

PAIRING INUIT AND
SCIENTIFIC KNOWLEDGE
OF SEA-RUN ARCTIC CHAR,
IQALUKPIK IN
ULUKHAKTOK, NT

SUMMARY BOOKLET



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The knowledges shared in this booklet were derived from many sources, namely the people of Ulukhaktok. *Koana*, thank you for sharing your knowledge of Arctic char, *Iqalukpik*. Sadly, some who contributed to this work did not live to see its completion. Agnes and Robert Kuptana, and Mary Akoaksion, may you rest in peace.

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INTRODUCTION

There is a long history of Inuit and researchers working together to monitor animals of importance to Inuit. As climate change and other stressors continue to transform the north, it is more important than ever to work together to understand these changes.

Arctic char is an important species for Inuit. They provide food, and fishing passes on knowledge, skills, and values to the next generation. However, Arctic char are also vulnerable to climate change, with Ulukhaktomiut concerned about what these changes mean for Arctic char health.

In response to this concern, researchers and the Olokhaktomiut Hunters and Trappers Committee (OHTC) did a study that engaged Inuit and scientific knowledge to better understand sea-run Arctic char.

Together, we aimed to:

- 1) document Inuit knowledge of char appearance, movement, and health;
- 2) pair this knowledge with scientific research; and
- 3) show how engaging both Inuit and scientific knowledge can improve our understanding of Arctic char.

By bringing Inuit and scientific knowledge together in partnership, we hope to provide a deeper understanding of sea-run Arctic char and support efforts to protect them for future generations.



METHODS

In 2018, sea-run char were photographed, measured, tagged, and tracked along the coast. These studies, completed in 2022, gave new insights into char appearance and movement. The next step was to connect these results with community knowledge.

In 2023 and 2024, sixteen Elders and experienced fishers shared their knowledge through interviews and workshops. Sessions were held in Inuinnaqtun and English, at homes and the OHTC office.

Participants reviewed photographs of Arctic char, grouped them by appearance, movement, or health, and discussed these groupings. Participants were also asked to comment on the findings from the appearance and movement studies. Interviews concluded with a discussion on knowledge gaps and recommendations for future research and monitoring.



RESULTS

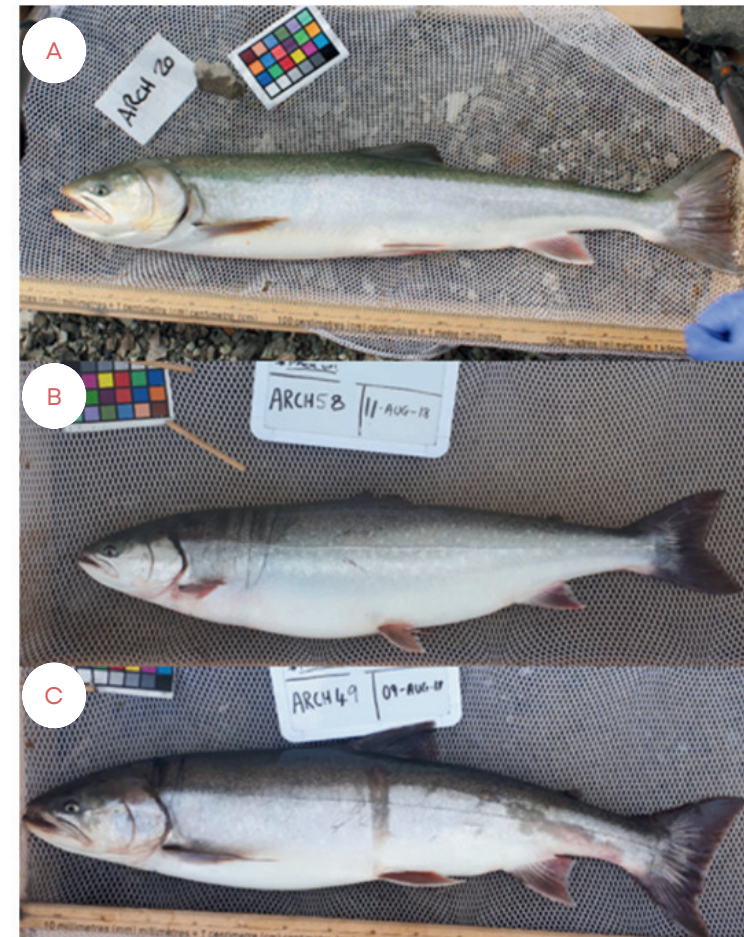
Arctic char appearance

Participants explained that the look and taste of Arctic char change depending on which lake the fish comes from. Some could identify a char's lake of origin by details like skin and flesh colour, head size, body shape, and taste—all shaped by the environment of that lake.

Both Ulukhaktomiut and scientific research recognised three body types in sea-run char near Ulukhaktok:

- A** Long, thin body (*Aniak*)
- B** Small head and small, fat body
- C** Big head and big body

However, most participants stated that Arctic char look different depending on which lake they come from—challenging the findings of the appearance research done in 2022.



Body shapes described by Ulukhaktomiut

Small head and small, fat body

Arctic char in Minto Inlet are smaller than fish from Prince Albert Sound. They have small heads, fat “football” shaped bodies, and silver sides with a dark back. Their flesh is red and rich.

“...they come from Fish Lake and Mayoklihok. They've got small heads.” – Robert Kuptana

Fish Lake char are especially known for their fatty taste—liked by some and considered too heavy by others—while Mayoklihok char are often described as rich but less fatty.

“...the ones from Fish Lake are so fat, I can't eat too much of them.” – Susie Malgokak

Participants attributed their smaller size and colouring to environmental conditions at Fish and Mayoklihok lakes. For example, Fish Lake is shallow and has dark rocks, resulting in smaller Arctic char with dark backs that help them blend in.

“Fish are darker in Fish Lake and Mayoklihok.” – David Kuptana

Participants also identified Kagloryuak River as a location where smaller char with thin silver skin and a sweet taste are found.

“Thin skin and smaller. Tastes like sand. Sweeter meat. Brighter skin than Minto Inlet” – Mary Kudlak



Big head and big body

Arctic char in Prince Albert Sound are typically larger than fish from Minto Inlet, with big heads and bodies, and green backs. Their colouring is thought to be due to the sandy substrate in places such as Kagloryuak River and Tahiryuak Lake, which is deeper than Fish and Mayoklihok lakes.

“Kuuk and those tend to be large fish [with] big heads and big body.” – Gibson Kudlak

“... these ones are way brighter colour. Greenish on the back, maybe because of the sand when they go up to Tahiryuak or these big lakes...” – Jack Akhiatak



Long, thin body, Aniak

Participants described Arctic char with long, thin bodies and bland, white flesh, with some associating them with Kuuk River and Safety Channel, and others stating they can be found in any lake. Some participants said these fish spawned the previous fall, as evident by their run-down condition, while others stated that they will spawn the following fall and are the first to leave the lakes every summer.

“The ones that have more of a whiter meat, I used to hear Elders say... Aniak.” – Helen Kitekudlak



Ocean char, Takgiukmaitak

Some participants identified a fourth body shape that was not documented by scientific research. Ocean char do not return to the lakes every year, instead remaining in the ocean over winter.

Ocean char are as large if not larger than Kuuk River char and “chubby” with blue backs and deep red flesh. The taste of ocean char was described by one participant as “tender and rich”, which was attributed to the increased amount of time spent in saltwater. Others described ocean char as “tough” with salty flesh.

“... some of the char like to spend their winter in the ocean. That's how come they get really red meat.” - John Alikamik

“About Kuuk size... and they're kind of darker blue, blueish.” - Gibson Kudlak

Several participants shared childhood memories of catching ocean char and teachings from Elders. One participant saw people placing nets in the cracks in the ice during June and remembers them catching “huge char” that they believe were ocean char.

Another participant also heard a story from her husband's family of fishing through cracks in Prince Albert Sound in the spring. Elders taught one participant that ocean char can be caught by jigging at the mouth of the Kuujjua River in deep winter. Similarly, another participant shared a story of their Elders fishing for ocean char through seal holes.

“Long ago, people tell stories of fishing for them in the wintertime, maybe in March and April, through seal hole[s]. They make lines with caribou sinew and then fish way down. And they used to get some and my uncle Morris, he knew about that, so he went out there in Minto Inlet area... and they fish using fishing rod and finished the whole spool without touching the bottom yet, and he gets one of those giant char.” - Robert Kuptana



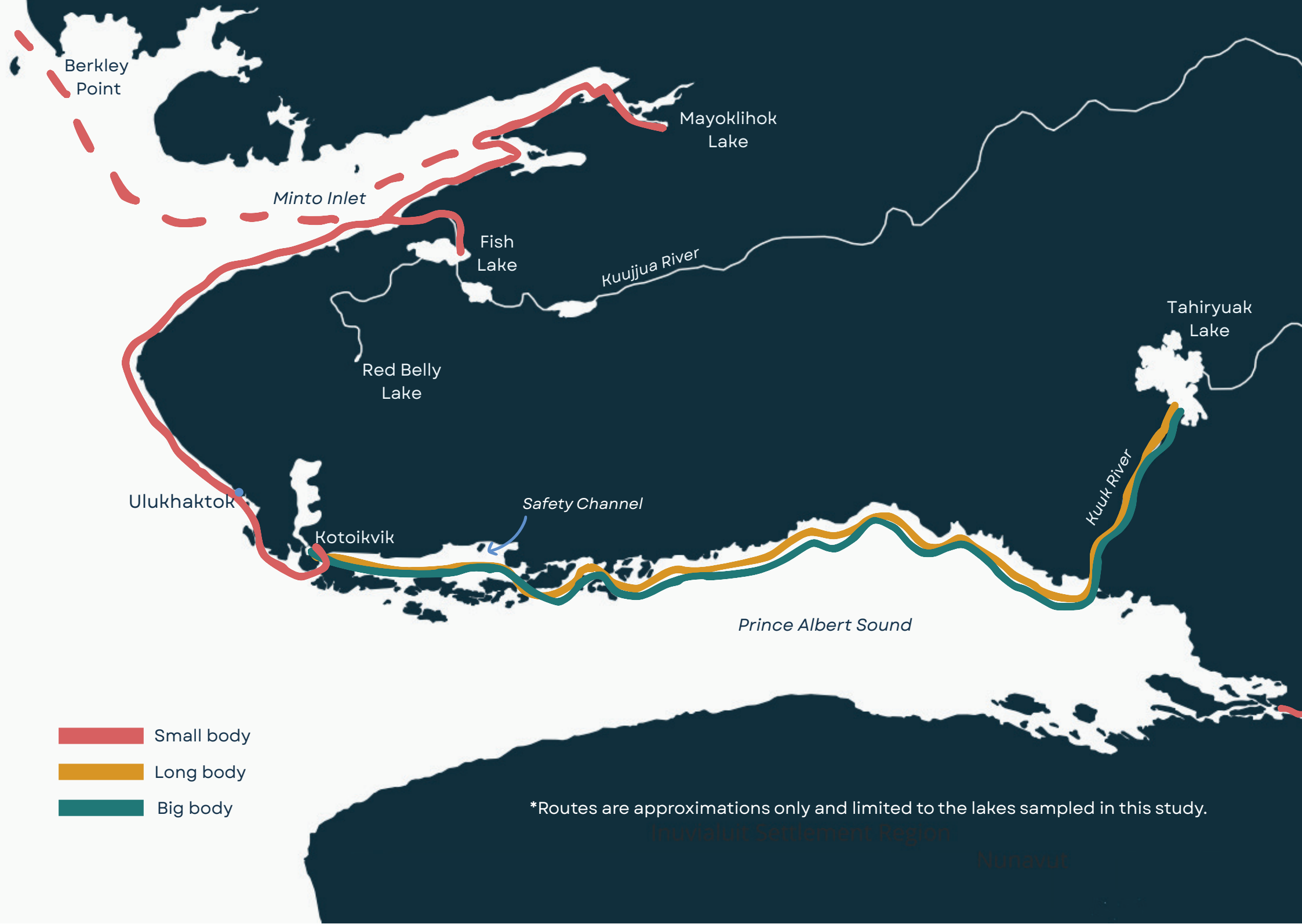
Arctic char movement

Every spring, sea-run Arctic char leave the lakes they reside in over winter and migrate to coastal waters, feeding and growing fat before returning to the lakes in the fall. This annual migration is mirrored by the seasonal activities of Inuit people, who follow the fish throughout their migration to and from their summer feeding grounds.

Participants confirmed two marine migration pathways and migration timing for Arctic char also documented by the 2018 movement study - one in Minto Inlet and the other in Prince Albert Sound. However, participants did not agree with the finding that Arctic char from Minto Inlet and Prince Albert Sound do not meet at the same marine feeding grounds at Kotoikvik in Safety Channel.

Participants also identified an additional third pathway going north past Berkley Point that was undocumented by the 2022 movement study because receivers were not deployed in that area.





Coastal char run

By mid-June to early July, Arctic char leave the lakes and migrate along the coast to summer feeding grounds. In recent years, fishers have set their nets up to two weeks earlier than usual, as warmer waters have caused earlier migrations. Along the way, char rest and feed in bays before continuing.

By late July, char move offshore into deeper water to feed on small fish like sand lance and capelin. The timing of this move depends on sea ice and wave conditions. If ice lingers, fish stay near shore; if ice melts early and waters warm, they head farther out.

“It seems when there is ice around, there’s more char. Where ice has virtually disappeared, then all the char disappear for a while until fall time. The ancestors say, when the ice has disappeared, char go out into the ocean to go feed so they stay out there until fall time until it’s time to go back to the lakes, rivers and they come rushing back to the shore.” - Anonymous

Arctic char from Minto Inlet and Prince Albert Sound meet in Safety Channel, a popular fishing spot. By late August, they start returning to overwintering lakes, with Prince Albert Sound fish leaving first.

On the return migration, Arctic char are harder to catch, as they are now well-fed. Fish migrate quickly from point to point instead of stopping in bays. They don’t always

return to the same lake; some stay in the ocean over winter while others go to lakes that are easier to reach when they are not spawning.

Spawning usually happens in mid- to late October. Called *Ivitagouk* (red spawners), char develop bright red bellies and hooked jaws.

“You can always tell Arctic char are spawning because the lake will be really murky and cloudy from all the char stirring [it] up.” - Gibson Kudlak

As winter sets in and lakes freeze, char move into deeper areas. In Fish Lake, smaller fish stay in shallower parts like Little Lake (Aimauqattahuk), while larger fish move to deeper areas like Big Lake (Tahiluak), where they remain until spring.



Arctic char health

Uluksaktomiut use many signs to judge if an Arctic char is healthy and good to eat. While scientists often look at plumpness, participants also considered colour, taste, stamina, and signs of sickness. As a result, skinny fish were not always seen as unhealthy by participants.

Overall, there was strong agreement between participants and scientific assessments, but not always. Some plump fish were still seen as unhealthy, while some slimmer fish were judged healthy.

This finding highlights the importance of using many indicators to assess a fish's condition.



Indicator	Description
Skin and flesh colour	Arctic char with bright, shiny skin and vibrant coloured flesh are healthy.
Plumpness	Arctic char that are “round like a football” were considered healthier than thinner fish, which may be the result of parasites or wounds.
Gill condition	The visibility of bone-like structures beneath the gills. Fish with gills through which these structures were clearly visible were deemed unhealthy.
Taste	How “rich” an Arctic char tastes. Fish with a rich or “wild” taste were preferred to those with a “stale” flavour, which was associated with skinnier individuals with whiter coloured flesh.
Wounds or sickness	The presence of wounds or signs of sickness on or beneath the skin. Fish with wounds extending beneath the skin into the meat were considered unsafe for human consumption. Some informants would still eat Arctic char with wounds present on just the skin, cutting out affected areas, but most would not.
Parasites or physical abnormalities	The presence of parasites or growths in the flesh. Arctic char with parasites (e.g. worms) or physical abnormalities (e.g. “bubbles”) were considered unhealthy and unsafe for human consumption.
Stamina	The energy displayed by an Arctic char. Individuals that appeared lethargic while caught in nets were considered less healthy. Fish that were dead a long time in nets were generally not eaten, out of concern that the flesh was no longer good to eat and had gone soft.

FUTURE RESEARCH

During discussions with participants, areas of future research were identified:

1. Documenting Arctic char numbers at lakes historically fished by Ulukhaktomiut

Most fishing today takes place at Fish Lake, but many other lakes were also used in the past. The current number of Arctic char in these places is unknown. Many participants expressed strong interest in determining Arctic char numbers in these historically fished lakes. This information could encourage fishing in traditional areas and help spread fishing pressure more evenly.

2. Learning more about ocean char

Some Arctic char spend the winter in the ocean, a migration strategy rarely discussed in scientific studies. This challenges the current scientific understanding of sea-run Arctic char. By pairing Inuit knowledge and scientific tools, we may learn where these fish go and how they survive in marine environments over winter.



3. Developing an on-the-land health assessment tool

Inuit fishers often check the health of Arctic char by looking at signs such as flesh colour, girth, stamina, and gill condition. Creating a simple, portable tool—such as a field guide or an offline mobile app—based on these indicators could support community monitoring and help detect early signs of environmental change.



CONCLUSION

This study brought together Inuit and scientific knowledge to learn more about sea-run Arctic char. It was done in partnership with the community of Ulukhaktok in response to local concerns about observed changes in Arctic char and their health.

The research shows the value of pairing Inuit and scientific knowledge. Working together allowed for a richer, more complete understanding than either could achieve alone, and ensured the work was based on community priorities. This approach can help fill knowledge gaps, test ideas, and support fisheries co-management that is grounded in both Inuit and scientific knowledge. By continuing to build on this collaborative partnership, we can strengthen efforts to safeguard Arctic char populations and Inuit fisheries in an era of rapid climate change.



Photo caption: Knowledge sharing on Third Hill, June 2023