

A Quest for Chinook Salmon in Central Yukon

A project in partnership with the First Nation of Na-cho Nyäk Dun to help guide conservation efforts

December 4, 2020

The Beaver River Watershed

The beautiful and remote wilderness of the Beaver River watershed provides habitat for moose, caribou, wolves, Chinook salmon, trumpeter swans and grizzly bears. This untouched landscape is marked with wetlands, lakes, valley bottoms and mountains, and is home to the the First Nation of Na-Cho Nyäk Dun. The Na-Cho Nyäk Dun people have lived, hunted, fished and harvested medicines off the land for thousands of years.



A cow and calf moose walking to the edge of a wetland in the Beaver River watershed with a bald eagle soaring above. Photo credit: Chrystal Mantyka-Pringle

"The Beaver River is my ancestors' traditional hunting area. My grandparents would follow the game in a circle, living in a canvas tent throughout the winter and travel by dogs." Heather Saggars, First Nation of Na-Cho Nyäk Dun

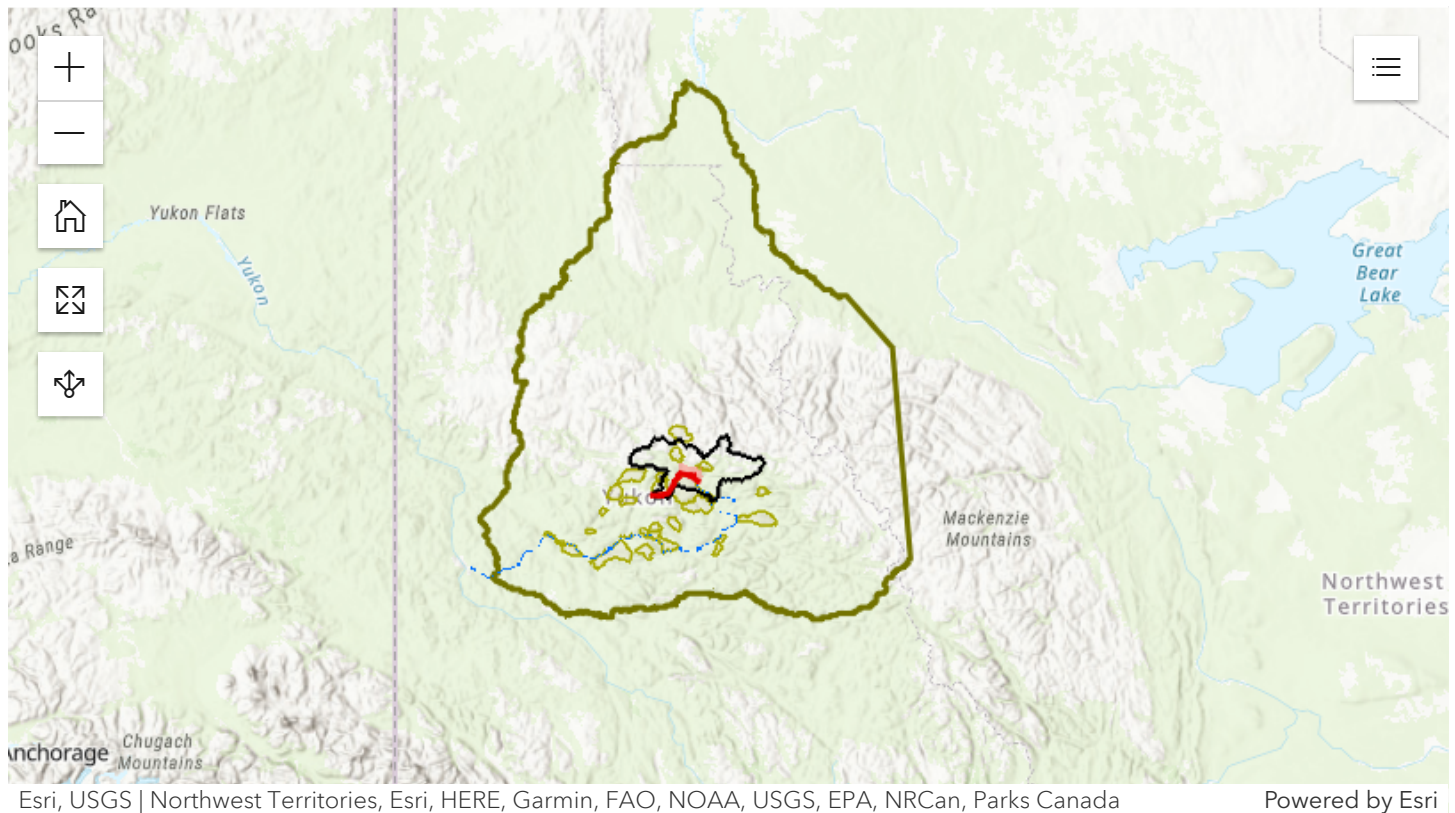


Jimmy Johnny, a Na-Cho Nyäk Dun Elder talks about how he travelled on horseback all his life throughout the land and wants to see the Beaver River watershed protected from mining for the next seven generations. Photo credit: Chrystal Mantyka-Pringle

A New Road

A new 65 km road has been proposed in the heart of the Beaver River watershed to reach claimed gold deposits. The road will cross 48 rivers and streams, including spawning grounds for Chinook salmon. The [Wildlife Conservation](#)

Society Canada (WCS Canada) and the First Nation of **Na-Cho Nyäk Dun** have been working together to inventory salmon spawning habitat, water quality and sources of erosion before the road is built. This work will help to inform the development of a land-use plan that can help protect key salmon spawning habitats and mitigate road impacts on water quality and salmon.



An interactive map showing the Beaver River Planning Area, Na-Cho Nyäk Dun's settlement lands and traditional territory, the proposed road, staked gold claims, and the salmon migratory route within the watershed starting at the Yukon River going upstream to the Beaver and Rackla Rivers

Weaving Together Indigenous Traditional Knowledge and Scientific Knowledge

WCS Canada has been gathering traditional knowledge of the area, including areas where Na-Cho Nyäk Dun Elders and citizens remember seeing Chinook salmon spawning. This knowledge helped tremendously as it guided field efforts to locate and designate Chinook salmon spawning and their habitat.



Every summer, Jessie Germaine, a First Nation of Na-Cho Nyäk Dun Elder went to her fish camp with her family to fish for two months: "It's a very spiritual time as I use it to heal and clean my thoughts from city life." Jessie, a keen conservationist who advocated for the protection of the Beaver River, sadly passed away unexpectedly in April 2020. Photo credit: Chrystal Mantyka-Pringle

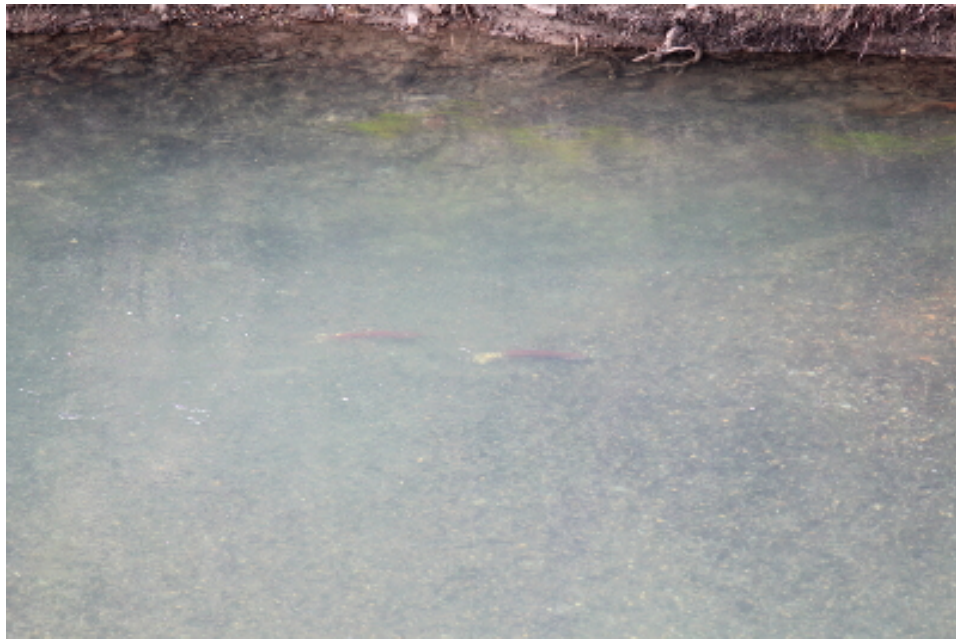


Steve Buyck, *First Nation of Na-Cho Nyäk Dun*
Photo credit: Chrystal Mantyka-Pringle

WCS Canada combined knowledge gathered in interviews and from individual cultural maps to help develop a study design for Chinook salmon and water quality in collaboration with the First Nation of Na-Cho Nyäk Dun.

"Chinook used to make their way all the way up to McQuesten Creek and South McQuesten River. Now salmon fishing needs to be stopped until the numbers increase." Steve Buyck expressed concern about low Chinook numbers throughout the territory and the roads' projected impacts on local fish and wildlife.

- WCS Canada scientists along with the First Nation of Na-Cho Nyäk Dun and a Fisheries Biologist surveyed the planning area in August 2019 & 2020. We used a helicopter to access remote country and to spot salmon in the water. In 2019, we documented **24 redds** (a redd is a spawning gravel bed) in a single stretch of the Beaver river and estimated that over **100 adult** Chinook salmon spawned in that reach that year.



Two adult Chinook Salmon in the Beaver river with white tails, indicating advanced spawning. Photo credit: Chrystal Mantyka-Pringle



A Chinook carcass lying on the side of the Beaver River.

Dead salmon are important food sources for other animals such as bald eagles and bears.

Photo credit: Lawrence McLaren



In 2020, no adult Chinook were observed despite spawning conditions being relatively good with higher water, but they did catch juvenile Chinook from the year before and other species including juvenile Grayling and Sculpin.

Photo: Peter Etherton (left) and Lawrence McLaren (right) using a seine net to survey juvenile fish just below the mouth of the Rackla River. Photo credit: Chrystal Mantyka-Pringle



A juvenile Chinook being released from the seine net. Juvenile Chinook spend one or two winters in freshwater before migrating to estuaries and eventually to the sea. Photo credit: Chrystal Mantyka-Pringle



- Part of the investigation involved recording any sources of erosion upstream. Four main types of erosion were documented in the watershed - cut banks, permafrost slides, permafrost slumps and gully erosion. The research team was able to confirm some previously mapped sedimentation sites and will use this information to analyze the distance between these sites and spawning sites and potential impacts.

Photo (right): An unknown source of erosion from the creek is causing the water to be turbid (making the river a muddy brown color). Too much turbidity can smother spawning beds and fish eggs and suffocate newly hatched fish larvae. Photo credit: Chrystal Mantyka-Pringle



A 'permafrost thaw slump' where a pre-existing frozen layer of soil collapses due to warming temperatures. Photo credit: Chrystal Mantyka-Pringle



A permafrost landslide. Permafrost thawing will have a profound impact on the flow and chemistry of wetlands, lakes, streams and rivers. Photo credit: Chrystal Mantyka-Pringle



Water samples were taken for analysis and water quality was surveyed at sites upstream and downstream of erosion to measure suspended sediments, water temperature, dissolved oxygen, conductivity, and pH.

Photo (right): Chrystal Mantyka-Pringle measures the turbidity of the water near a known Chinook salmon spawning area. Photo credit: Jimmy Johnny



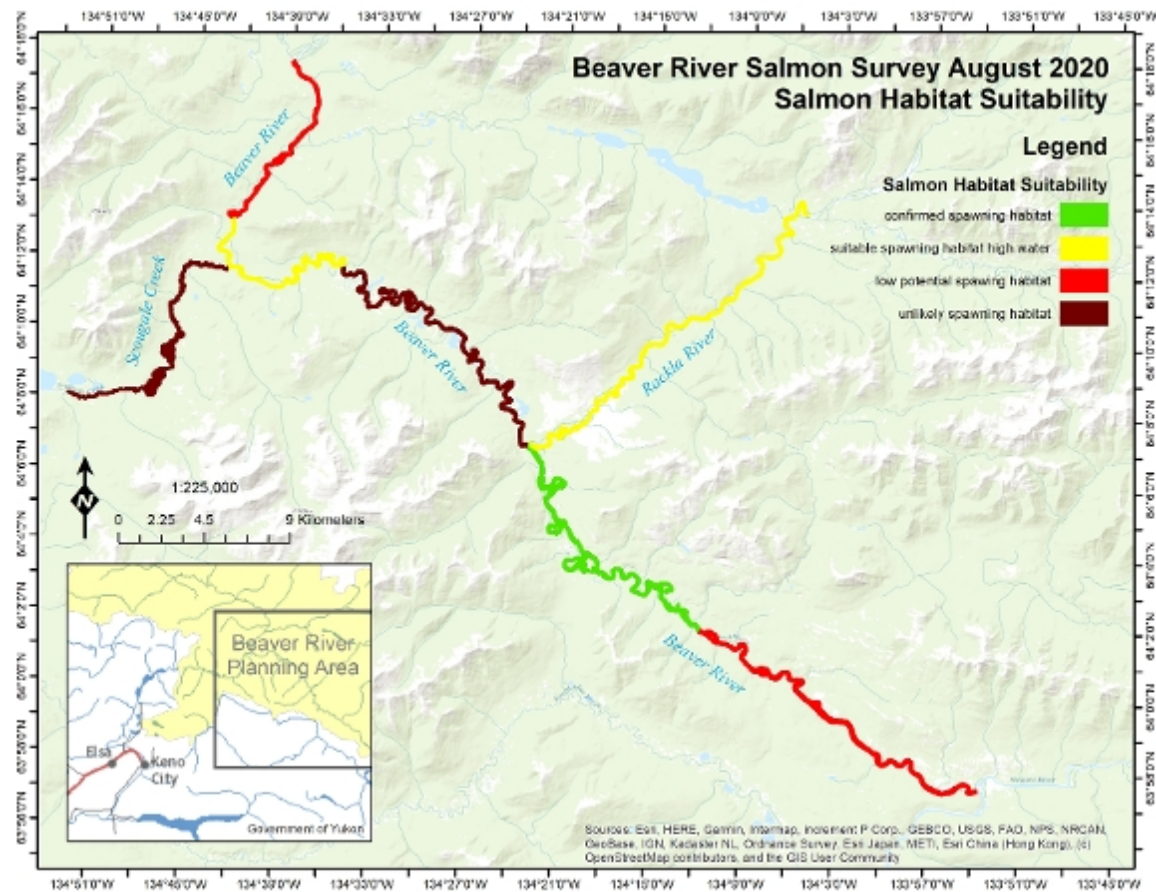
Lawrence McLaren uses a water monitoring instrument to test water quality downstream of a permafrost slump. Photo credit: Chrystal Mantyka-Pringle



Chrystal Mantyka-Pringle collects a water sample for a more detailed laboratory assessment of suspended sediments in the river. Photo credit: Jimmy Johnny

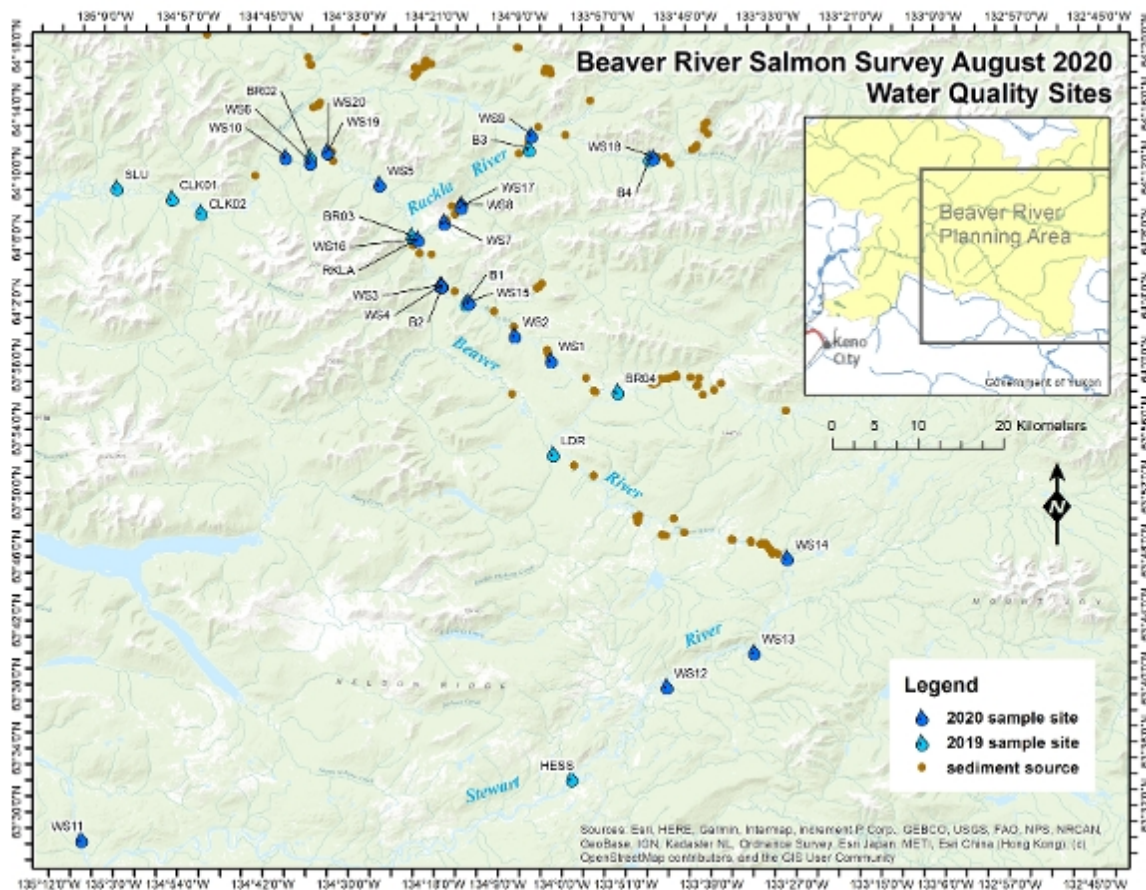
Mapping conservation priorities

The research team (WCS Canada, First Nation of Na-Cho Nyäk Dun and a local Fisheries Biologist) collated information onto maps for land-use planning, communication and environmental monitoring. The First Nation of Na-Cho Nyäk Dun plans on continuing monitoring to track water quality, spawning, and erosion. This information can be used to shape a more robust conservation future for Chinook salmon and water protection that support the First Nation community.



The results of the salmon spawning survey documenting the suitability of spawning habitat in the Beaver River Watershed.

Mapped by Al von Finster and digitized by Lisa Moore.



The location of water quality sites, permafrost erosion and other erosion sources in the Beaver River Watershed. Mapped by Stephanie Saal and Chrystal Mantyka-Pringle and digitized by Lisa Moore.

As scientists, we see the effect of climate change and land use change on fish and wildlife in our work every day. Indigenous peoples have been observing the same changes but for hundreds of years. Together, partnerships like this one between WCS Canada and the First Nation of Na-Cho Nyäk Dun for Chinook salmon in the Beaver River Watershed represents a new era, one where bridges are built for conservation.



Chrystal Mantyka-Pringle, *WCS Canada* Conservation Planning Biologist and Lawrence McLaren, *Na-Cho Nyäk Dun* Lands Officer

Photo credit: Peter Etherton

This story map was created for the **Wildlife Conservation Society Canada** - **Northern Boreal Mountains Program** by Chrystal Mantyka-Pringle (cmantykapringle@wcs.org) with input from the First Nation of Na-Cho Nyäk Dun, Brad Cundiff, Jaime Grimm, Meg Southee, and Don Reid. Interactive map was created by Meg Southee (msouthee@wcs.org). This research was financially supported by the Yukon River Panel Restoration & Enhancement Fund and the William and Flora Hewlett Foundation.

Powered by ArcGIS StoryMaps

Please visit the links below to access the interactive map and video for this Story Map:

<https://www.wcscanada.org/Resources/Story-maps-Data/A-Quest-for-Chinook-Salmon-in-Central-Yukon.aspx>

Alternative link

<https://storymaps.arcgis.com/stories/8eba6b85803b4b56b6389abcc74708a8>)