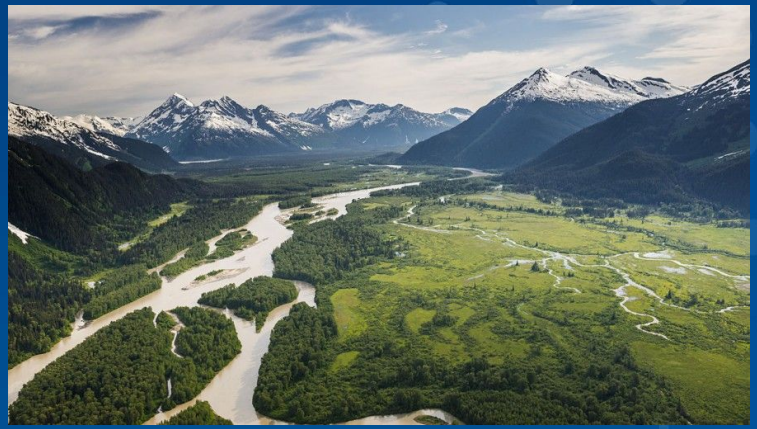
Taku **E**nvironmental **A**ction **M**anagement Plan
TEAM Plan



Group 7:
Chelsea Flaherty, Ryan Kim, Kayla Price, and Caitlyn Zeller

University of Delaware

Complete Map

Spans 10,600 square miles
54 miles long

Map of the River Outlet

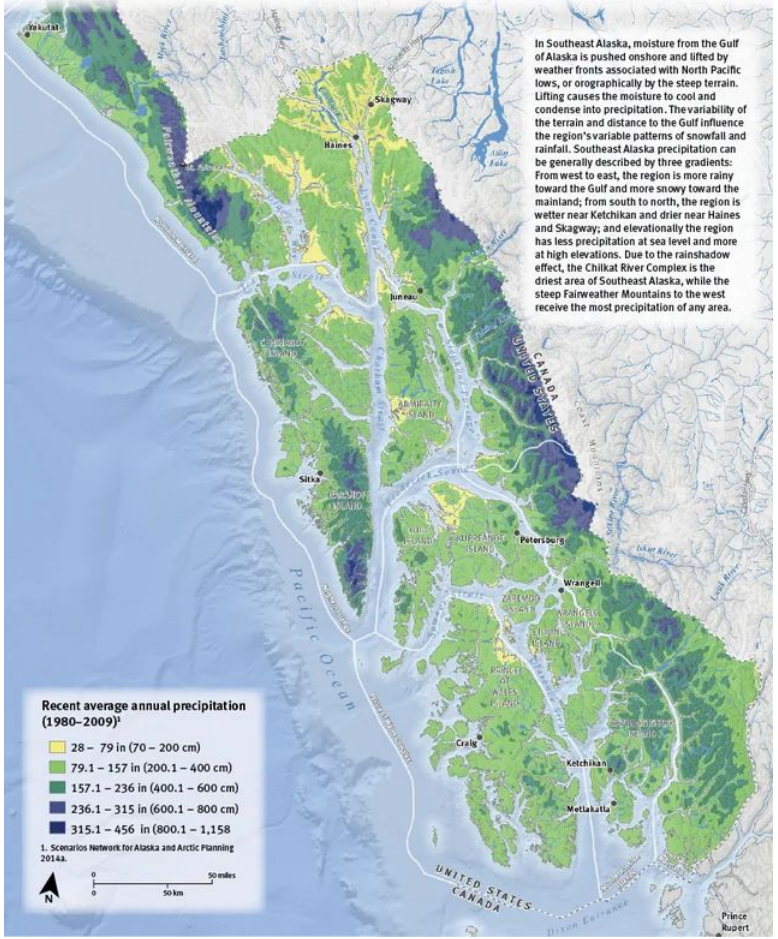
Headwater in British Columbia

-> Taku River Outlet near Juneau

-> Stephens Passage

-> Frederick Sound

-> Pacific Ocean



Outline

- Background and History
- Mission Statement
- Policies and Mandates
- Governance Structure
- Problem One and Goal One
- Problem Two and Goal Two
- Problem Three and Goal Three
- Conclusion
- Works Cited

Background and History

- The indigenous Tlingit people live within the Taku River watershed are said to have originated almost 10,000 years ago
- Russians had control of Alaska to later be sold to the United States in 1867
- The Tlingit people directly rely on the resources that the Taku River provides
- History of heavy metal mines that have contributed to acid mine drainage within the Taku River

Mission Statement

The TEAM Plan's mission is to safeguard the ecological integrity of the Taku watershed in Alaska by the Canadian border through various remediation and restoration projects centered around the negative environmental impacts caused by historical mining, pollution, and melting glaciers. With our goals, we hope to preserve the watershed ensuring future protection of water quality, wildlife habitats, and indigenous land by 2030.

Policies and Mandates (United States)

- **The Clean Water Act (1972): Regulates pollution discharges and water quality standards for US waters.**
- National Environmental Policy Act (1970): Requires federal agencies to assess their environmental impact prior to making decisions.
- Endangered Species Act (1973): Conserves and protects endangered and threatened species.
- **Wild and Scenic Rivers Act (1968): Allows Congress to preserve rivers that provide natural, cultural, and recreational values.**
- **Federal Land Policy and Management Act (1976): Governs how the Bureau of Land Management manages public lands.**

Policies and Mandates (Canada)

- **Mineral Tenure Act: A law of British Columbia that regulates mining and mining claims in the province.**
- **The Environmental Assessment Act (2012): Assesses possible environmental risks of new projects, including mines.**
- **The Environmental Management Act: Regulates the discharge and pollution of industrial and municipal waste as well as oversees site remediation.**
- The Water Sustainability Act (2016): Ensures a sustainable and clean water supply for the people of Canada.
- Canadian Fisheries Act: Regulates fisheries and fishing vessels in Canada.

Policies and Mandates

Alaska:

- **The Anadromous Fish Act (1965): Requires approval of projects from the Alaska Department of Fish and Game concerning rivers and streams that are vital for salmon spawning and rearing.**
- The Fishway Act: Requires notification and approval for activities from the Alaska Department of Fish and Game if the activities involve possible impediment of the passage of fish.

United States and Canada:

- The Pacific Salmon Treaty (1985): Prevents the overfishing of salmon and ensures that the United States and Canada benefit equally in terms of economics from salmon production

Governance Structure

- The Taku River Tlingit First Nation (TRTFN) of Canada
  - Fought to maintain the integrity of their watershed and protect the natural environment that includes the Taku River
- Environmental Protection Agency (EPA) and Alaska Department of Environmental Protection (DEC) oversee the quality of water and the surrounding area of the Taku River

TAKU RIVER TLINGIT
First Nation

Problem 1: Heavy Metal Pollution

- Mine in British Columbia has been discharging metal waste ever since it was abandoned in 1957.
- A proposed new mine, Tulsequah Chief, would be a gold and mixed metals mine, developed in the same area, on the bank of the Tulsequah River very close to its juncture with the Taku.
  - would cause major environmental issues and affect salmon spawning
- Interferes with indigenous groups living there.


Large-scale Mining in Alaska-British Columbia Transboundary Watersheds
Taku / T'aakū
Stikine / Shtax'héen
Unuk / Joonák
Nass / Naas
Skeena
Atlin
Haines
Juneau
Sitka
Petersburg
Wrangell
Craig
Ketchikan
Metlakatla
Prince Rupert
Dease Lake
Telegraph Creek
Iskut
Tulsequah Chief
New Polaris
Big Bull
Golden Bear
Hat
Star
North ROK
GJ
Red Chris
Schaft Creek
Galore Creek
Snip
Eskay Creek
KSM
Brucejack
Premier-Dilworth
Silver Coin
Red Mountain
Hazelton
Smithers
Terrace
Contact Chris Sergeant at:
christopher.sergeant@umontana.edu
Sources: HydroSHEDS, BC Data Catalogue
BC MINFILE, State of Alaska, ESRI
Past producer, exploratory, or developing mine
Operating mine
Primary Project Owners
Ascot Resources (Premier-Dilworth, Silver Coin)
Canarc Resource (New Polaris)
Chieftain Metals* (Big Bull, Tulsequah Chief)
Colorado Resources (North ROK)
Copper Fox Metals (Schaft Creek)
Doubleview Capital (Hat)
Firesteel Resources (Star)
IDM Mining (Red Mountain)
Imperial Metals (Red Chris)
Newcrest Mining (Galore Creek)
Newmont Mining (Galore Creek)
Pretium Resources (Brucejack)
Prosper Gold (Star)
Seabridge Gold (Iskut, KSM)
Skeena Resources (GJ, Eskay Creek, Snip)
Teck Resources (Galore Creek, Schaft Creek)
Wheaton River Minerals (Golden Bear)
* In receivership
N
FLATHEAD LAKE BIO STATION
UNIVERSITY OF MONTANA
Fraser R.
Vancouver
Seattle


Atlin
Taku / T'aakū
Tulsequah Chief
New Polaris
Big Bull
Dease Lak
Juneau
Golden Bear
Hat
Star
Telegraph Creek
Iskut

Goal 1: Clean-Up of Mines

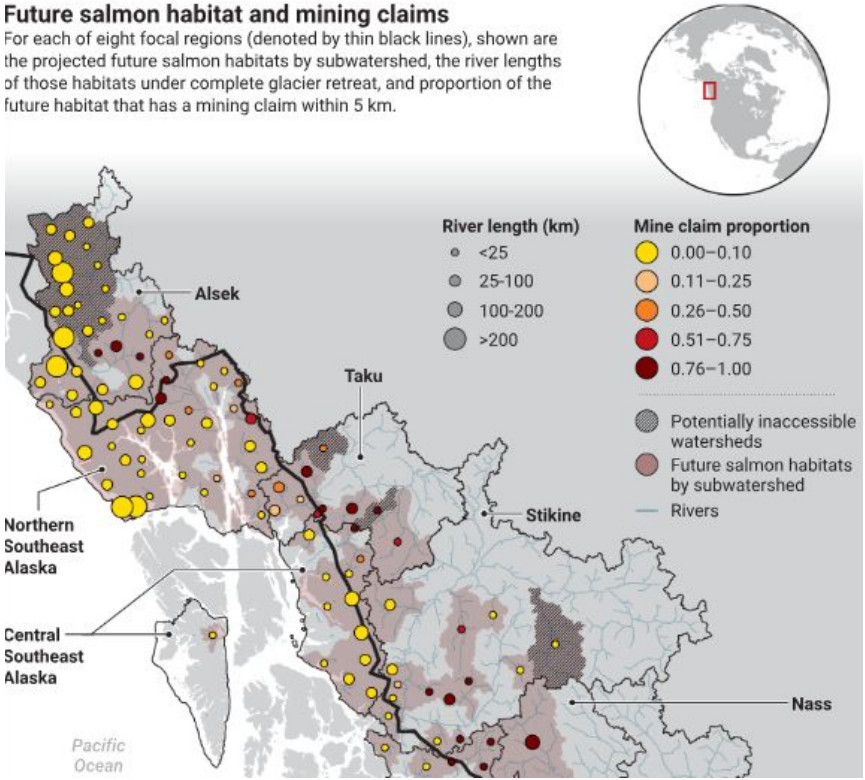
- The acid run-off from the mine into the Taku River has also been a long-standing sore point of environmental groups and the Alaskan government.
- Bringing rivers toward a more neutral ph level.
- Creating legislation with the Canadian government.

Financing Goal 1: Clean Up of Mines

- The B.C. government released a remediation plan that estimated clean up at more than $55 million with $2 million a year for maintenance and monitoring of the site in the coming decades.
- The cost of the cleanup over the next two decades will be about $100 million.
- Expected to take at least five years.
- Teck, the company that owned the mines in the 1950s, has provided $1.575 million in 2021 and $1.685 million in 2022.

Problem 2: Legal Loophole Bypassing Environmental Risk Policies for Mines

- Mineral Tenure Act allows for extremely easy mining claims
- Environmental Assessment Act's risk assessment does not account for future terrain alterations (glacier melting)
- Environmental assessment certificates do not expire and can not be revoked so long as the project has been "substantially started"



Currently, of the 279 km of future salmon habitat in the Taku river watershed, 62% of it is currently within 5 km of mining claims.

Goal 2: Pass Legislation Amending the Environmental Assessment Act

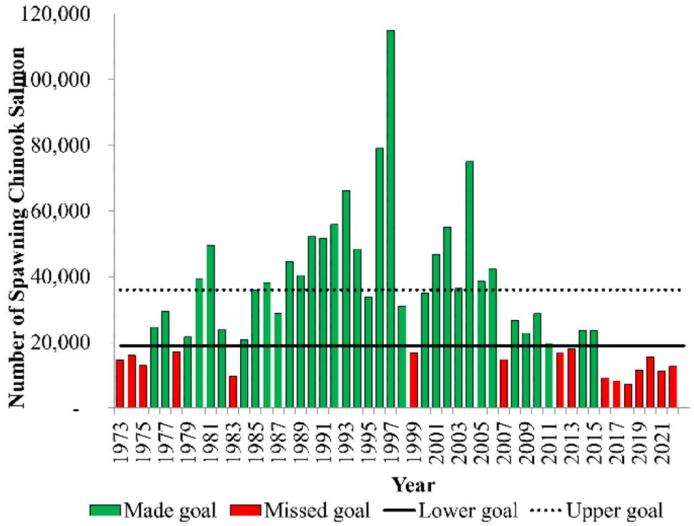
- We propose that legislation should be passed to amend the Environmental Assessment Act, removing the provisions that give lifetime certification to projects that have been "substantially started"
- Suggested replacement involves continuous recertification requirements per time intervals between 1-2 years
- Specific wording of the amendment should depend on stakeholder input

Section 31 subsection 7 of the Environmental Assessment Act states,

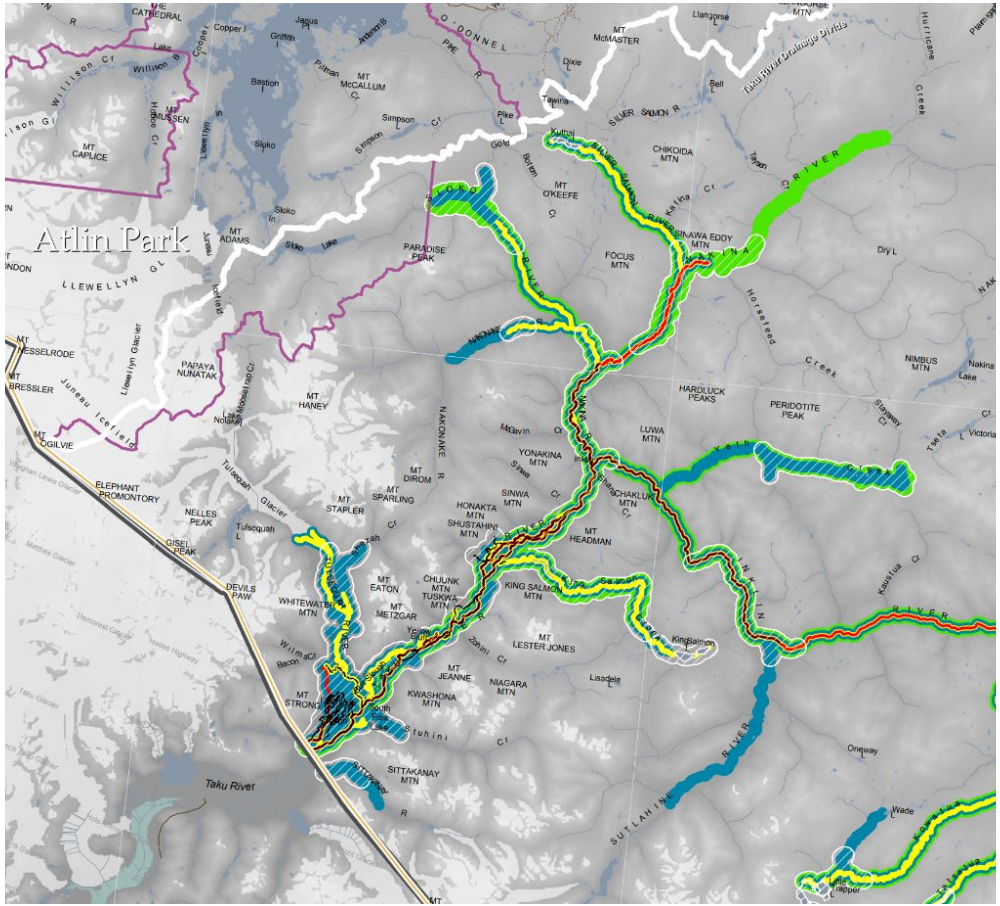
"If, in the reasonable opinion of the minister as set out in subsection (1) or (6), a reviewable project is ***substantially started****, the certificate remains in effect for the life of the project, subject to cancellation or suspension under section 56."*

Problem 3: Lower Salmon Populations

- Salmon are crucial for overall ecosystem health and supporting local fisheries and indigenous groups
- Salmon in southeast Alaska contributes 8 million dollars in economic activity
- Chinook salmon spawning number was around 15,000 in 2022 when lower end of goal set by Alaska Department of Fish and Game was 20,000
- Threats to salmon mainly due to acidification from acid mine drainage as salmon thrive in a neutral pH range of 6.5-7.5

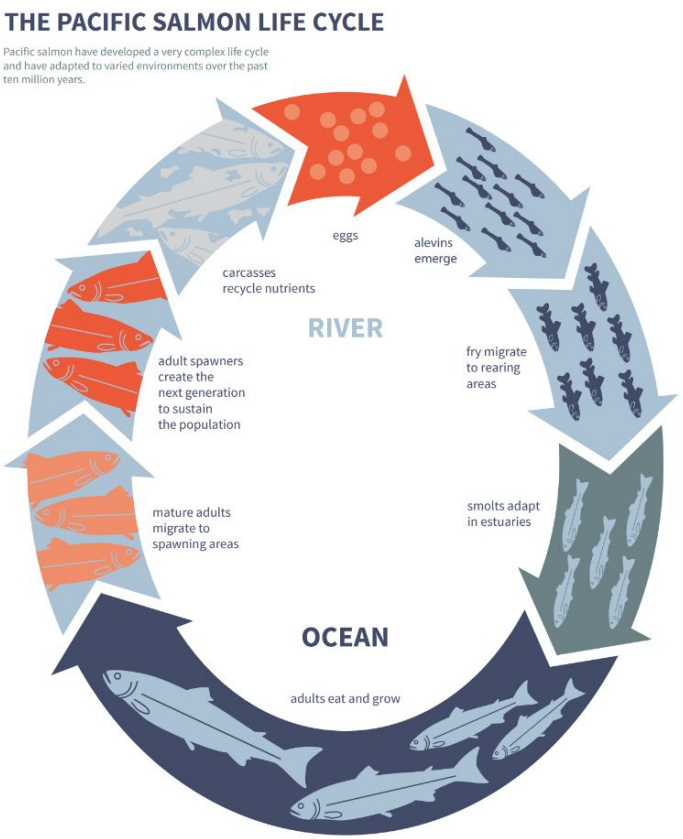


Distribution of Various Salmon Populations in Focus Area



Fun Facts:

- Chinook salmon is Alaska's state fish
- Chinook are the biggest salmon in Alaska (record is 97 lbs)
- Can travel more than 2,000 miles upriver to spawn



Goal 3: Increase Salmon Population

- Increase the number of Chinook salmon spawning in a year in the Taku River by 40% by 2030
  - 15,000 spawned in 2022
  - Upper limit goal of 40,000 set by Alaska Department of Fish and Game
- Need to address acid mine drainage of nearby mines in British Columbia to reduce acidification

Recommendations

To combat heavy metal pollution, TEAM recommends:

- A combined effort from both Alaska and British Columbia to fully cleanup the abandoned mines
- Creating new regulations for both Alaska and British Columbia to design a plan around current abandoned mine drainage and the halting of future mine production
- Continually monitor sites near abandoned mines every year to be below the EPA water quality standards of 0.010 mg/L for arsenic, 0.005 mg/L for cadmium, 1.3 mg/L for copper, and 0.002 mg/L for mercury.

To help with the issues of glacier melting:

- Legislation passed by the Canadian government to amend the Environmental Assessment Act to add continuous recertification requirements per time intervals between 1-2 years to include the effects of glacial melting.

To help increase salmon population, TEAM recommends:

- Cleaning up the pollution caused by abandoned heavy metal mines located in the British Columbia side of the Taku River.
- Providing better connections between upstream and ocean outlets with less barriers for fish migration.

Conclusion

The Taku watershed is home to groups of indigenous groups as well as being the largest salmon producing river in Southeast Alaska, and the pollution issues continue to be a hindrance to the environment and health of the area. Many of these issues are due to the heavy metal pollution which affects many aspects of the watershed. TEAM includes suggestions to implement several solutions that address the heavy metal toxins, such as a clean-up plan and also legislation changes to expand the protected area. TEAM addresses the correlation between these problems, and requires the assistance from both the Alaskan and Canadian government to address these issues. TEAM hopes to preserve and protect the Taku River so that the ecosystem the river supports can continue to benefit the environment in the future.

Works Cited

"$100 Million Cleanup of Tulsequah Chief Mine Can Proceed After ..." *Vancouver Sun*, vancouversun.com/business/100-million-cleanup-of-tulsequah-chief-mine-can-proceed-after-leaking-acid-runoff-for-decades. Accessed 3 Apr. 2024.

"Alaska's Wild Salmon." *Alaska Department of Fish and Game*, www.adfg.alaska.gov/static/home/library/pdfs/ak_wild_salmon.pdf. Accessed 3 Apr. 2024.

"Canada - British Columbia - Taku River Tlingit First Nation." *Round River Conservation Studies*, 15 Nov. 2020, www.roundriver.org/where-we-work/north-america/taku-british-columbia/.

"Chinook Salmon Research Initiative." *Alaska Department of Fish and Game*, www.adfg.alaska.gov/index.cfm?adfg=chinookinitiative_taku.main. Accessed 2 Apr. 2024.

"How Does Habitat Restoration Influence Resilience of Salmon ..." *University of Delaware Library*, esajournals.onlinelibrary.wiley.com/doi/full/10.1002/ecs2.4402. Accessed 3 Apr. 2024.

Works Cited (Cont.)

Isabella Breda, The Seattle Times. “New Pacific Coast Salmon Habitat Created by Melting Glaciers Could Be Threatened by Mining, Study Finds.” *Anchorage Daily News*, Anchorage Daily News, 13 Dec. 2023, www.adn.com/business-economy/2023/12/13/new-pacific-coast-salmon-habitat-created-by-melting-glaciers-could-be-threatened-by-mining-study-finds/.

Jaishankar, Monisha, et al. “Toxicity, Mechanism and Health Effects of Some Heavy Metals.” *Interdisciplinary Toxicology*, U.S. National Library of Medicine, June 2014, www.ncbi.nlm.nih.gov/pmc/articles/PMC4427717/.

“Mining Stakes Claim on Salmon Futures as Glaciers Retreat.” *Science*, www.science.org/doi/10.1126/science.adj4911. Accessed 3 Apr. 2024.

Ministry of Energy, Mines and Low Carbon Innovation. “Protecting the Environment near the B.C. and Alaska Border.” *Province of British Columbia*, Province of British Columbia, 17 Oct. 2023, www2.gov.bc.ca/gov/content/industry/mineral-exploration-mining/further-information/bc-alaska-transboundary-waters.

Works Cited (Cont.)

"National Primary Drinking Water Regulations." *EPA*, Environmental Protection Agency, www.epa.gov/ground-water-and-drinking-water/national-primary-drinking-water-regulations#seven. Accessed 2 Apr. 2024.

"The Pacific Salmon Treaty - Pacific Salmon Commission." *Pacific Salmon Commission* -, 21 May 2019, www.psc.org/about-us/history-purpose/pacific-salmon-treaty/.

"Round River Home." *Round River Conservation Studies*, 1 Mar. 2024, www.roundriver.org/.

"Taku: Rivers without Borders." *RiversWithoutBorders*, www.riverswithoutborders.org/taku. Accessed 1 Apr. 2024.

Wildsalmoncenter,wildsalmoncenter.org/wp-content/uploads/2016/02/Harrison-Stronghold-Assessment-and-Proposal.pdf. Accessed 3 Apr. 2024.