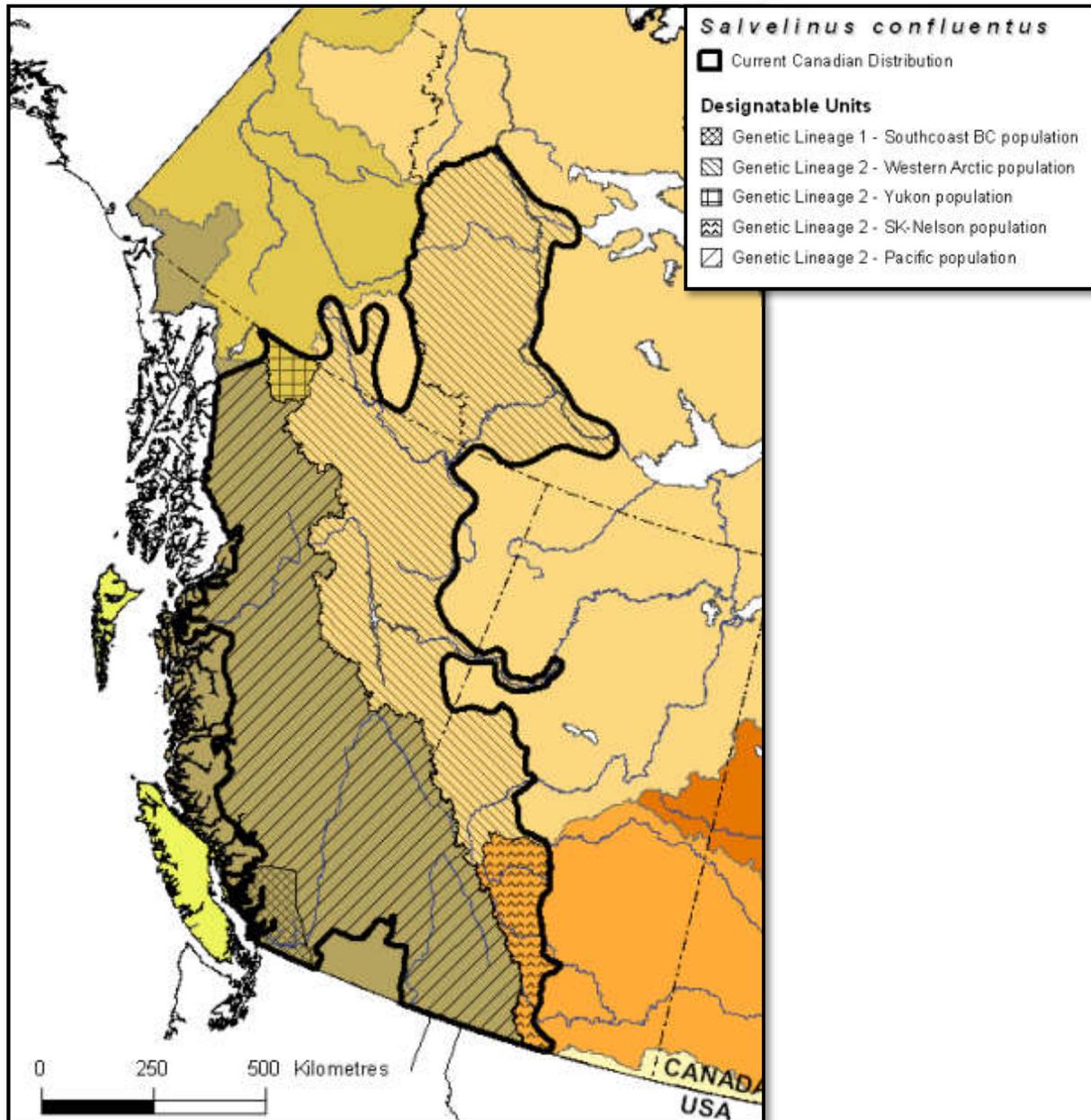


Figure 2: Canadian distribution of Bull Trout.

Source: After COSEWIC. 2012. COSEWIC Assessment and Status Report on the Bull Trout *Salvelinus confluentus* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. iv + 103 pp. (https://wildlife-species.canada.ca/species-risk-registry/virtual_sara/files/cosewic/sr_omble_tete_plat_bull_trout_1113_e.pdf).



Rainbow Trout (*Oncorhynchus mykiss*) – Athabasca River populations

SARA: Endangered

SARA Listing Year: 2019

COSEWIC: Endangered

Most Recent COSEWIC Assessment: May 2014

Recovery Strategy Status: Final

Action Plan Status: Final



Figure 3: Athabasca Rainbow Trout image.

Source: Fisheries and Oceans Canada. 2020. Recovery Strategy for the Rainbow Trout (*Oncorhynchus mykiss*) in Canada (Athabasca River populations). *Species at Risk Act* Recovery Strategy Series. Fisheries and Oceans Canada, Ottawa. vii + 90 pp.

<https://www.canada.ca/en/environment-climate-change/services/species-risk-public-registry/recovery-strategies/rainbow-trout.html>

Description:

Smaller than other Rainbow Trout (maximum length less than 50 cm), Athabasca Rainbow Trout have a silver-coloured dorsal surface, which is covered in black spots that extend towards the fins and lateral surface, and a horizontal pink band at the midpoint on the dorsal surface. Stream resident Athabasca Rainbow Trout tend to be bluish to greenish in colour, with yellow green to silvery sides and black spots on the head, back, dorsal fin, adipose fin, and tail fin. The front tip of the pelvic, dorsal, and anal fins are whitish in color. River migrant fish may be silverish without spots or with small spots and faint coloration. Spawning fish often have a bright reddish band along their sides.



In Canada there are only three drainages east of the continental divide known to contain native populations of Rainbow Trout: the Peace, Liard and Athabasca rivers. The Athabasca Rainbow Trout is considered a distinct form of a species native to rivers and streams of the upper Athabasca watershed in west-central Alberta.

Habitat:

- There are two life history strategies observed within populations of Athabasca Rainbow Trout: “stream residents” that live exclusively in cold headwater streams, and “river migrants” that live in the upper reaches of larger rivers and move into smaller streams to spawn.
- Rainbow Trout are a cold-water species that requires clean, well oxygenated water, sediment-free substrates, instream cover and a variety of resting or feeding habitats with lower water velocities.
- Rainbow Trout spawn in the spring, in small to medium perennial streams.

Critical Habitat:

- Areas on which Athabasca Rainbow Trout depend directly and indirectly in order to carry out their life processes, and areas where populations of the species formerly occurred and have the potential to be reintroduced.
- All streams where strong genetic strains of Athabasca Rainbow Trout were determined to be present were identified as critical habitat and these include reaches within, and tributaries of, the Athabasca River, Berland River, Edson River, Embarras River, Freeman River, McLeod River, Miette River, Sakwatamau River, Trout Creek, Oldman Creek, Wildhay River and Wolf Creek.
- Includes riparian areas for a width of 30 m from the high water mark, on both stream banks, within areas designated as critical habitat for Athabasca Rainbow Trout.

Threats:

- Invasive species
- Habitat loss and degradation, including fragmentation
- Mortality, including types of exploitation and incidental mortality;
- Contaminants and toxic substances (including industrial and agricultural pollution)
- climate change.
- Invasive species (non-native Rainbow Trout, Brook Trout and Cutthroat Trout), habitat issues, and climate change are seen as the greatest threats.

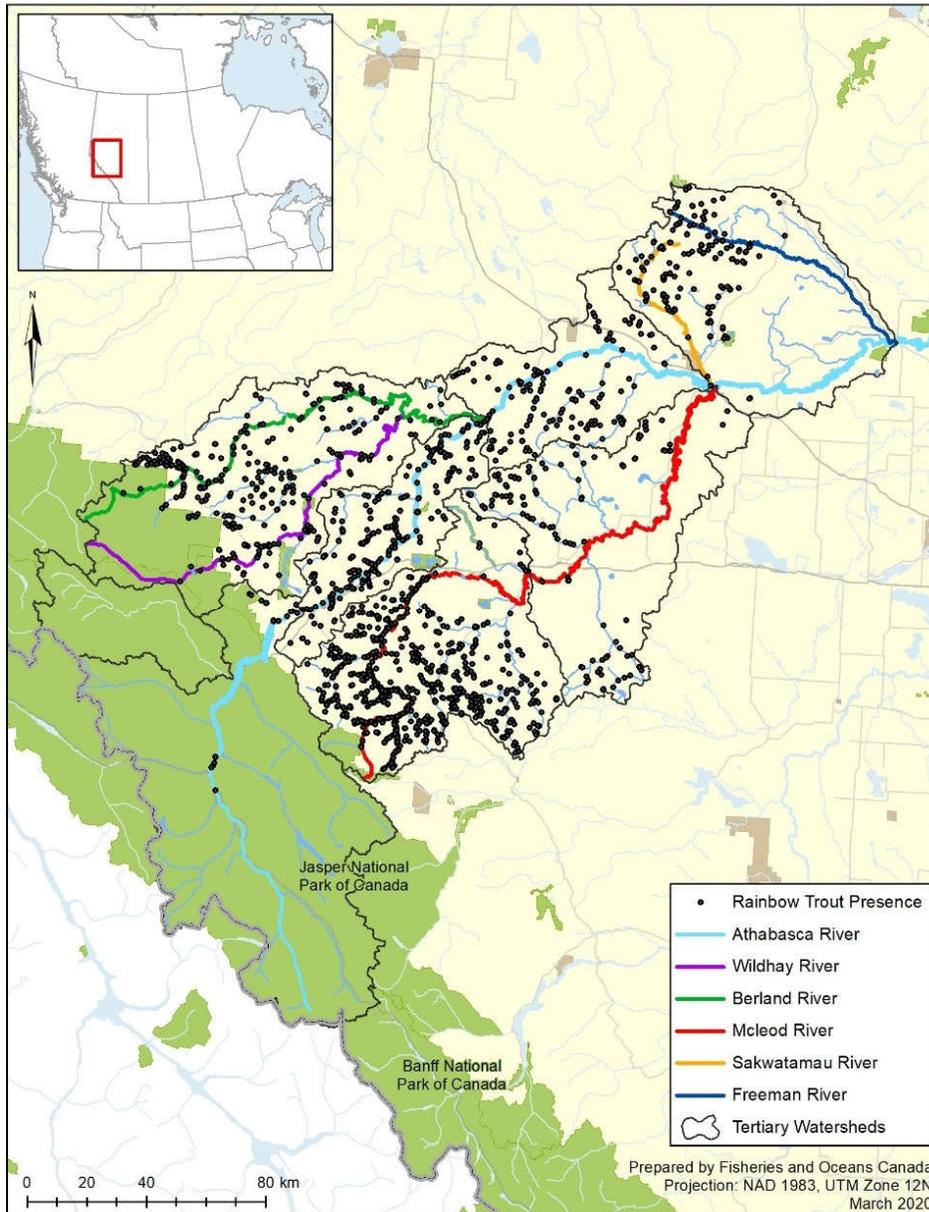


Figure 4: Distribution of Athabasca Rainbow Trout in Canada.

Source: Fisheries and Oceans Canada. 2020. Recovery Strategy for the Rainbow Trout (*Oncorhynchus mykiss*) in Canada (Athabasca River populations). *Species at Risk Act* Recovery Strategy Series. Fisheries and Oceans Canada, Ottawa. vii + 90 pp. (<https://www.canada.ca/en/environment-climate-change/services/species-risk-public-registry/recovery-strategies/rainbow-trout.html>)



Freshwater and Anadromous Species at Risk along the Pipeline Route in British Columbia

Bull Trout (*Salvelinus confluentus*) – South Coast British Columbia populations

SARA: Special Concern

SARA Listing Year: 2019

COSEWIC: Special Concern

Most Recent COSEWIC Assessment: November 2012 (new)

Management Plan: Under development



Figure 5: Bull Trout Image

Source: Species at risk public registry (<https://species-registry.canada.ca/index-en>)

Description:

The Bull Trout belongs to the salmon and trout family and is part of the char subgroup that also includes Dolly Varden, Lake Trout, Brook Trout and Arctic Char. Bull Trout has a long and slender body, a large broad head, a prominent upper jaw, and a slightly forked tail fin. Its back is olive-green to blue-grey in colour and its belly is pale in colour. The Bull Trout's sides are silvery with small pink, lilac, yellow-orange or red spots.



In Canada the distribution of Bull Trout extends throughout British Columbia and western Alberta, with a northern limit into the southern Yukon and the central portion of the Northwest Territories. Based on genetic analysis and range Bull Trout have been divided into five designatable units (DUs). The South Coast British Columbia populations DU is unique in including an anadromous life history form. The South Coast British Columbia populations inhabit the Skagit, Squamish, Ryan, Lillooet, Pitt and Lower Fraser Rivers; the Pitt, Birkenhead, Chilliwack and Chehalis Lakes; and the Phelix and Ure Creeks.

Habitat:

- Requires cold (generally below 18°C, but most commonly below 12°C) clean, and clear water
- Bull Trout are best adapted to low productivity waters with complex forms of cover
- Have four important life history strategies that are dependent on different environments:
 - Resident, non-migratory bull trout that are found in small streams and headwater tributaries that grow slowly, are smaller at maturity (average length 250 mm, max 410 mm).
 - Fluvial or riverine bull trout that complete their life cycle in rivers and streams, overwintering and maturing (average length 400 mm, max 730 mm) in large streams, and migrating to small tributaries to spawn.
 - Adfluvial or Lacustrine bull trout that overwinter and mature (average length 400 mm, max 900 mm) in large lakes and migrate to small tributaries to spawn.
 - Anadromous populations may be larger still migrates from natal freshwater streams to feeding habitats at sea.
- Bull Trout spawn in the fall, with females digging a 'redd' in clean loose gravels where they deposit eggs, after which the males fertilize them. Preferred spawning areas are usually cold (~5 to 10C).

Critical Habitat:

Not applicable; species listed as Special Concern do not have critical habitat identified.

Threats:

- Habitat degradation and fragmentation
- Sedimentation of habitat
- Reduced groundwater
- Interactions with introduced species, particularly brook trout.
- Over-exploitation/over-harvest

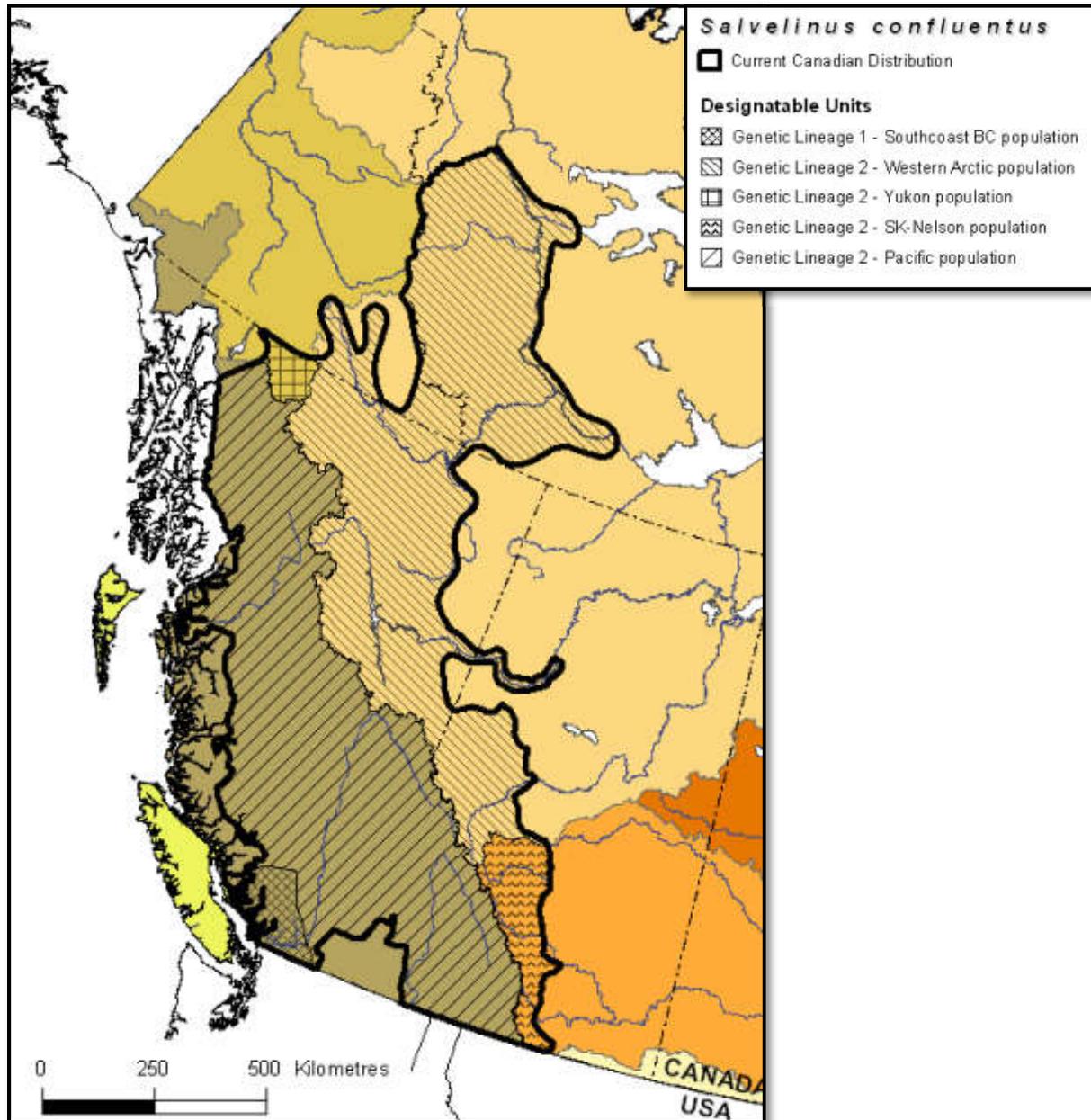


Figure 6: Canadian distribution of Bull Trout.

Source: After COSEWIC. 2012. COSEWIC Assessment and Status Report on the Bull Trout *Salvelinus confluentus* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. iv + 103 pp. (https://wildlife-species.canada.ca/species-risk-registry/virtual_sara/files/cosewic/sr_omble_tete_plat_bull_trout_1113_e.pdf).



Green Sturgeon (*Acipenser medirostris*)

SARA: Special Concern

SARA Listing Year: 2006

COSEWIC: Special Concern

Most Recent COSEWIC Assessment: November 2013

Management Plan: Final



Figure 7: Green Sturgeon Image

Source : Fisheries and Oceans Canada. 2016. Management Plan for the Green Sturgeon (*Acipenser medirostris*) in Canada [Proposed]. *Species at Risk Act* Management Plan Series. Fisheries and Oceans Canada, Ottawa. v + 36 pp.

Description:

The Green Sturgeon has a rounded body, small eyes, and a short snout, with a dark or olive green body and upper part of the head. The underside of the fish is white with a dark green stripe extending down the middle of the belly. The Green Sturgeon has a lifespan of 60-70 years, with a maximum length of 2.1 m and a maximum weight of 159 kg.

The Green Sturgeon is an anadromous fish (i.e., it returns to freshwater to spawn) but spends most of its time in marine environments. However, there are no known spawning locations in Canada.

Habitat:

- Marine coast of British Columbia, including the Strait of Georgia
- Also found in estuaries, but marine populations prefer benthic habitat for feeding



- Previous reports of freshwater captures in the lower Fraser River, Nass River, Stikine River, Skeena River, and Taku River (but the species is still rarely found in Canadian freshwater environments)

Threats:

- By-catch of commercial and recreational fishing
- Habitat loss
- Persistent bioaccumulative toxins

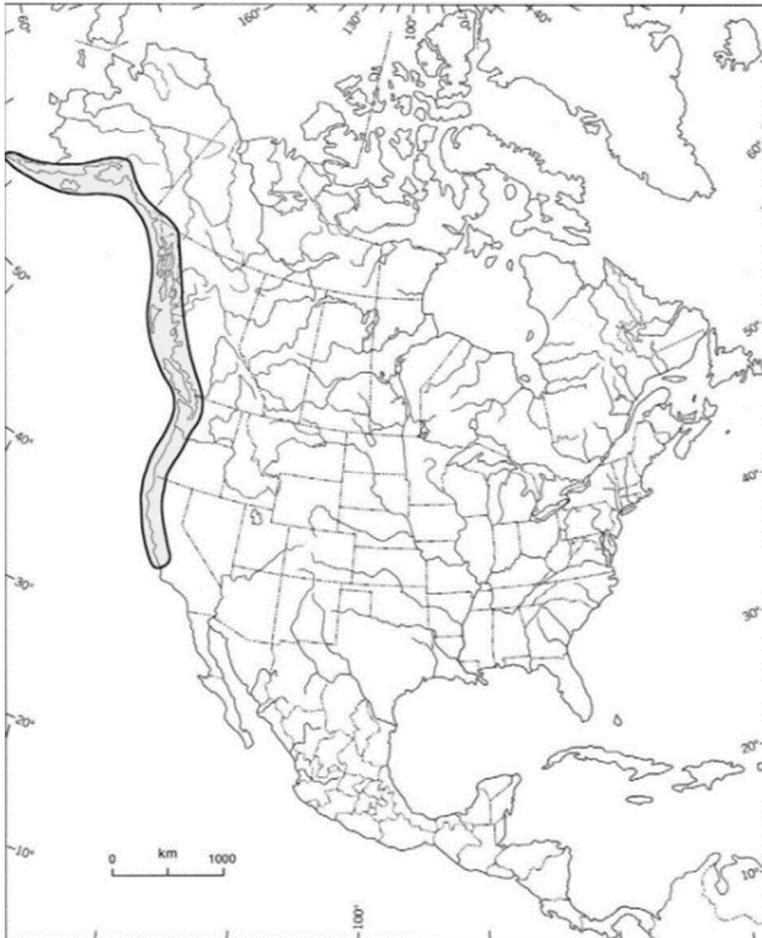


Figure 8: Green Sturgeon global range

Source: Fisheries and Oceans Canada. 2017. Management Plan for the Green Sturgeon (*Acipenser medirostris*) in Canada. *Species at Risk Act* Management Plan Series. Fisheries and Oceans Canada, Ottawa. v + 36 pp.



Figure 9: Area for potential Green Sturgeon presence in the Fraser River near a Trans Mountain Pipeline crossing (a trenchless crossing under the river).

Source: <https://www.dfo-mpo.gc.ca/species-especes/sara-lep/map-carte/index-eng.html>



Mountain Sucker (*Catostomus platyrhynchus*) – Pacific populations

SARA: Special Concern

SARA Listing Year: 2017

COSEWIC: Special Concern

Most Recent COSEWIC Assessment: November 2010

Management Plan: Under development



Figure 10: Mountain Sucker illustration

Source: Fisheries and Oceans Canada. 2018. Management Plan for the Mountain Sucker (*Catostomus platyrhynchus*), Pacific populations, in Canada [Proposed]. Species at Risk Act Management Plan Series. Fisheries and Oceans Canada, Ottawa. iv + 18 pp.

Description:

The Mountain Sucker is a small (127-152 mm in length), bottom-dwelling freshwater fish. They have an elongated cylindrical body with dark green, grey, or brown colouring, a yellow to white underbelly, and a straight green or black line along the sides of the body that turn red during breeding. Mountain Suckers also have a downward facing mouth with large upper lips covered in large, fleshy bumps. They spawn in late spring to early summer.

In Canada, there are three freshwater populations including the Saskatchewan-Nelson River, Milk River, and Pacific populations. The Pacific populations are located in B.C. in the Similkameen River and tributaries, the North Thompson River, and the lower Fraser River.

Habitat:

- Freshwater environment with cool waters, swift currents, and rocky substrate
- Tend to live in clear mountain streams and larger turbid rivers
- In the summer, they can also be found in deeper glides and pools



Threats:

- Habitat loss and degradation associated with agriculture, resource extraction, and commercial or industrial land use
- Water availability and use
- Channelization
- Sedimentation
- Water impoundments and flow regulation
- Deleterious substances
- Aquatic invasive species
- Climate Change

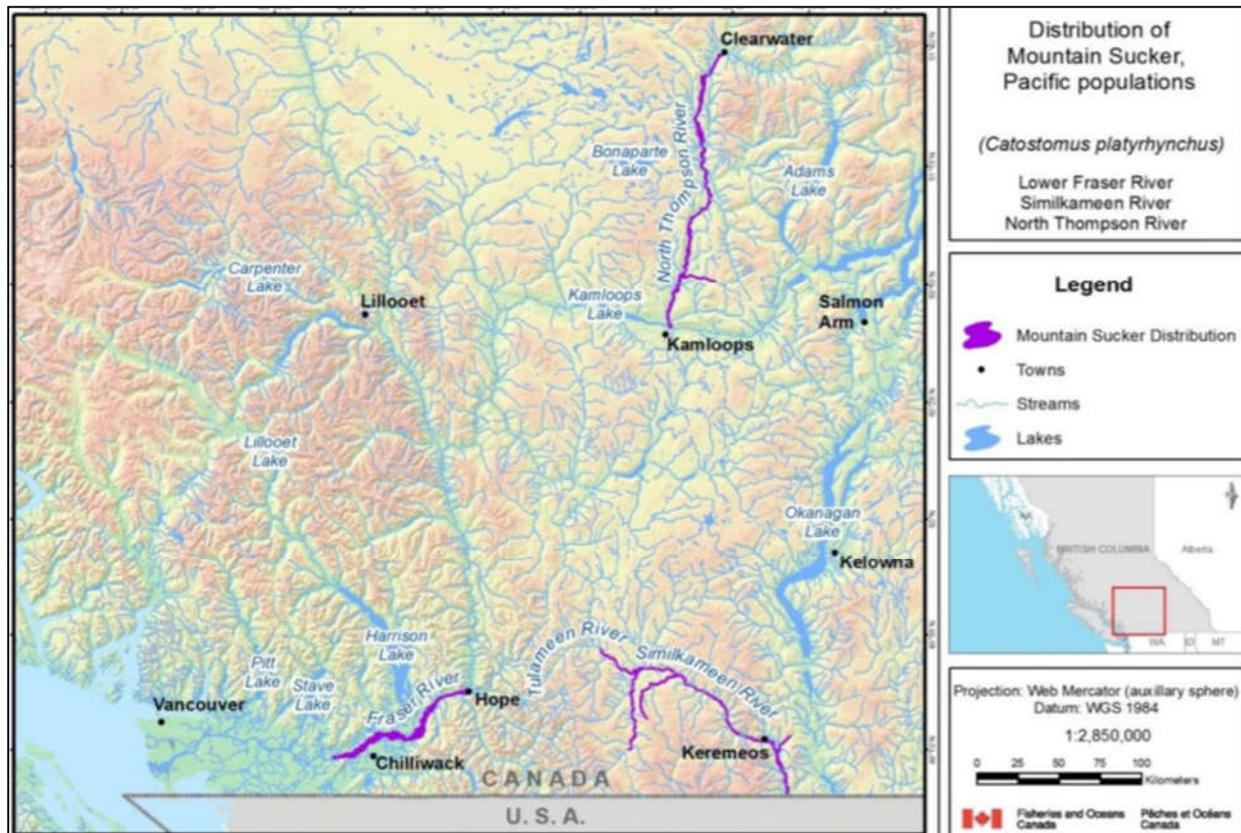


Figure 11: Mountain Sucker Pacific Range

Source: Fisheries and Oceans Canada. 2018. Management Plan for the Mountain Sucker (*Catostomus platyrhynchus*), Pacific populations, in Canada [Proposed]. *Species at Risk Act* Management Plan Series. Fisheries and Oceans Canada, Ottawa. iv + 18 pp.

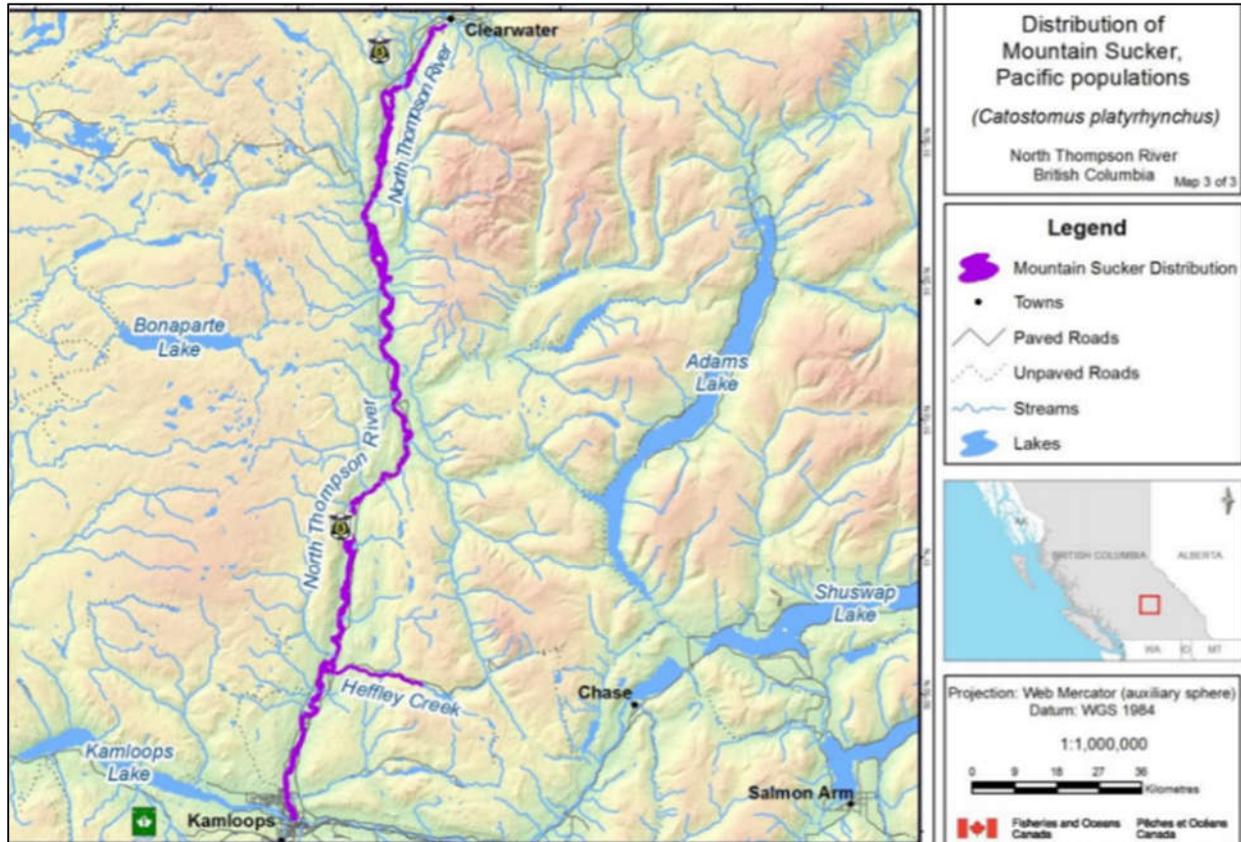


Figure 12: Mountain Sucker North Thompson River Habitat

Source: Fisheries and Oceans Canada. 2018. Management Plan for the Mountain Sucker (*Catostomus platyrhynchus*), Pacific populations, in Canada [Proposed]. *Species at Risk Act* Management Plan Series. Fisheries and Oceans Canada, Ottawa. iv + 18 pp.



Nooksack Dace (*Rhinichthys cataractae*)

SARA: Endangered

SARA Listing Year: 2003

COSEWIC: Endangered

Most Recent COSEWIC Assessment: November 2018

Recovery Strategy Status: Final

Action Plan Status: Final



Figure 13: Nooksack Dace Image

Source: Fisheries and Oceans Canada. 2019. Recovery Strategy for the Nooksack Dace (*Rhinichthys cataractae* ssp.) in Canada [Proposed]. 1st amendment. *Species at Risk Act* Recovery Strategy Series. Fisheries and Oceans Canada, Ottawa. vii+ 54 pp.

Description:

The Nooksack Dace is a freshwater minnow measuring up to 15 cm long. It is greyish-green with a dull brassy stripe over its lateral line and distinct pale marks near its dorsal fin that are visible from above. It has a rounded back, flat underside, and long snout that overhangs its mouth. The Nooksack Dace spawns at night from spring to early summer, with eggs hatching 7-10 days after spawning.

There are only four Canadian populations of Nooksack Dace located in the Fraser Valley in British Columbia. They can be found in Bertrand Creek, Fishtrap Creek, Pepin Brook, and the Brunette River. It is thought that the total population does not exceed 10,000.

Habitat:

- Shallow streams with moderately turbulent riffle habitats and a loose, coarse substrate.



Critical Habitat:

- Reaches within Bertrand Creek, Brunette River, Fishtrap Creek, and Pepin Creek watersheds that consist of (or are known to have previously consisted of) more than 10% riffle habitat by length
- Along the length of the abovementioned reaches, the critical habitat includes all instream habitats (including riffle, shallow glide, shallow pool, and deep pool habitats) and the riparian vegetation on both banks

Threats:

- Habitat loss from urban, industrial, and agricultural projects and practices
- Destruction of habitat from sediment accumulation, agricultural grazing channelization, dredging, infilling, and habitat fragmentation
- Low flow in the late summer due to water extraction and climate change
- High flows from urban storm water systems entering streams can cause scouring of gravel
- Deleterious substances
- Hypoxia (low or depleted dissolved oxygen levels) due to nutrient overload

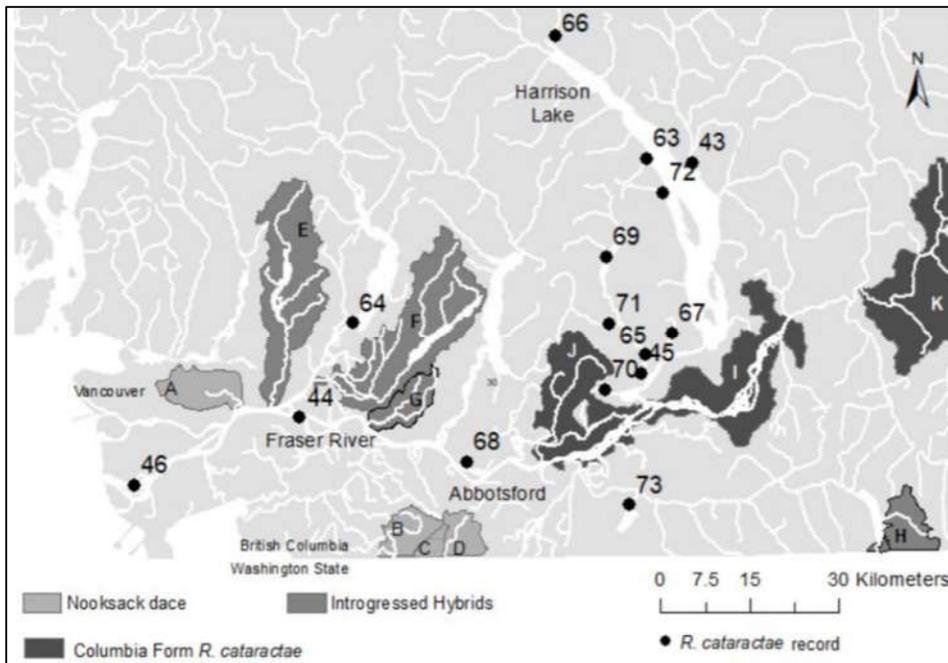


Figure 14: Canada Distribution Map – Nooksack Dace populations are confirmed in the Brunette River (A), Bertrand Creek (B), Pepin Creek (C), Fishtrap Creek (D). Norrish Creek (G) has the Columbia-Fraser form *R. cataractae*. Coquitlam river E, Alouette River (F), Kanaka Creek (G), and Chilliwack River (H) have hybrid populations between the two types.

Source: COSEWIC. 2018. COSEWIC assessment and status report on the Nooksack Dace *Rhinichthys cataractae* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xii + 38 pp. (<http://www.registrelep-sararegistry.gc.ca/default.asp?lang=en&n=24F7211B-1>).

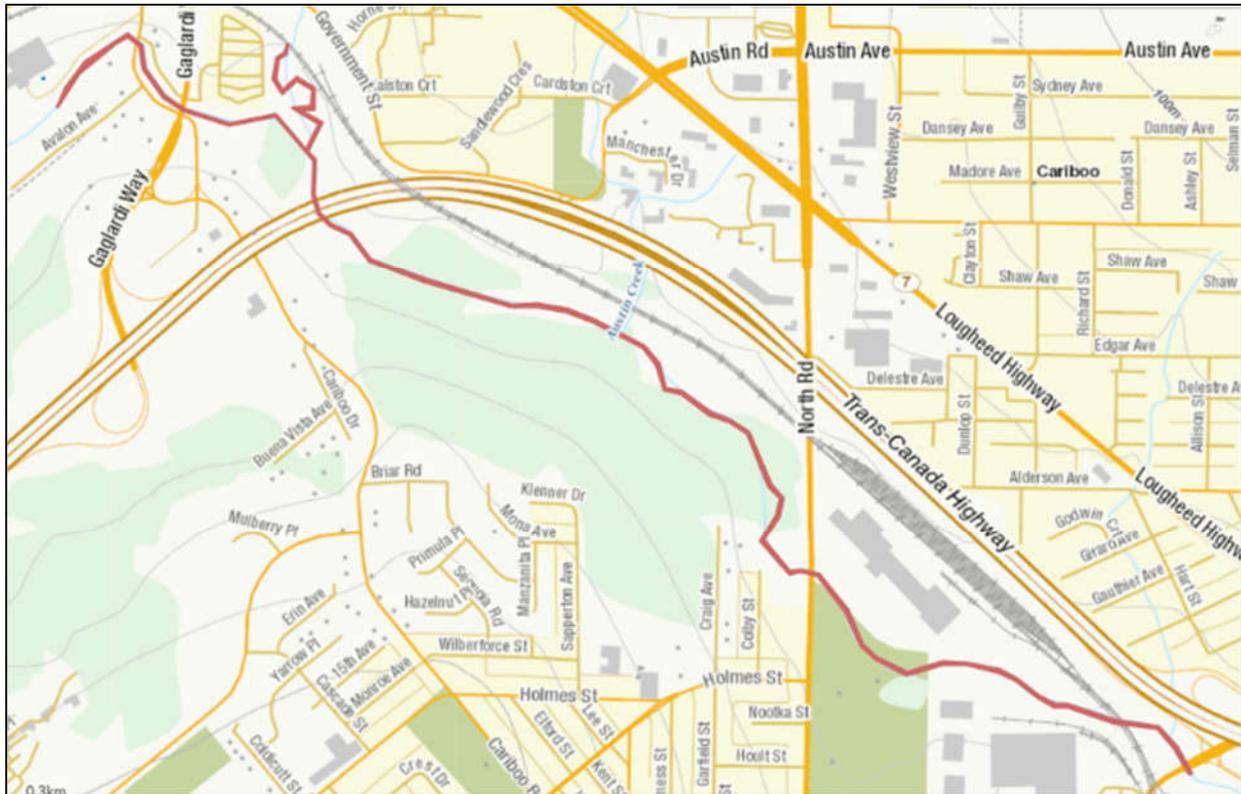


Figure 15: Nooksack Dace critical habitat (Brunette River) near the Trans Mountain pipeline route

Source: <https://www.dfo-mpo.gc.ca/species-especes/sara-lep/map-carte/index-eng.html>

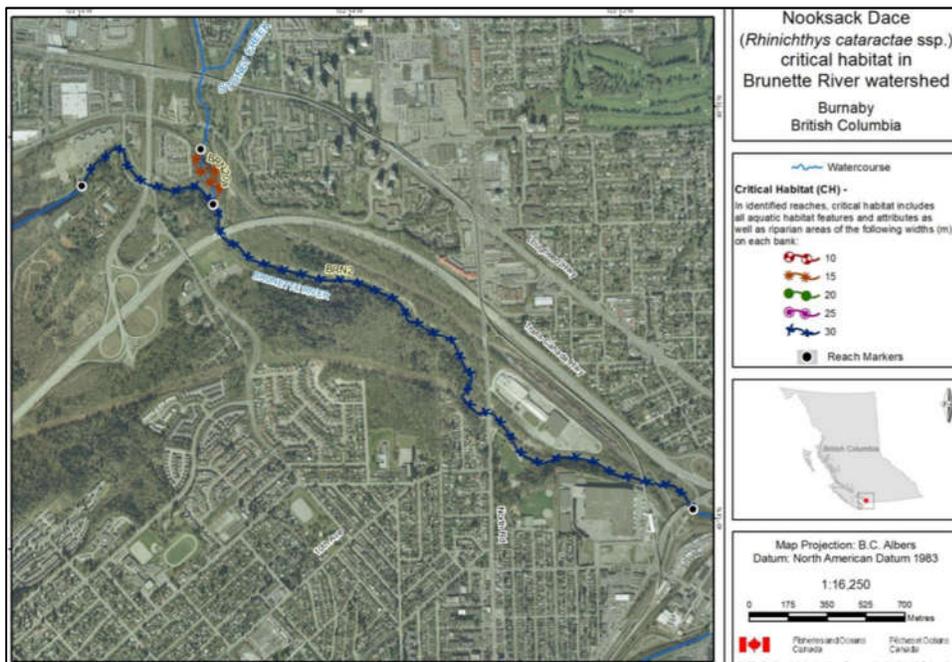


Figure 16: Nooksack Dace Brunette River Critical Habitat map

Source: Fisheries and Oceans Canada. 2020. Recovery Strategy for the Nooksack Dace (*Rhinichthys cataractae* ssp.) in Canada. 1st amendment. *Species at Risk Act* Recovery Strategy Series. Fisheries and Oceans Canada, Ottawa. vii+ 47 pp.



Salish Sucker (*Catostomus sp. cf. catostomus*)

SARA: Threatened

SARA Listing Year: 2005

COSEWIC: Threatened

Most Recent COSEWIC Assessment: November 2012

Recovery Strategy Status: Final

Action Plan Status: Final



Figure 15: Salish Sucker image

Source: Fisheries and Oceans Canada. 2020. Recovery Strategy for the Salish Sucker (*Catostomus sp. cf. catostomus*) in Canada. 1st amendment. *Species at Risk Act Recovery Strategy Series*. Fisheries and Oceans Canada, Ottawa. vii + 71 pp.

Description:

The Salish Sucker is a small fish, less than 25 cm in size. It has a black back, a light stomach and dark green blotching. The Salish Sucker has a blunt snout and fleshy-lipped mouth. During spawning, a red band may become visible along the sides of the fish. The Salish Sucker spawns during spring and early summer. Once laid, eggs adhere to the stream bottom and hatch in just over a week.

In Canada, the Salish Sucker is only found in the Fraser Valley in southwestern British Columbia. It is found across 11 watersheds in B.C. The number of mature individuals is thought to be in the hundreds for most of the listed watersheds.

Habitat:

- Riffles with cobble or gravel substrate for spawning



Critical Habitat:

- Reaches within Little Campbell River, Salmon River, Bertrand Creek, Pepin Brook, Fishtrap Creek, Salwein Creek/Hopedale Slough, Chiliwack Delta, Elk Creek/Hope Slough, Mountain Slough, Agassiz Slough, and Miami River watersheds that have reaches that are more than 50 m of continuous pool with a water depth over 70 cm during summer low flow conditions, including riparian habitats
- For the project, the reaches of consideration are located in the Salmon River, Salwein Creek/Hopedale Slough, Chilliwack Delta, and Elk Creek/Hope Slough watersheds

Threats:

- Hypoxia
- Physical destruction of habitat
- Habitat fragmentation
- Toxicity
- Sediment deposition
- Seasonal lack of water
- Increased predation
- Riffle loss to beaver ponds

Severe hypoxia poses the most widespread and highest risk to Salish Sucker, because it degrades areas of suitable habitat, kills large numbers of fish quickly, has numerous contributing factors, can easily go undetected, and is occurring with increasing frequency across watersheds inhabited by the species.

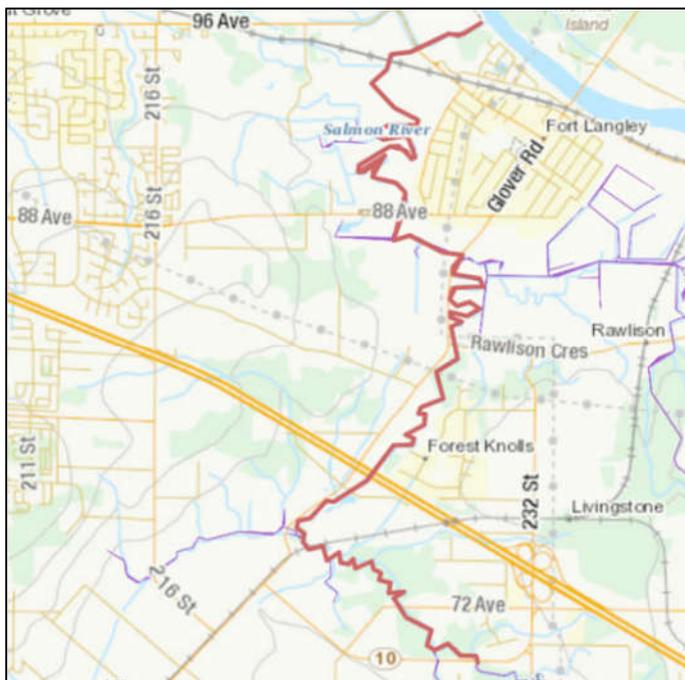


Figure 16: Salmon River Salish Sucker critical habitat near the Trans Mountain pipeline route

Source: <https://www.dfo-mpo.gc.ca/species-especes/sara-lep/map-carte/index-eng.html>



Figure 17: Salwein Creek/Hopedale Slough Salish Sucker Critical Habitat near the Trans Mountain pipeline route

Source: <https://www.dfo-mpo.gc.ca/species-especes/sara-lep/map-carte/index-eng.html>



Figure 18: Chilliwack Delta Salish Sucker critical habitat near the Trans Mountain pipeline route

Source: <https://www.dfo-mpo.gc.ca/species-especes/sara-lep/map-carte/index-eng.html>



Figure 19: Chilliwack Delta Salish Sucker critical habitat near the Trans Mountain pipeline route

Source: <https://www.dfo-mpo.gc.ca/species-especes/sara-lep/map-carte/index-eng.html>



Marine Species at Risk around the Westridge Marine Terminal and Marine Shipping Areas

Basking Shark (*Cetorhinus maximus*)

SARA: Endangered

SARA Listing Year: 2010

COSEWIC: Endangered

Most Recent COSEWIC Assessment: April 2018

Recovery Strategy Status: Final

Action Plan Status: Final

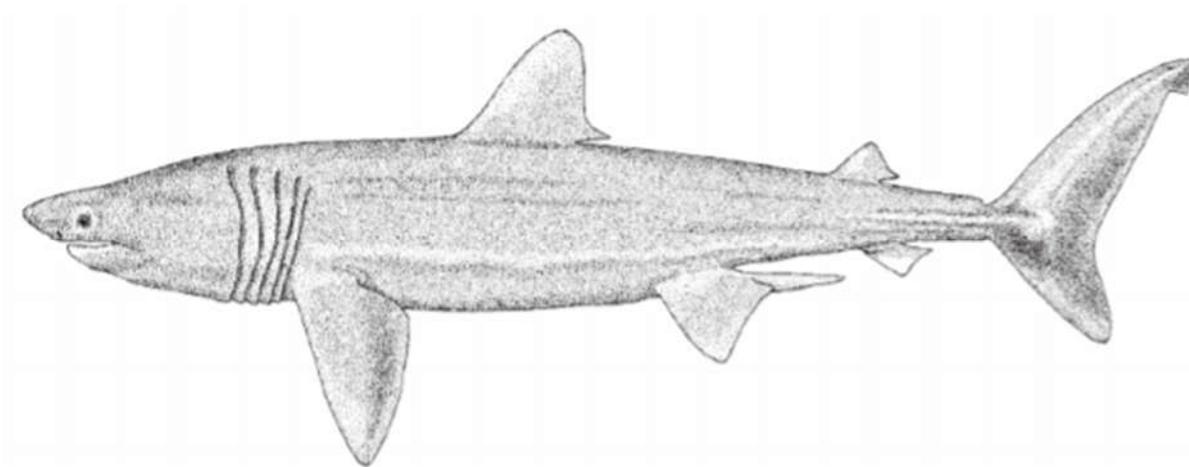


Figure 20: Basking Shark illustration

Source: COSEWIC 2007. COSEWIC assessment and status report on the basking shark *Cetorhinus maximus* (Pacific population) in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 34 pp. (www.sararegistry.gc.ca/status/status_e.cfm).

Description:

The basking shark is the second largest fish in the world, with a maximum size of 12.2 m. It is black to gray-brown in colour with a mottled appearance, a large mouth, elongated gills, a pointed snout, and a crescent shaped tail fin. Basking sharks are filter feeders and primarily eat plankton and they often surface to feed.

Basking Sharks are typically found in temperate coastal shelf waters. The Pacific coast basking shark population migrates between B.C. waters in the spring and summer and California in the winter. The current population of Basking Sharks in Pacific waters is estimated to be between 321 and 535 individuals; however, the species has rarely been seen in B.C. waters within the last 15 years.



Habitat:

- Areas with high concentrations of plankton, typically where water masses meet, headlands, and around islands and bays
- Basking sharks spend most of their time at or near the water's surface, but may also use habitats at depths greater than 1000 m

Critical Habitat:

No critical habitat has been identified for Basking Shark.

Threats:

- Ship traffic/vessel strikes
- Fishing operations

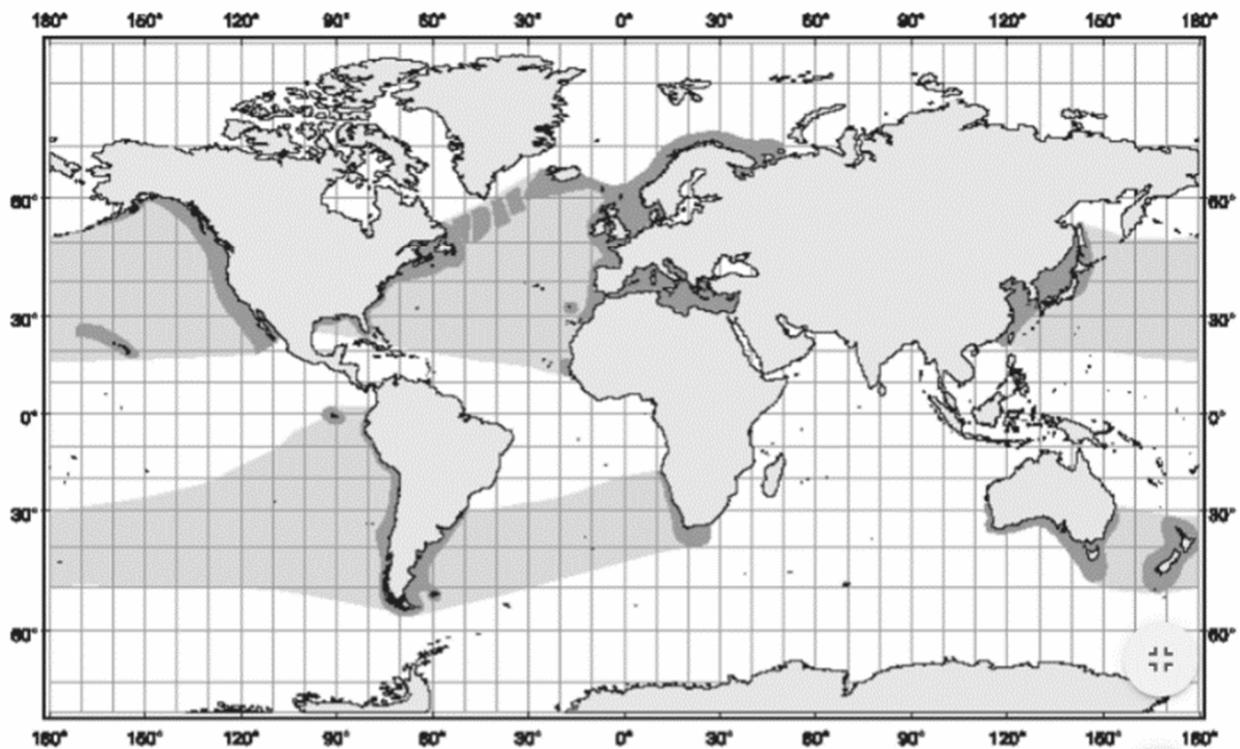


Figure 21: Basking Shark Global Distribution – dark grey is where basking sharks are definitely been found, light grey is where they could be found based on temperature

Source: COSEWIC 2007. COSEWIC assessment and status report on the basking shark *Cetorhinus maximus* (Pacific population) in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 34 pp. (www.sararegistry.gc.ca/status/status_e.cfm).



Blue Whale (*Balaenoptera musculus*)

SARA: Endangered

SARA Listing Year: 2005

COSEWIC: Endangered

Most Recent COSEWIC Assessment: May 2012

Recovery Strategy Status: Final

Action Plan Status: Final



Figure 22: Blue Whale illustration

Source: COSEWIC 2002. COSEWIC assessment and update status report on the Blue Whale *Balaenoptera musculus* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 32 pp.

Description:

The Blue Whale is the largest animal known to have ever lived on the planet. The biggest Blue Whale ever recorded was 29.5 m in length; and females are generally larger than males. Calves are born that are approximately 7 m in length and 2 tonnes in weight. They have tapered, elongated bodies that are widest at the level of the eye, small dorsal fins, and pointed flippers. Blue Whales are a mottled blend of dark and light greys, with 60-88 grooves in the skin of their neck.

The Blue Whale found in Canada is known as the Northern Hemisphere subspecies. The Pacific population of the subspecies is found in offshore waters off the west coast of Canada and migrates past Vancouver Island. There is no estimate of the number of Blue Whales off the western coast of Canada. Blue Whales would rarely be found near or within the TMX shipping route.

Habitat:

- Coastal and open waters
- Pacific population is mostly offshore in the open ocean

Critical Habitat:

No critical habitat has been identified for Blue Whale.



Threats:

- Physical disturbance
- Acoustic disturbance
- Environmental contamination
- Fishing entanglements

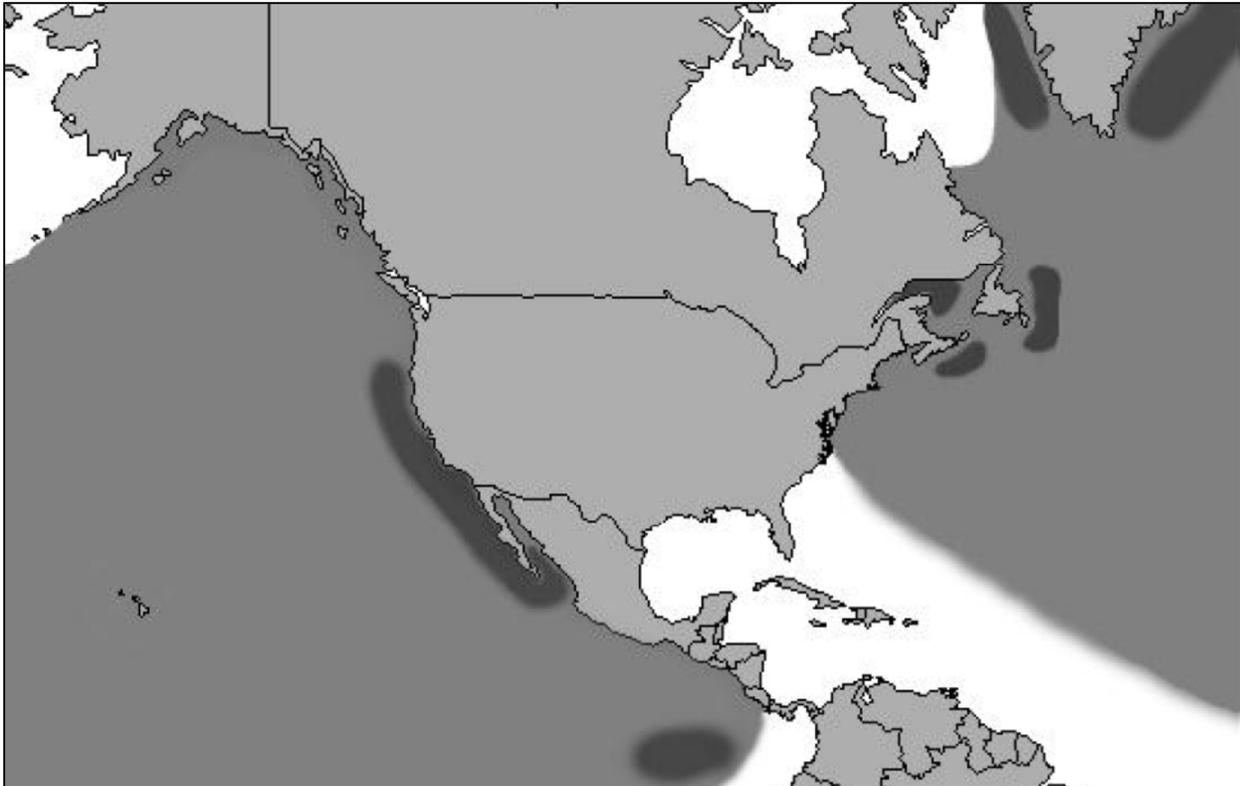


Figure 23: Blue Whale distribution of occurrence in the northern Pacific and Atlantic Oceans (shading indicates occurrence, with darker shading marking known areas of concentration)

Source: COSEWIC 2002. COSEWIC assessment and update status report on the Blue Whale *Balaenoptera musculus* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 32 pp.



Bluntnose Sixgill Shark (*Hexanchus griseus*)

SARA: Special Concern

SARA Listing Year: 2009

COSEWIC: Special Concern

Most Recent COSEWIC Assessment: April 2007

Action Plan Status: Final (included in multi-species action plans for Gwaii Haanas and Pacific Rim)

Management Plan: Final

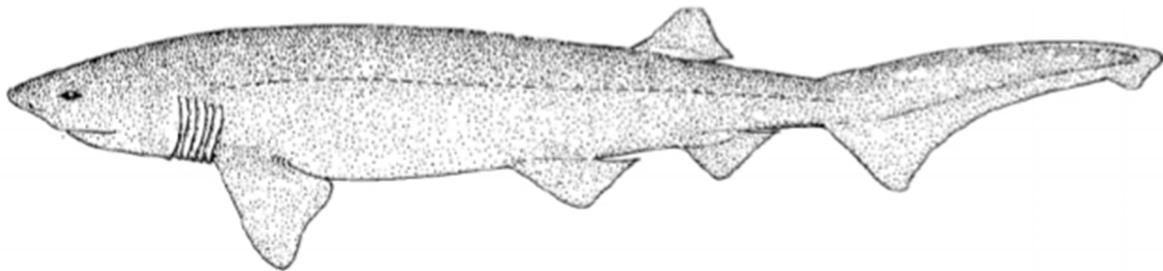


Figure 24: Bluntnose Sixgill Shark illustration

Source: COSEWIC 2007. COSEWIC assessment and status report on the bluntnose sixgill shark *Hexanchus griseus* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 33 pp. (www.sararegistry.gc.ca/status/status_e.cfm)

Description:

The Bluntnose Sixgill Shark is the largest predatory shark in Canada's Pacific waters with a maximum length of 4.8 m. It has six gill slits (rather than 5 like most sharks) and has a single dorsal fin. It is dark brown or grey on the back side and is a lighter shade on the underside. It has a broad and depressed head with a blunt snout and bright green eyes.

This shark is widely distributed over continental and insular shelves in temperate and tropical waters across the planet. It is likely well distributed throughout much of Canada's Pacific waters including inlets, continental shelf and slope, and the Strait of Georgia.

Habitat:

- Primarily found in deep waters below 91 m, but can occasionally be found at the surface
- Tend to be found over the outer continental and insular shelves and upper slopes associated with areas of upwelling

Threats:

- Fishing activities

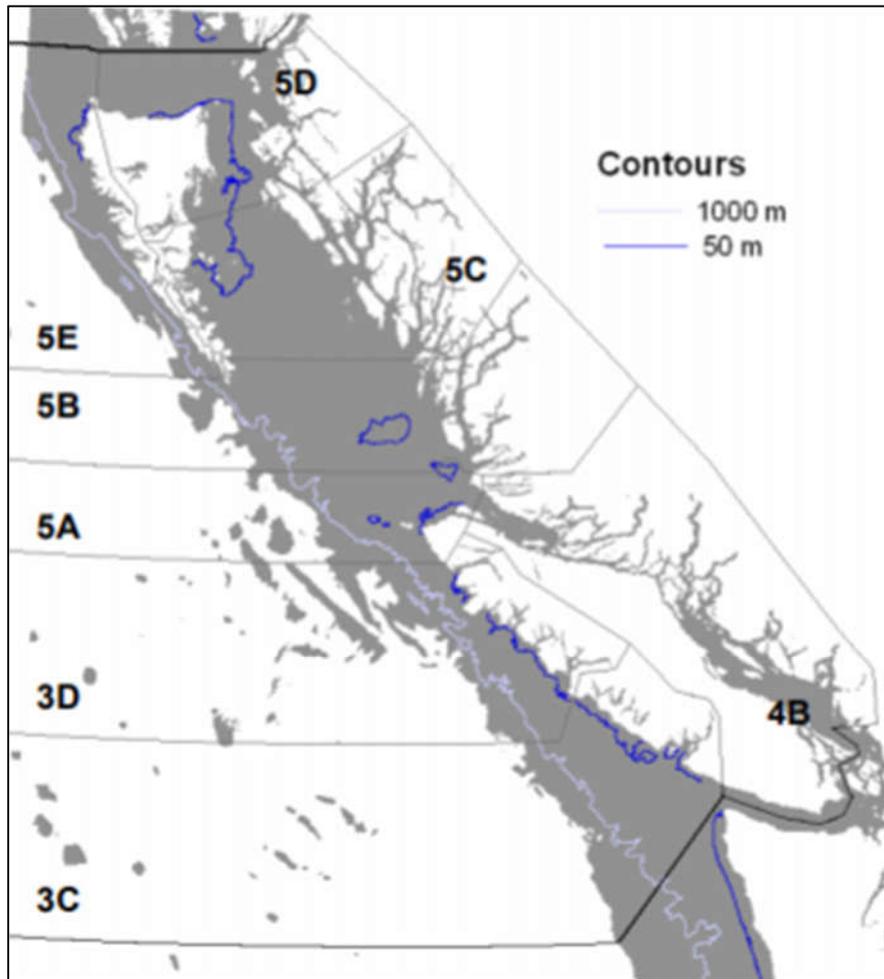


Figure 25: Possible distribution of the Bluntnose Sixgill Shark on the B.C. coast

Source: COSEWIC 2007. COSEWIC assessment and status report on the bluntnose sixgill shark *Hexanchus griseus* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 33 pp. (www.sararegistry.gc.ca/status/status_e.cfm)



Fin Whale (*Balaenoptera physalus*)

SARA: Threatened

SARA Listing Year: 2006

COSEWIC: Special Concern

Most Recent COSEWIC Assessment: May 2019

Recovery Strategy Status: Final

Action Plan Status: Final



Figure 26: Fin Whale illustration

Source: COSEWIC 2005. COSEWIC assessment and update status report on the fin whale *Balaenoptera physalus* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. ix + 37 pp. (www.sararegistry.gc.ca/status/status_e.cfm).

Description:

The Fin Whale is the second largest whale after the blue whale, with an average length at sexual maturity of 17.2 m found in populations in the northern hemisphere. They have dark grey-blue colouring on their back with white on their underside. They also have asymmetrical colouring of the lower jaw (dark on the left side and light on the right side) that is a diagnostic characteristic of the species. Fin Whales have a more pointed head and a larger, hooked dorsal fin set further back with a shallower rise when compared to blue or sei whales.

In B.C. Fin Whales are seen during migration between their winter range in Southern California and the summer range in the Chukchi and Bering Seas. Most sightings of Fin Whales occur off the west coast of Vancouver Island, Hecate Strait, and Queen Charlotte Sound. They have historically also been sighted in the Strait of Georgia. Pacific Fin whales predominantly feed on krill (euphausiids) and copepods (small planktonic crustaceans).

Habitat:

- Summer habitat tends to consist of areas with dense prey concentrations

Critical Habitat:

No critical habitat has been identified for Fin Whale.



Threats:

- Physical disturbance
- Fishing entanglements
- Acoustic disturbance
- Environmental contaminants
- Reduction in prey density



Figure 27: Fin Whale Canadian Range (dark areas)

Source: COSEWIC 2005. COSEWIC assessment and update status report on the fin whale *Balaenoptera physalus* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. ix + 37 pp. (www.sararegistry.gc.ca/status/status_e.cfm).



Grey Whale (*Eschrichtius robustus*) – Eastern North Pacific Population

SARA: Special Concern (currently in review by the Species at Risk Program)

SARA Listing Year: 2005

COSEWIC: Non-Active

Most Recent COSEWIC Assessment: November 2017

Management Plan: Final



Figure 28: Grey Whale illustration

Source: COSEWIC 2004. COSEWIC assessment and update status report on the grey whale (Eastern North Pacific population) *Eschrichtius robustus* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 31 pp. (www.sararegistry.gc.ca/status/status_e.cfm).

Description:

The Grey Whale grows up to 11-15 m in length. It can weigh up to 35 tonnes. It lacks a dorsal fin and has 2-4 throat grooves to assist with feeding. They feed primarily on crustaceans including ghost shrimp and amphipods, as well as herring eggs, polychaete worms and larvae. The Grey Whale typically has mottled skin and often is covered with patches of barnacles.

The Eastern North Pacific population of Grey Whales winters off the coast of Baja California and feeds in the summer from Northern California to Alaska. Canadian feeding grounds often can be found in the southern Beaufort Sea and B.C.'s coastal waters.

Habitat:

- Usually found in shallow waters (less than 60 m deep) close to shore
- During the summer, they are frequently sighted along the outer coast, but occasionally enter protected bays and waterways

Critical Habitat:

No critical habitat has been identified for Grey Whale.



Threats:

- Physical disturbance
- Industrial development of shallow marine areas
- Acoustic disturbance
- Environmental contaminants
- Entanglement

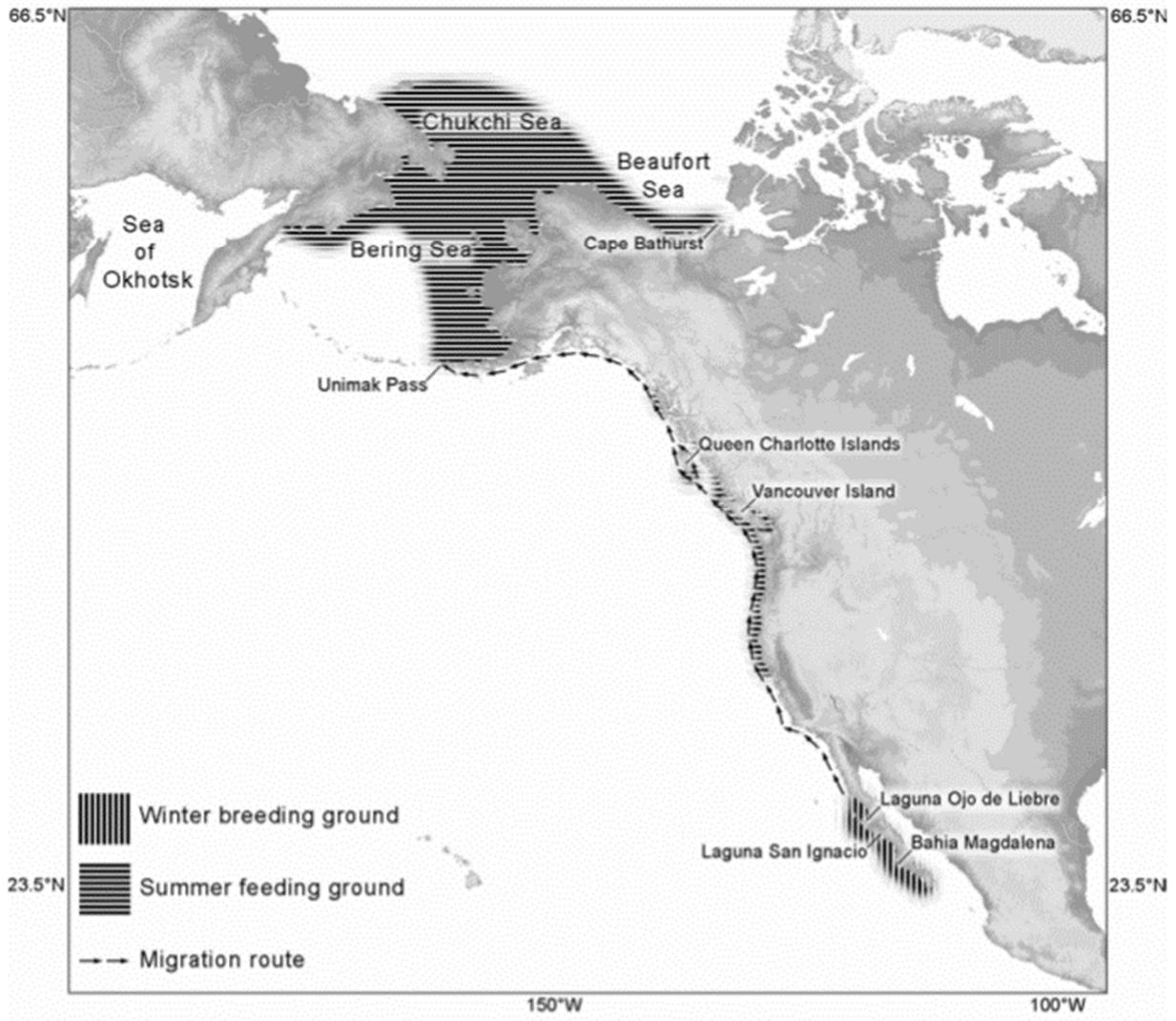


Figure 29: Eastern North Pacific Grey Whale Range

Source: COSEWIC 2004. COSEWIC assessment and update status report on the grey whale (Eastern North Pacific population) *Eschrichtius robustus* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 31 pp. (www.sararegistry.gc.ca/status/status_e.cfm).

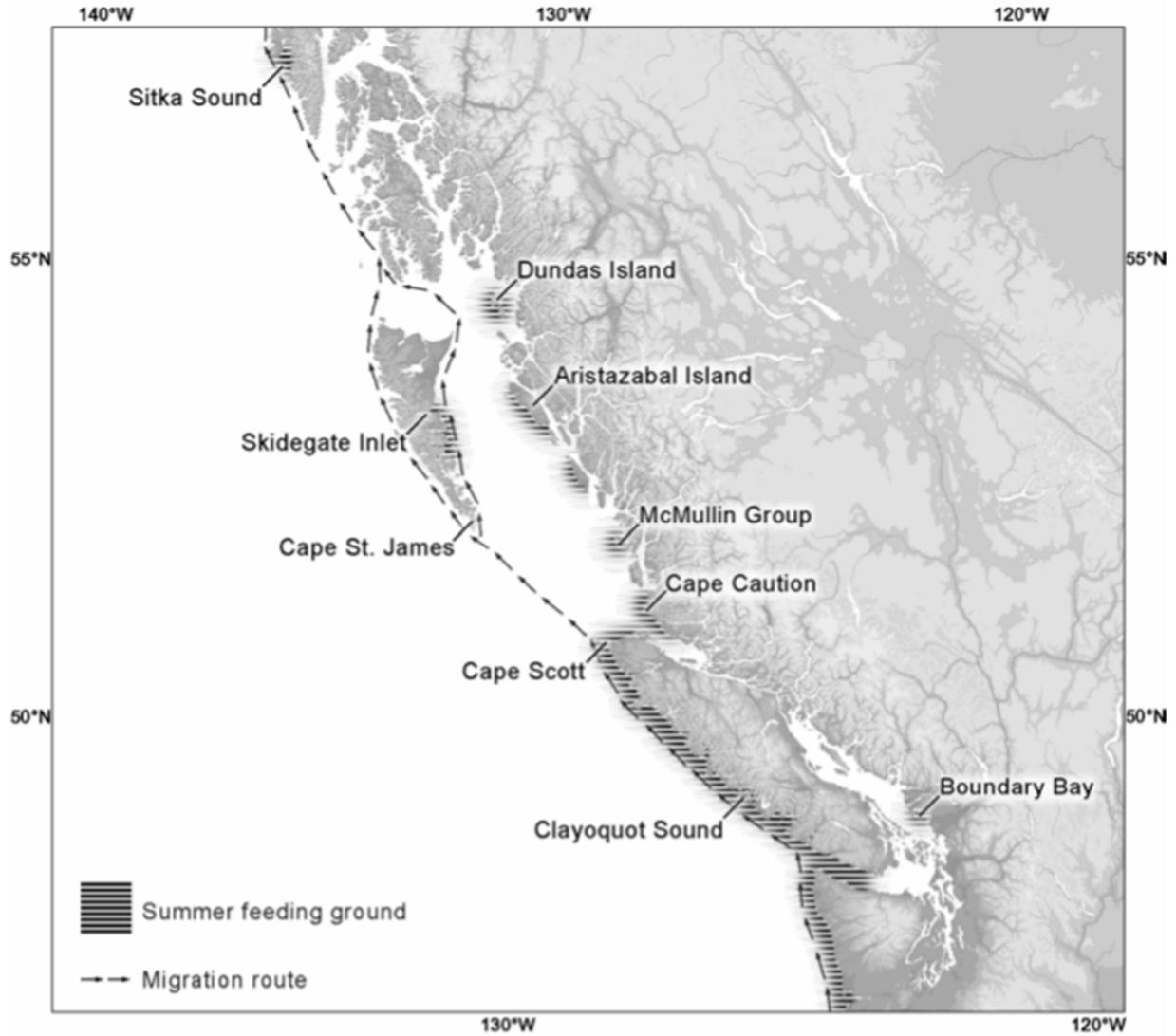


Figure 30: Eastern North Pacific Grey Whale BC Feeding Sites

Source: COSEWIC 2004. COSEWIC assessment and update status report on the grey whale (Eastern North Pacific population) *Eschrichtius robustus* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 31 pp. (www.sararegistry.gc.ca/status/status_e.cfm).



Humpback Whale (*Megaptera novaeangliae*)

SARA: Special Concern

SARA Listing Year: 2003 (re-assessed in 2011)

COSEWIC: Special Concern

Most Recent COSEWIC Assessment: May 2011

Management Plan: Under development



Figure 31: Humpback Whale illustration

Source: COSEWIC. 2011. COSEWIC assessment and status report on the Humpback Whale *Megaptera novaeangliae* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. x + 32 pp. (www.sararegistry.gc.ca/status/status_e.cfm).

Description:

The Humpback Whale is a larger cetacean, reaching lengths of 13-14 m and weighing 34-45 tonnes. It has black colouring on its back and is mottled black and white on its underside with pleated grooves in the skin of the neck. Humpback whales have large flippers that are up to a third of the whale's body length and it has small round bumps around its jaws. In B.C. humpback whales eat a variety of zooplankton and small schooling fish. Humpback whale hearing sensitivity ranges from tens of Hz to 24 kHz.

Humpback whales migrate seasonally between summer high latitude feeding areas and winter low latitude breeding and calving areas. B.C.'s waters are an important summer feeding habitat for humpbacks to build up fat reserves for sustenance over winter. There is an estimated 2,145 individuals that utilize B.C.'s waters.

Habitat:

- B.C. coastal waters are used for summer feeding

Threats:

- Reductions in prey density
- Environmental contaminants
- Acoustic disturbance
- Physical disturbance



- Fishing entanglements

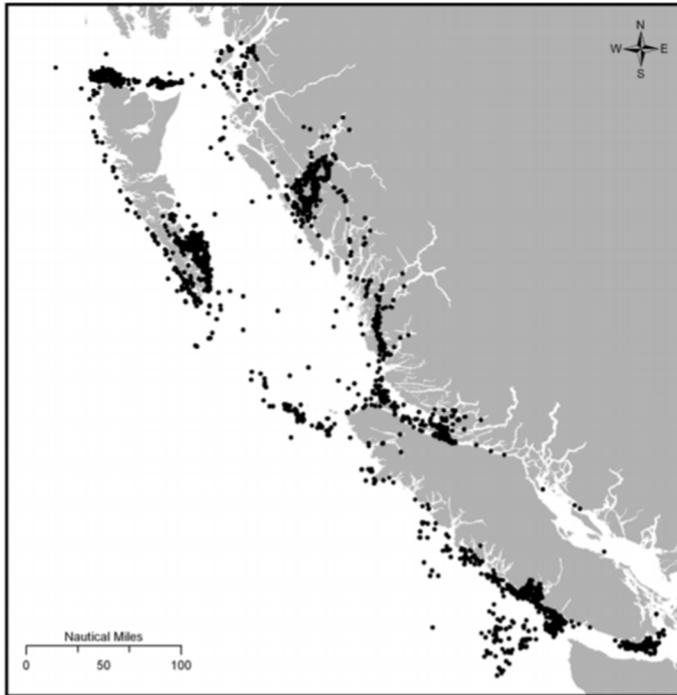


Figure 34: Humpback Whale sightings in B.C. between 1984-2007

Source: Fisheries and Oceans Canada. 2013. Recovery Strategy for the North Pacific Humpback Whale (*Megaptera novaeangliae*) in Canada. *Species at Risk Act Recovery Strategy Series*. Fisheries and Oceans Canada, Ottawa. x + 67 pp.



Figure 35: Humpback Whale image

Source: Fisheries and Oceans Canada. 2013. Recovery Strategy for the North Pacific Humpback Whale (*Megaptera novaeangliae*) in Canada. *Species at Risk Act Recovery Strategy Series*. Fisheries and Oceans Canada, Ottawa. x + 67 pp.



Killer Whale (*Orcinus orca*) - Northeast Pacific Northern Resident Population

SARA: Threatened

SARA Listing Year: 2003

COSEWIC: Threatened

Most Recent COSEWIC Assessment: November 2008

Recovery Strategy Status: Proposed

Action Plan Status: Final



Figure 32: Killer Whale image

Source: Fisheries and Oceans Canada. 2018. 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, x + 84 pp.

Description:

The Killer Whale is characterized by distinctive black and white markings and tall, triangular dorsal fins. They can reach overall lengths of 7-9 m and weigh up to 4-5 tonnes, with females being smaller than males. Resident Killer Whales are characterized as having a more rounded leading edge to their dorsal fin and abrupt angle to the trailing edge than Transient (Bigg's) Killer Whales, and they have a more variable saddle patch marking at the base of the dorsal fin, which is either uniformly grey or contains a black region. The Northern Resident Killer Whale population feeds exclusively on fish (mostly Chinook and Chum salmon) and cephalopods.



The known range of the Northern Resident Killer Whale extends from southeastern Alaska to southern Washington State. They are often encountered though in the coastal waters of the Canadian Pacific. They can range down to the Salish Sea. Their population roughly consists of 290 individuals.

Habitat:

- B.C. coastal waters, mid-shelf to offshore areas

Critical Habitat:

- The waters of Johnstone Strait and southeastern Queen Charlotte Strait
- Waters on the Continental shelf off southwestern Vancouver Island, including Swiftsure and La Perouse Banks
- Waters west of Dixon Entrance, along the north coast of Graham Island from Langara to Rose Spit

Threats:

- Physical disturbance
- Environmental contaminants
- Acoustic disturbance
- Reduction in prey density and availability

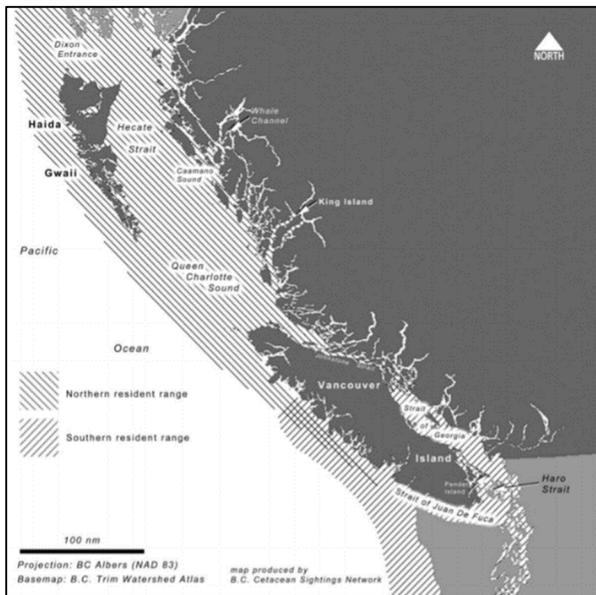


Figure 33: Northern and Southern Resident Killer Whale B.C. range

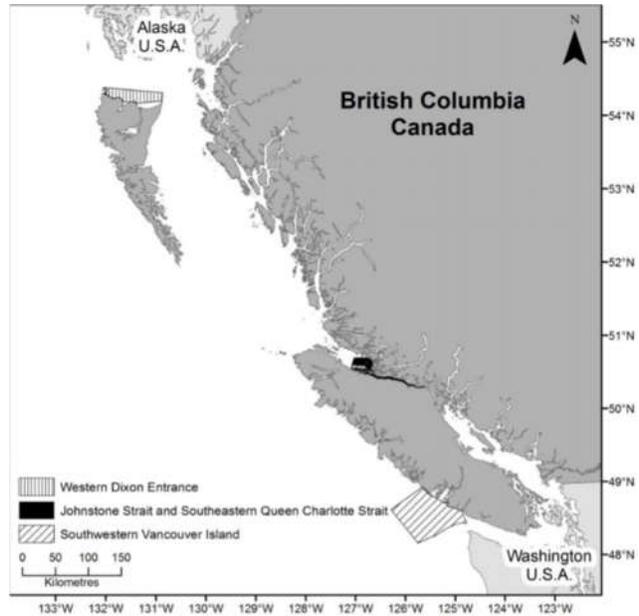


Figure 34: Northern Resident Killer Whale B.C. Critical Habitat

Source: Fisheries and Oceans Canada. 2018. 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, x + 84 pp.



Killer Whale (*Orcinus orca*) - Northeast Pacific Offshore Population

SARA: Threatened

SARA Listing Year: 2003

COSEWIC: Threatened

Most Recent COSEWIC Assessment: November 2008

Recovery Strategy Status: Final

Action Plan Status: Final



Figure 35: Offshore Killer Whale image

Source: Fisheries and Oceans Canada. 2018. Recovery Strategy for the Offshore Killer Whale (*Orcinus orca*) in Canada. *Species at Risk Act* Recovery Strategy Series. Fisheries and Oceans Canada, Ottawa. vi + 52 pp.

Description:

The Killer Whale is characterized by distinctive black and white markings and tall, triangular dorsal fins. They can reach overall lengths of 7-9 m and weigh up to 4-5 tonnes, with females being smaller than males. Offshore Killer Whales tend to be smaller than Resident and Transient Killer Whales and their dorsal fins are characterized as being rounded at the leading and trailing edges, but with nicks and notches along the trailing edge. This killer whale population feeds on fish, particularly on shark species.

The known range of the Offshore Killer Whale extends from the Bering Sea to southern California and possibly into Mexican waters. Their population consists of approximately 300 individuals.



Habitat:

- B.C. continental shelf-edge waters
- Outer Canadian Pacific waters

Critical Habitat:

No critical habitat has been identified for Offshore Killer Whale.

Threats:

- Physical disturbance
- Chemical and biological contamination
- Acoustic disturbance
- Reduction in prey density and availability
- Fishery interactions

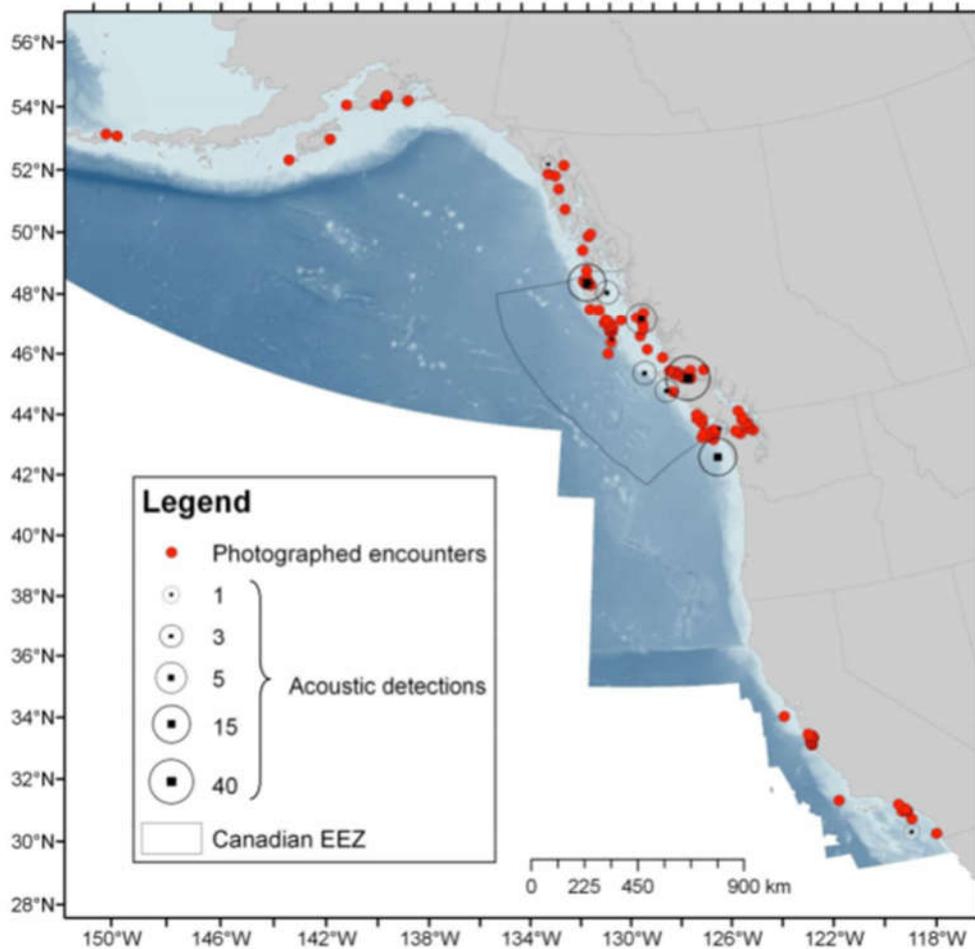


Figure 36: Offshore Killer Whale range

Source: Fisheries and Oceans Canada. 2018. Recovery Strategy for the Offshore Killer Whale (*Orcinus orca*) in Canada. *Species at Risk Act* Recovery Strategy Series. Fisheries and Oceans Canada, Ottawa. vi + 52 pp.



Killer Whale (*Orcinus Orca*) - Northeast Pacific Southern Resident Population

SARA: Endangered

SARA Listing Year: 2003

COSEWIC: Endangered

Most Recent COSEWIC Assessment: November 2008

Recovery Strategy Status: Under development

Action Plan Status: Final



Figure 37: Illustration of Southern Resident Killer Whale, L88 (Wave Walker).

Credit: Courtesy of Ryan Chadwick at Ryan Chadwick Art.

Description:

The Killer Whale is characterized by distinctive black and white markings and tall, triangular dorsal fins. They can reach overall lengths of 7-9 m and weigh up to 4-5 tonnes, with females being smaller than males. Resident Killer Whales are characterized as having a more rounded leading edge to their dorsal fin and abrupt angle to the trailing edge than Transient (Bigg's) Killer Whales, and they have a more variable saddle patch marking at the base of the dorsal fin, which is either uniformly grey or contains a black region. The Southern Resident Killer Whale population feeds exclusively on fish (predominantly Chinook and Chum salmon) and cephalopods.

The known range of the Southern Resident Killer Whale extends from northern B.C. to central California. This population currently consists of approximately 74 individuals.



Habitat:

- In summer they are commonly found off the southern end of Vancouver Island

Critical Habitat:

- The transboundary waters in southern BC, including the southern Strait of Georgia, Haro Strait, and Juan de Fuca Strait
- Waters on the Continental shelf off southwestern Vancouver Island, including Swiftsure and La Perouse Banks

Threats:

- Physical disturbance
- Environmental contaminants
- Acoustic disturbance
- Reduction in prey density and availability

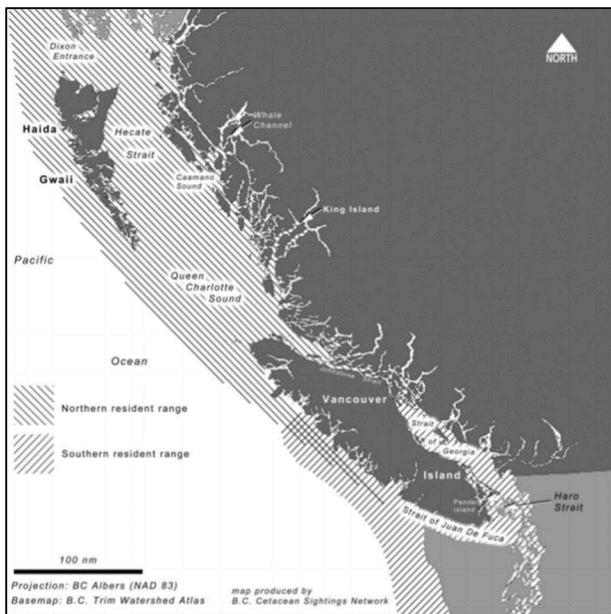


Figure 42: Northern and Southern Resident Killer Whale B.C. range

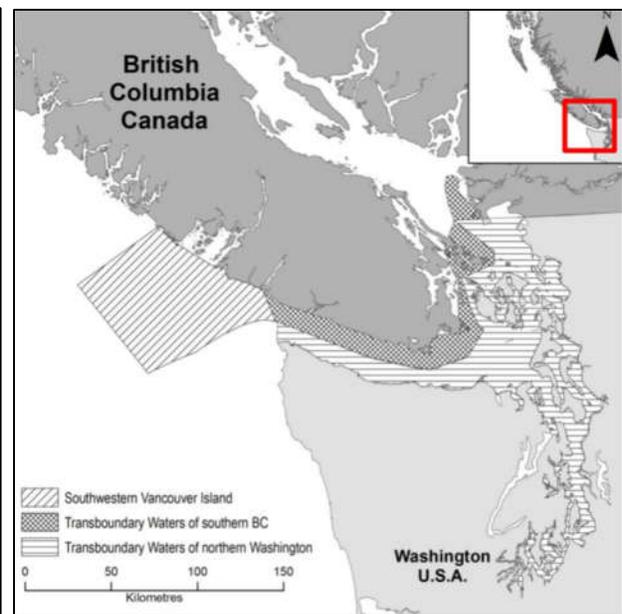


Figure 43: Southern Resident Killer Whale B.C. Critical Habitat

Source: Fisheries and Oceans Canada. 2018. 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, x + 84 pp.



Killer Whale (*Orcinus orca*) - Northeast Pacific Transient Population (Biggs)

SARA: Threatened

SARA Listing Year: 2003

COSEWIC: Threatened

Most Recent COSEWIC Assessment: November 2008

Recovery Strategy Status: Final

Action Plan Status: Final



Figure 38: Illustration of Transient (Biggs) Killer Whale, T11A (Rainy).

Credit: Courtesy of Ryan Chadwick at Ryan Chadwick Art.

Description:

The Killer Whale is characterized by distinctive black and white markings and tall, triangular dorsal fins. The dorsal fin of males can measure up to 1.8 m. They can reach overall lengths of 7-9 m and weigh up to 4-5 tonnes, with females being smaller than males. Transient (Bigg's) Killer Whales are characterized as having a more pointed dorsal fin than Resident Killer Whales, and they have a uniformly grey saddle patch at the base of the dorsal fin. Transient Killer Whales feed on marine mammals. They have been observed to prey on Harbor seals, Steller and Californian sea lions, Harbor and Dall's porpoises, Pacific white-sided dolphins, and occasionally Minke, Humpback, and Grey whales. They rely on passive listening to locate and approach prey without detection.



Bigg's/Transient Killer Whales are widely distributed in coastal waters of the eastern North Pacific and are known from several genetically distinct populations.

Population estimates for B.C. Coastal Waters (“inner-coast” and “outer-coast” sub-populations) totals 521 (304 and 217) unique individuals.

Habitat:

- Typically found along the exposed outer coast and in protected inshore channels, straits, passages, and inlets
- They spend the majority of their life within B.C. coastal waters

Critical Habitat:

No critical habitat has been identified for Transient Killer Whale.

Threats:

- Physical disturbance
- Environmental contaminants
- Acoustic disturbance
- Biological pollutants
- Changes in prey availability

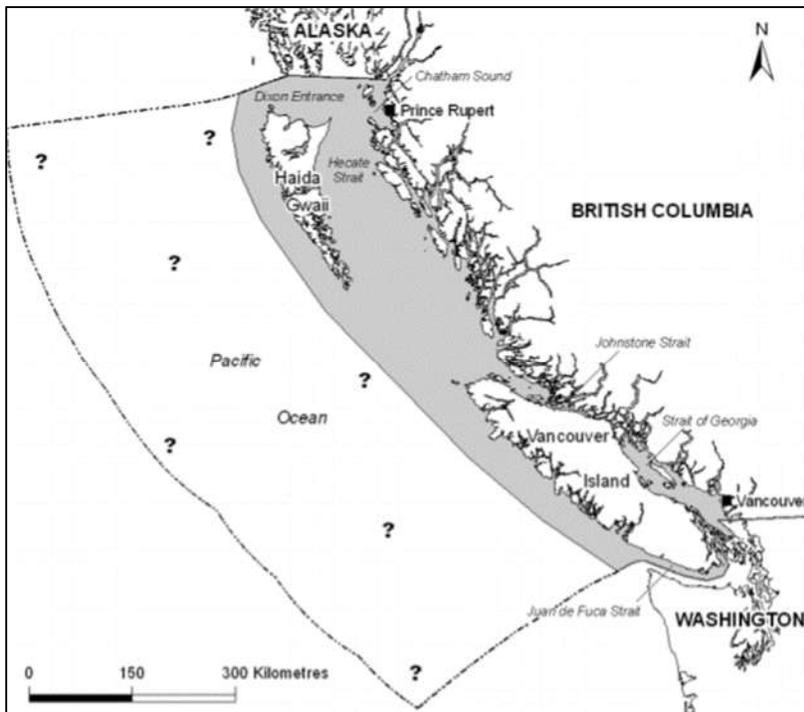


Figure 39: Transient Killer Whale B.C. range

Source: COSEWIC. 2008. COSEWIC assessment and update status report on the Killer Whale *Orcinus orca*, Southern Resident population, Northern Resident population, West Coast Transient population, Offshore population and Northwest Atlantic / Eastern Arctic population, in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. viii + 65 pp. (www.sararegistry.gc.ca/status/status_e.cfm).



Figure 40: Transient Killer Whale image

Source: COSEWIC. 2008. COSEWIC assessment and update status report on the Killer Whale *Orcinus orca*, Southern Resident population, Northern Resident population, West Coast Transient population, Offshore population and Northwest Atlantic / Eastern Arctic population, in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. viii + 65 pp. (www.sararegistry.gc.ca/status/status_e.cfm).



Leatherback Sea Turtle (*Dermochelys coriacea*)

SARA: Endangered

SARA Listing Year: 2003

COSEWIC: Endangered

Most Recent COSEWIC Assessment: May 2012

Recovery Strategy Status: Final

Action Plan Status: Final



Figure 41: Leatherback Sea Turtle swimming near the surface.

Credit Canada Sea Turtle Network

Source: <https://www.dfo-mpo.gc.ca/species-especes/mammals-mammiferes/seaturtles-tortuesmarines/index-eng.html>

Description:

Leatherback Sea Turtles are the largest sea turtle species, weighing up to 900 kg and up to 2 m long. They have a teardrop shaped bluish-black shell. Their shell, head, and flippers are often covered with white blotches and they have a distinct pink patch on their head. Leatherbacks feed primarily on gelatinous prey, such as jellyfish and salps.

Leatherbacks that nest in the tropical Western Pacific, forage in waters of the north eastern Pacific including the coast of B.C. They are rarely sighted off the B.C. coast, but this may be due to the difficulty of spotting them from a distance because of their pelagic nature. They are a migratory species that seasonally forages in B.C.'s coastal waters .

Habitat:

- Seasonally occupy B.C.'s coastal waters for feeding



Critical Habitat:

No critical habitat has been identified for Leatherback Sea Turtle.

Threats:

- Predation of eggs from Indo-Pacific nesting beaches by mammals and humans
- Light pollution and disturbance from development of Indo-Pacific nesting beaches
- Fishing entanglements
- Marine pollution

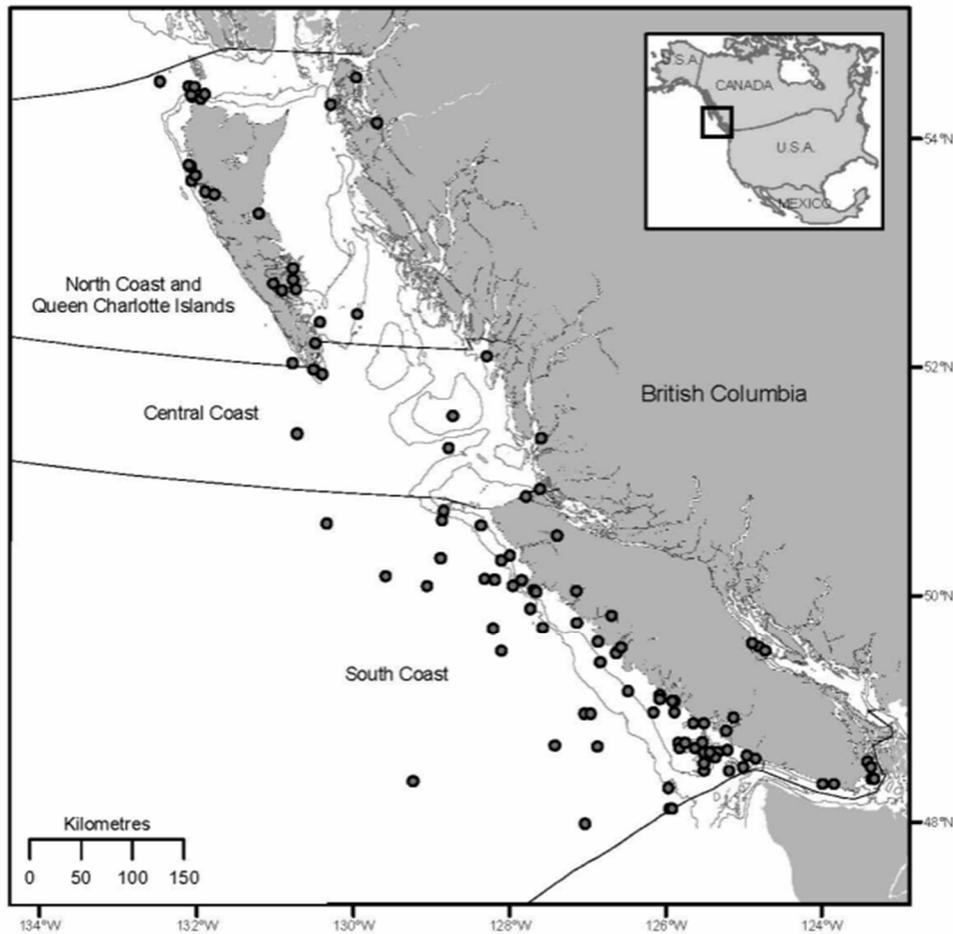


Figure 42: Leatherback Sea Turtle sightings along the B.C. coast

Source: COSEWIC. 2012. COSEWIC assessment and status report on the Leatherback Sea Turtle *Dermochelys coriacea* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xv + 58 pp. (www.registrelep-sararegistry.gc.ca/default_e.cfm).



Northern Abalone (*Haliotis kamtschatkana*)

SARA: Endangered

SARA Listing Year: 2003

COSEWIC: Endangered

Most Recent COSEWIC Assessment: April 2009

Recovery Strategy Status: Final

Action Plan Status: Final



Figure 43: Northern Abalone B.C. image

Source: COSEWIC. 2009. COSEWIC assessment and update status report on the Northern Abalone *Haliotis kamtschatkana* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 48 pp. (www.sararegistry.gc.ca/status/status_e.cfm).

Description:

The Northern Abalone is a gastropod mollusc with a small, thin, low, oval shaped shell. The shell of the species is mottled red to green in colour and in adults is greater than 70 mm in length. Northern Abalone can be found along the Pacific Coast from Alaska to Baja California. The species is found in the lower intertidal and subtidal to a depth of 10 m.

Habitat:

- Lower intertidal and subtidal areas, up to 10 m in depth, with a firm substrate (usually rock), full salinity seawater, and moderate water exchange.

Critical Habitat:

- Northern Abalone critical habitat has been identified within four geospatial areas that have been selected as necessary to support recovery of the species: Northern Abalone habitat along



the North and Central coast of the B.C. mainland; habitat along the east coast of Haida Gwaii; habitat in Barkley Sound; and habitat along the west coast of Haida Gwaii.

- The abovementioned areas were selected based on high productivity during the former Northern Abalone commercial fishery and an understanding of important areas for rebuilding numbers.
- Within the Northern Abalone habitat areas, sites that are considered critical habitat are identified being at least 20m² in size, with ≥ 0.1 abalone/m², and having all of the features and attributes (characteristics of critical habitat) described in the Action Plan for the species.

Threats:

- Poaching
- Works and developments in marine settings
- Increase in Sea Otter populations
- Low recruitment

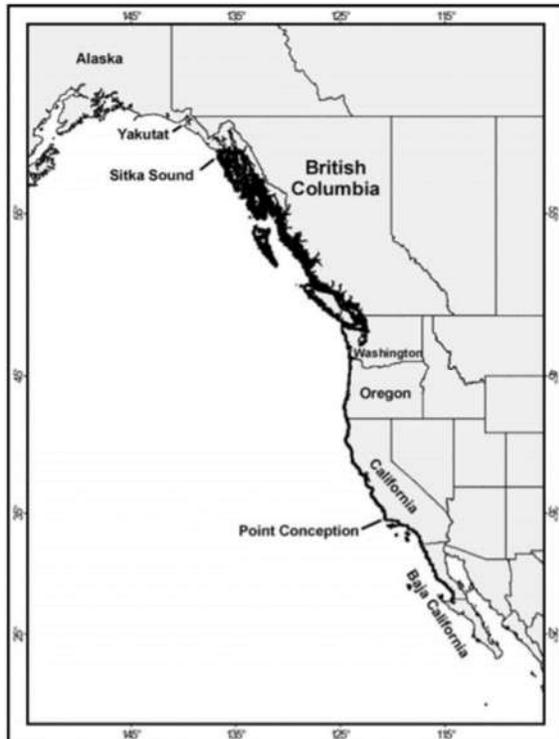


Figure 44: Northern Abalone Pacific range

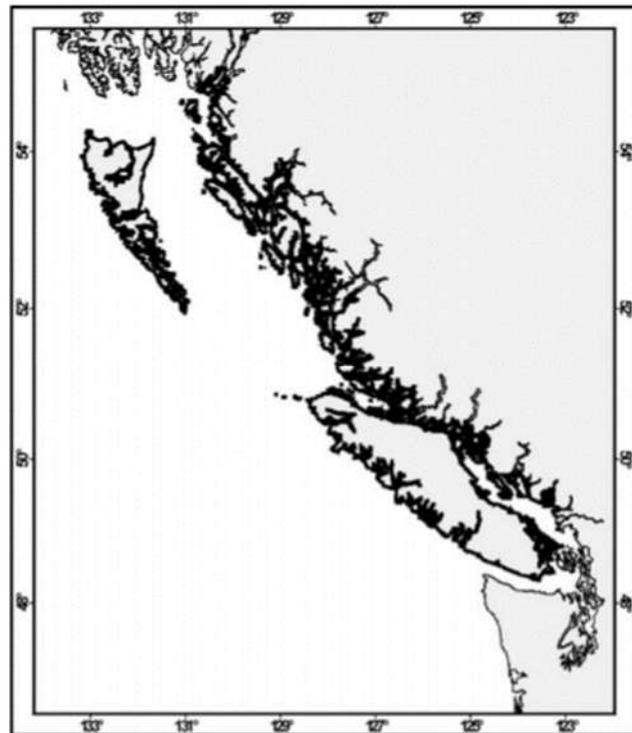


Figure 51: Northern Abalone B.C. Distribution

Source: COSEWIC. 2009. COSEWIC assessment and update status report on the Northern Abalone *Haliotis kamtschatkana* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 48 pp. (www.sararegistry.gc.ca/status/status_e.cfm).

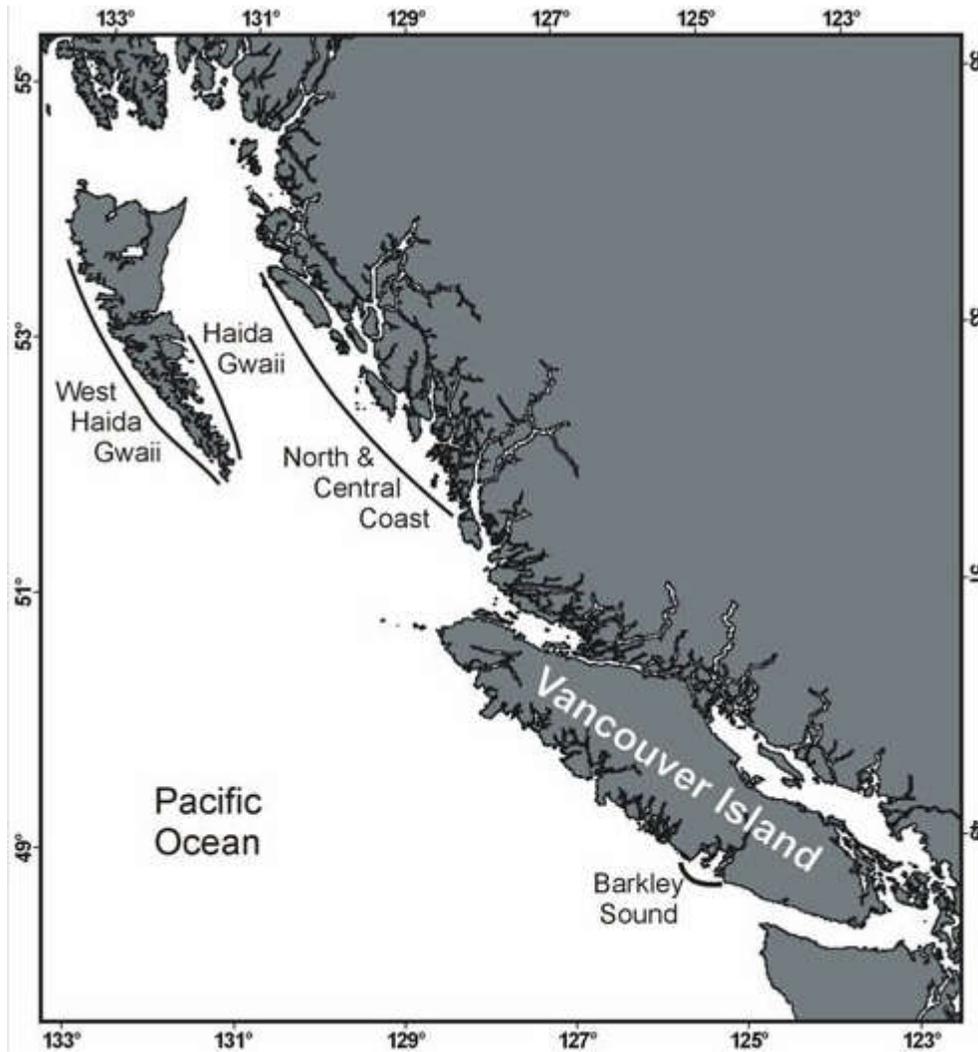


Figure 52: Northern Abalone habitat areas that contain critical habitat for the species in B.C.

Source: Fisheries and Oceans Canada. 2012. Action Plan for the Northern Abalone (*Haliotis kamtschatkana*) in Canada. *Species at Risk Act* Action Plan Series. Fisheries and Oceans Canada, Ottawa. vii + 65 pp.



North Pacific Right Whale (*Eubalaena japonica*)

SARA: Endangered

SARA Listing Year: 2006

COSEWIC: Endangered

Most Recent COSEWIC Assessment: May 2015

Recovery Strategy Status: Final

Action Plan Status: Final



Figure 53: North Pacific Right Whale illustration

Source: Fisheries and Oceans Canada. 2011. Recovery Strategy for the North Pacific Right Whale (*Eubalaena japonica*) in Pacific Canadian Waters [Final]. *Species at Risk Act Recovery Strategy Series*. Fisheries and Oceans Canada, Ottawa. vii + 51 pp.

Description:

The North Pacific Right Whale is distinguished by a stocky body, black colouration, lack of a dorsal fin, a large rostrum, strongly bowed lower lip, and callosities on the head. Adults can reach up to 18 m in length and can weigh over 100 tonnes.

There is not enough information to confirm migratory routes of the North Pacific Right Whale or where it can be found off the Canadian coast. Although there have been historical sightings of the whale in Pacific Canadian waters, including near the mouth of the Juan de Fuca Strait, it is likely to be a very rare visitor to marine shipping areas related to the Trans Mountain Pipeline.

Habitat:

- Insufficient information to be able to identify preferred habitat

Critical Habitat:

No critical habitat has been identified for North Pacific Right Whale.

Threats:

- Physical disturbance



- Fishing entanglements
- Acoustic disturbance
- Environmental contaminants

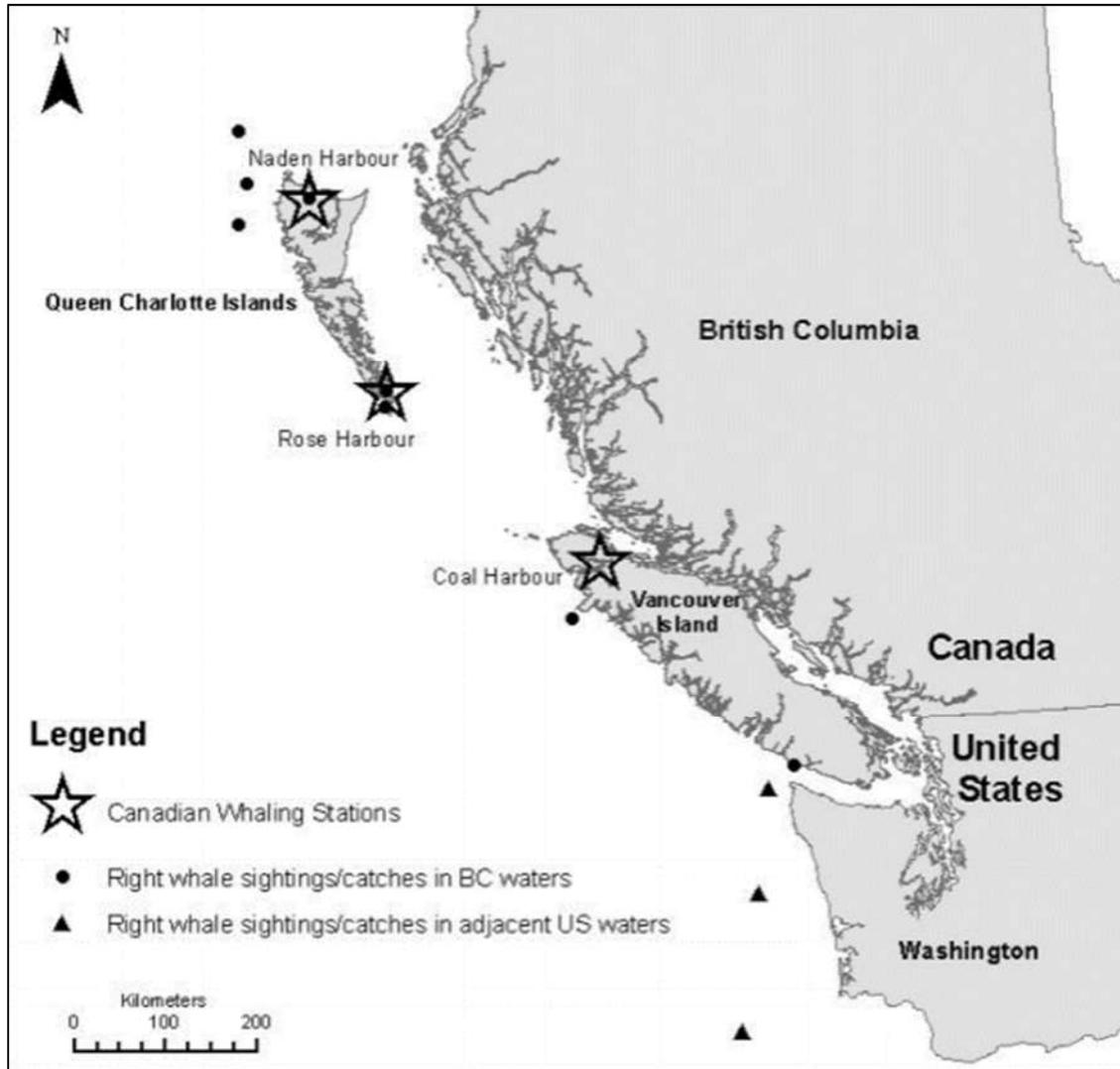


Figure 54: North Pacific Right Whale historical sightings 1900-2008

Source: Fisheries and Oceans Canada. 2011. Recovery Strategy for the North Pacific Right Whale (*Eubalaena japonica*) in Pacific Canadian Waters [Final]. *Species at Risk Act Recovery Strategy Series*. Fisheries and Oceans Canada, Ottawa. vii + 51 pp.



Olympia Oyster (*Ostrea lurida*)

SARA: Special Concern

SARA Listing Year: 2003

COSEWIC: Special Concern

Most Recent COSEWIC Assessment: May 2011

Management Plan: Final



Figure 55: Olympia Oyster image

Source: Fisheries & Oceans Canada. 2009. Management Plan for the Olympia Oyster (*Ostrea conchaphila*) in Canada. *Species at Risk Act* Management Plan Series. Fisheries & Oceans Canada, Ottawa. vi + 31 pp.

Description:

The Olympia Oyster is a small, roughly circular, oyster with colouring ranging from white to purple-black. It is only found on the west coast of North America, ranging between Alaska and Panama. In Canada, it is found in the Strait of Georgia, the Strait of Juan de Fuca, the west coast of Vancouver Island, the Queen Charlotte Strait, and the Queen Charlotte Sound.

Habitat:

- Found in the lower intertidal and shallow subtidal zones of estuaries and saltwater lagoons
- Also found on tidal flats, splash pools, near freshwater seepage, tidal channels, bays, sounds, and attached to pilings or the undersides of floats



Threats:

- Historical fishing activities
- Disease
- Environmental contaminants, in other parts of range

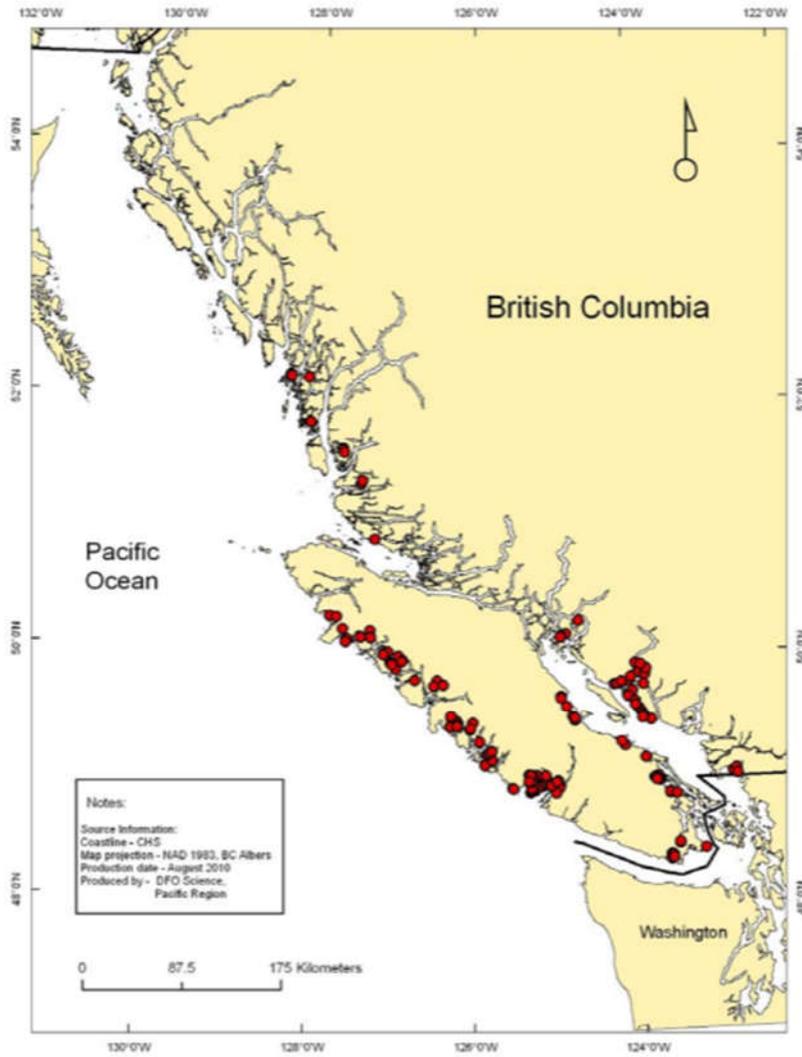


Figure 56: Olympia Oyster B.C. range

Source: COSEWIC. 2011. COSEWIC assessment and status report on the Olympia Oyster *Ostrea lurida* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xi +56 pp. (www.sararegistry.gc.ca/status/status_e.cfm).



Pacific Harbour Porpoise (*Phocoena phocoena vomerina*)

SARA: Special Concern

SARA Listing Year: 2005

COSEWIC: Special Concern

Most Recent COSEWIC Assessment: April 2016

Management Plan: Final



Figure 57: Pacific Harbour Porpoise image

Photograph credit: C. Maeve O'Connell

Description:

The Pacific Harbour Porpoise is a small cetacean ranging from 1.5 to 1.6 m in length and 45 to 60 kg. They have a small dorsal fin and can be grey to brown with a white underside. They feed on a variety of cephalopods and fish (including squid, herring, sand lance, and hake) and have a hearing sensitivity range of 16 to 140 kHz (with a peak hearing sensitivity at 125 kHz).

It is often difficult to observe the species in the wild, but due to their inshore distribution, year-round residency, and proximity to populated areas, they have a high probability of exposure to human activities. Inland B.C. Harbour Porpoise populations are estimated at 9,120.

Habitat:

- In B.C., Harbour Porpoises are typically found in coastal, shallow waters (less than 150 m deep)
- Can also be found in deeper waters, particularly in the Strait of Georgia and at the junction of Haro and Juan de Fuca straits

Threats:

- Physical disturbance
- Acoustic disturbance
- Fishing entanglements
- Environmental contaminants
- Predation
- Habitat loss



Figure 58: Pacific Harbour Porpoise B.C. range

Source: Fisheries and Oceans Canada. 2009. Management Plan for the Pacific Harbour Porpoise (*Phocoena phocoena*) in Canada. *Species at Risk Act Management Plan Series*. Fisheries and Oceans Canada, Ottawa. v + 49 pp.



Sei Whale (*Balaenoptera borealis*)

SARA: Endangered

SARA Listing Year: 2005

COSEWIC: Endangered

Most Recent COSEWIC Assessment: May 2013

Recovery Strategy Status: Final

Action Plan Status: Final



Figure 59: Sei Whale illustration

Source: COSEWIC 2003. COSEWIC assessment and status report on the Sei Whale *Balaenoptera borealis* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 27 pp.

Description:

The Sei Whale is a rorqual whale characterized by pleated grooves in the skin of the neck that improve feeding. Its back and sides are dark grey-blue in colour and its underside is grey-white. They are generally 14-15 m long and are often confused with Fin and Minke Whales.

The Pacific population of Sei Whales is found off the coast of B.C. and does not usually enter waters higher than 55°N.

Habitat:

- Temperate, deep offshore waters

Critical Habitat:

No critical habitat has been identified for Sei Whale.

Threats:

- Physical disturbance
- Fishing entanglements
- Acoustic disturbance
- Environmental contaminants
- Reduction in prey density

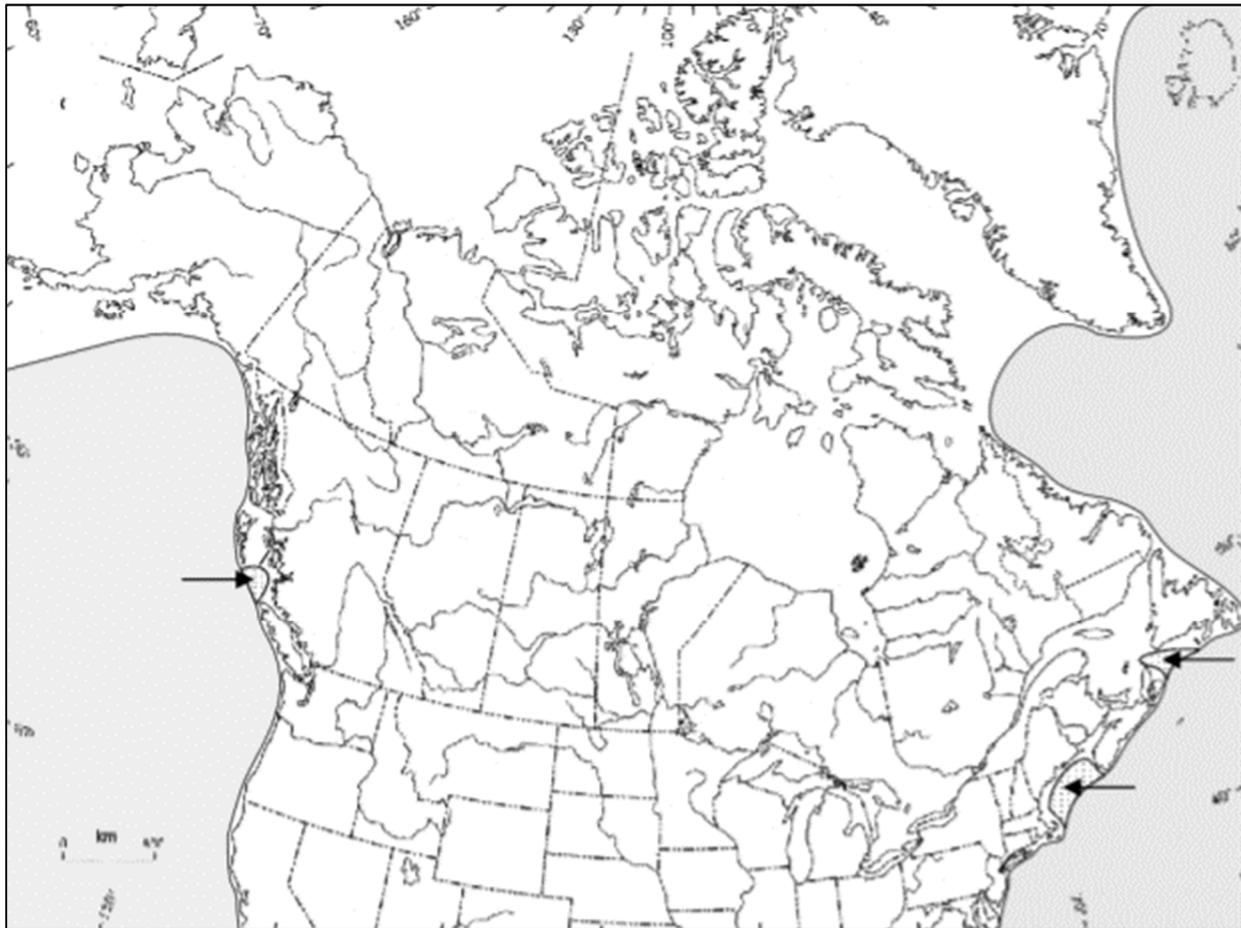


Figure 60: Sei Whale Canadian range (dark areas, arrows indicate areas with sporadic occurrence)

Source: COSEWIC 2003. COSEWIC assessment and status report on the Sei Whale *Balaenoptera borealis* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 27 pp.



Steller Sea Lion (*Eumetopias jubatus*)

SARA: Special Concern

SARA Listing Year: 2005

COSEWIC: Special Concern

Most Recent COSEWIC Assessment: November 2013

Management Plan: Final



Figure 61: Steller Sea Lion image

Source: COSEWIC. 2013. COSEWIC assessment and status report on the Steller Sea Lion *Eumetopias jubatus* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xi + 54 pp. (www.registrelep-sararegistry.gc.ca/default_e.cfm).

Description:

The Steller Sea Lion is a large sea lion that ranges from 2.1-3.1 m in length and 200 to 800 kg, with males noticeably larger than females. Their colouring ranges from pale yellow to tan when dry and greyish white when wet. They feed on a variety of prey, including small to medium sized schooling fish.

Steller Sea Lions are non-migratory and live and breed year round in coastal BC waters. It is currently estimated that the Steller Sea Lion population is between 20,000-28,000.

Habitat:

- Steller Sea Lions usually remain within 60 km of shore in water less than 400 m deep
- Five main breeding areas (consisting of seven rookeries) spread across the northern most point of Vancouver Island and Haida Gwaii



- Around 30 winter haul-out sites, some of which are located in the Salish Sea

Threats:

- Physical disturbance
- Acoustic disturbance
- Environmental contaminants

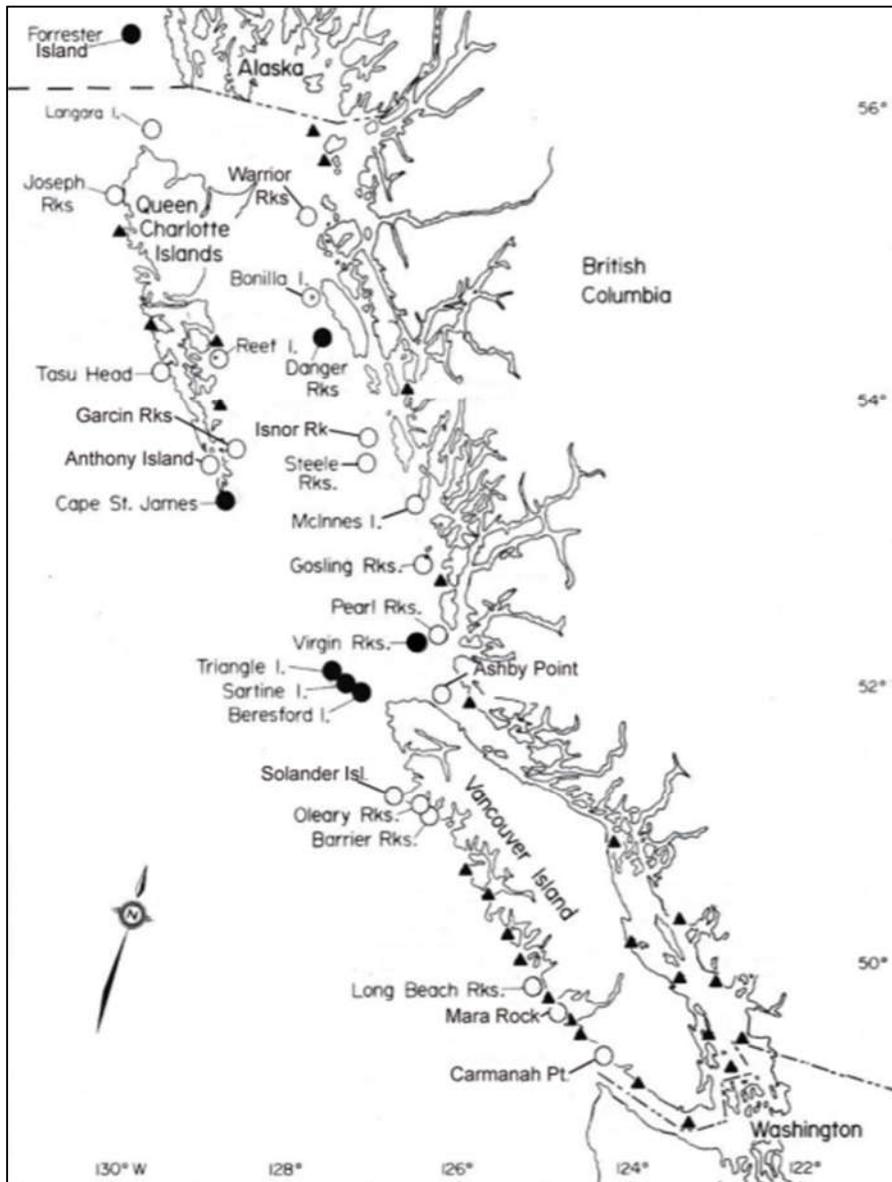


Figure 62: Steller Sea Lion BC Range, including rookeries (●), year-round haulout sites (○), and major winter haulout sites (▲)

Source: Fisheries and Oceans Canada. 2010. Management Plan for the Steller Sea Lion (*Eumetopias jubatus*) in Canada [Final]. *Species at Risk Act* Management Plan Series. Fisheries and Oceans Canada, Ottawa. vi + 69 pp.



Yelloweye Rockfish (*Sebastes ruberrimus*)

Pacific Ocean Inside Waters Population

SARA: Special Concern

SARA Listing Year: 2011

COSEWIC: Special Concern

Most Recent COSEWIC Assessment: November 2008

Management Plan: Under development



Figure 63: Yelloweye Rockfish image

Source: Fisheries and Oceans Canada. 2018. Management Plan for the Yelloweye Rockfish (*Sebastes ruberrimus*) in Canada [Proposed]. *Species at Risk Act* Management Plan Series. Fisheries and Oceans Canada, Ottawa. iv + 32 pp.

Description:

The Yelloweye Rockfish are a vibrant orange or red rockfish with bright yellow eyes and black tipped fins. It can reach a maximum length of 91 cm and a maximum weight of 11.3 kg and can live for over one hundred years.

The Yelloweye Rockfish can be found in the northeast Pacific and are most prevalent from Alaska to central California. There are two designatable units (DUs) of Yelloweye Rockfish in Canada, one for



Pacific inside waters and one for Pacific outside waters. The Pacific Ocean inside waters DU includes the Strait of Georgia,

Habitat:

- The Pacific Oceans inside waters DU of Yelloweye Rockfish is found in the Strait of Georgia, Johnstone Strait, and the Queen Charlotte Strait

Threats:

- Fishing activities
- Environmental contaminants

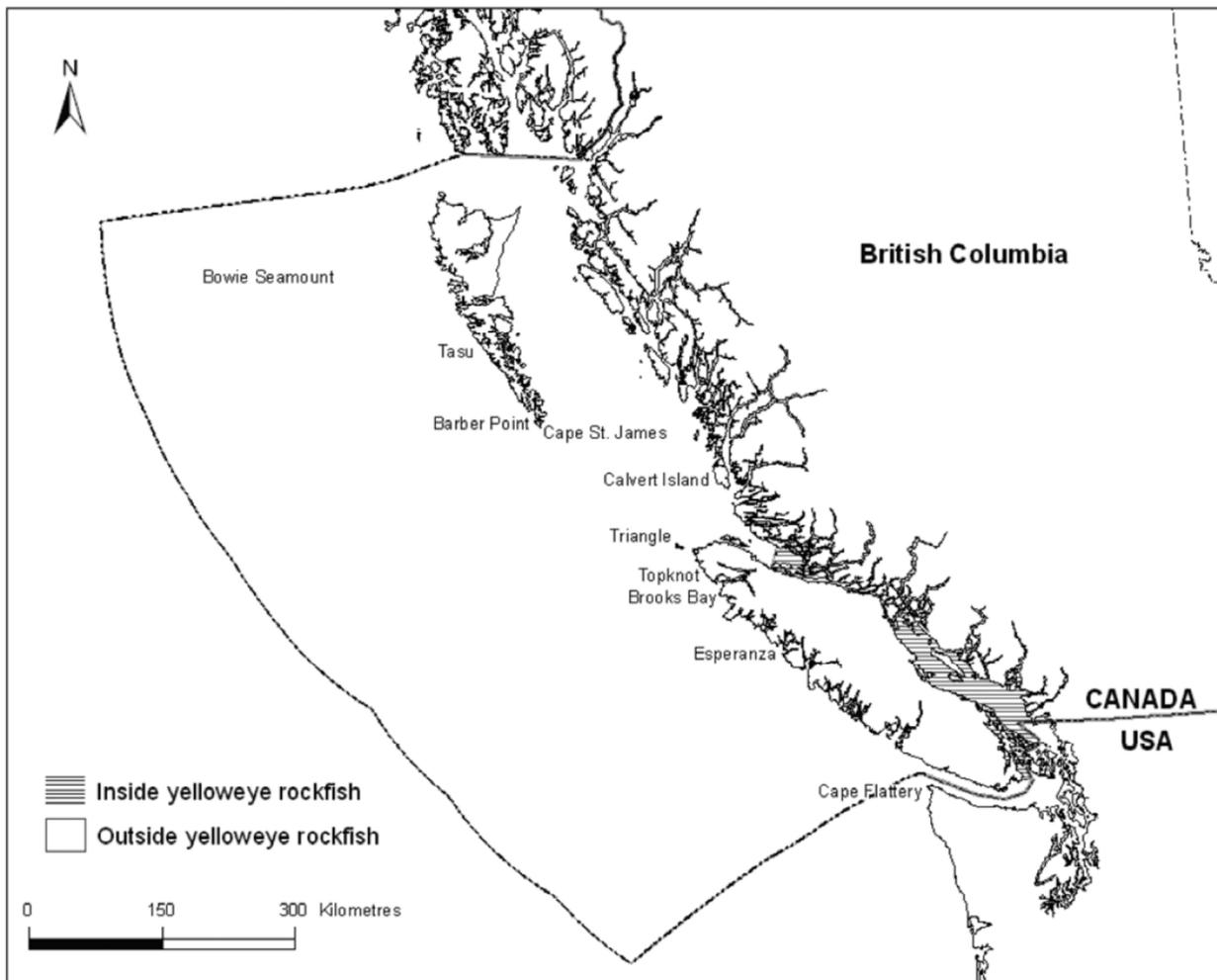


Figure 64: Yelloweye Rockfish Designatable Unit areas in B.C.

Source: Fisheries and Oceans Canada. 2018. Management Plan for the Yelloweye Rockfish (*Sebastes ruberrimus*) in Canada [Proposed]. *Species at Risk Act* Management Plan Series. Fisheries and Oceans Canada, Ottawa. iv + 32 pp.

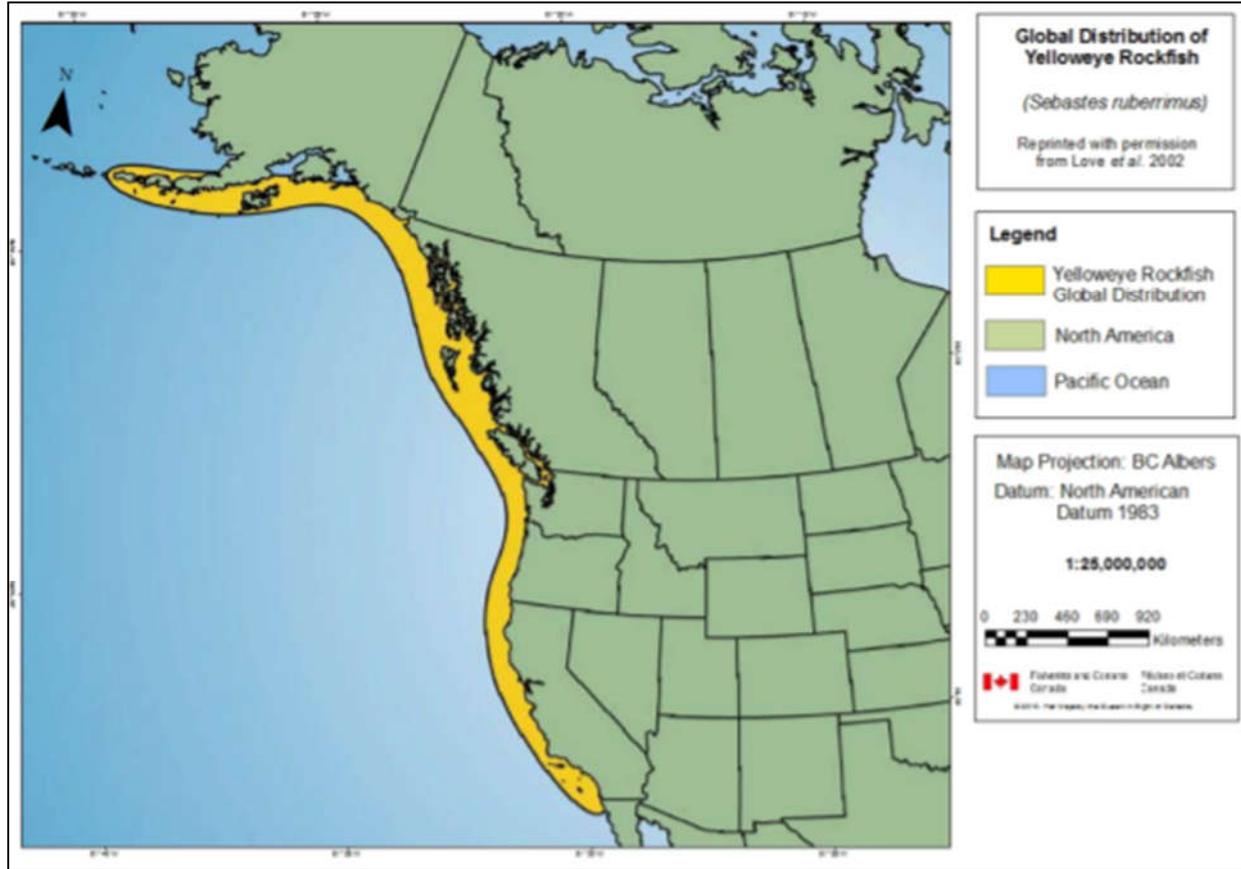


Figure 65: Yelloweye Rockfish global distribution

Source: Fisheries and Oceans Canada. 2018. Management Plan for the Yelloweye Rockfish (*Sebastes ruberrimus*) in Canada [Proposed]. *Species at Risk Act* Management Plan Series. Fisheries and Oceans Canada, Ottawa. iv + 32 pp.