



spanaxnox sm'hoon
(supernatural salmon place)

Dr. *Sm'hayetsk* (Teresa) Ryan
Gitlan, Tsm'syen

Pacific Salmon Commission Seminar Series 3
May 25, 2022

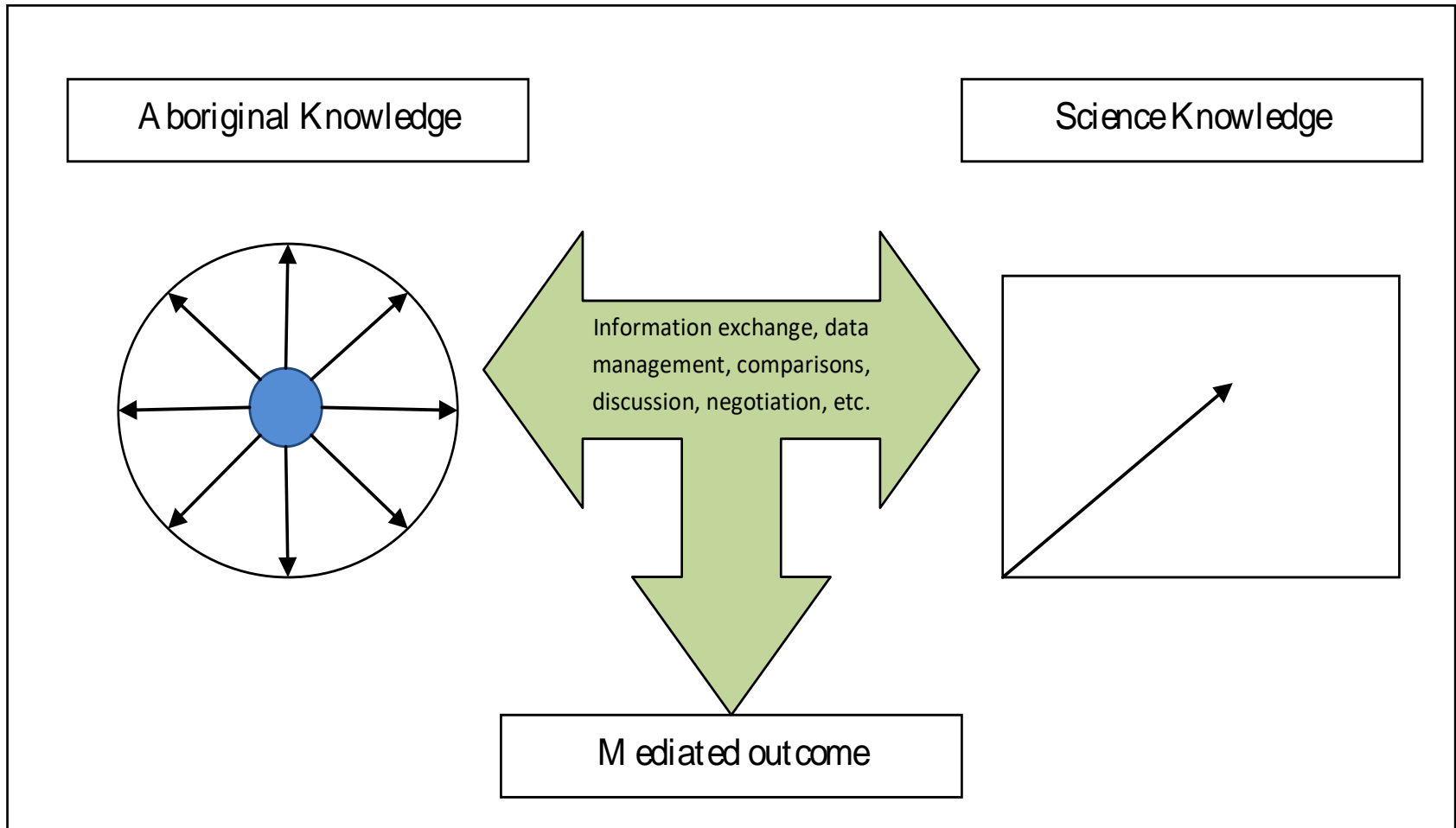
ontology

- Good food
- Types
- Locations
- Timing
- Spawning
- Rearing
- Relationships

epistemology

- Knowledge transmission
- 'handed down'
- Oral tradition
- Stories/Legend/Myth
- Practice/Action
- Landscapes/Seascapes
- Plants, Animals, Fish

Aboriginal Ecological Knowledge



T. Ryan (2013). Summary Comparison of Governance Models That Consider Aboriginal Traditional Knowledge. In E. Simmons (ed.), *Indigenous Earth: Praxis and Transformations*. Penticton, BC: Theytus Books.



Salmon Forest

A map of the Pacific Northwest region of North America, showing the coastline of British Columbia, Canada, and the adjacent United States. The map highlights a specific area in the coastal region of British Columbia, which is the focus of the Salmon Forest project. The highlighted area is colored in shades of green and yellow, indicating forested land. The map also shows major water bodies like the Pacific Ocean and the Strait of Georgia, as well as some inland features like the Fraser River and various lakes.

UBC Forestry Salmon Forest Project funded by
Donner Canadian Foundation

Image source: Ecotrust

Gulf of Alaska

Prince Rupert, BC

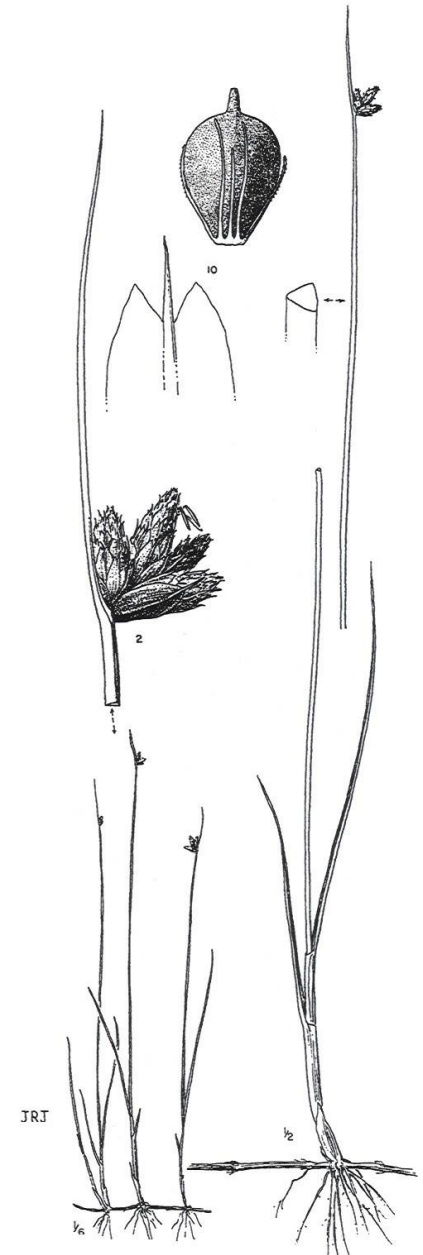
Grays Harbor, WA

Schoenoplectus pungens

(incorrectly *Scirpus americanus*)

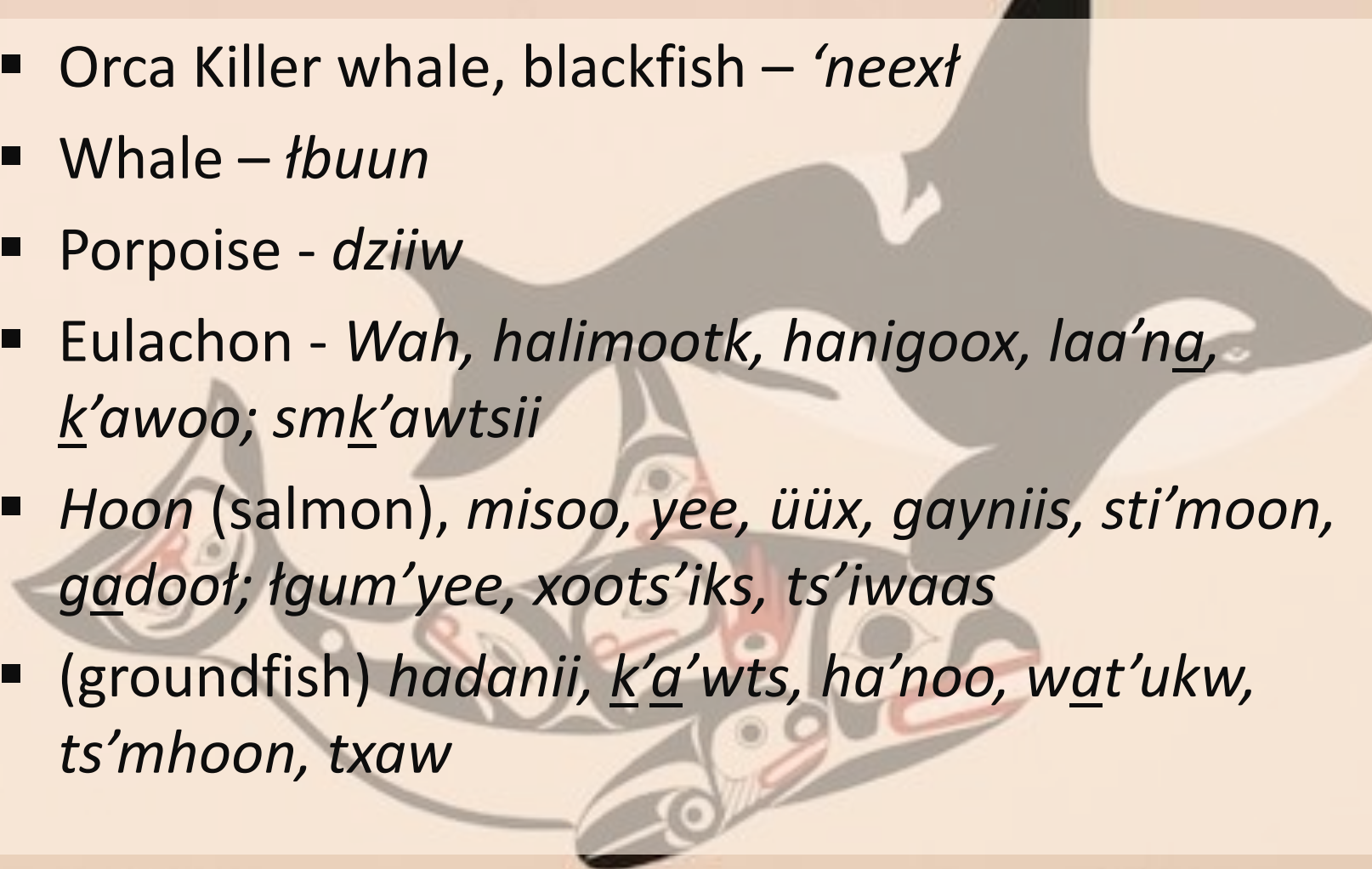
Common name: sea sweetgrass

Family: Cyperaceae



Taxonomy, classification

- Orca Killer whale, blackfish – *'neext*
- Whale – *tbuun*
- Porpoise - *dziw*
- Eulachon - *Wah, halimootk, hanigoox, laa'na, k'awoo; smk'awtsii*
- Hoon (salmon), *misoo, yee, üüx, gayniis, sti'moon, gādoot; tgum'yee, xoots'iks, ts'iwaas*
- (groundfish) *hadanii, k'a'wts, ha'noo, wat'ukw, ts'mhoon, txaw*



Athlaloat



Image: Public domain, Donald LeRo (NOAA Southwest Fisheries Science Center, National Science Foundation)



Karl Solomon



A large, dense crowd of salmon swimming in water, viewed from above. The fish are packed closely together, creating a complex pattern of dark and light shapes. The water is a deep blue-green color.

People of the Salmon

Photo: Ecotrust



Title: A man with an Indian fishtrap at Kyoquot.



Old Enoch
– fish trap builder

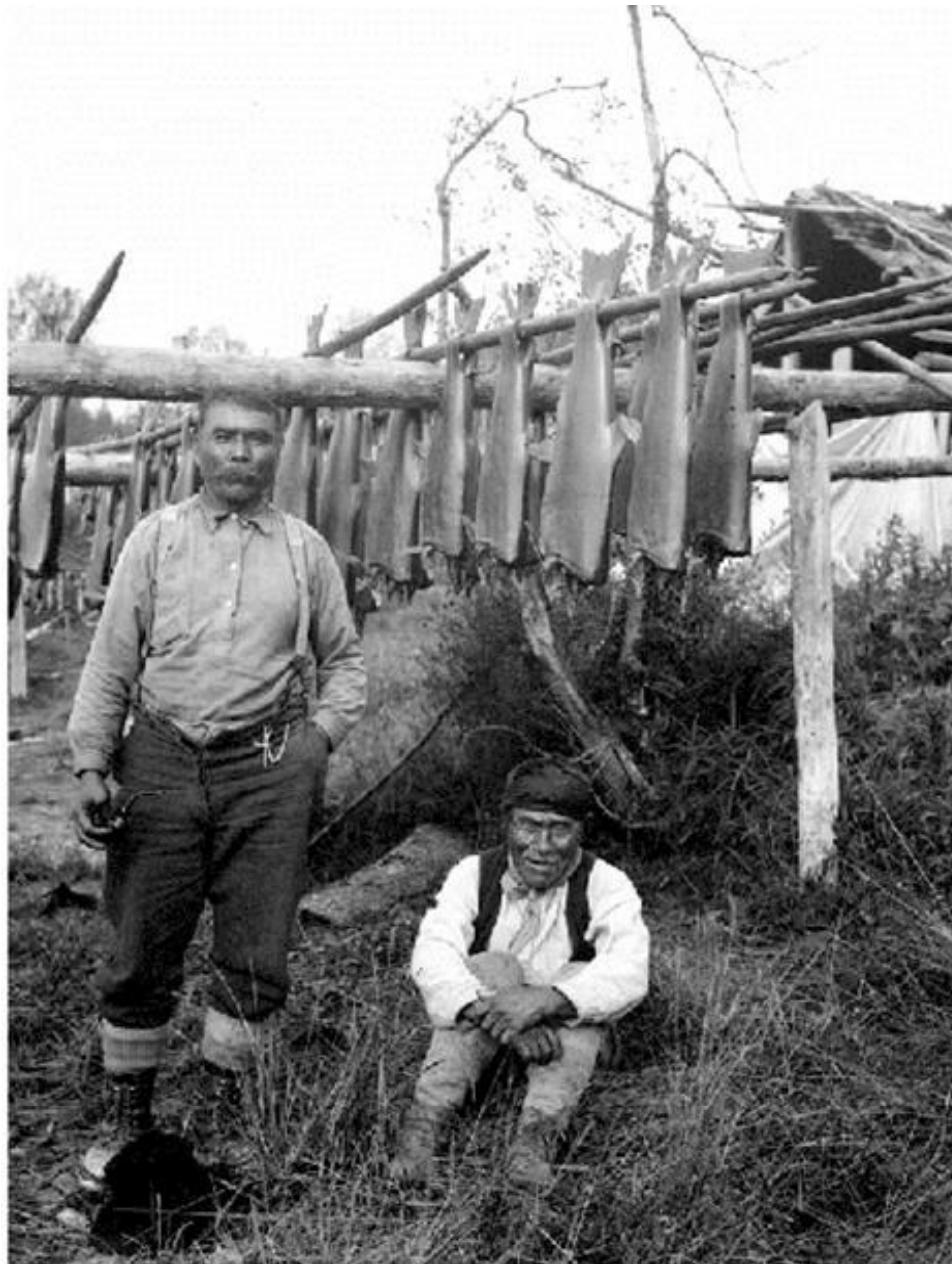
Made from young jack pine
and wrapped with wild rose

Photo: BC Archives ca. 1910



Photo: BC Archives

Title: Indians Smoking Salmon



Title: Two unidentified men - fish drying on racks.

Photo: BC Archives taken by Frank Cyril Swannell (1880 – 1969) on June 23, 1926

'June Hogs'

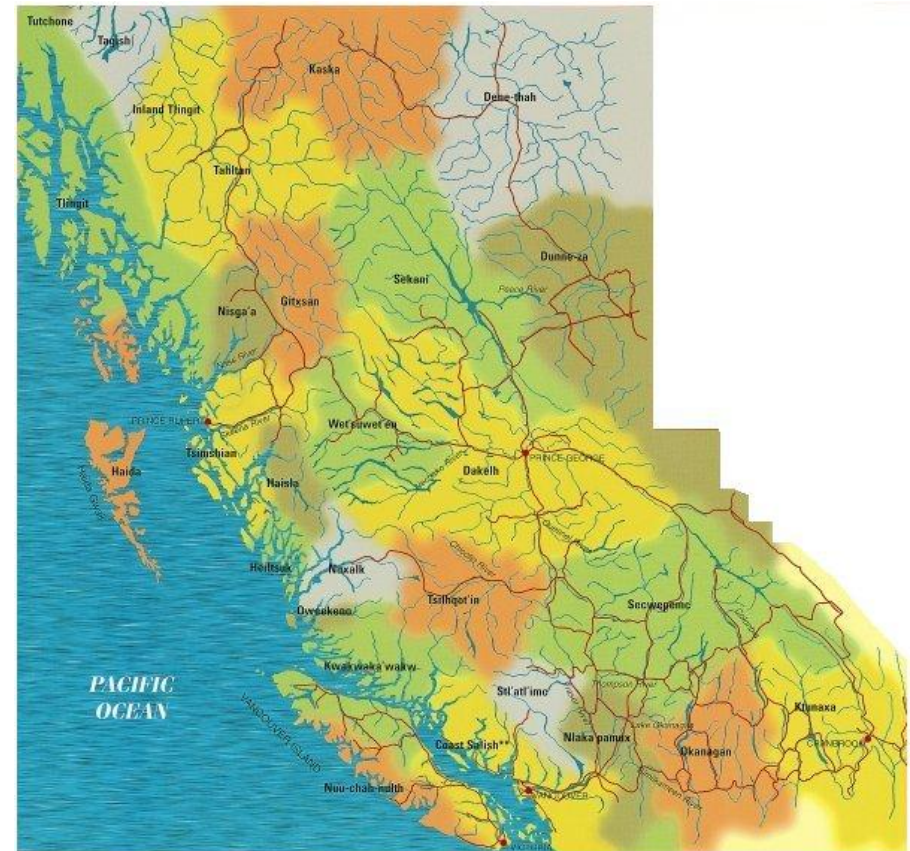
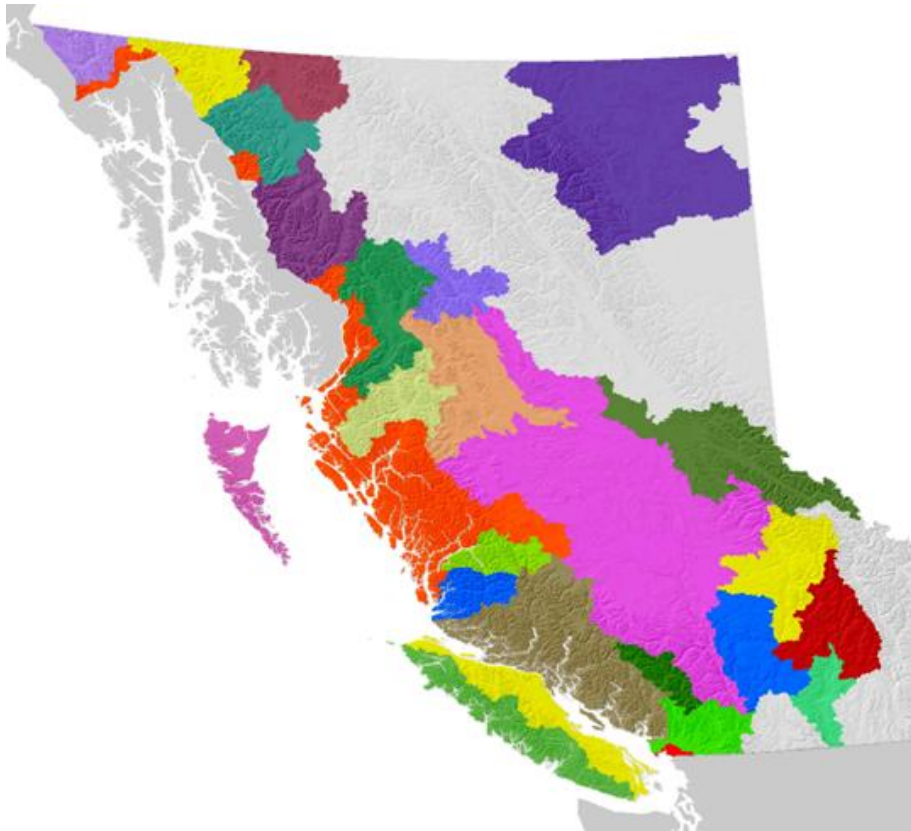


1909 - Large Chinook salmon displayed at the Union Fisherman's Dock in Astoria, Oregon (Public domain)



Title: Fish weir, Fraser Lake.

Language Groups - *Voice of the people*



A suggestion at the WSP Ecosystem values workshop (2006) to overlay First Nations language map with proposed CUs to provide a starting point for knowledge integration on salmon (in progress).

Hereditary system

Strict matrilineal :

- Tlingit
- Tsm'syen
- Haida

'Adaptive':

- Heiltsuk
- Kwakwaka'wakw
- Nuxalk
- Others

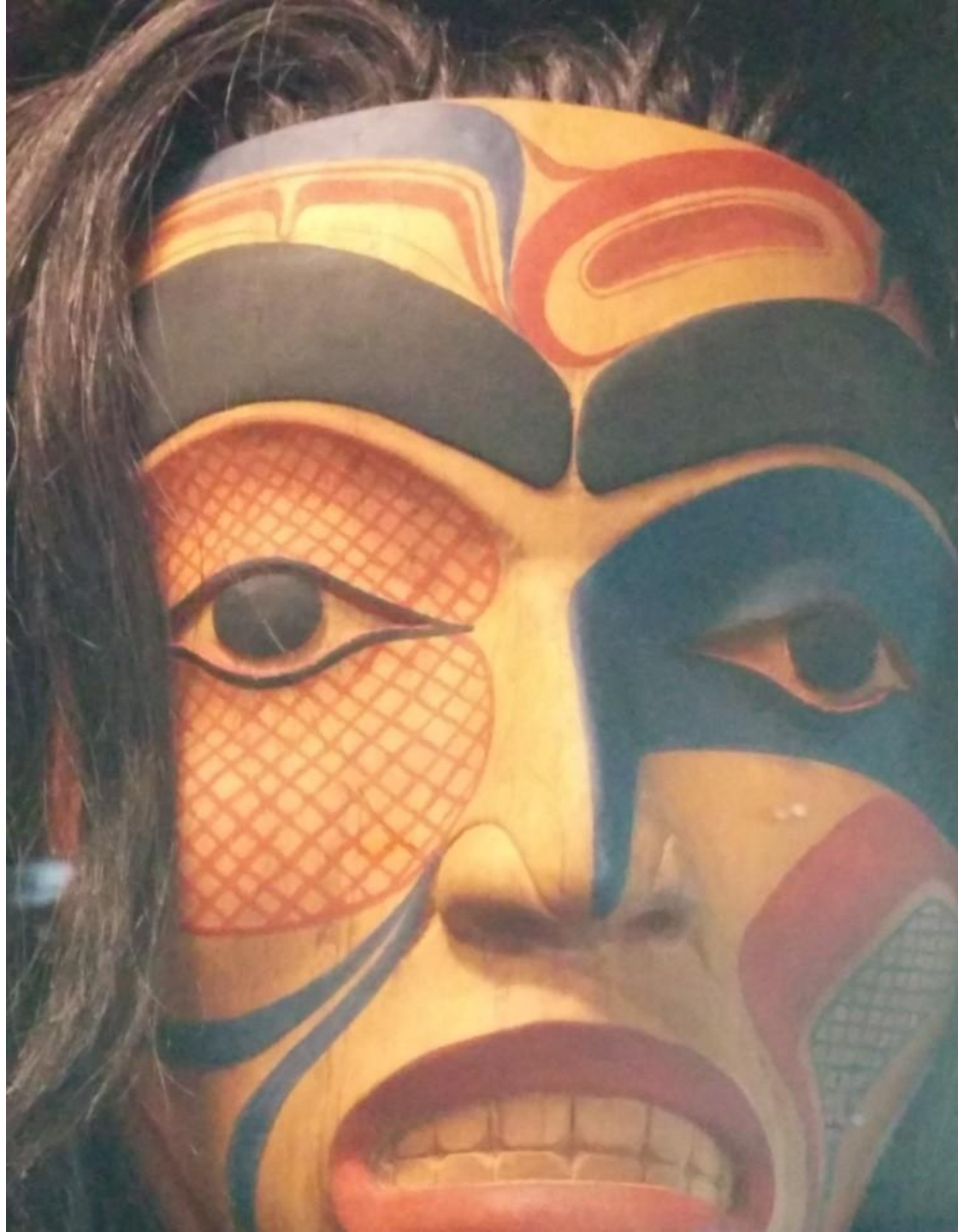




Photo: T. Ryan



Photo: T. Ryan



Photo: T. Ryan

Obligations





Balance

- Seven Generations
- Generosity
- Abundance
- Stewardship
- Wealth



Generosity

“The mechanisms of social institutions are the facilitating engines that drive surplus production based on the conduct of appropriate ethical behavior to *give generously* to the ecological services”

Salmon Forest Project

Photo: T. Ryan 2010

Aboriginal Stewardship

- Timing of key events are linked to observations in local conditions (e.g., salmonberry blossoms)
- Harvest protocol, rules and regulation (e.g., test fishing, taboos)
- “tidal pulse fishing”

Consecutive events

- Moon
- Bird life
- Eulachon
- Weather
- Salmon





Photo: Orion 8, Wikimedia Commons, Adapted



Photo: Nirupam Sarker, Wikimedia Commons, Adapted

Vancouver, British Columbia (max. tidal range 4.92m 16.1ft)

Times are PDT (UTC -7.0hrs). Last Spring Tide on Wed 31 Aug (h=4.51m 14.8ft). Next Spring Tide on Sun 18 Sep (h=4.58m 15.0ft)

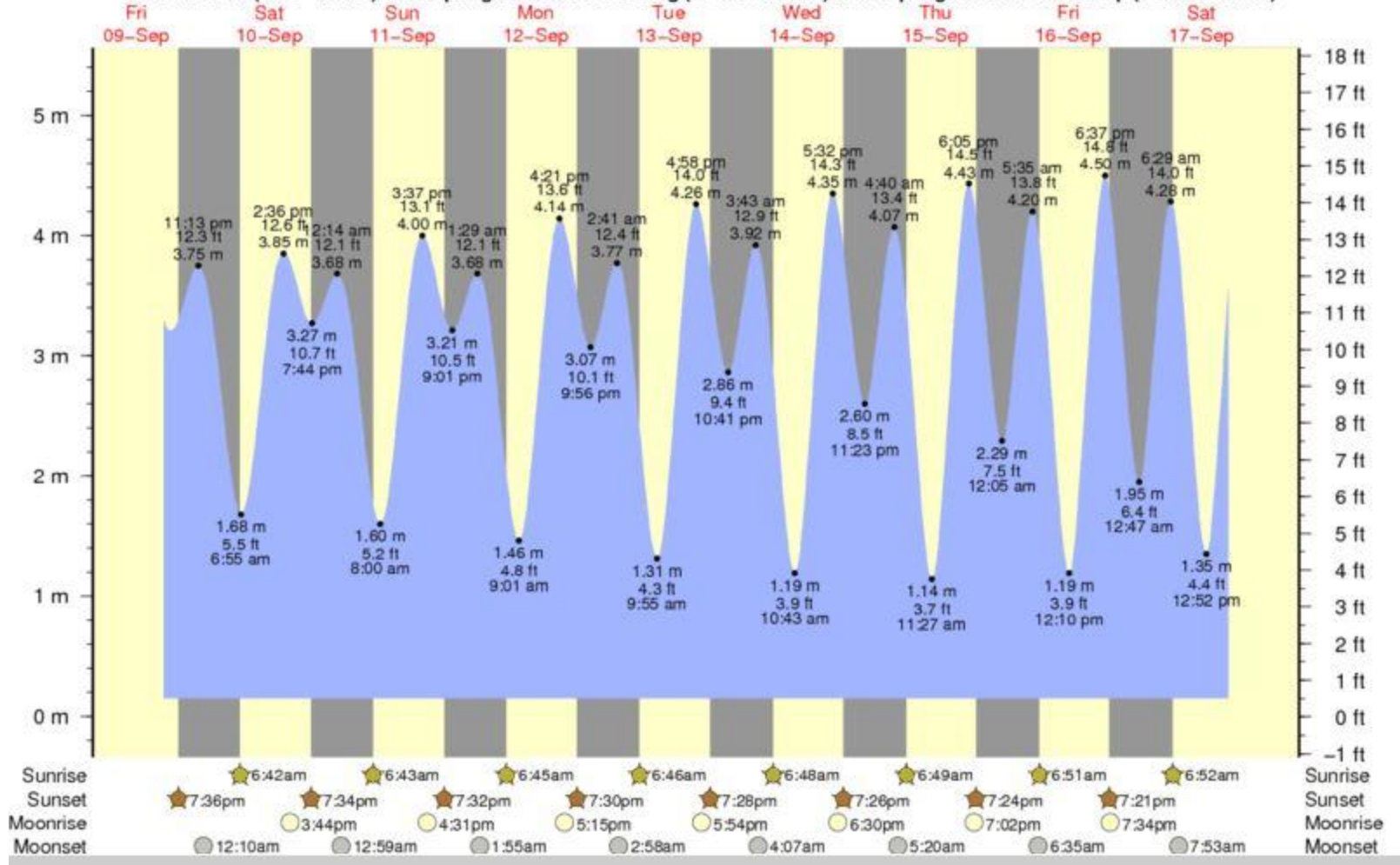


Image: Public domain



Photo: T. Ryan 2017



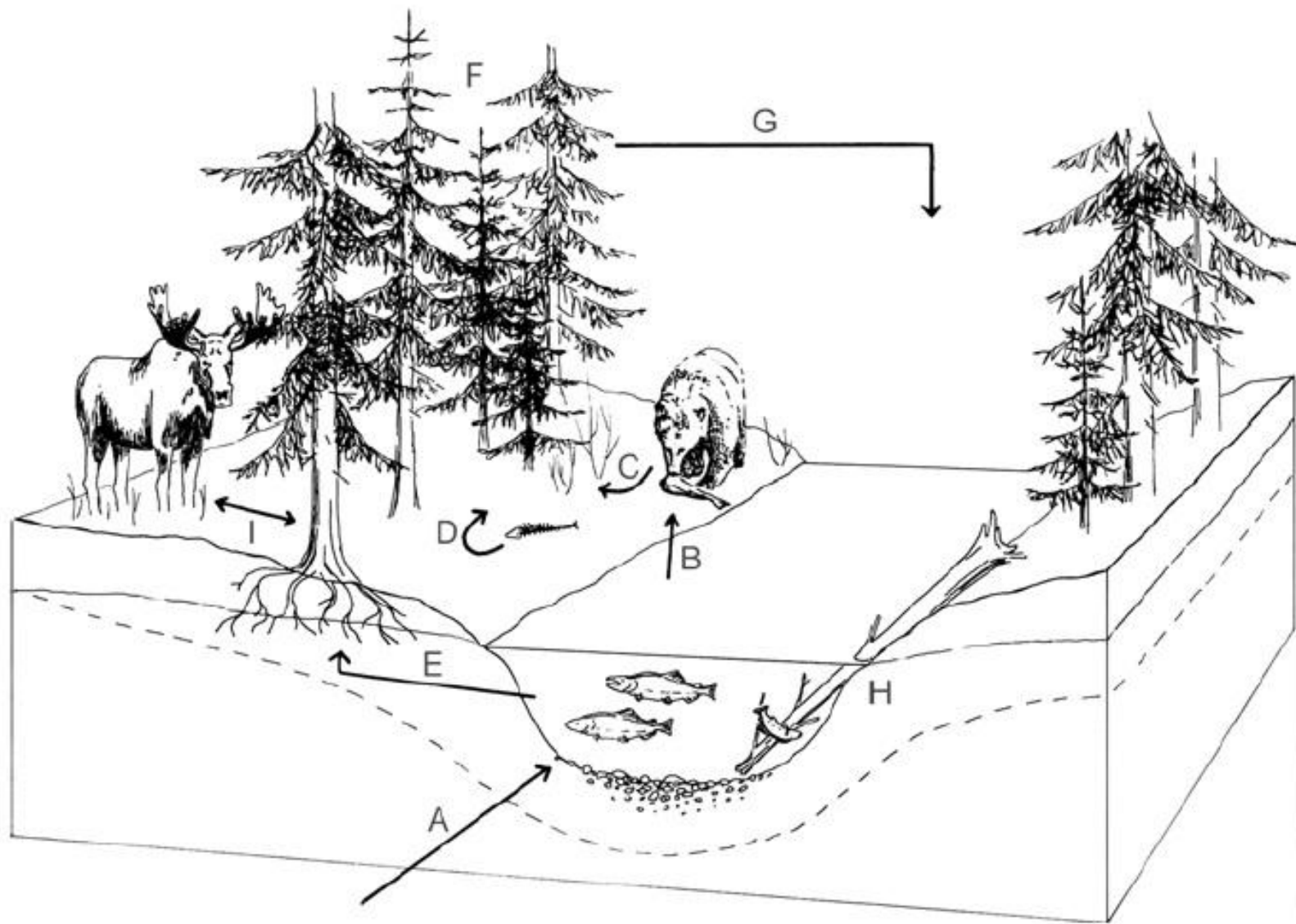


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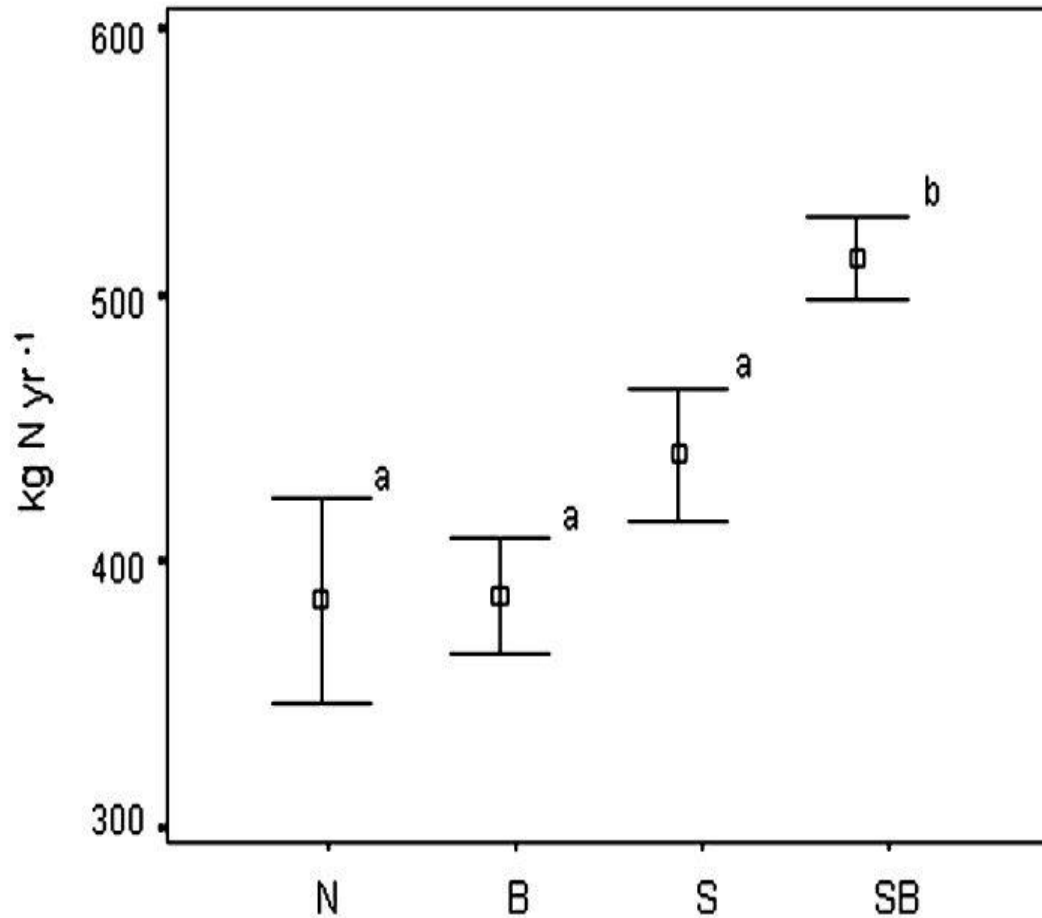
http://news.nationalgeographic.com/content/dam/news/2016/03/03/bear_rainforest/02_gbrainforest.ngsversion.1457040602735.adapt.768.1.jpg



Photo: A. Larocque 2017



Estimated total N influx - SWAK



Helfield, J. M and Naiman, R. J. Keystone Interactions: Salmon and Bear in Riparian Forests of Alaska. *Ecosystems*, 9: 167-180.

A photograph of a forest scene. In the foreground, a large, thick tree trunk is covered in green moss and lichen. The trunk is dark brown with some lighter, reddish-brown patches. The background is filled with many other trees, mostly evergreens, and sunlight is filtering through the canopy, creating a bright, hazy atmosphere. The text "Mother Tree Project" is overlaid in a stylized font.

Mother Tree Project

Photo: T. Ryan 2016

'Subiyay spoke of the ancient story of the Tree People that tells how the trees have much to teach us about their diversity and symbiotic nature. Under the forest floor there is an intricate and vast system of roots and fungi that keeps the forest strong. The **story** captures an important teaching for building alliances, communal strength, diversity and roles each member has in the web of the whole community. Together we are stronger.



Alaska's vanishing salmon push Yukon River tribes to brink

Oct 2, 2021 **"STEVENS VILLAGE, Alaska** — In a normal year, the smokehouses and drying racks that Alaska Natives use to prepare salmon to tide them through the winter would be heavy with fish meat, the fruits of a summer spent fishing on the **Yukon River** like generations before them.

This year, there are no fish. For the first time in memory, both king and chum salmon have dwindled to almost nothing and the state has banned salmon fishing on the Yukon, even the subsistence harvests that Alaska Natives rely on to fill their freezers and pantries for winter. The remote communities that dot the river and live off its bounty — far from road systems and easy, affordable shopping — are desperate and doubling down on moose and caribou hunts in the waning days of fall.

"Nobody has fish in their freezer right now. Nobody," said Giovanna Stevens, 38, a member of the Stevens Village tribe who grew up harvesting salmon at her family's fish camp. "We have to fill that void quickly before winter gets here.""

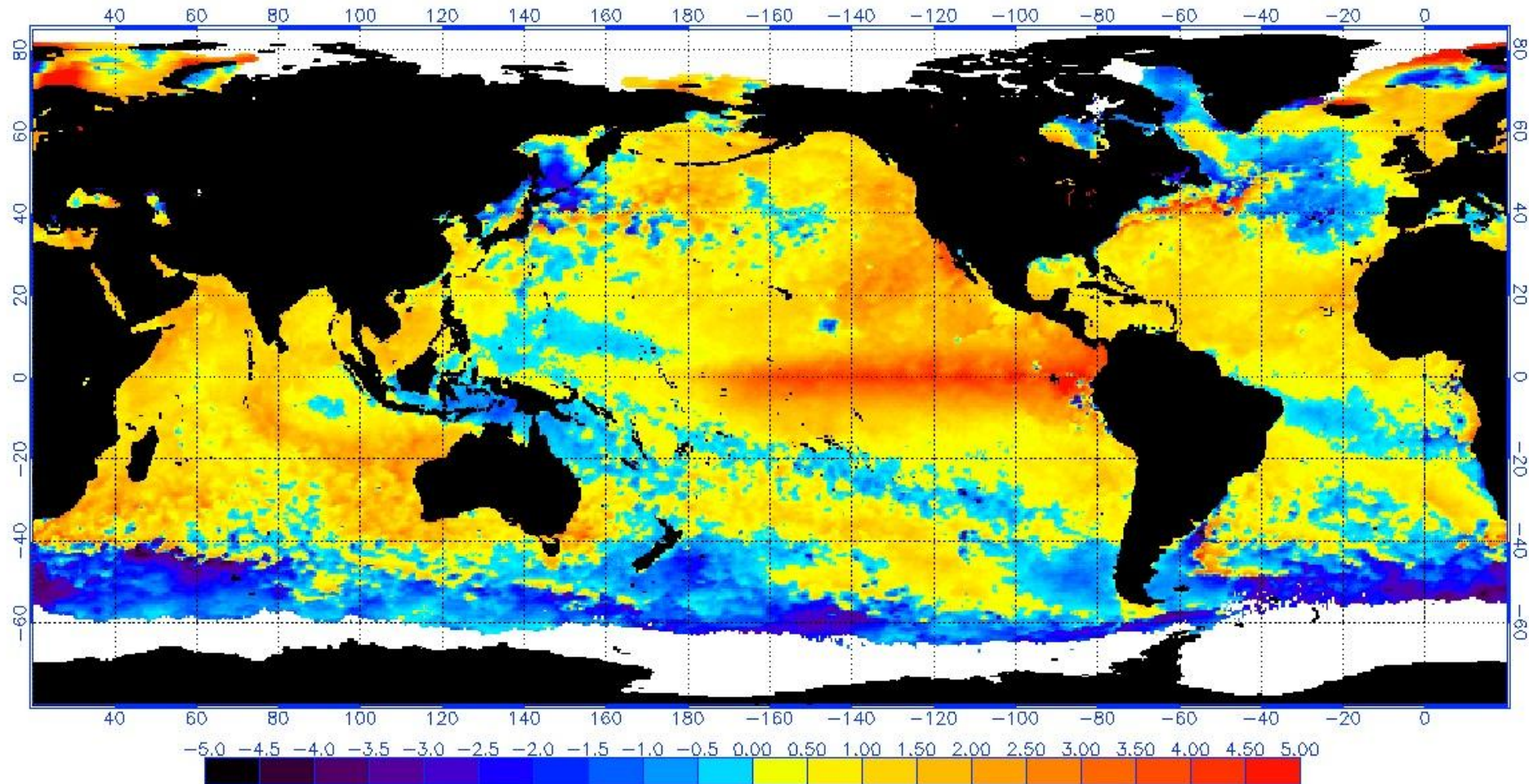


Michael Williams scans the shoreline for moose while traveling up the Yukon River on Sept. 14 near Stevens Village, Alaska. For the first time in memory, both king and chum salmon have dwindled to almost nothing and the state has banned salmon fishing on the Yukon. (Nathan Howard / AP)



Climate change

NOAA/NESDIS 50 KM GLOBAL ANALYSIS: SST Anomaly (degrees C), 11/2/2015
(white regions indicate sea-ice)





Title: Indians Fishing For Oolichan, Nass River.

Interior – snow dominated

Additional factors (other than withdrawal) negatively influencing ground water supply include:

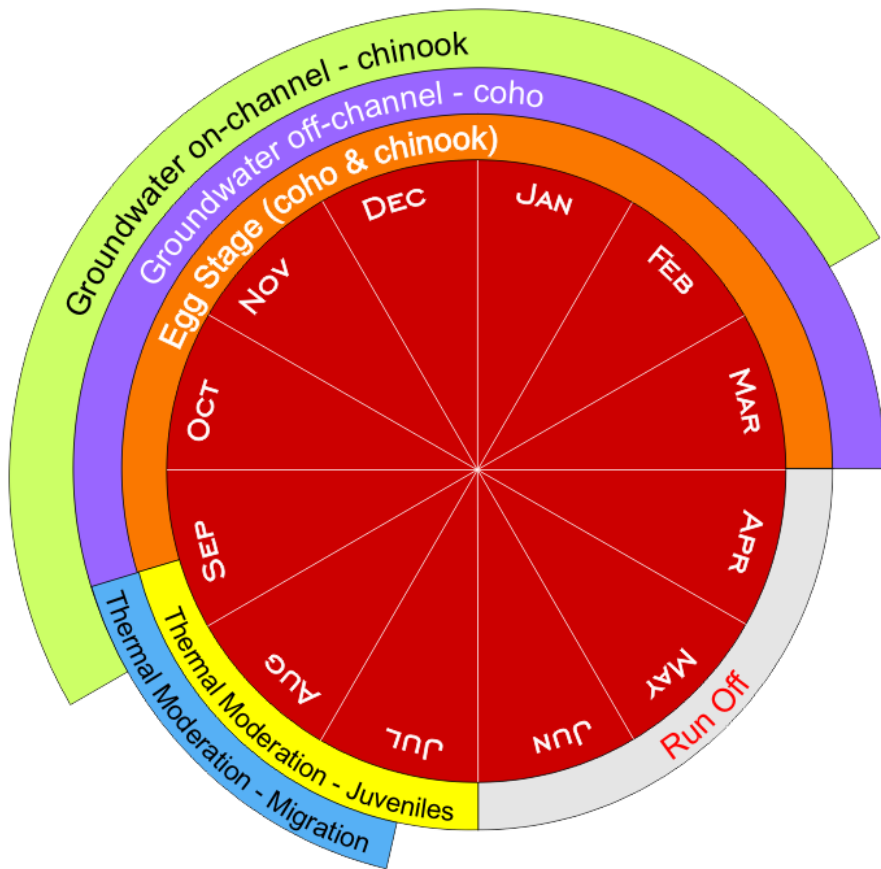
Long term climate change and increased frequency of extended periods of drought and high temperature in summer.

Shifts in hydrologic cycle as a result of Mountain Pine Beetle and salvage logging, deforestation of large portions of Interior Fraser, and fires.

Urbanization in Southern Interior – economic migration from South Coast.



Groundwater Thermal Refugia: Where and When?



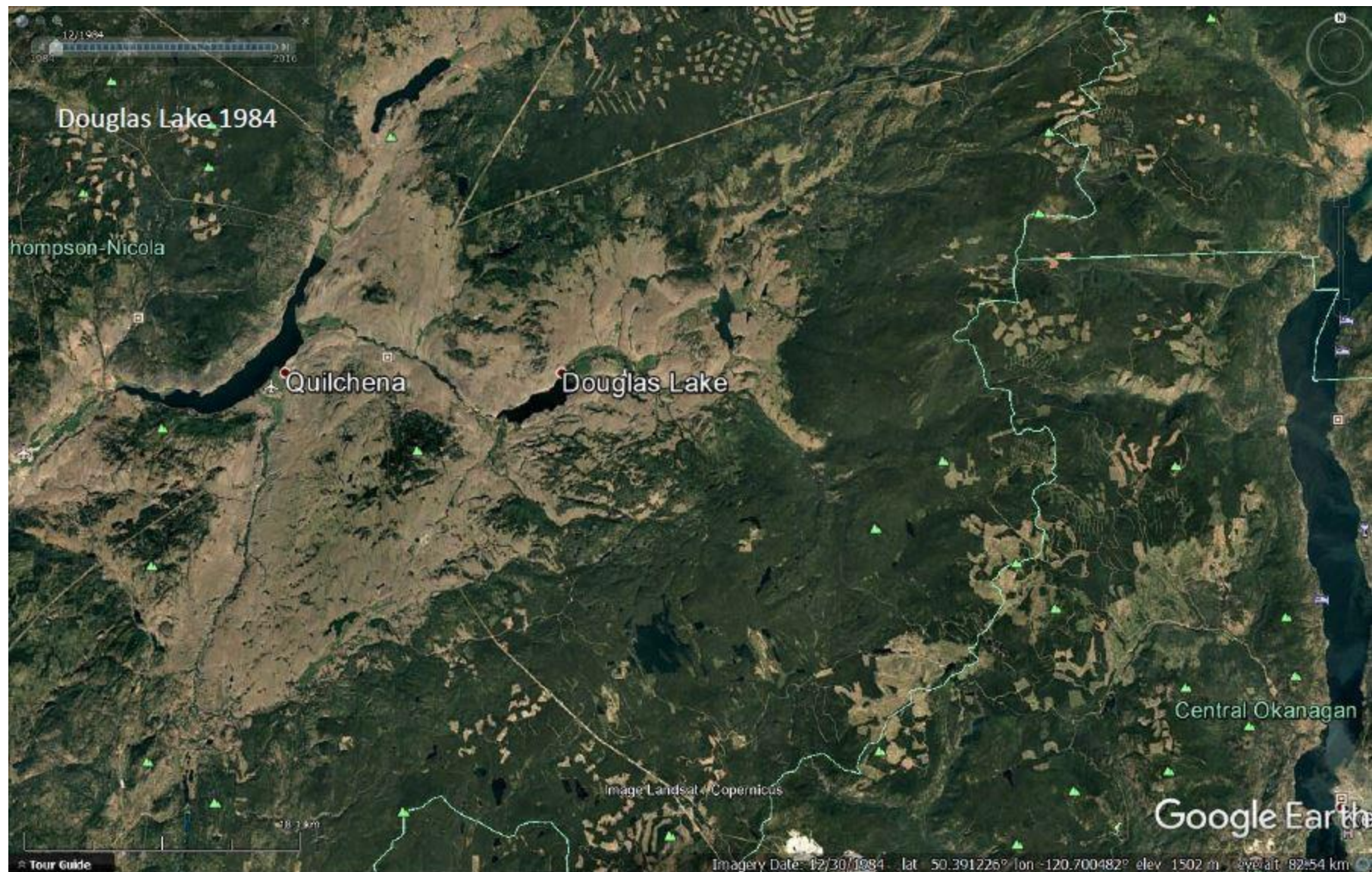
Summer Low Flow Period

Adult Migration

- Influent groundwater provides localized cooling.
- Staging adults may become confined to areas cooled by groundwater.
- Without influence of groundwater, migration to extreme terminal area likely not possible in some populations.







Douglas Lake 2018

Thompson-Nicola

Quilchena

Douglas Lake

Central Okanagan

© 2018 Google
Image © 2016 DigitalGlobe
Image © 2018 Province of British Columbia
Image RDCO

Google Earth

Ⓜ Tour Guide

Imagery Date: 8/25/2016 Lat: 50.122237° Lon: -120.089326° elev: 1133 m sea alt: 82.54 km

Species deeply rooted in Canadian culture are at risk

Français



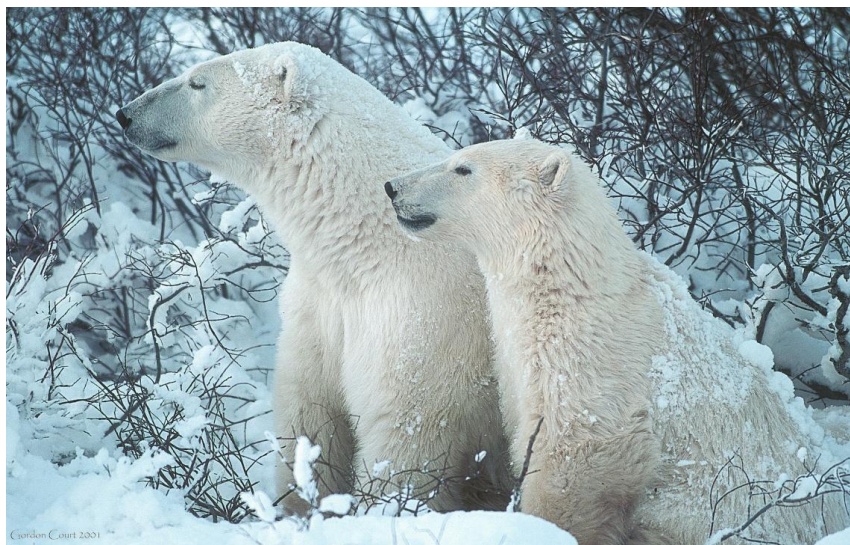
COSEWIC
Committee on the
Status of Endangered
Wildlife in Canada

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Dec 03, 2018, 14:00 ET

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<https://www.newswire.ca/news-releases/species-deeply-rooted-in-canadian-culture-are-at-risk-701805822.html>

Land Area Affected by Endangered Species Act Listings of Salmon & Steelhead

- * 28 distinct population segments:
5 endangered, 23 threatened
- * 176,000 sq. miles in Washington,
Oregon, Idaho & California
- * 61% of Washington's land area,
55% of Oregon's, 26% of Idaho's, &
32% of California's



October 2010



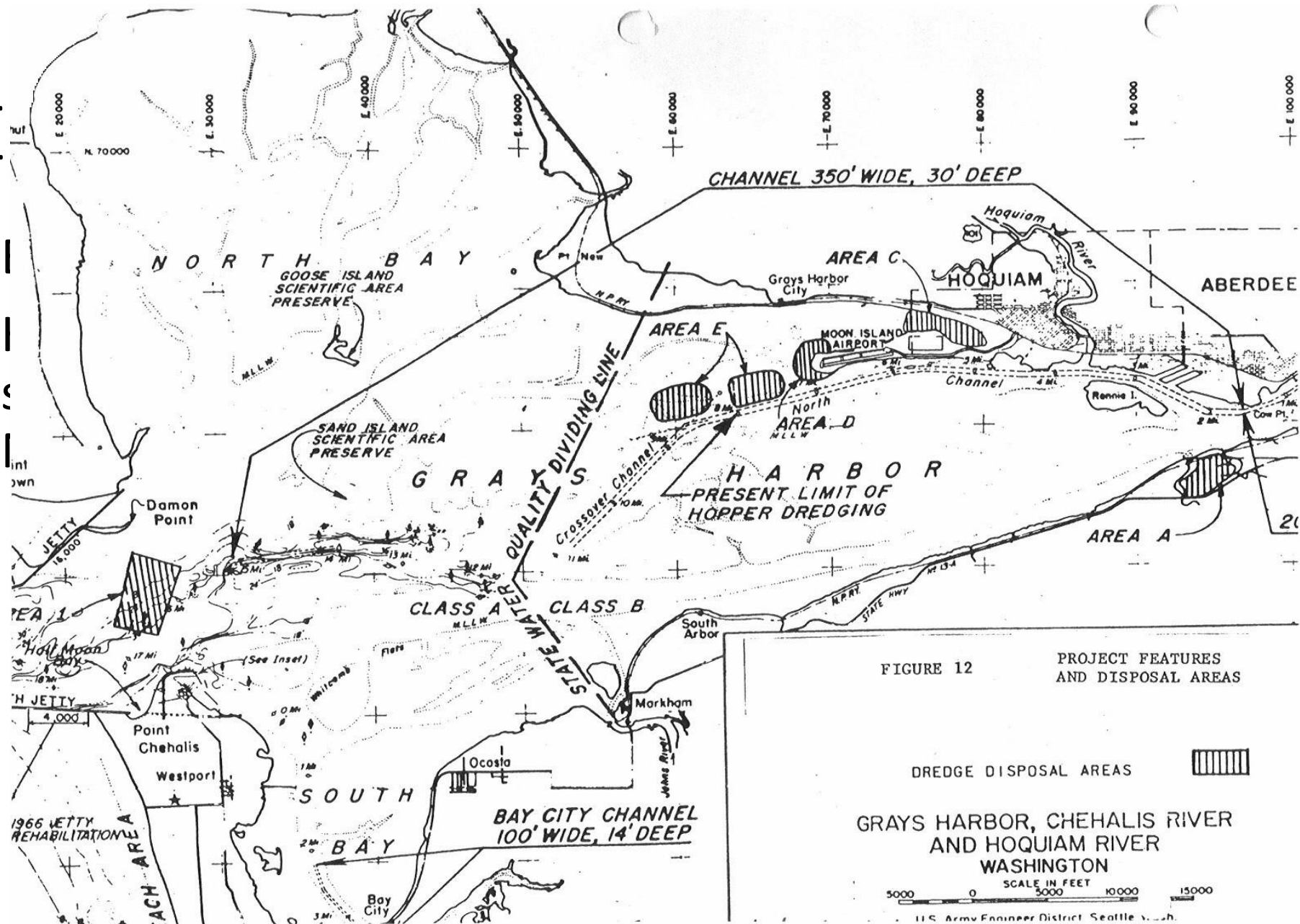


FIGURE 12 PROJECT FEATURES AND DISPOSAL AREAS

DREDGE DISPOSAL AREAS

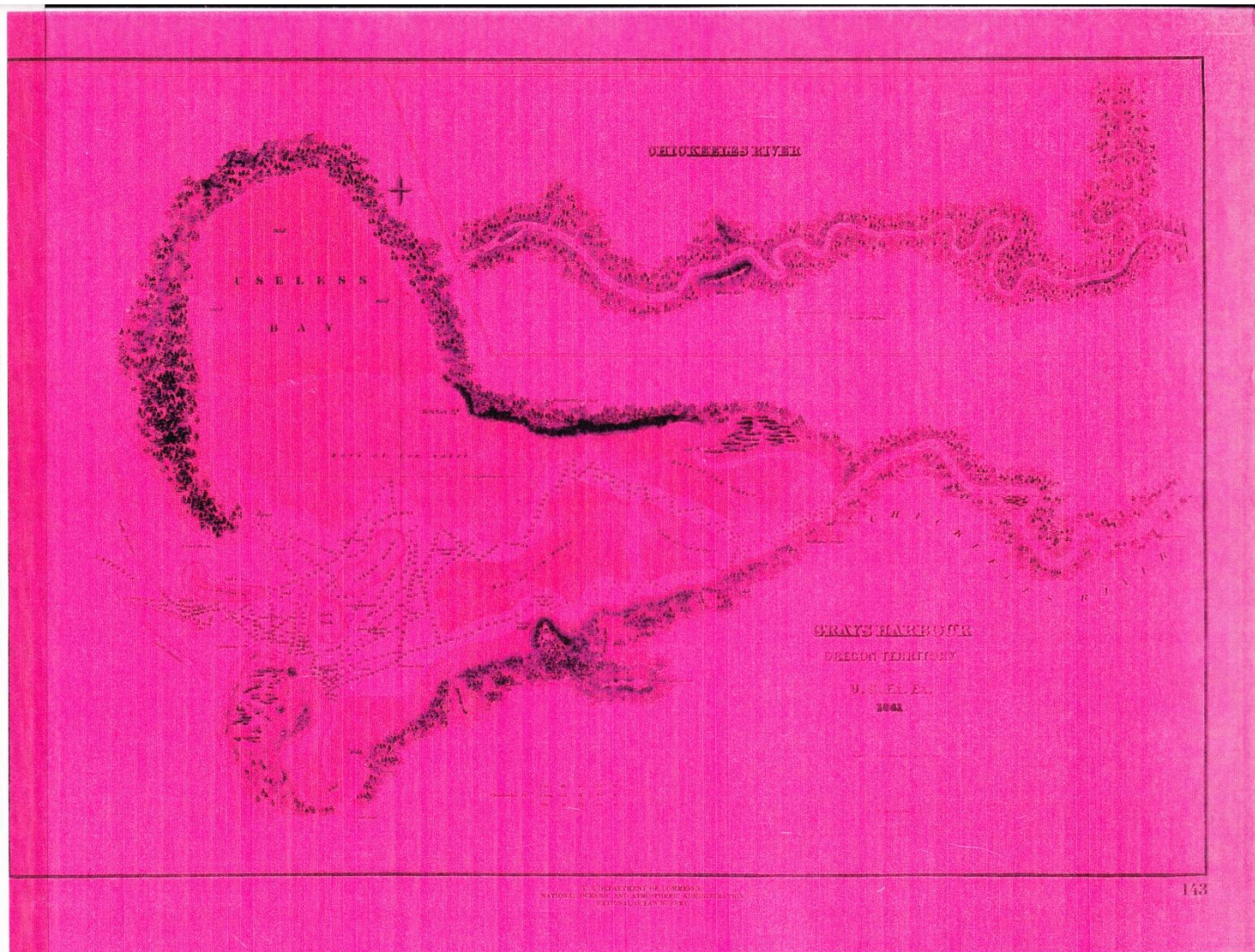


GRAYS HARBOR, CHEHALIS RIVER AND HOQUIAM RIVER WASHINGTON

SCALE IN FEET 0 5000 10000 15000

U.S. Army Engineer District Seattle Wash.

Something missing....



Reciprocity



Image: Robert Hewson, Tsimshian



N'doyax'n (thank you).

Photo: T. Ryan 2017