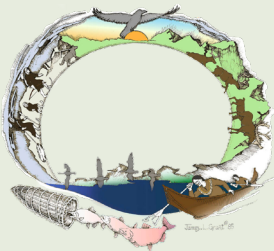
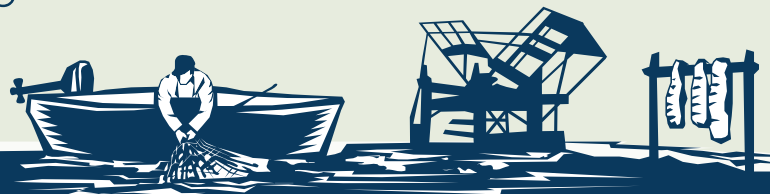


Salmon and Whitefish in the Yukon Flats and the Draanjik Drainage



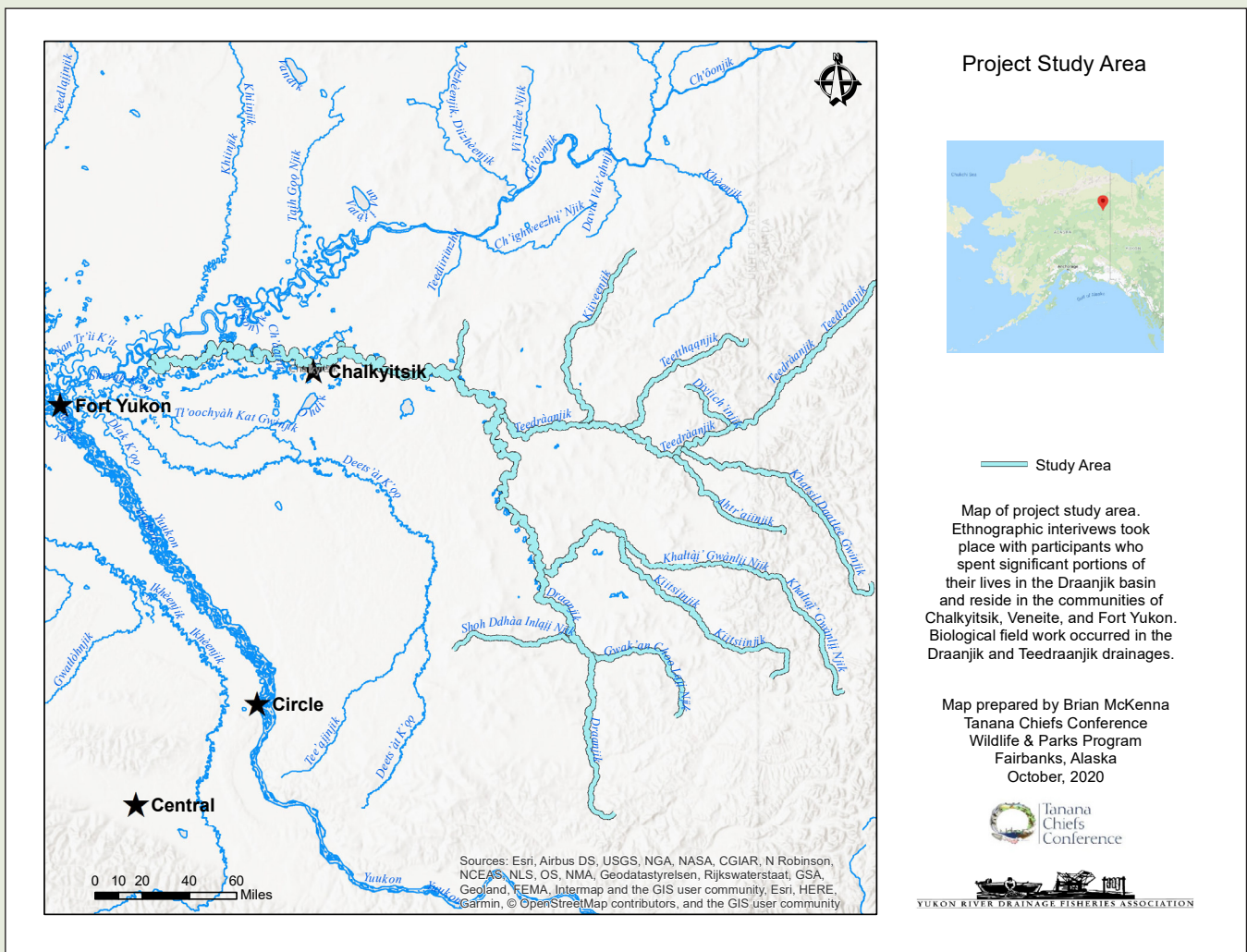
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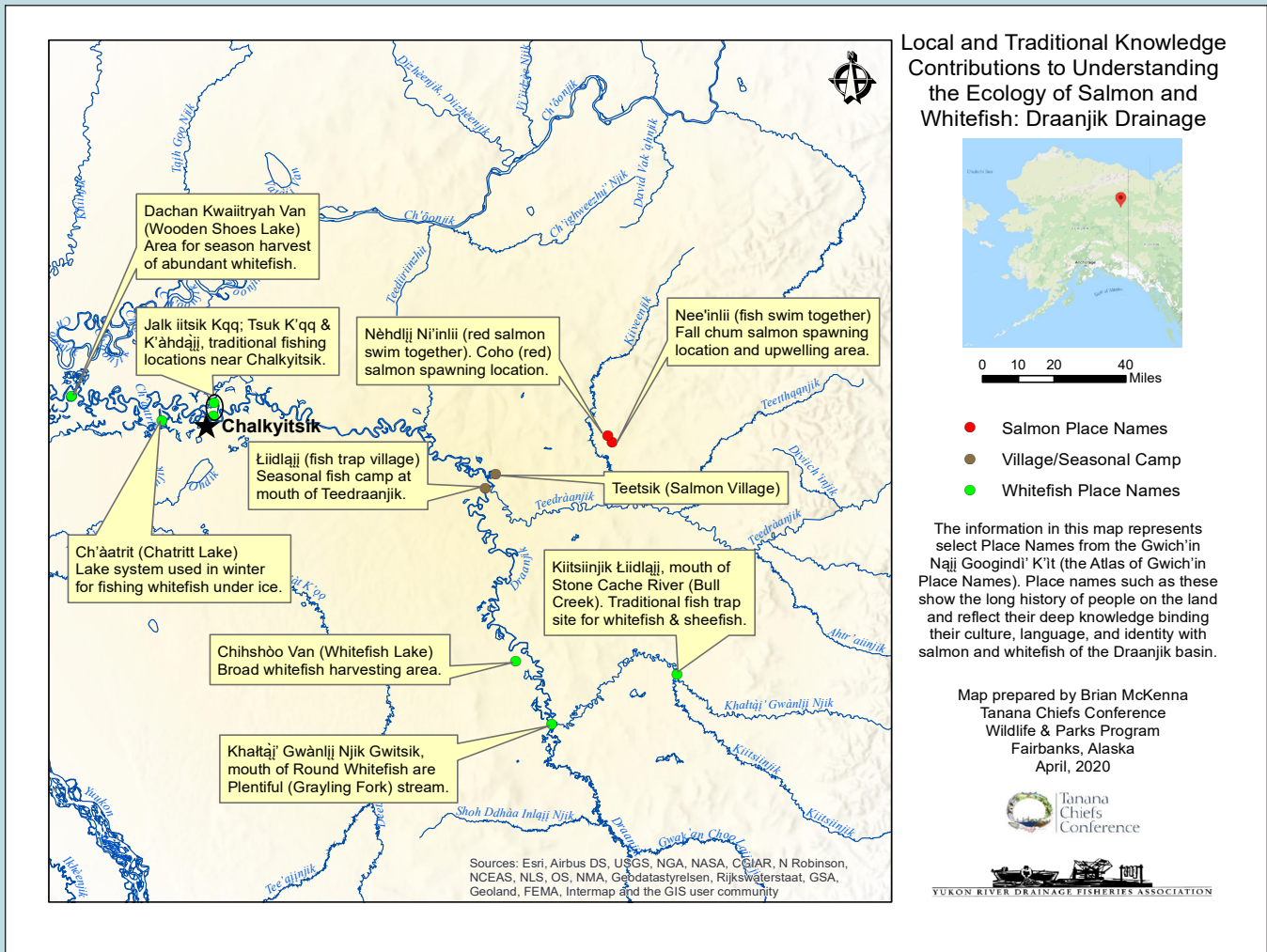


Summary Statement

This project documents Local and Traditional Knowledge (LTK) of salmon and whitefish in the Yukon Flats region and documents spawning and rearing activity in the Draanjik Black River subbasin.

Researchers with the Yukon River Drainage Fisheries Association (YRDLFA) and the Tanana Chiefs Conference (TCC) collaborated on this project, seeking and confirming locally observed contributions to the Anadromous Waters Catalog (AWC), using a combination of social and biological methods, and collaborating amongst agencies and communities. Broadly, researchers engaged standard anthropological methods of ethnographic fieldwork to identify potential search areas based on local knowledge including place name mapping. Next, researchers used a combination of fisheries techniques to document and identify migrating, spawning, and rearing habitats used by salmon and whitefish as identified by local knowledge. This project was designed as a partnership with the Tribal Councils (TC) of Chalkyitsik, Venetie, and Gwichyaa Zhee, with the TCs selecting local research assistants for the ethnographic fieldwork. Local hires were trained in interviews and mapping techniques, and they participated in outreach activities.





Background

- Multiple salmon and whitefish species are known to utilize habitats within the Yukon Flats, and the Draanjik subbasin at multiple stages in their life cycles for migration, spawning, and rearing. However, while their presence is known, the extent of their anadromous geographic distribution is not fully identified and documented within the AWC.
- The AWC documents streams, rivers, and lakes important for spawning, rearing or migration of salmon and whitefish.
 - The Draanjik basin was selected after review of primary literature and the current state of the AWC. The presence of salmon and whitefish is known but their extent is not fully documented within the AWC.
 - Incorporating the most up to date anadromous information into the AWC through biological fish surveys enables fisheries managers and biologists to protect habitats necessary for spawning, rearing, and migrating of anadromous fishes, and provides baseline information critical to understanding any future changes that may occur in an uncertain and changing environment and climate.
- This project was created because of concerns relating to population declines in Yukon River salmon species.
- The knowledgeable people of Chalkyitsik, Fort Yukon, Venetie, and Fairbanks provided valuable LTK informing fish locations through ethnographic interviews and mapping.



Views of Nee Inlii in December 2021 during flight to investigate coho spawning area.



Nee Inlii, January 2022.

Research Goal

The main goal of this project was to provide information critical to the management of anadromous fishes and the habitats that support them.

Study Objectives

This project will achieve that goal through the following objectives:

1. Document and record local and traditional knowledge of anadromous waters utilized by salmon and whitefish species occurring in the Yukon Flats with a focus on the Draanjik sub-basin.
2. Verify the presence of salmon and whitefish species and document and record anadromous waters used for spawning and rearing as described by local and traditional knowledge, primary literature, and field observations for the Draanjik sub-basin.
3. Submit nominations to the Anadromous Waters Catalog for all verified water bodies used by salmon and whitefish species to maximize the spatial extent of mapped anadromous waters.
4. Engage the local communities and build capacity by collaborating with the Tribal Councils and by hiring local research technicians to assist with the ethnographic and biological research.

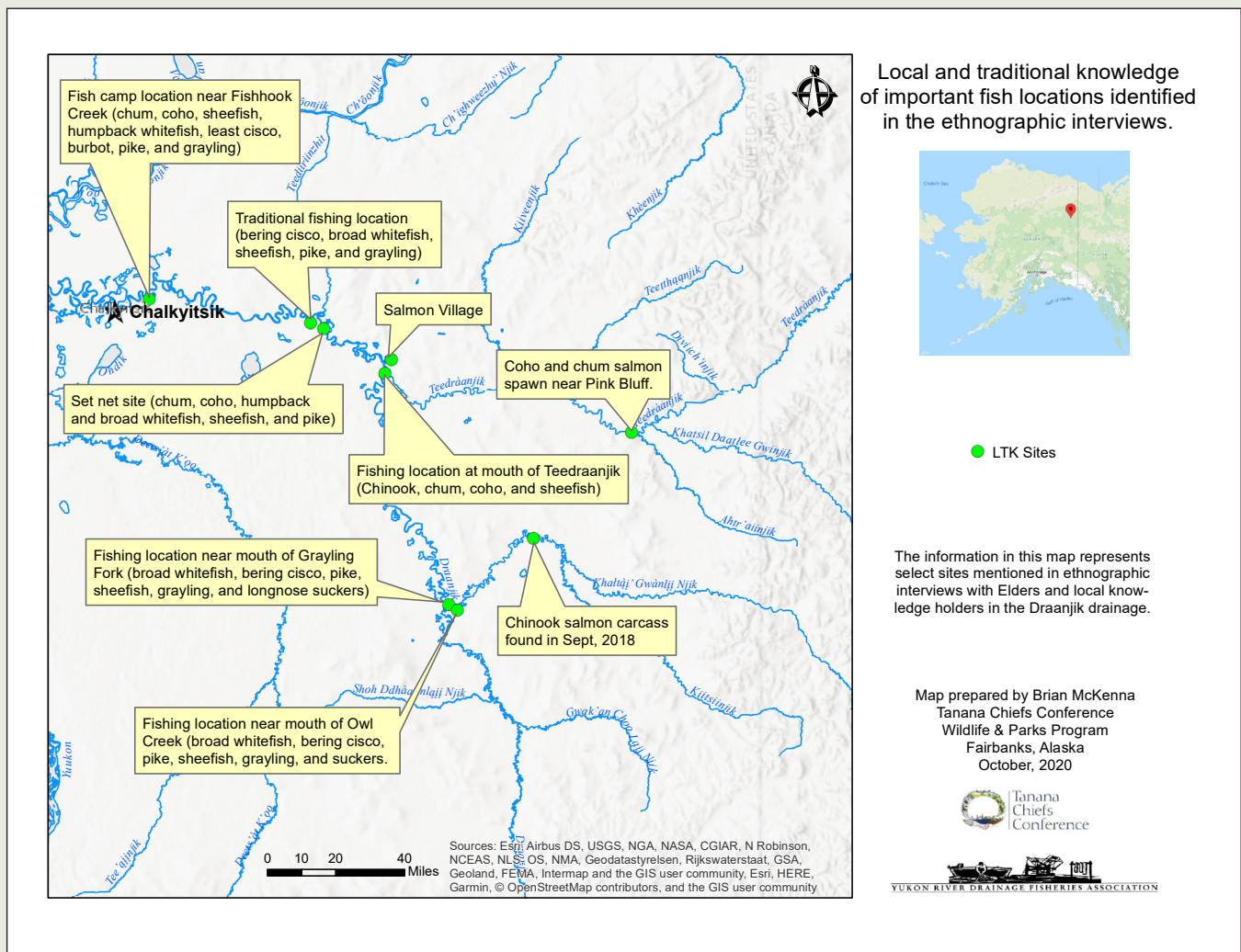
Methods

- Ethnographic interviews were used to learn local and traditional knowledge identifying potential spawning and rearing habitats used by salmon and whitefish. Ethnographic methods used included participant observation, semi-structure interviews, and mapping
 - Local research assistants guided researchers while in each community, making introductions and assisting with interviews.
- A combination of fisheries techniques were used to verify spawning and rearing habitats identified by the LTK. Biological methods used included aerial surveys, eDNA analysis, minnow trapping, and electrofishing.
 - Local research assistants in year 1 were instrumental in getting to the sites along the river for sampling
- A collaboration of entities (YRDFA, TCC, TCs of Chalkyitsik, Venetie, and Gwichyaa Zhee, and the ADF&G) contributed to success of this project.

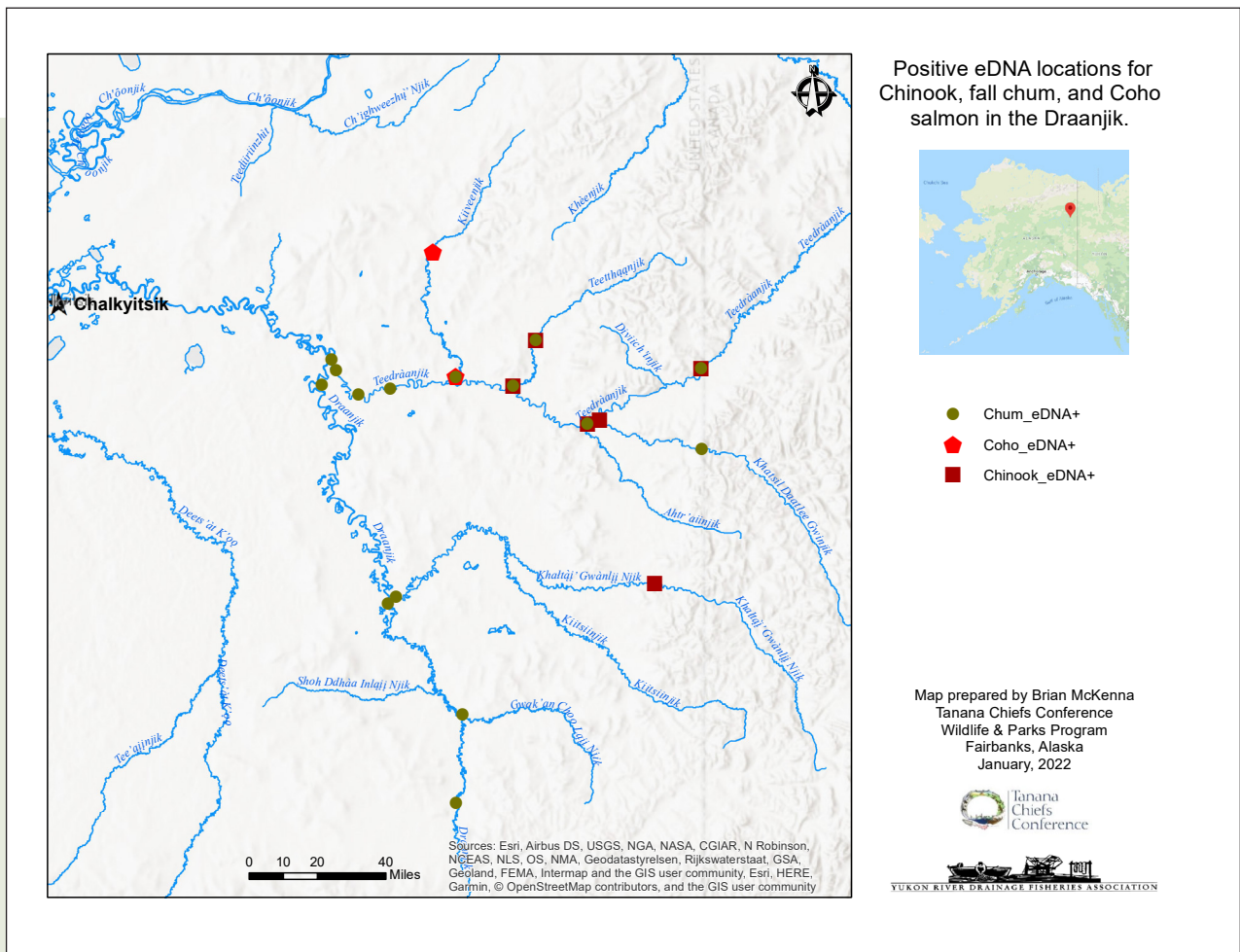
Results

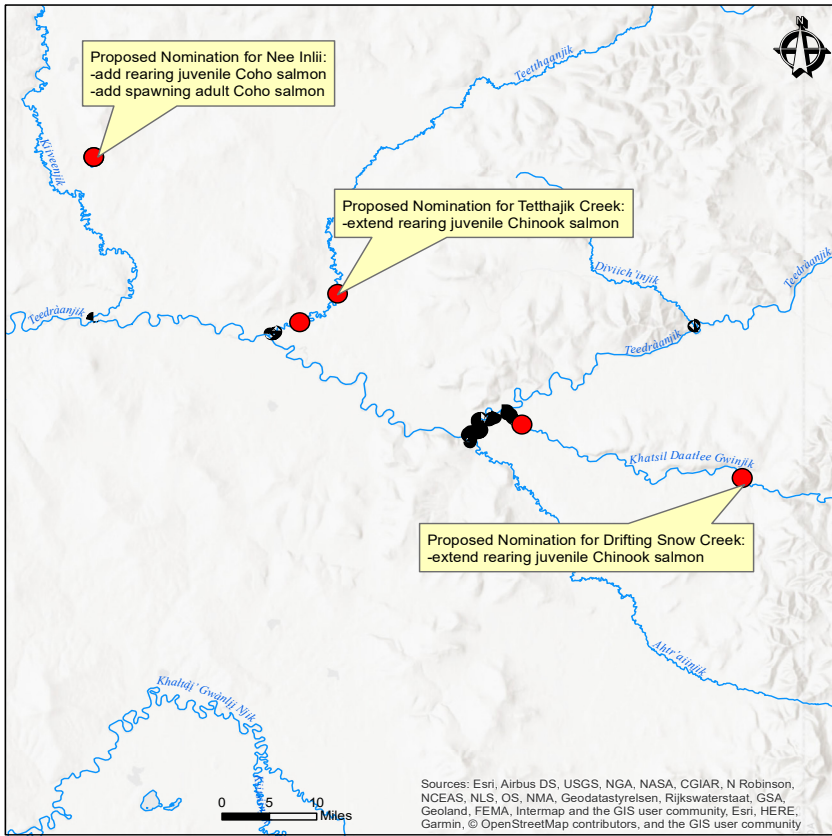
- Ethnographic Interviews
 - Regional fishing profile: respondents primarily target for fish harvests are whitefish species; chum salmon are also harvested, and some Chinook salmon are observed; in the spring, humpback whitefish, least cisco, and broad whitefish are harvested as they are coming out of lakes; in the fall, whitefishes heading back to the lakes are harvested, including sheefish, or “Koonies”, full of eggs; in the winter, whitefishes and northern pike are harvested through the ice.
 - Over 19 fish locations identified.
 - Topics: learning to fish, fishing methods including ‘can’ fishing, traveling Fort Yukon/Chalkyitsik, Salmon Village, the school at Chalkyitsik.

“I started fishing when I was really young, maybe just a little kid. My dad taught me, we learned from [other] kids. We all fished out here in this little river, [it was] common knowledge, I can’t even remember who taught me. But I remember fishing for as long as I can [remember].” (Kyle Joseph, Chalkyitsik)



- Concerns and changes:
 - o System is changing, as lakes are drying up and more trees are growing
 - o Breakup is happening earlier and winters are more mild
 - o Decrease in longnose sucker and arctic lamprey over past 10 years
 - o Whitefish populations are decreasing due to increasing beaver populations, which are affecting whitefish access to lake habitats; “Now there are less whitefish because of the beaver dams. The fish do not come up.” (Eddie Frank, Venetie)
 - o Some animal populations are decreasing (muskrats, rabbits, squirrels)
- Fisheries Surveys
 - Environmental-DNA (eDNA) results from water samples suggest the presence of Chinook, fall chum, and Coho salmon in numerous tributaries throughout the Draanjik drainage.
 - Data acquired from minnow trapping, angling, electrofishing, and aerial surveys will result in nominations to the State of Alaska’s Anadromous Waters Catalog for the following species and locations:
 - o Rearing juvenile Chinook salmon in Tetthajik and Drifting Snow Creeks
 - o Spawning adult and rearing juvenile Coho salmon at Nee Inlii in the Kevinjik Creek drainage
 - o Presence of adult and juvenile Round Whitefish in Kevinjik Creek, Drifting Snow Creek, and Grayling Fork Black River
 - o Presence of juvenile Arctic Lamprey in Kevinjik Creek, Tetthajik Creek, and Grayling Fork Black River





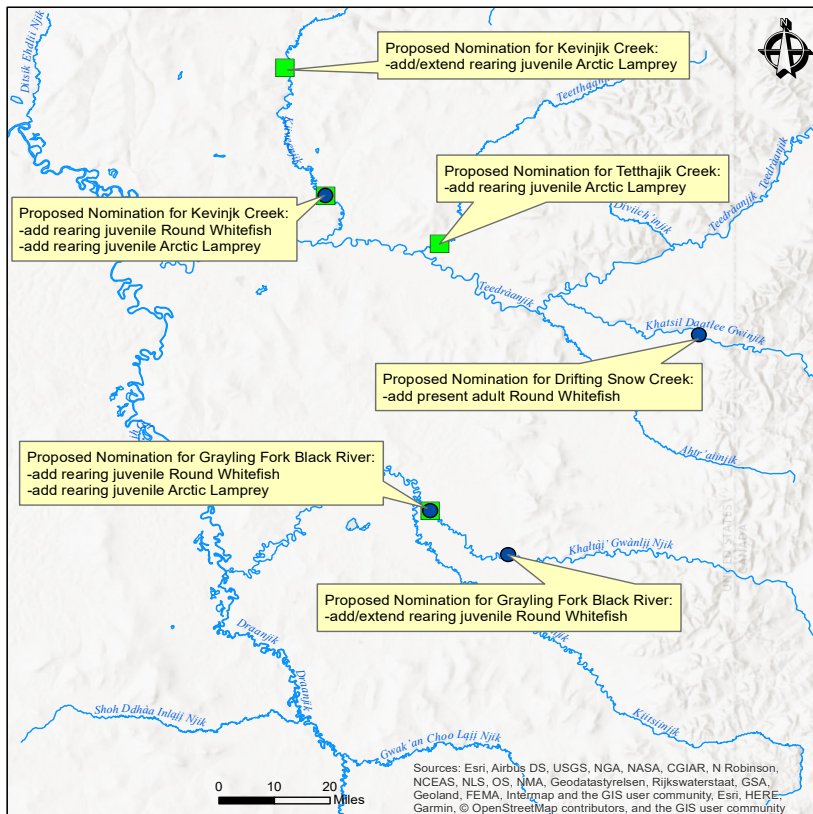
Proposed nominations to the State of Alaska's Anadromous Waters Catalog for Chinook & Coho salmon in the Draanjik.



- Proposed Nominations
- Kr_AWC_2020

A combination of fisheries techniques was used to verify spawning and rearing of Chinook and Coho salmon in the Draanjik. This information was collected between 2018 and 2022, and is being used to update the Anadromous Waters Catalog to protect critical spawning and rearing habitat for anadromous fishes in the Draanjik River drainage.

Map prepared by Brian McKenna
Tanana Chiefs Conference
Wildlife & Parks Program
Fairbanks, Alaska
January, 2022



Proposed nominations to the State of Alaska's Anadromous Waters Catalog for Arctic Lamprey and Round Whitefish in the Draanjik drainage.



- Round Whitefish
- Arctic Lamprey

A combination of fisheries techniques was used to verify spawning and rearing of Lamprey and Whitefish sp. in the Draanjik. This information was collected between 2018 and 2022, and is being used to update the Anadromous Waters Catalog to protect critical spawning and rearing habitat for anadromous fishes in the Draanjik River drainage.

Map prepared by Brian McKenna
Tanana Chiefs Conference
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Open water containing redds (salmon nests).



Travis David searching for redds and spawning Coho.

Conclusions

The combination of traditional knowledge and western science techniques has documented anadromous fish in the locations noted above and this project will conclude with those nominations to the AWC.

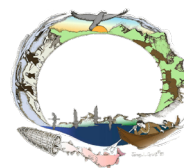
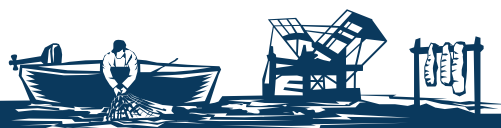
Recommendations

- Aerial survey Kevinjik Creek & Nee Inlii for spawning Coho salmon during years of higher returns
- Aerial survey Tetthajik Creek for spawning Chinook salmon during years of higher returns
- Aerial survey Drifting Snow Creek for spawning Chinook salmon during years of higher returns
- Electrofishing and minnow trapping on upper portion of Drifting Snow Creek for rearing juvenile Chinook salmon
- Aerial survey Grayling Fork Black River for spawning Chinook salmon in years of higher returns
- Beach seine or other collection technique for documenting spawning chum salmon in the upper Draanjik drainage above the Salmon Fork confluence.

Acknowledgements

We thank the knowledgeable participants and the communities of Chalkyitsik, Fort Yukon, and Venetie for sharing their vast knowledge and for their support in this project.

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