

Fraser River Estuary and Roberts Bank By Roger Emsley

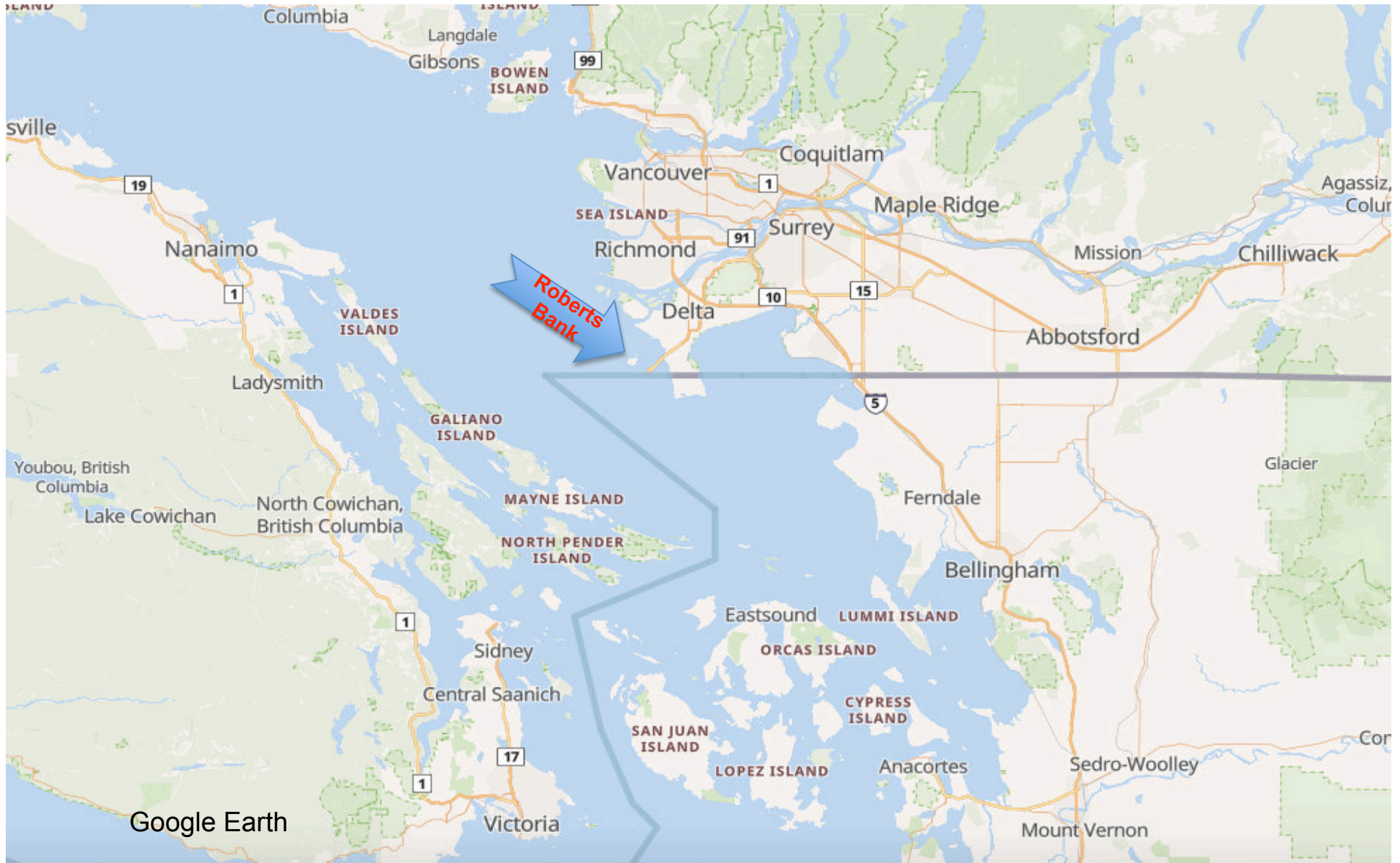
The Habitat, Ecology, Environment and Threats

One of the most important ecosystems in Canada



© Jason Puddifoot

Salish Sea



The History and Habitat

Captain
Vancouver
Arrived June
1792,
preceded by
two Spanish
Naval
Officers,
Galiano and
Valdes



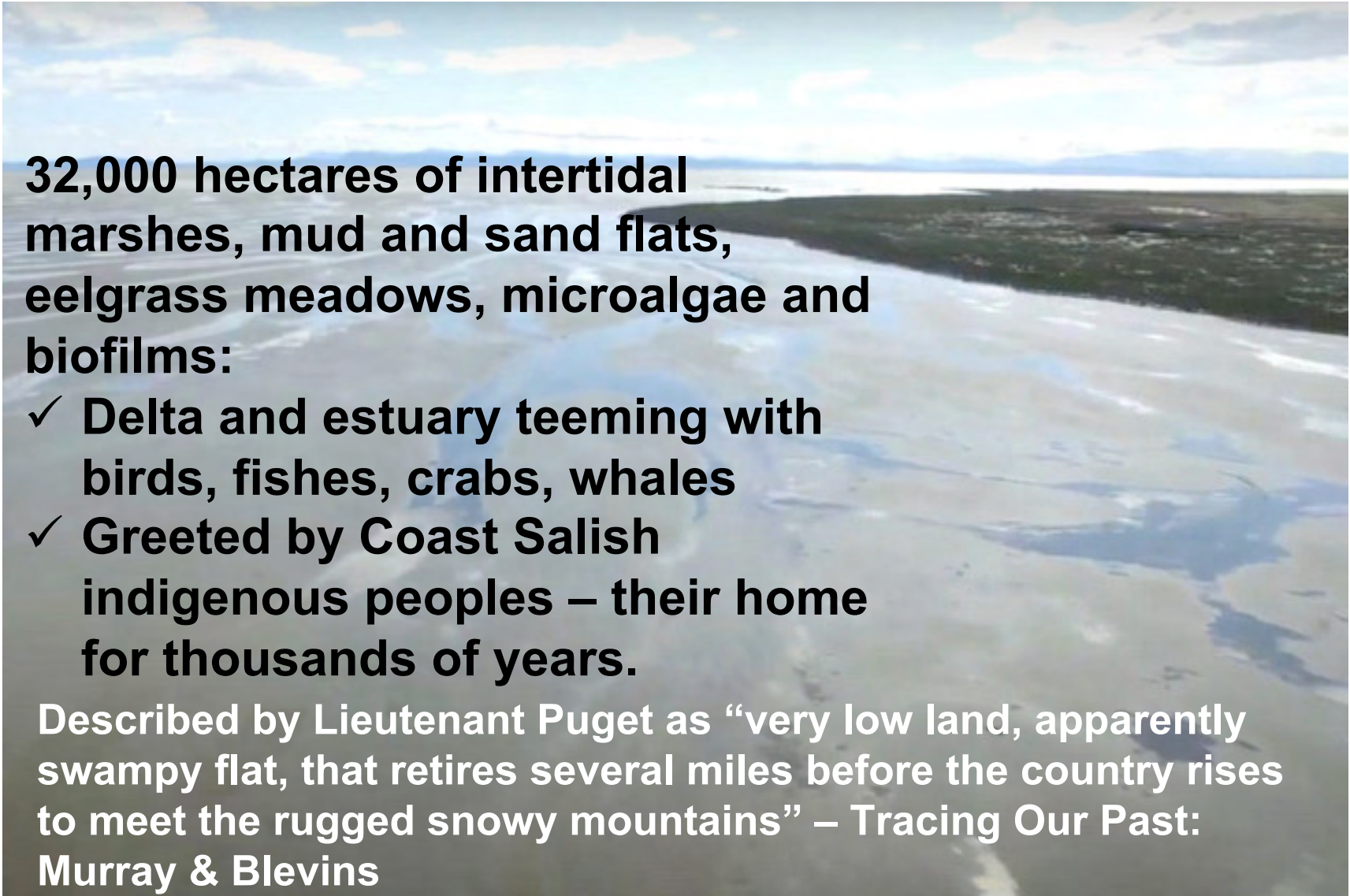
Gerry Greenstone, MD,. Special feature: Captain Vancouver and medicine in the Age of Sail. BCMJ, Vol. 52, No. 10, December, 2010,

Roberts Bank as Captain Vancouver & The Spanish Before Him Might Have Seen It in 1792

32,000 hectares of intertidal marshes, mud and sand flats, eelgrass meadows, microalgae and biofilms:

- ✓ **Delta and estuary teeming with birds, fishes, crabs, whales**
- ✓ **Greeted by Coast Salish indigenous peoples – their home for thousands of years.**

Described by Lieutenant Puget as “very low land, apparently swampy flat, that retires several miles before the country rises to meet the rugged snowy mountains” – Tracing Our Past: Murray & Blevins



Fraser Estuary Today

Wildlife not as bountiful – populations numbers diminishing, some threatened

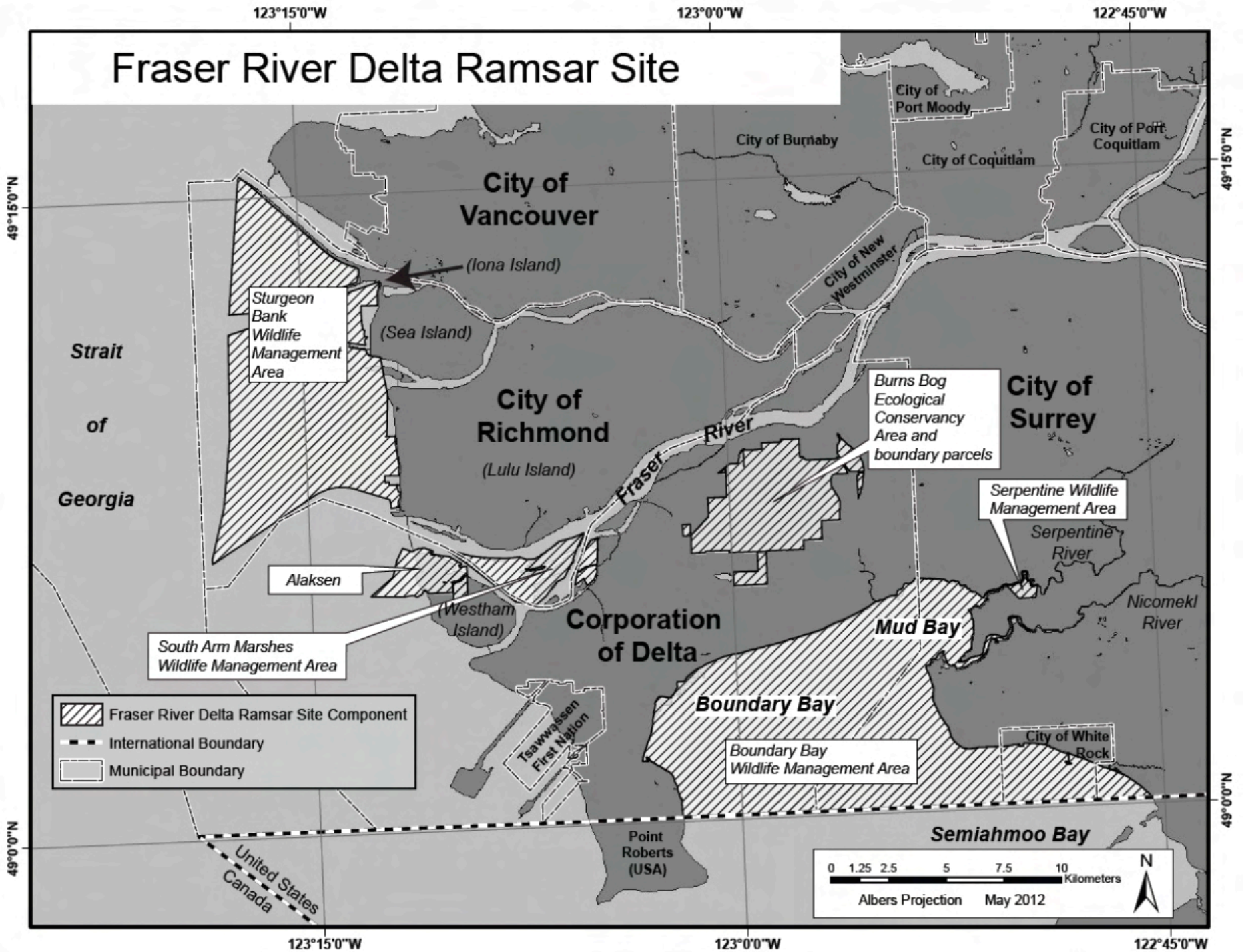
- ✓ Heavily dyked, river and estuary
- ✓ Canneries, or what is left of them
- ✓ YVR Airport
- ✓ Iona and South Arm Jetties
- ✓ Deltaport and BC Ferry Causeways
- ✓ Westshore Coal Terminal
- ✓ Deltaport Container Terminal
- ✓ Amazon and other warehouses
- ✓ Shopping Mall
- ✓ And more

Despite All That...

Still a key mammal, bird, fish and wildlife habitat:

- ❑ UN Ramsar Convention designation as a wetland of international importance
- ❑ Birdlife International – top Important Bird and Biodiversity Area: in danger
- ❑ Canada – Key Biodiversity Area (In Progress)
- ❑ Western Hemisphere Shorebird Reserve Network – site of hemispheric importance
- ❑ BC Wildlife Management Area – “critical wintering grounds for the highest number of waterfowl and shorebirds found anywhere in Canada”.

Fraser River Delta Ramsar Site



The Ecology



Wildlife

Birds

- Shorebirds: Sandpipers, Dunlin, Yellow Legs, Cormorants
- Gulls
- Barn and Short Eared Owls
- Canada Geese
- Snow Geese
- Trumpeter Swans
- American Pelican
- Ducks
- Peregrine Falcon
- Great Blue Heron
- Bald Eagle
- Red-tailed Hawk
- Northern Harrier
- Other Birds

Fishes

- Salmon: 6 salmon species –most are in trouble
- Herring
- Eulachon
- Sturgeon
- Other Fishes

Marine Mammals

- Southern Resident Killer Whales.
Three pods: J K and L
- Transients
- Seals

Crustaceans and Molluscs

- Dungeness Crabs
- Clams
- Others

Southern Resident Killer Whales

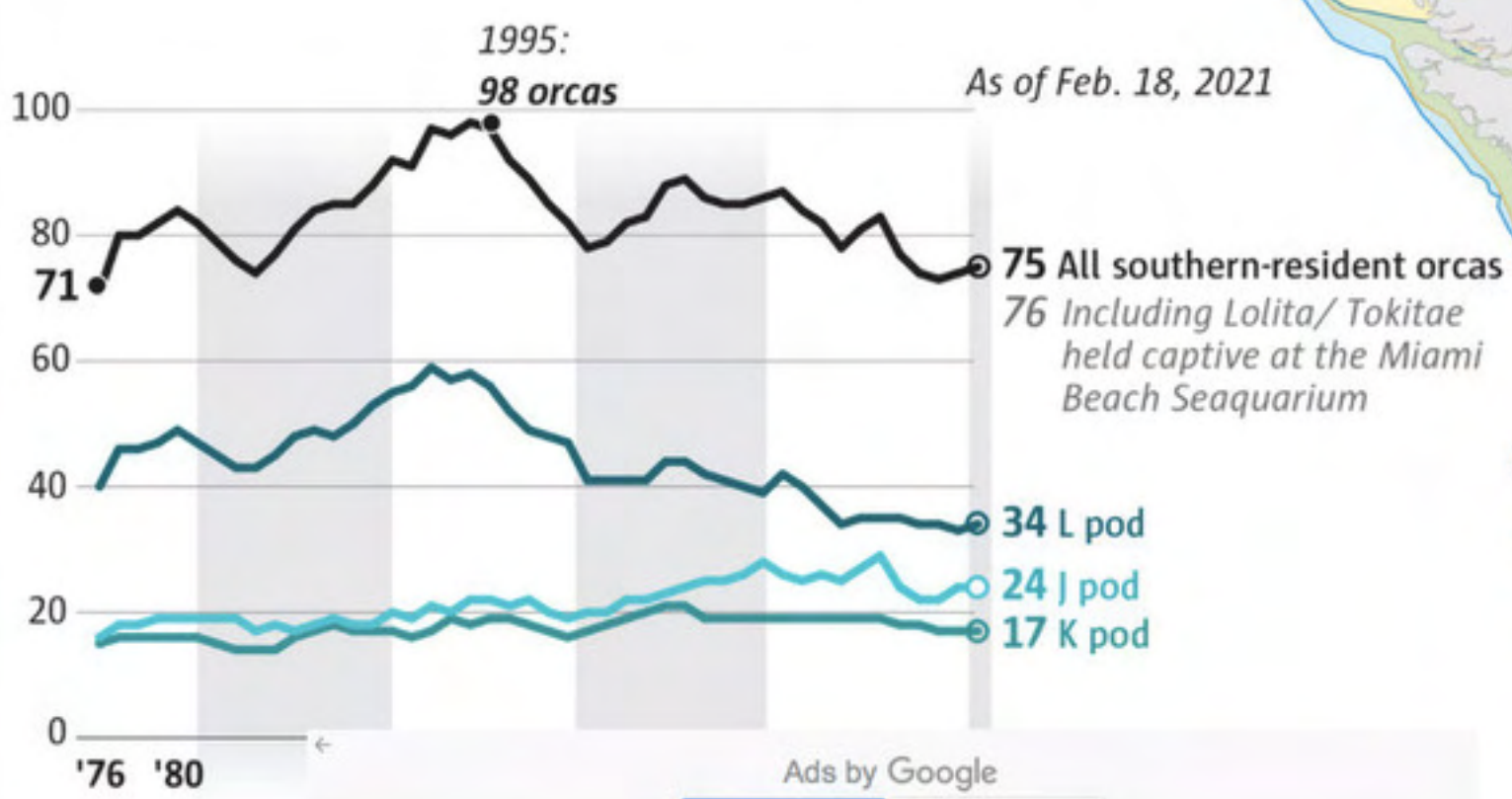


Each Southern Resident Killer Whale needs up to 20 Chinook Salmon every day



Southern resident orca population

The first calf born in L pod since 2019 has been spotted. J pod has two calves, both born in 2020, bringing the total southern resident population to 75. A count in 1976 found 71 whales.



6 Species of Salmon - Most Fraser Populations are in Trouble

- Spawning /rearing grounds degraded
- Increased predation
- Less food
- Lack of estuary habitat to transition from river to ocean



Wildlife on Roberts Bank



The Pacific Flyway

Roberts Bank



- a chain of stops along the west coast of North America that is used by millions of migrating shorebirds each year. Many of the key stops are major river estuaries with mudflats where the birds stop to refuel to give them strength for the next leg of their journey. Environment Canada says further port expansion risks breaking the chain of the Pacific Flyway

Over 500,000 Western Sandpipers have been estimated to use the Roberts Bank mudflat on a single day in spring migration



Western Sandpiper have specialized tongues, used to probe the mud and suck up biofilm



Snow Geese - 150,000 or more winter here.
Significant Portion of Wrangal Island Population



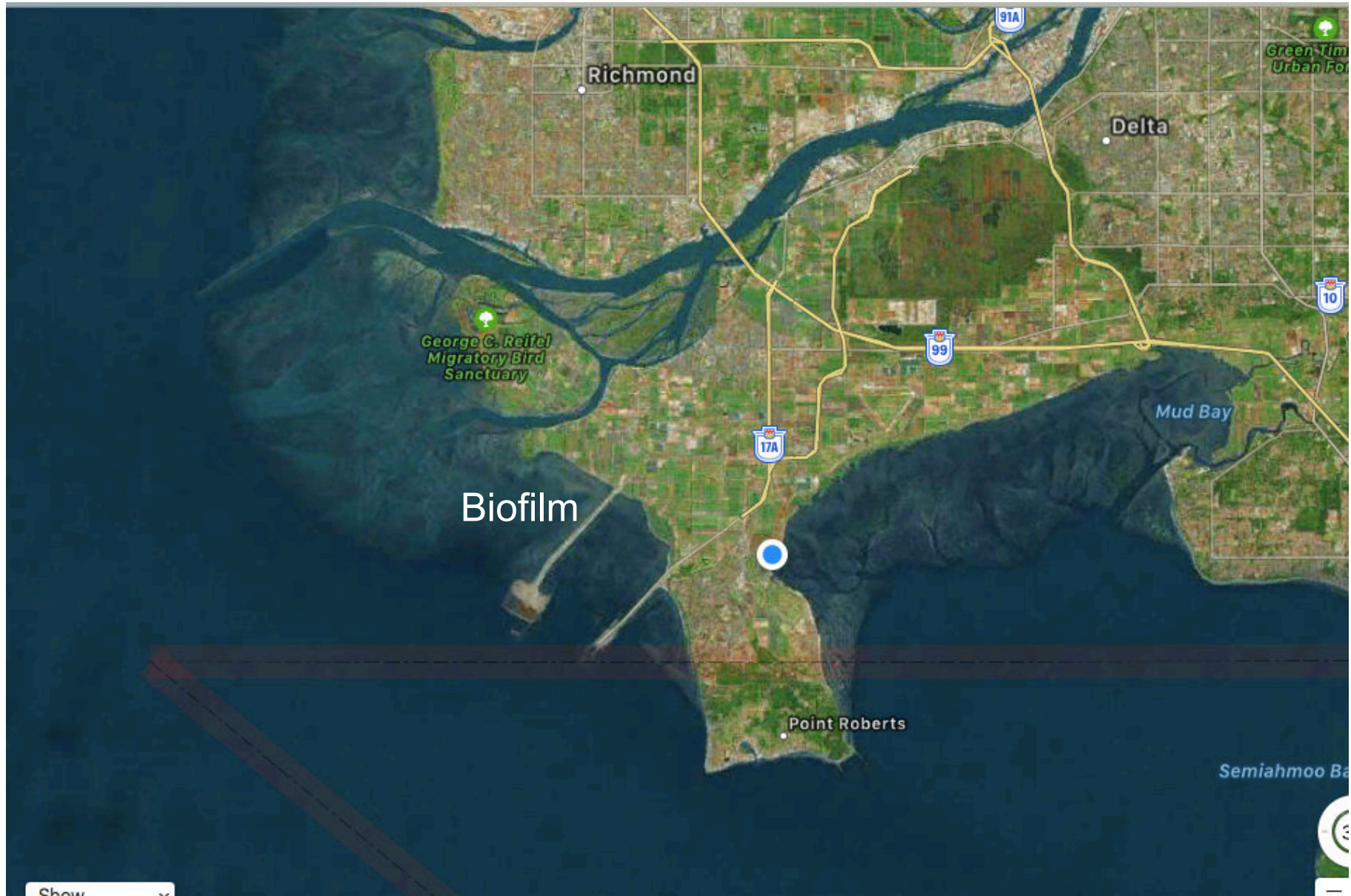
© David Bradley

The Environment



- Roberts Bank:**
- Marsh Grasses
 - Mud Flats
 - Sand Flats
 - Eel Grasses

Why is Roberts Bank So Rich in Wildlife? Fraser River Fresh Water Outflow Interacting with the Tides that Creates Rich Biofilm



Marine (Saltwater) Biofilm

Biofilm is a community of diatoms, bacteria and tiny invertebrates living in a thin mucus coating on the surface of mud in intertidal waters - a **veritable biological powerhouse**:

- Prime source of polyunsaturated fatty acids, including omega-3's, which cannot be produced by fish or birds themselves, as well as other nutrients
- Fatty acids for shorebirds to complete long-distance migration by improving muscle performance etc.
- Important food for migratory birds, salmon, fishes, etc.
- Lower levels of the food chain consume biofilm directly – such as crabs, mud shrimp, clams, snails.
- When fishes, birds, etc. consume these prey they are also consuming fatty acids.
- When orcas feed on salmon, or birds of prey feed on other birds and fishes, they also consume fatty acids.



© James Casey

Biofilm becomes most critical in April/May as a result of salinity oscillations, due to the pre-freshet interacting with the tide, shocking the diatoms into a super fatty acid production phase - during spring (breeding) migration of shorebirds

Roberts Bank Mud Flats

A major refueling stop for the western sandpiper and other shorebirds, where they stop to refuel for the next leg of their journey



**Mud flat Slime –
thin mucus coating
of diatom-rich
biofilm on the
surface**



**Sandpipers
probe the
mud and
suck up the
nutrient rich
biofilm –
60% + of
their diet**

Threats



**Port and Industrial
Expansion**

Ever Increasing Vessel Traffic

Urban Development

© Tom Middleton

UBC Study Dr. Tara Martin

102 species are **AT RISK** of extinction
in the Fraser River Estuary

It's not too late to save them.



<https://www.3billionbirds.org/>



Western Sandpipers:
“The overall trend from 1991 to 2017 indicates a decline of -2%/year ($P = 0.09$).”
Canadian Wildlife Service.

As a group shorebirds in Canada have declined by 40% since 1970

“ IF YOU TAKE CARE OF BIRDS, YOU TAKE CARE OF MOST OF THE ENVIRONMENTAL PROBLEMS IN THE WORLD.” Thomas Lovejoy The Godfather of Biodiversity – Senior Fellow UN Foundation

Relied on by millions of shorebirds, herons, orcas, seals, salmon, herring, crabs, and other fishes

Fraser River

Marshland	
Intertidal Zone	
Bird Sanctuary	
Biofilm Areas	
Western Sandpiper Foraging Areas	

Roberts Bank Terminal

BC Ferries Terminal

CANADA
USA

- Up to 20 million salmon pass through.
- Largest gathering of over wintering raptors

T2 Dams the Estuary for Juvenile Salmon and alters Tidal Flows, and Salinity thus degrading the Biofilm



Air, Noise and Light Pollution, Traffic Congestion on Highways

3,000 truck trips per day now. Over 7,000 with Terminal 2
Collisions with vehicles kills Barn Owls

Powerlines kill birds

17 Trains per day now. 29 trains per day with Terminal 2

©Michael Snyder



Roberts Bank Container Terminal 2

TERMINAL TWO =

- Breaks the Pacific Flyway
- Destroys Critical Mudflats
- Risks the Western Sandpiper species with destruction

- Project component
- Project rail additions/modifications
- Project road additions/modifications



DELTA

TSAWWASSEN
FIRST NATION

Widened
causeway

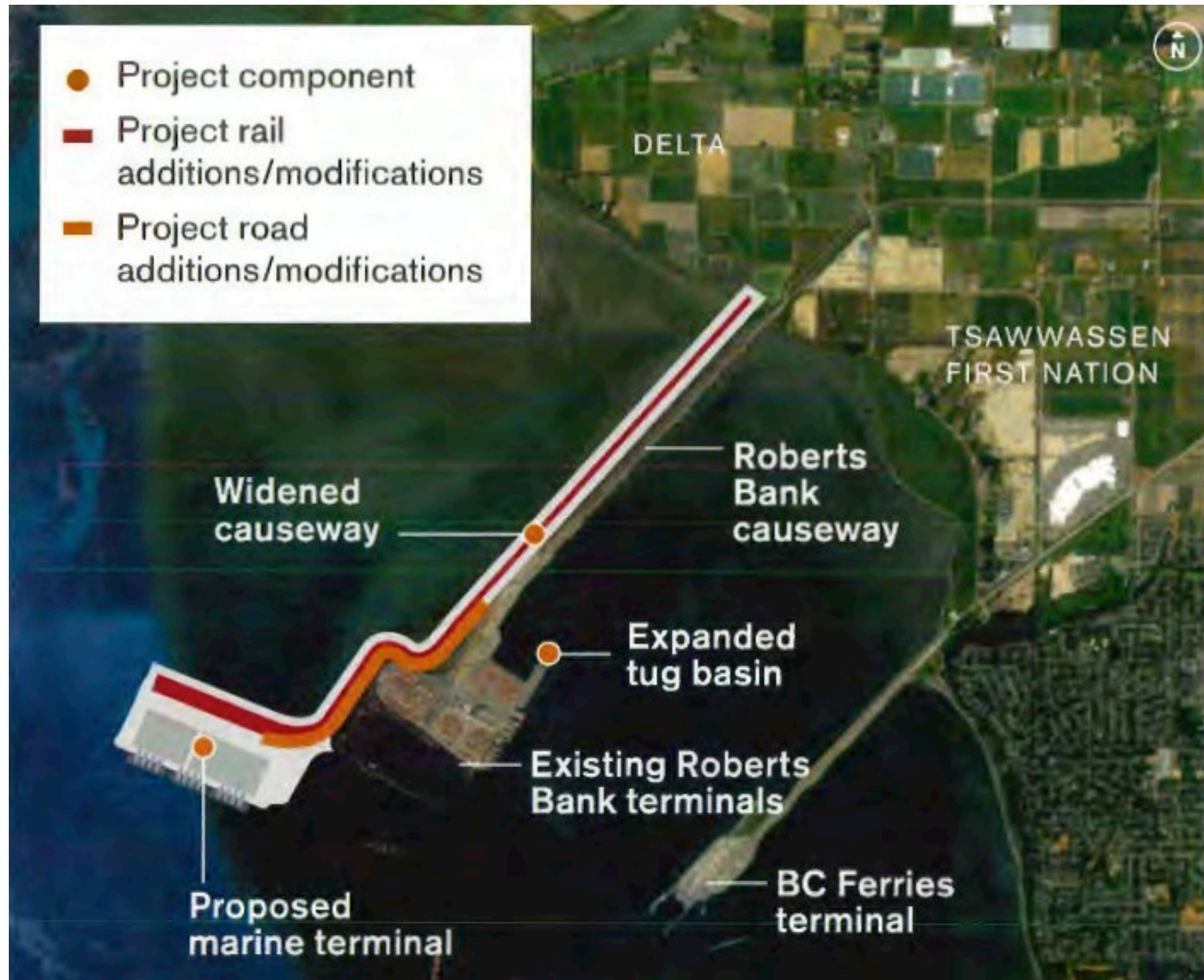
Roberts
Bank
causeway

Expanded
tug basin

Existing Roberts
Bank terminals

Proposed
marine terminal

BC Ferries
terminal





Already too many vessel transits through Haro Strait, prime habitat for Orcas

By Pfly - Own work, CC BY-SA 3.0, <https://commons.wikimedia.org/w/index.php?curid=15730665>

Delta's Worst Nightmare

ROBERTS BANK TERMINAL 2

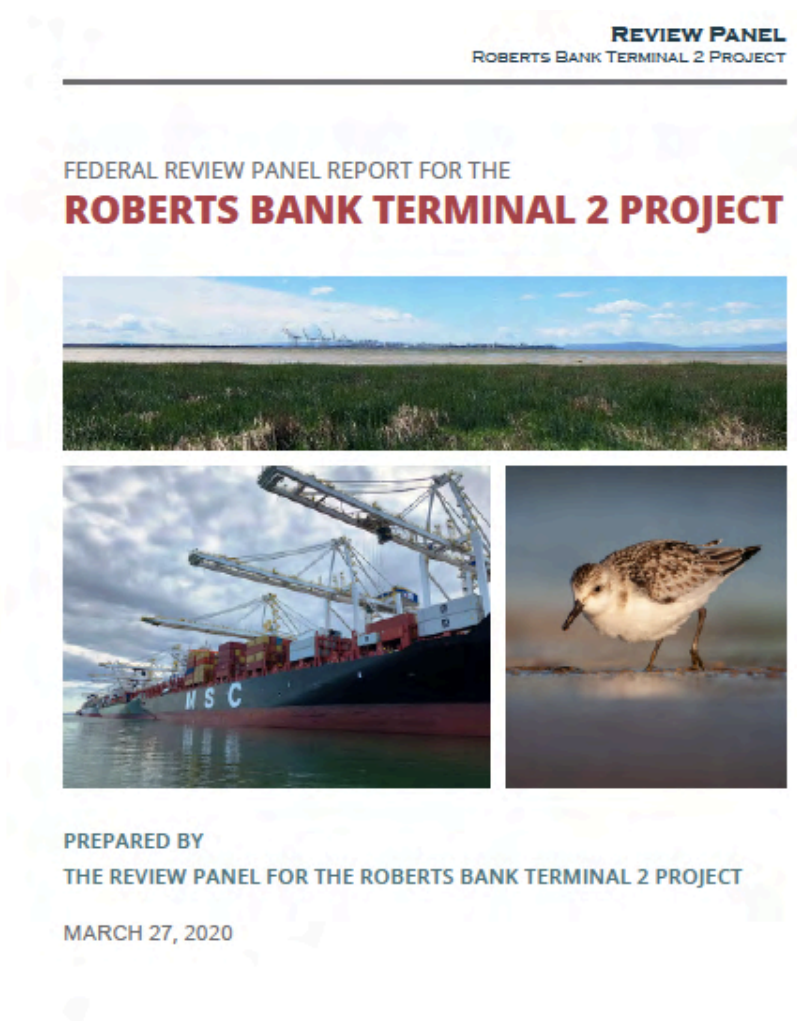
ONE SCARY MONSTER

Richmond, Delta and White Rock
Councils have voted to oppose
Terminal 2

Roberts Bank Terminal 2 Panel Report

“ The Panel concludes that the Project would result in numerous adverse residual and cumulative effects. The proposed offsetting plan for aquatic species, totaling 29 hectares, would be insufficient to compensate for the reduction in productivity associated with a Project-induced habitat loss of 177 hectares of Roberts Bank. There would be significant adverse and cumulative effects on wetlands and wetland functions at Roberts Bank”.

Too Much Risk



Can we Risk this Happening In the Salish Sea or Juan de Fuca Strait?



When/What is the Tipping Point for the Fraser Estuary

Is it a dripping tap



Or is it an avalanche



Or is it both?

Fraser Estuary - 70% of Natural Habitat Already Lost



Issues Impacting the Fraser Estuary



Ever increasing vessel traffic through an already congested area

What Can You Do ?

© James Casey

Make your Voice Count.

Tell Government

to Reject Roberts Bank Terminal 2:

- Write to the Environment Minister:
ec.ministre-minister.ec@canada.ca
- Write to your MP
- Write Letters to the Media
- Post on Facebook, Twitter, Linked In

No business need for T2. There is a better alternative.

Prince Rupert has potential to quadruple its current container terminal capacity.

- Two sailing days closer to Asia
- No significant environmental issues

For More Information

Contact:

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Websites:

<https://www.againstportexpansion.org>

<https://www.birdscanada.org/?s=roberts+bank>

Further Reading:

<https://www.hakaimagazine.com/features/slime-shorebirds-and-scientific>

<https://www.hakaimagazine.com/features/questionable-science-vancouvers-port-expansion/>