



# FOOD INSECURITY IN THE ARCTIC

## WATERY ABUNDANCE: BUILDING COLLECTIVE ACTION THROUGH FOOD

HMUI REPORT  
JANUARY 24, 2022  
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# PROJECT STATEMENT

**Our project takes the position of decolonizing current food infrastructures in the Canadian arctic through collaborating with the Gwich'in Tribal Council in the northwest territories of Canada, reimagining renewed foodways that celebrate Indigenous food culture and reciprocal ways of living.**

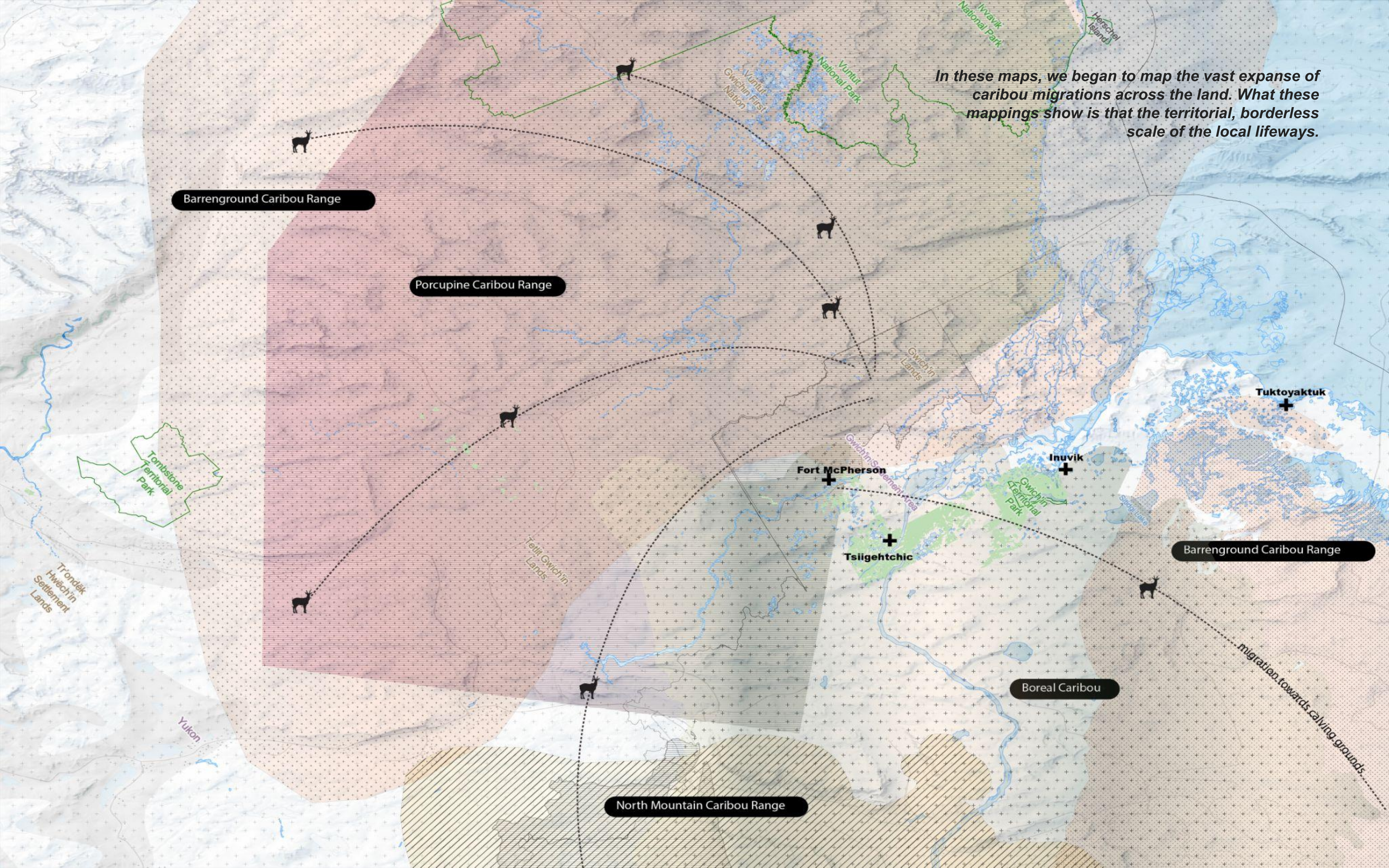
The research focuses on the evolution of food geography and food deserts in arctic built environments and communities. We have been looking at the correlative relationship between food scarcity and the loss of animal habitats due to the Dempster Highway in relation to changes in the biogeography of the existing ecosystem. Climate change increases the risk of fresh food insecurity and exacerbates the loss of permafrost and lichen, a main food source for Caribou populations. Indigenous tribes in the Northwest Territories have a commensalistic relationship with Caribou populations, whose herd size and location depend on the fragile ecosystem of the evanescent Arctic and are critical to the preservation of the permafrost. This situation is also closely tied to food insecurity among Gwich'in communities across Arctic Canada, which have been associated with disturbed eating patterns, reduced diet quality, and increased susceptibility to chronic and infectious diseases after the introduction of a diet high in processed foods. Starting in the 18th century, commercial hunting depleted the wildlife populations that many depended on for food. Our project aimed to produce material for publication and innovative data visualization, such as maps and multimedia drawings.

This project investigates indigenous Gwich'in foodways currently disrupted by colonial infrastructures under increasing climatic uncertainties in the Canadian arctic, through the lens of the Makenzie Bay River as our site. The study area is in the First Nations Gwich'in town of Fort McPherson (Northwest Territories, Canada), where the sinking of the Dempster Highway is fragmenting cultural relationships to the land and traditional food systems. We hope that our research begins to fill a gap in the landscape discipline on the effects of colonial infrastructure on Arctic traditional foodways, expanding the role of landscape architects as activists for place-based food security and Indigenous studies in a TEK perspective. **Ultimately, this design project seeks to raise awareness for cultural preservation through food rituals, the impact of climate change on traditional ways of life, and seek new modalities for coexisting and living, in shifting times.**

*“A food culture is not something that gets sold to people. It arises out of a place, a soil, a climate, a history, a temperament, a collective sense of belonging.”*

- Barbara Kingsolver

*In these maps, we began to map the vast expanse of caribou migrations across the land. What these mappings show is that the territorial, borderless scale of the local lifeways.*



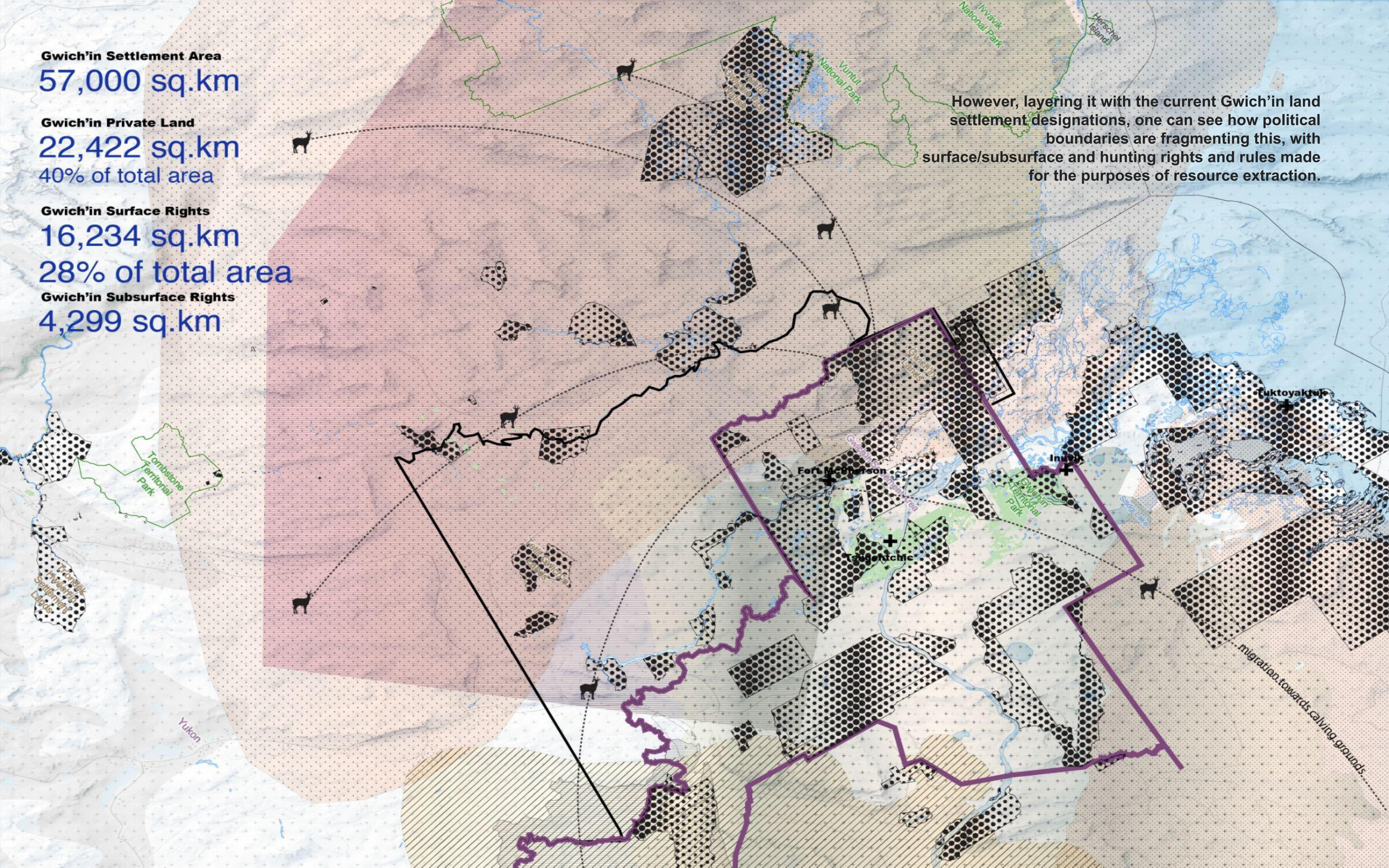
**Gwich'in Settlement Area**  
**57,000 sq.km**

**Gwich'in Private Land**  
**22,422 sq.km**  
40% of total area

**Gwich'in Surface Rights**  
**16,234 sq.km**  
**28% of total area**

**Gwich'in Subsurface Rights**  
**4,299 sq.km**

However, layering it with the current Gwich'in land settlement designations, one can see how political boundaries are fragmenting this, with surface/subsurface and hunting rights and rules made for the purposes of resource extraction.



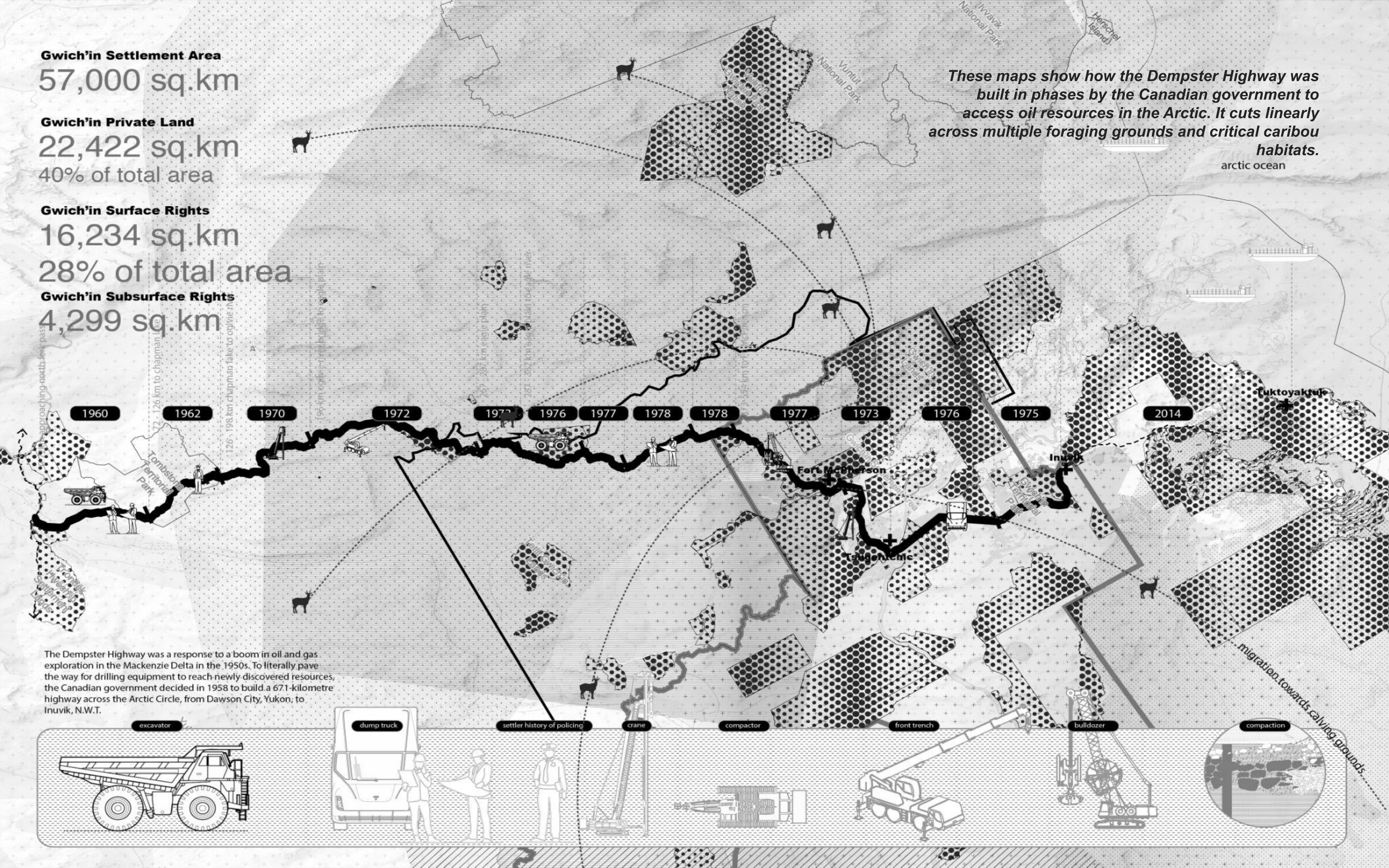
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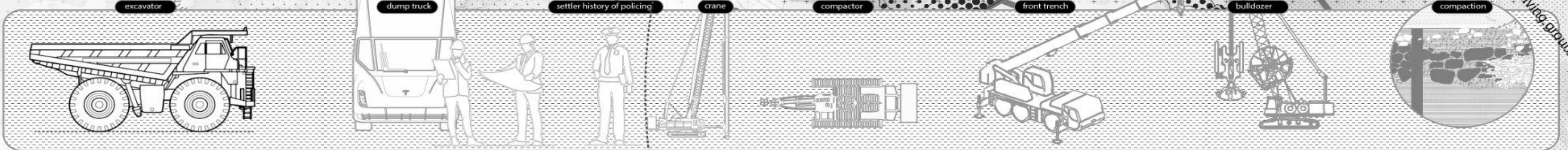
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*These maps show how the Dempster Highway was built in phases by the Canadian government to access oil resources in the Arctic. It cuts linearly across multiple foraging grounds and critical caribou habitats.*



The Dempster Highway was a response to a boom in oil and gas exploration in the Mackenzie Delta in the 1950s. To literally pave the way for drilling equipment to reach newly discovered resources, the Canadian government decided in 1958 to build a 671-kilometre highway across the Arctic Circle, from Dawson City, Yukon, to Inuvik, N.W.T.



approaching north fork pass

1960

1962

1970

1972

1972

1976

1977

1978

1978

1977

1973

1976

1975

2014

excavator

dump truck

settler history of policing

crane

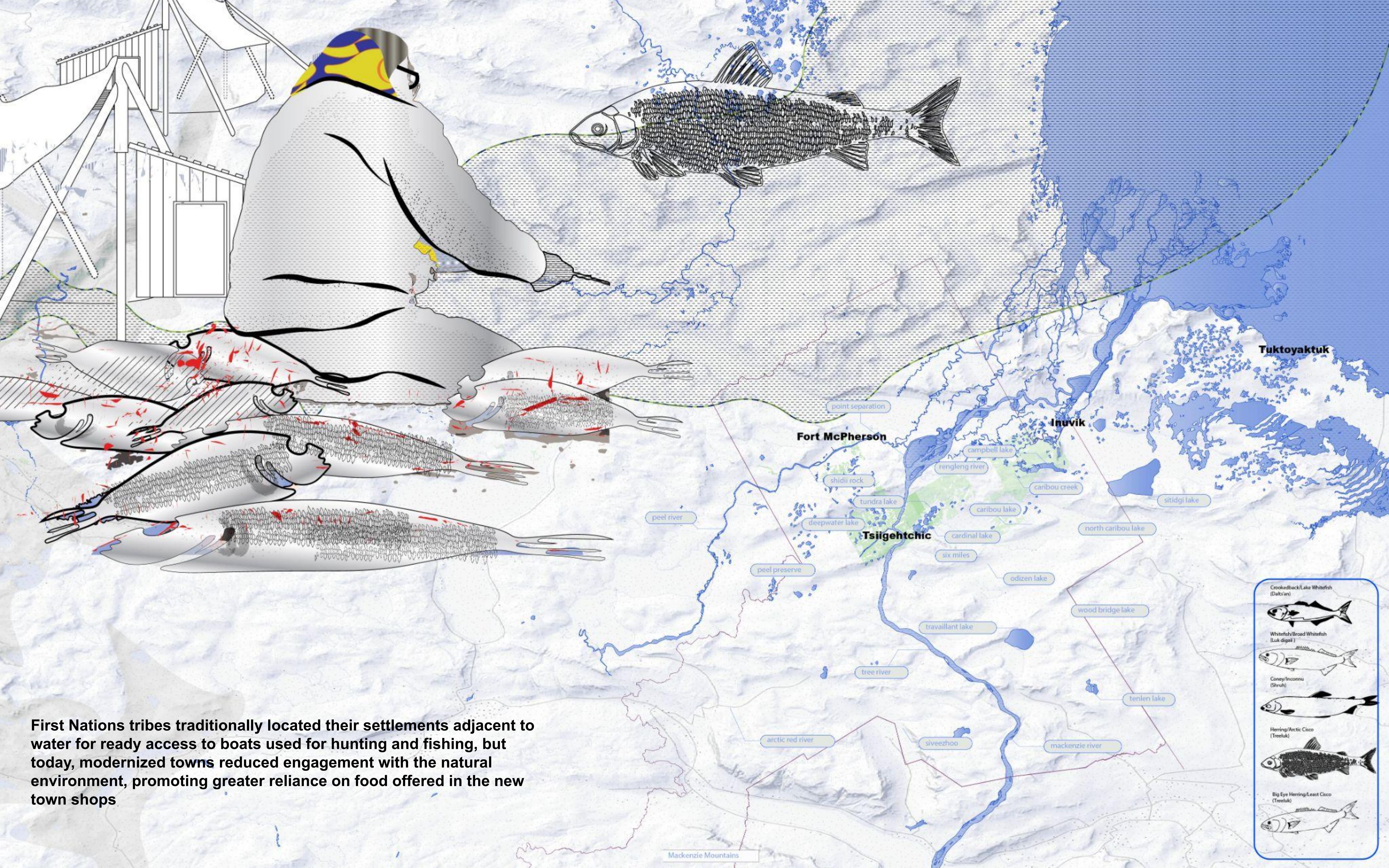
compactor

front trench

bulldozer

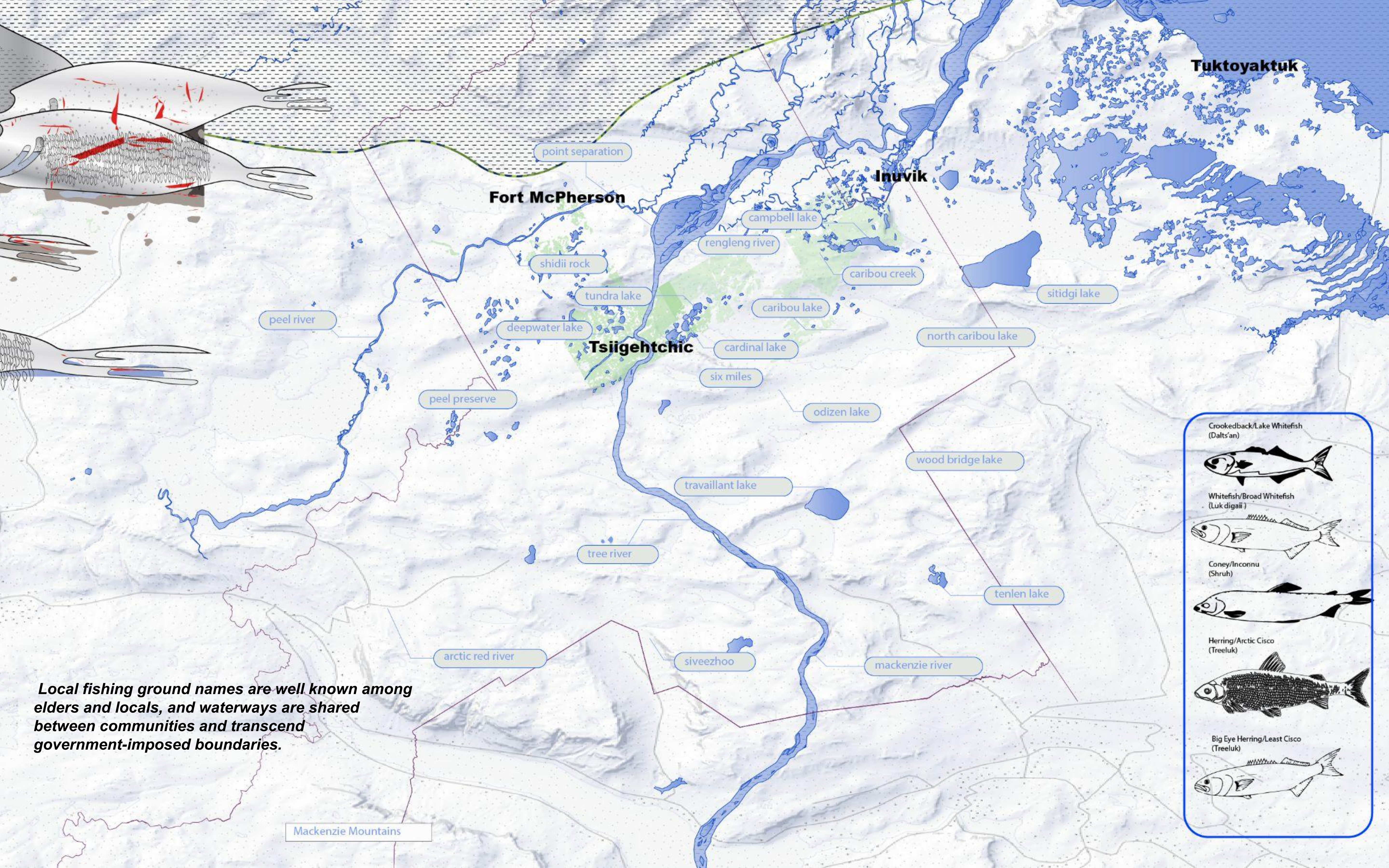
compaction

migration towards calving grounds



First Nations tribes traditionally located their settlements adjacent to water for ready access to boats used for hunting and fishing, but today, modernized towns reduced engagement with the natural environment, promoting greater reliance on food offered in the new town shops

- Crookedback Lake Whitefish (Dalt'an)
- Whitefish/Broad Whitefish (Luk digai)
- Coney/Inconnu (Shruh)
- Herring/Arctic Cisco (Teeeluk)
- Big Eye Herring/Least Cisco (Teeeluk)



**Tuktoyaktuk**

**Inuvik**

**Fort McPherson**

**Tsiigehtchic**

point separation

campbell lake

rengleng river

caribou creek

sitidgi lake

shidii rock

tundra lake

caribou lake

peel river

deepwater lake

north caribou lake

cardinal lake

six miles

peel preserve

odizen lake

wood bridge lake

travaillant lake


tree river


tenlen lake


arctic red river


siveezhoo


mackenzie river

- 

Crookedback/Lake Whitefish (Dalts'an)
- 

Whitefish/Broad Whitefish (Luk digaii)
- 

Coney/Inconnu (Shruh)
- 

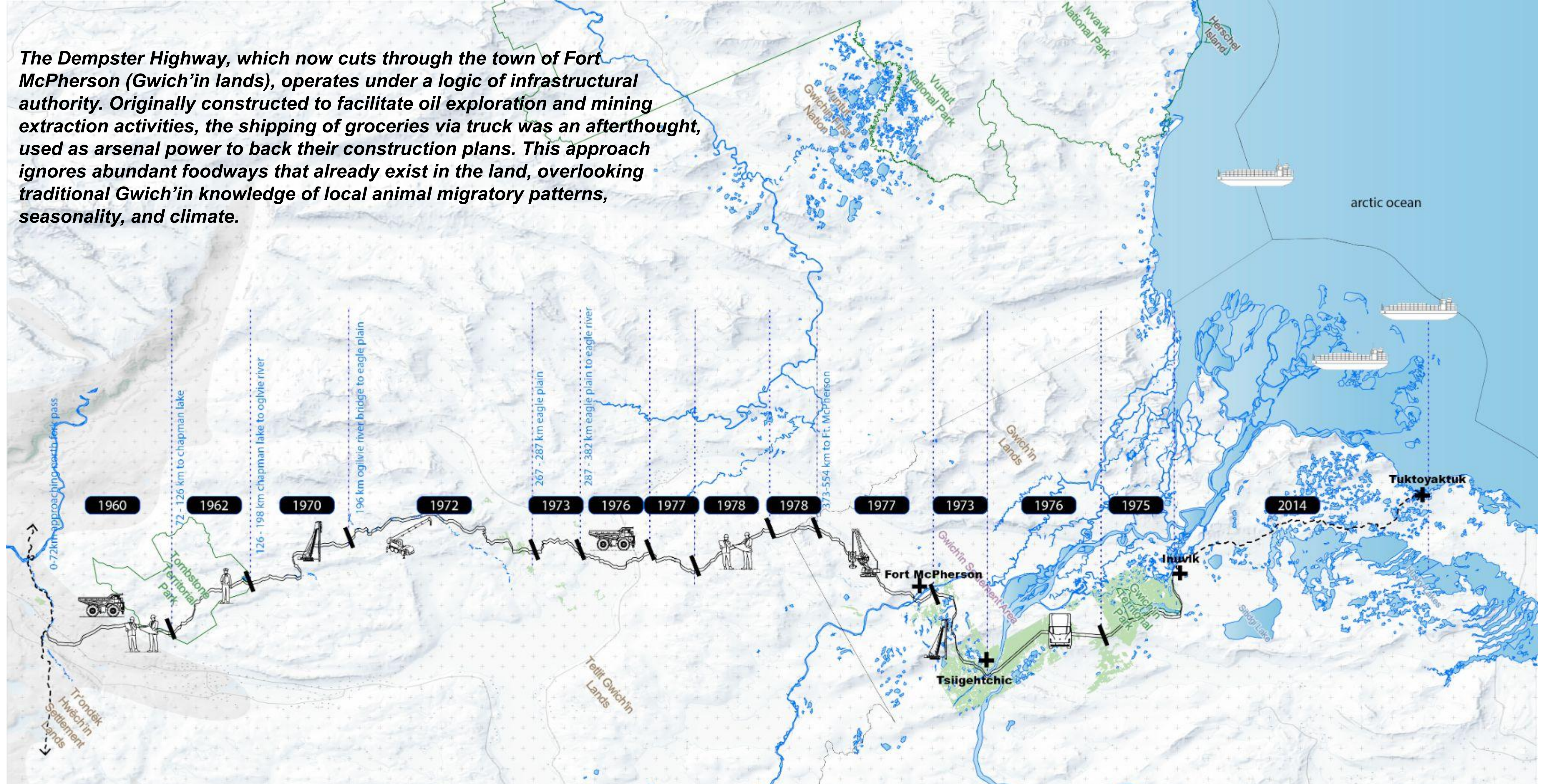
Herring/Arctic Cisco (Treeluk)
- 

Big Eye Herring/Least Cisco (Treeluk)

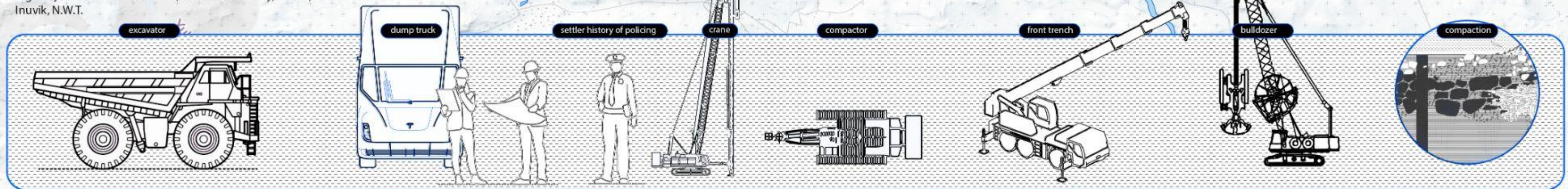
*Local fishing ground names are well known among elders and locals, and waterways are shared between communities and transcend government-imposed boundaries.*

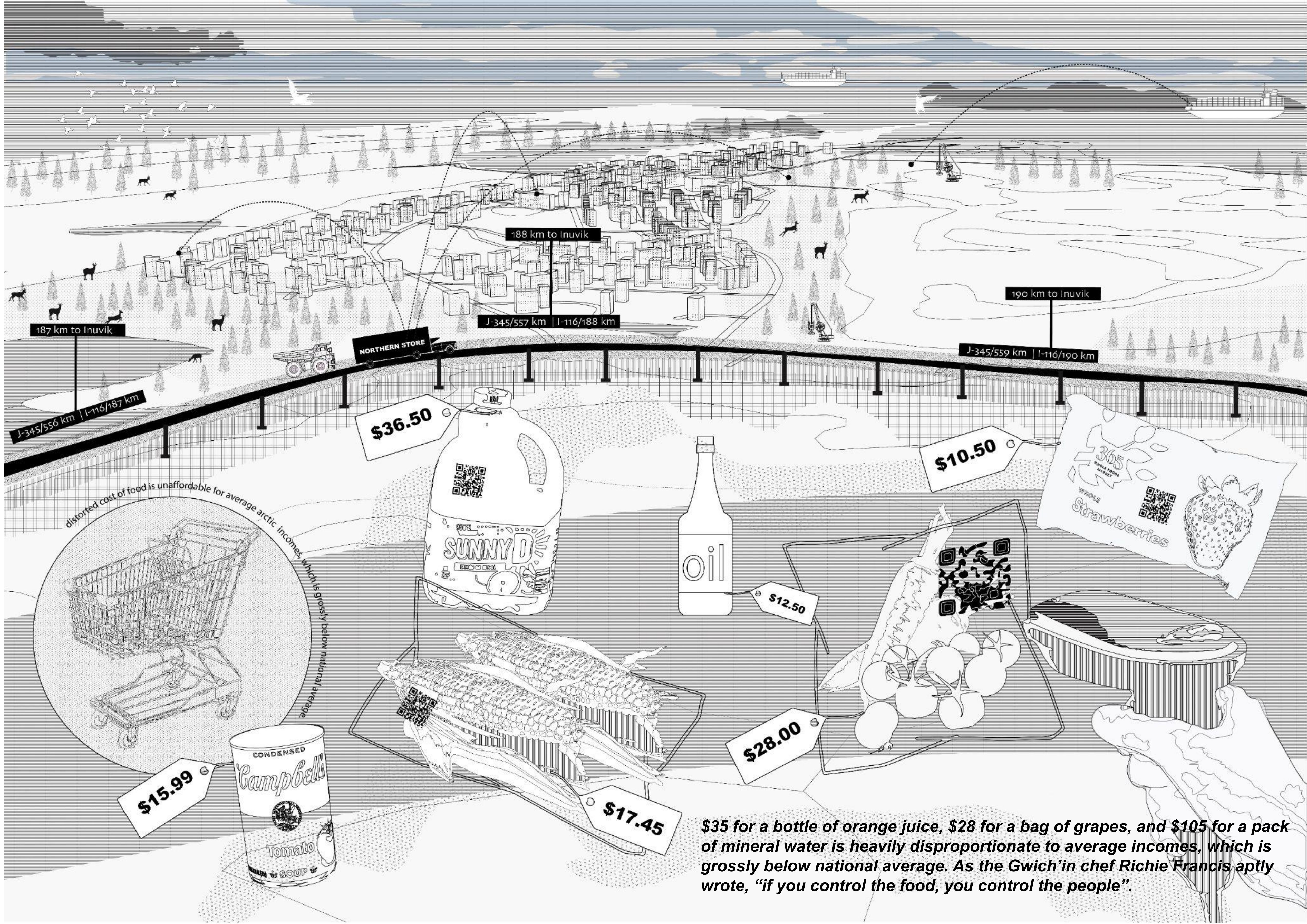
Mackenzie Mountains

**The Dempster Highway, which now cuts through the town of Fort McPherson (Gwich'in lands), operates under a logic of infrastructural authority. Originally constructed to facilitate oil exploration and mining extraction activities, the shipping of groceries via truck was an afterthought, used as arsenal power to back their construction plans. This approach ignores abundant foodways that already exist in the land, overlooking traditional Gwich'in knowledge of local animal migratory patterns, seasonality, and climate.**



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187 km to Inuvik

J-345/556 km | I-116/187 km

188 km to Inuvik

J-345/557 km | I-116/188 km

NORTHERN STORE

190 km to Inuvik

J-345/559 km | I-116/190 km

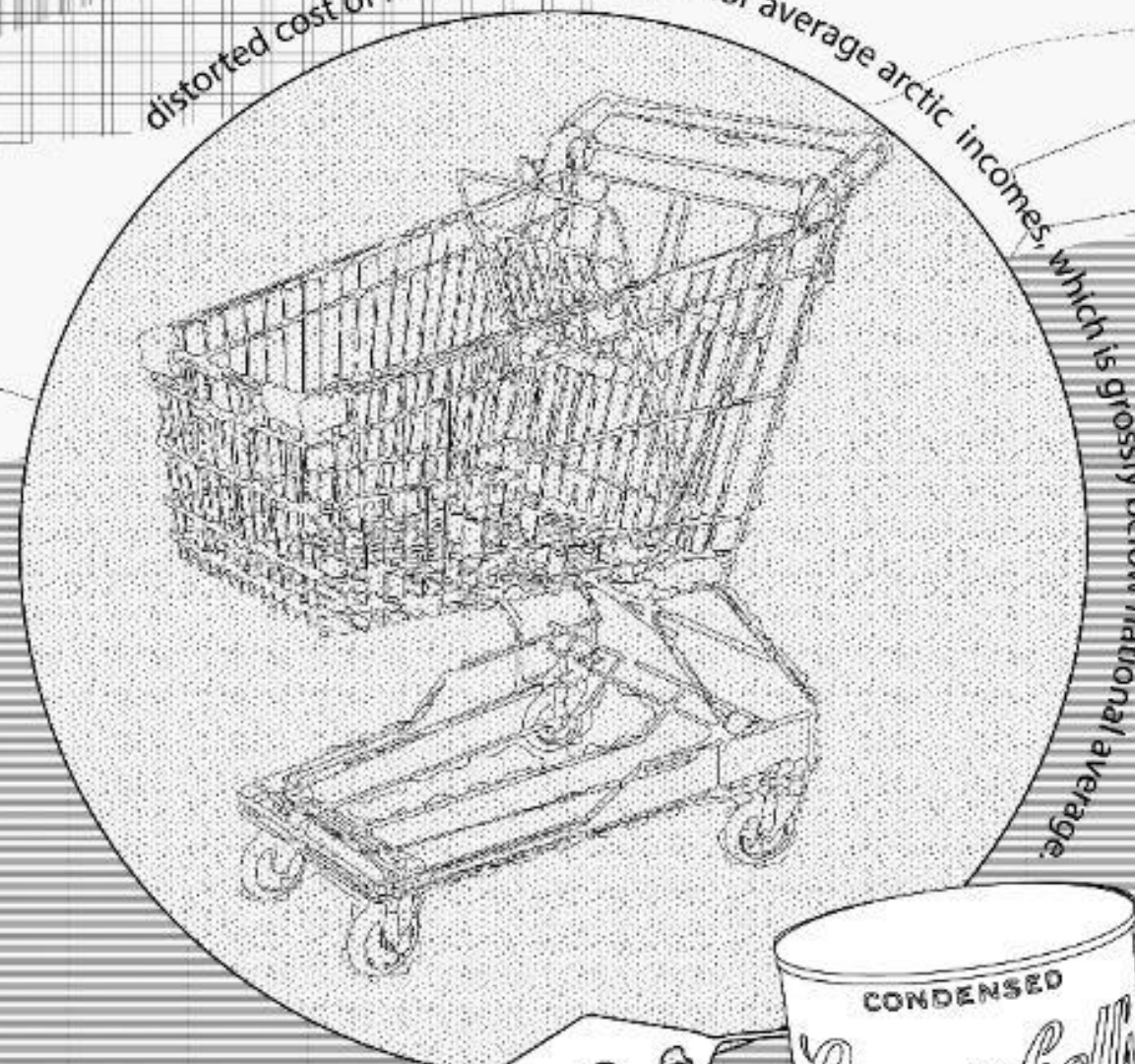
\$36.50



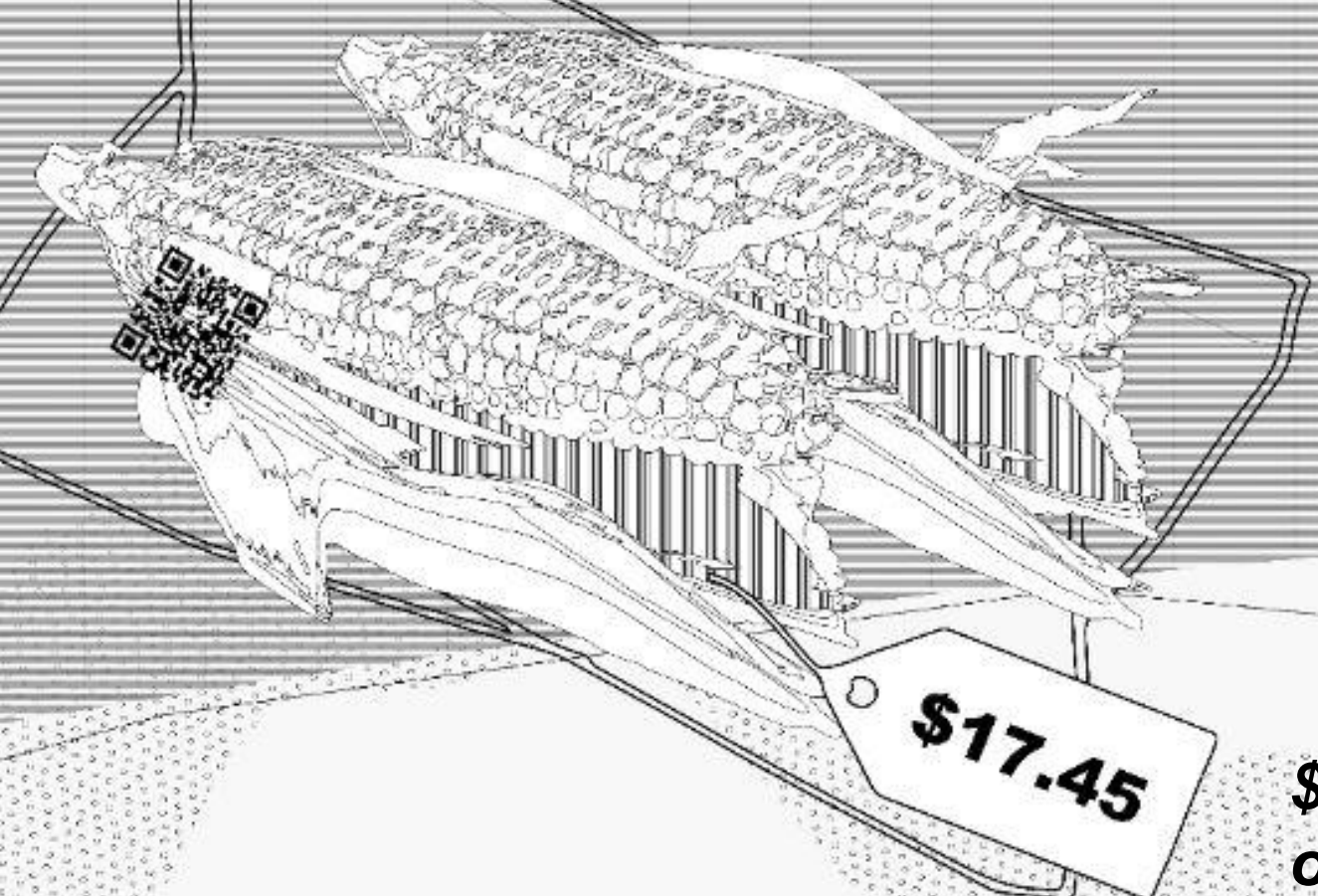
\$10.50



\$12.50

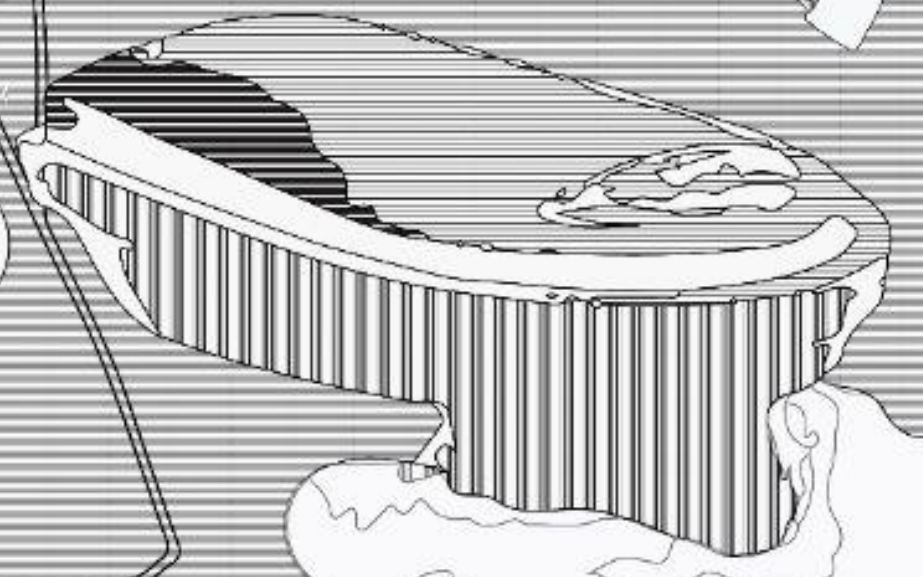
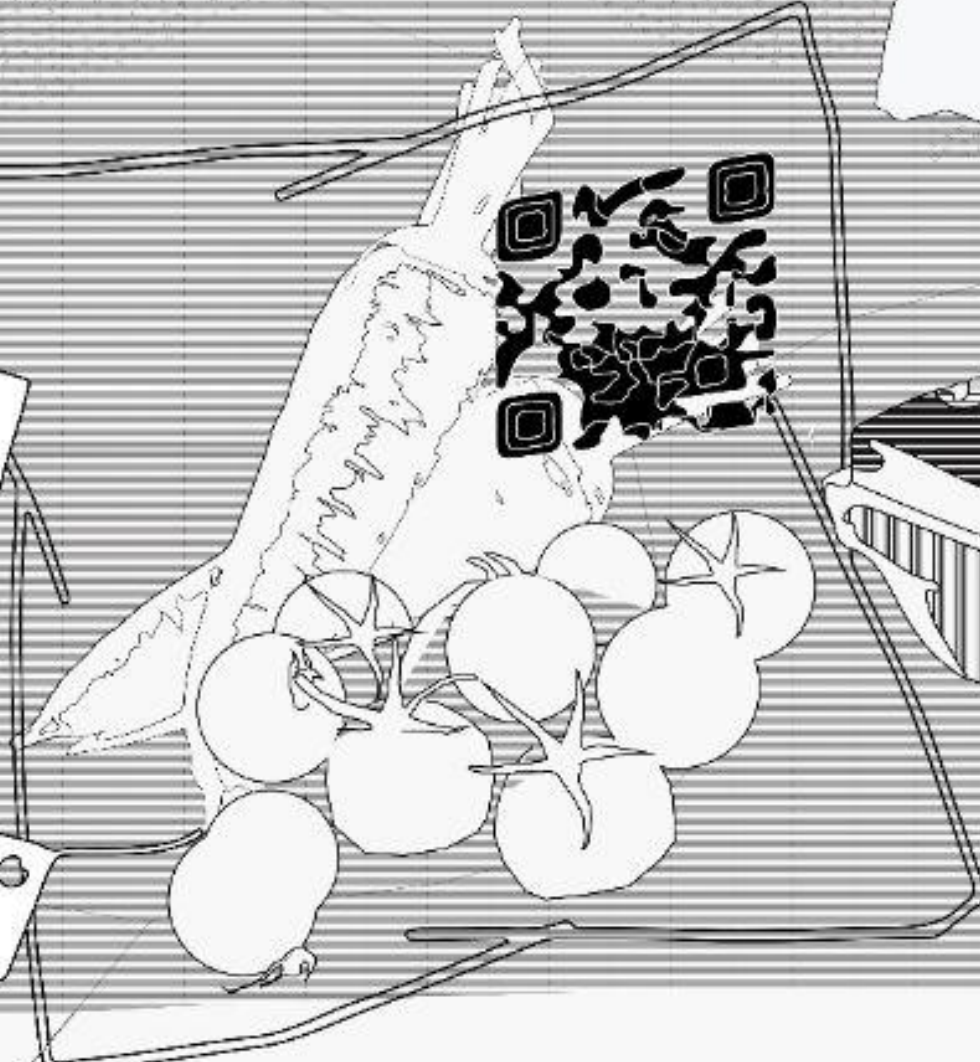


\$15.99



\$17.45

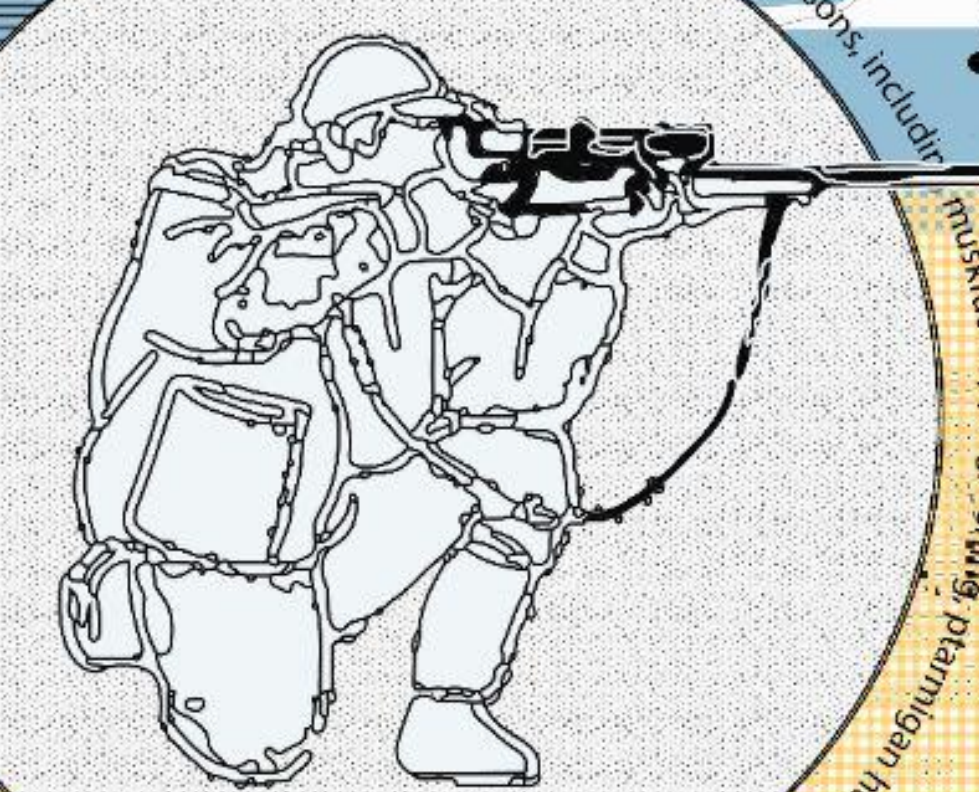
\$28.00



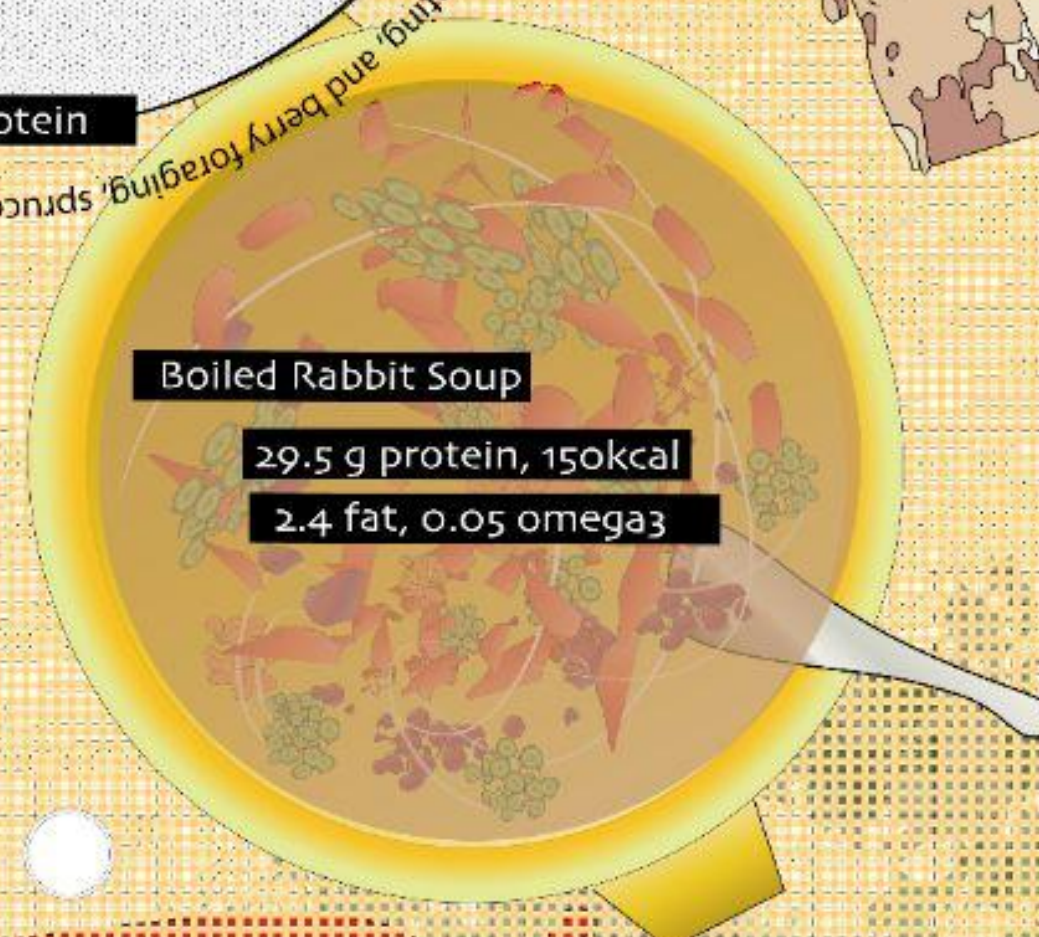
\$35 for a bottle of orange juice, \$28 for a bag of grapes, and \$105 for a pack of mineral water is heavily disproportionate to average incomes, which is grossly below national average. As the Gwich'in chef Richie Francis aptly wrote, "if you control the food, you control the people".



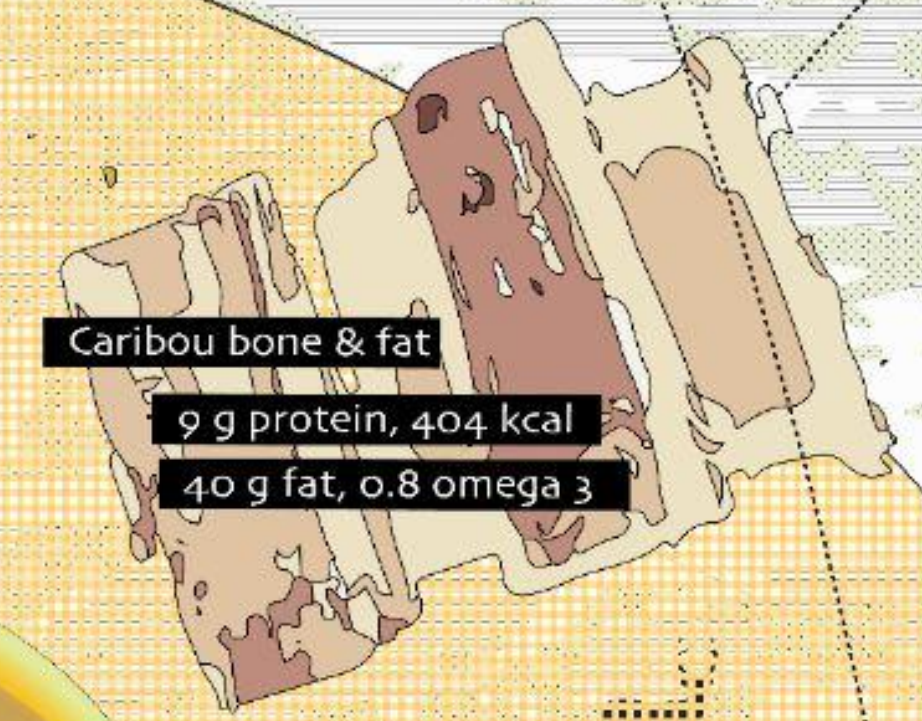
traditional foodways were abundant throughout all seasons, including muskox trapping, fishing, plant/animal hunting and berry foraging, spruce collecting



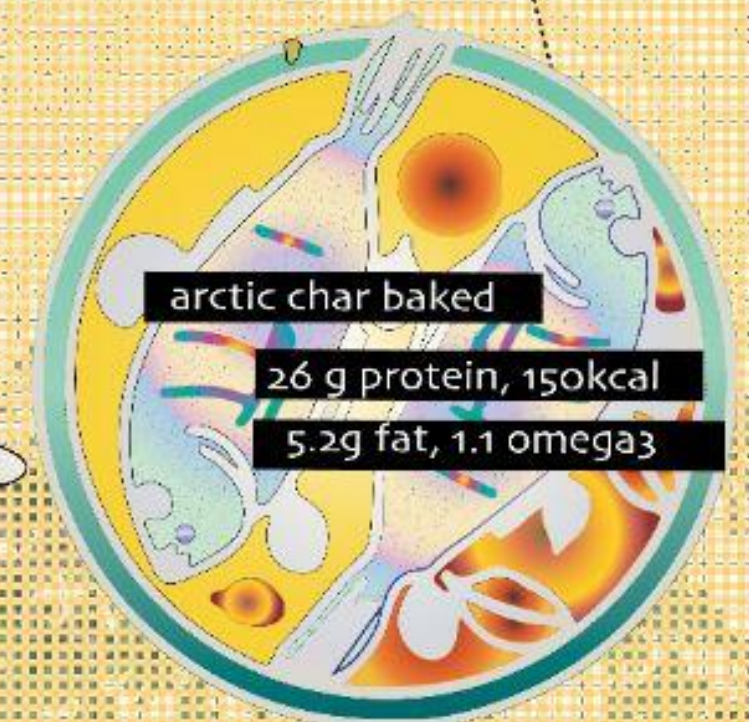
cranberries  
74 kcal, 0.7g protein



Boiled Rabbit Soup  
29.5 g protein, 150kcal  
2.4 fat, 0.05 omega3



Caribou bone & fat  
9 g protein, 404 kcal  
40 g fat, 0.8 omega 3

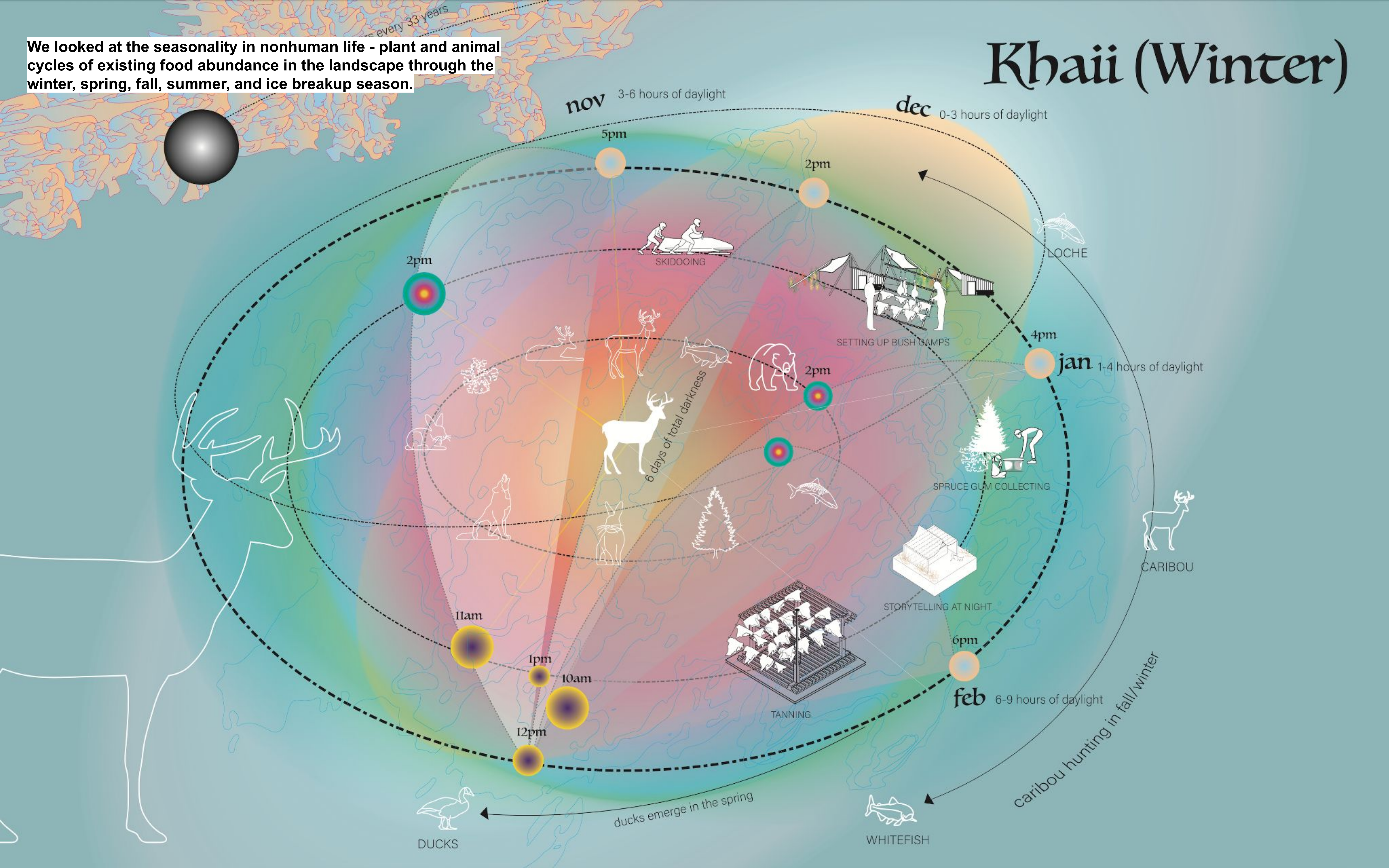


arctic char baked  
26 g protein, 150kcal  
5.2g fat, 1.1 omega3

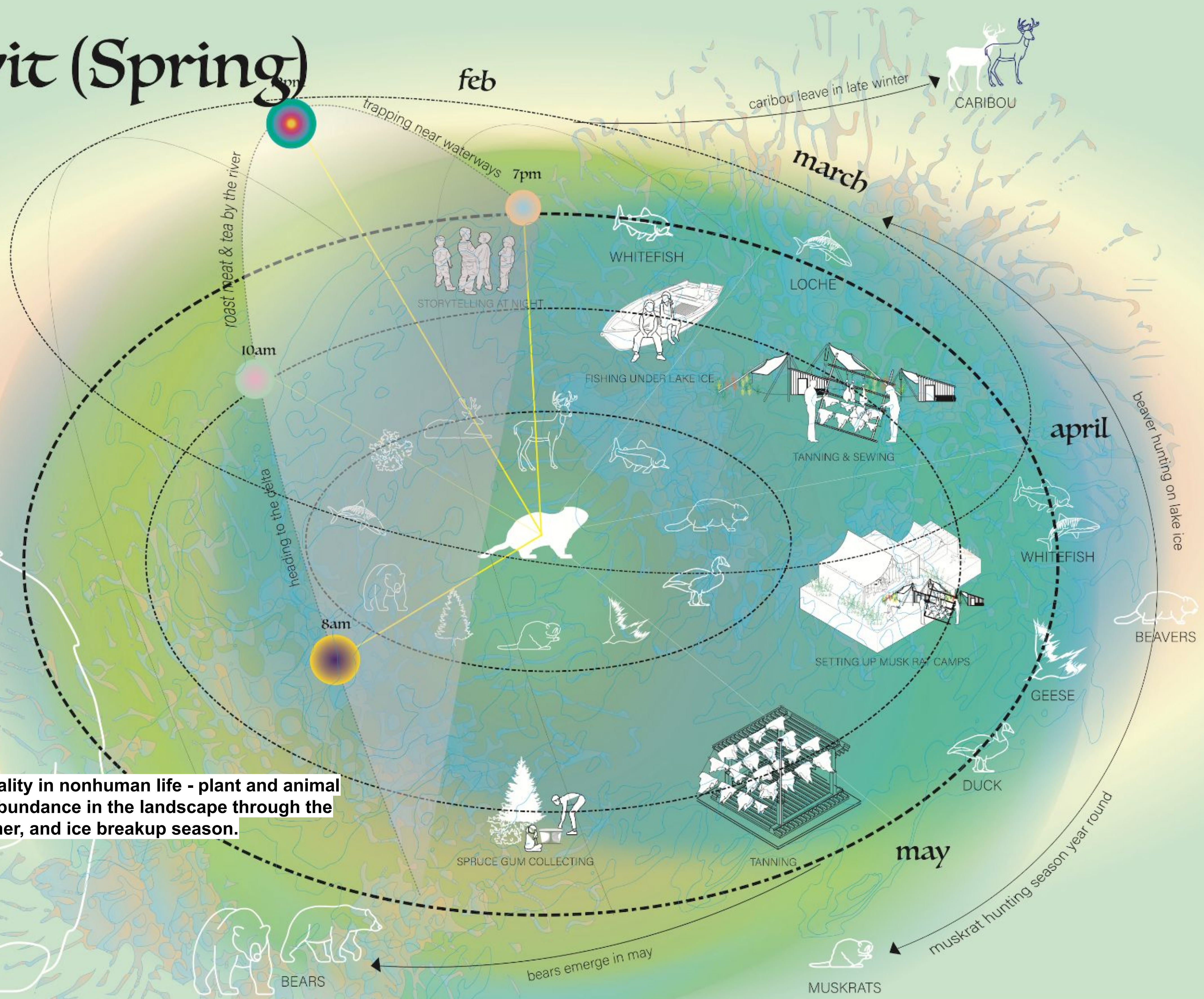
Agency is not given, but is embodied in land and in everyday living between both humans and the nonhuman.

We looked at the seasonality in nonhuman life - plant and animal cycles of existing food abundance in the landscape through the winter, spring, fall, summer, and ice breakup season.

# Khaii (Winter)



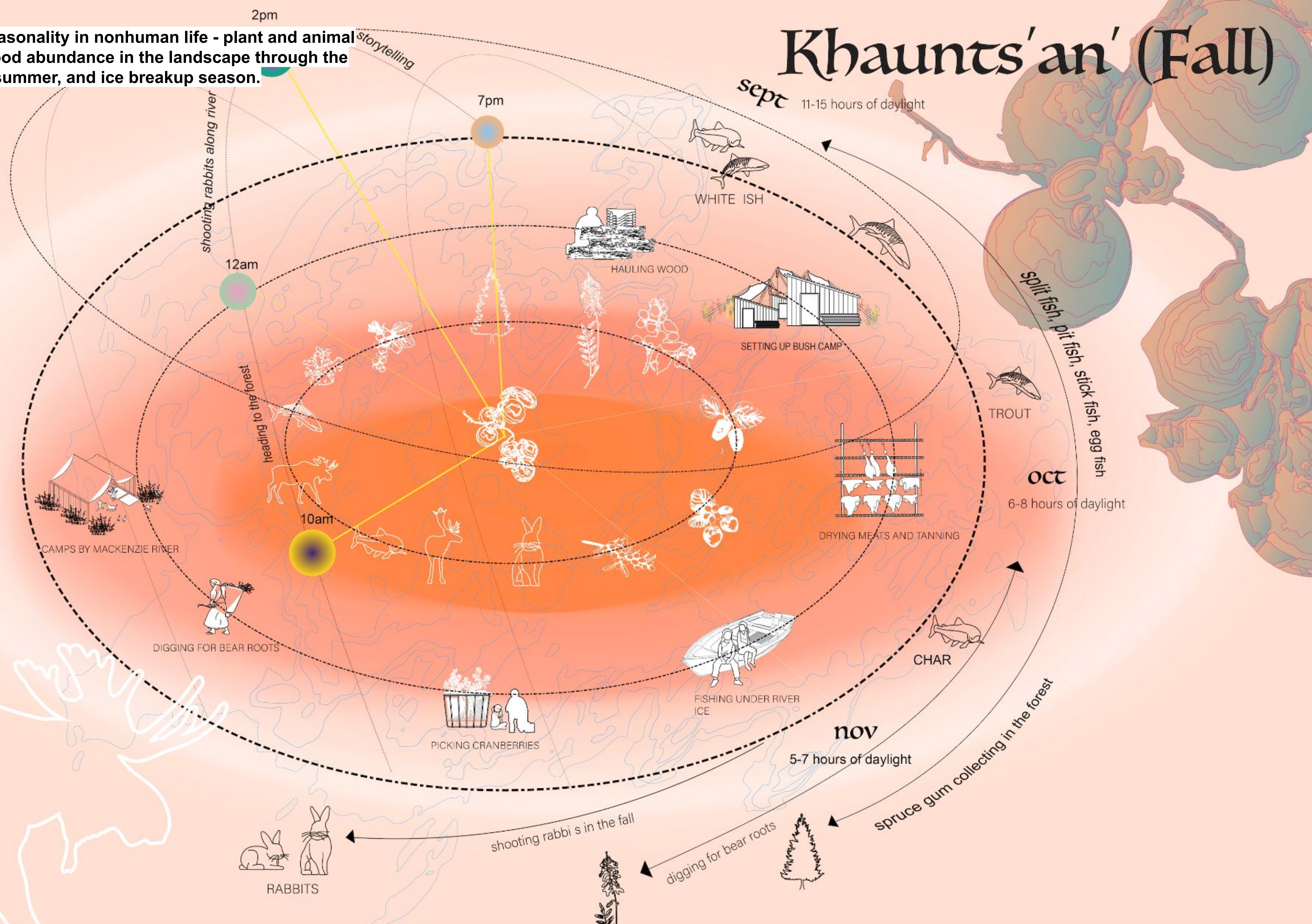
# Sreendytit (Spring)



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# Khaunts'an' (Fall)



2pm

7pm

12am

10am

sept

11-15 hours of daylight

WHITE FISH

HAULING WOOD

SETTING UP BUSH CAMP

TROUT

oct

6-8 hours of daylight

DRYING MEATS AND TANNING

CHAR

nov

5-7 hours of daylight

PICKING CRANBERRIES

FISHING UNDER RIVER ICE

shooting rabbits in the fall

digging for bear roots

spruce gum collecting in the forest

shooting rabbits along river

heading to the forest

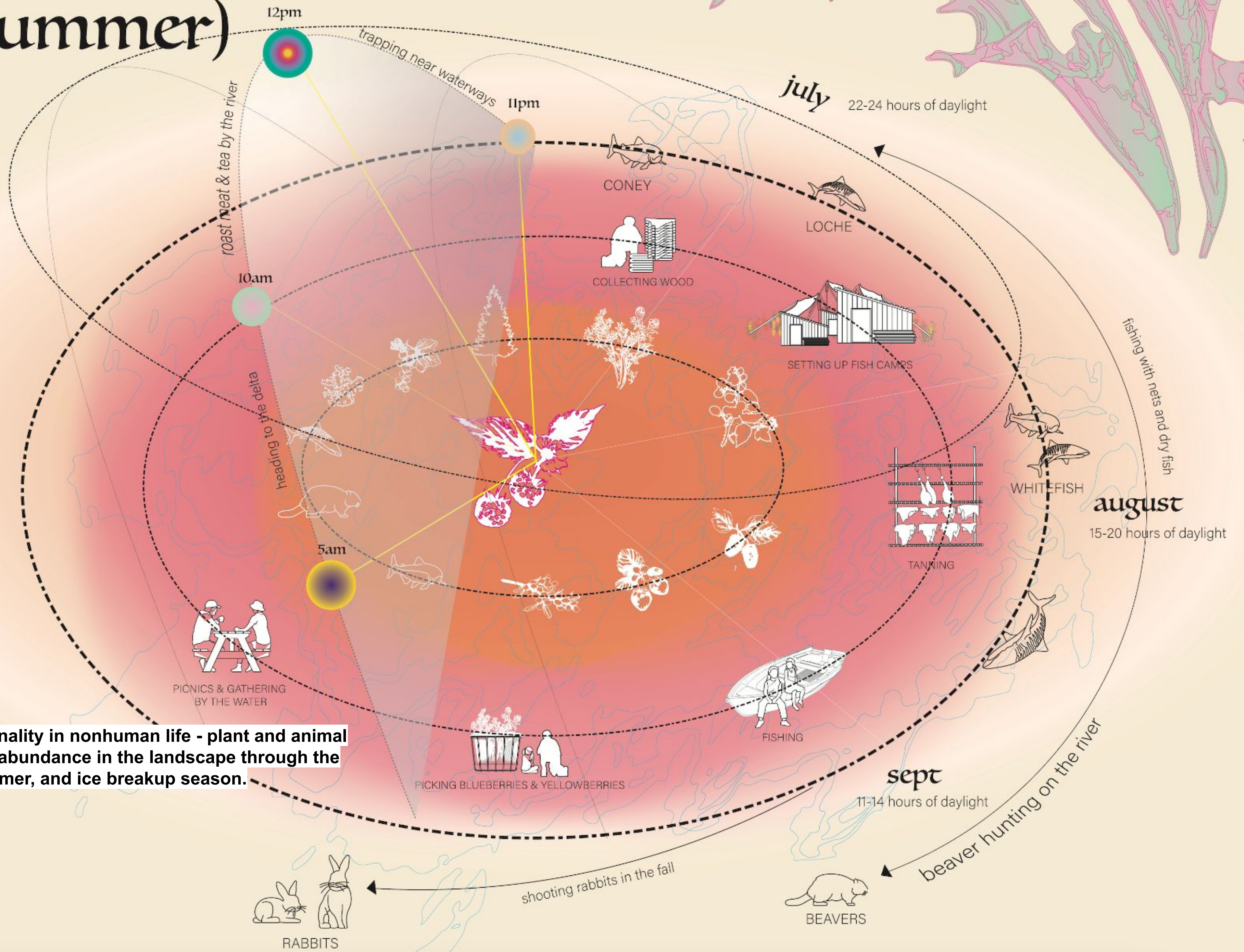
DIGGING FOR BEAR ROOTS

CAMPS BY MACKENZIE RIVER

RABBITS

Split fish, pit fish, stick fish, egg fish

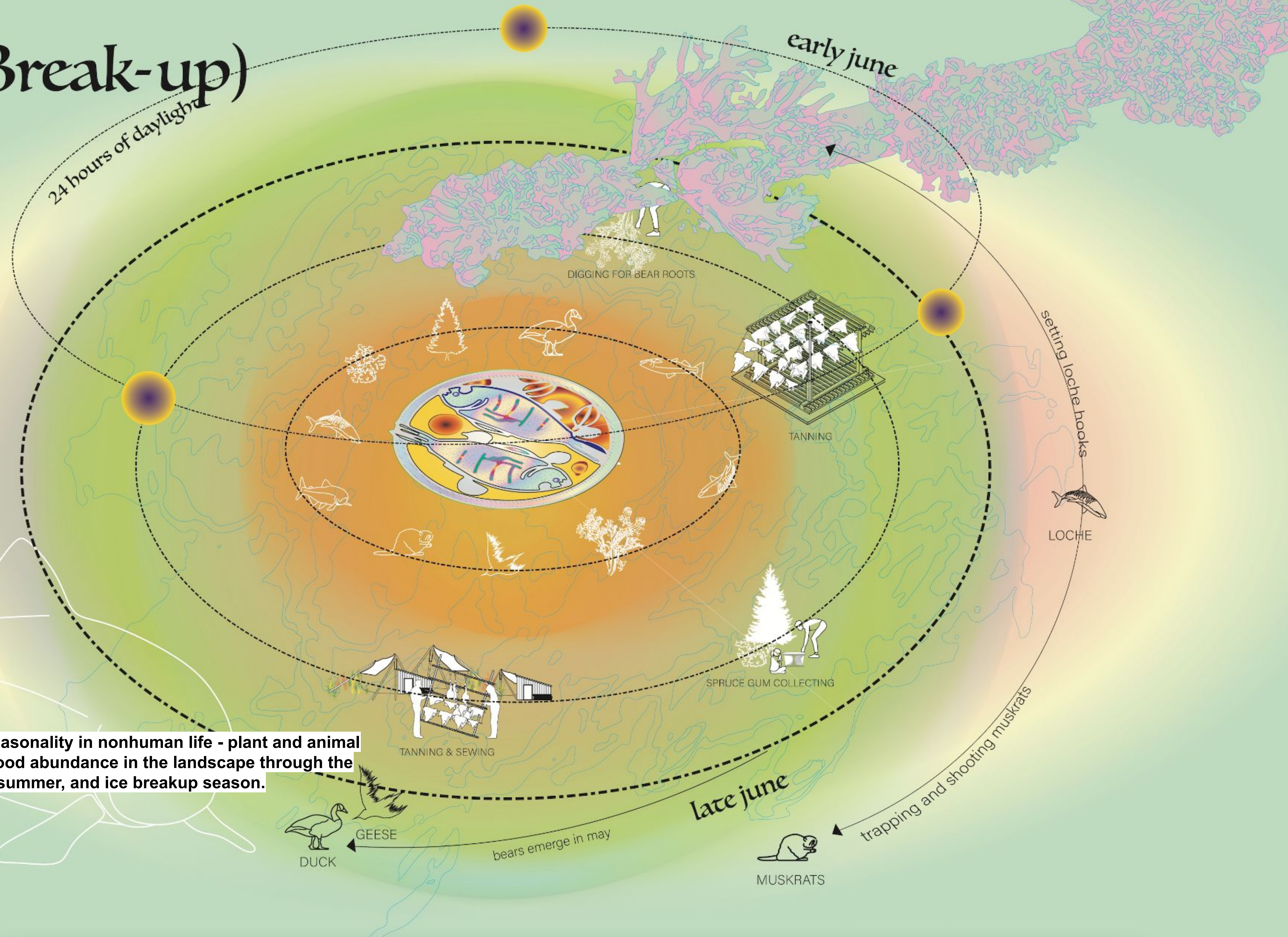
# Shin (Summer)



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# Daii (Break-up)

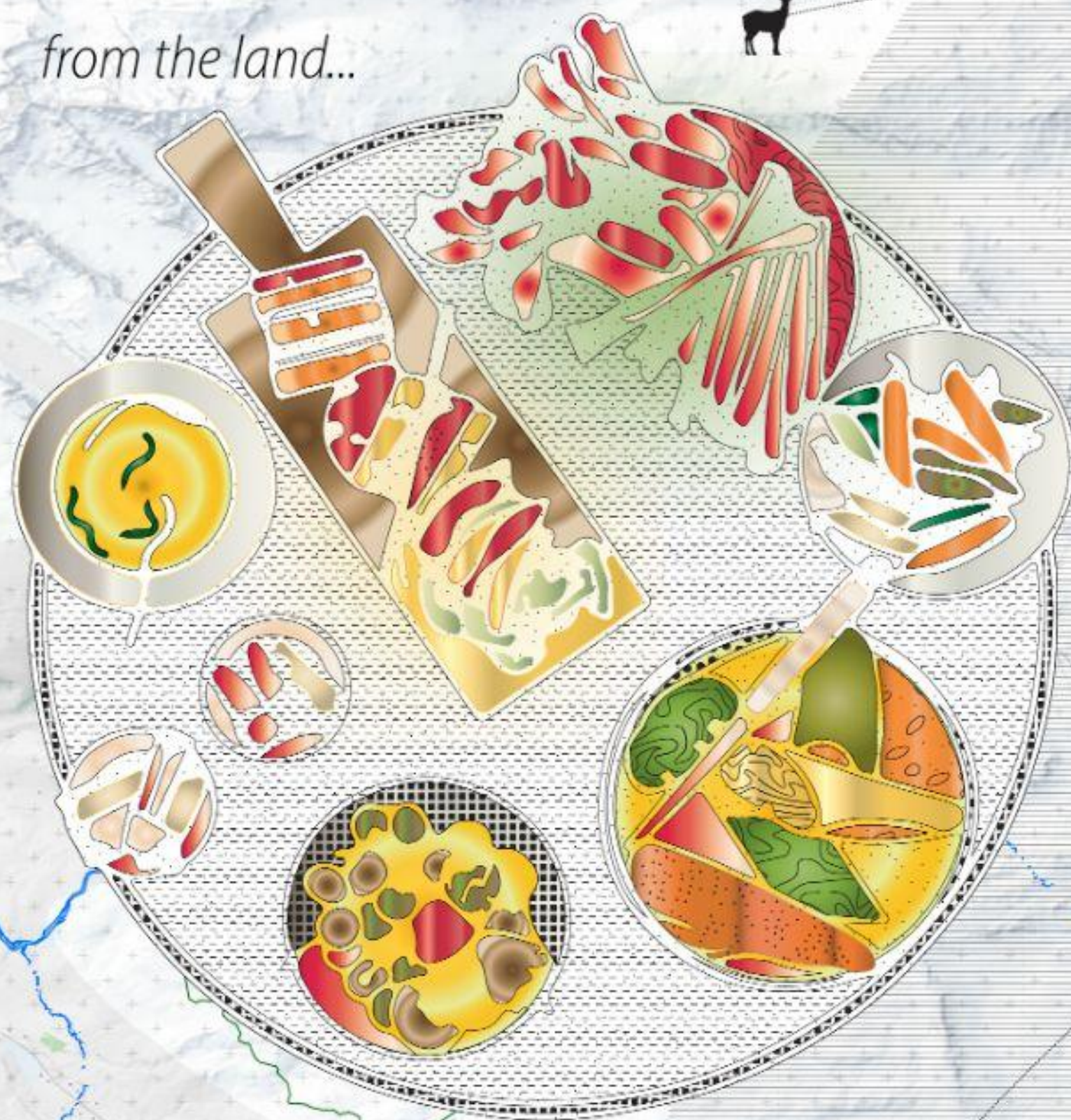
24 hours of daylight



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**Pierre Belanger asks: Whose lands are you on? Which territorial treaties are they part of? Whose stories and histories are privileged? Who are your collaborators? Are waters, rivers, estuaries, streams, seedlings, beavers, and other beings part of that change?**

from the land...



1. supporting caribou migration routes

4. returning to sacred fishing grounds

2. reconnecting to traditional trails

3. linking to ancestral waterways

5. reconnecting to medicinal forest

Gwich'in traditionally located their settlements adjacent to water for ready access to boats used for hunting and fishing. Following Pierre Belanger's theory of "No Design on Stolen Land", the first step towards decolonizing design is to remove settler structures. We propose to undesign the Dempster Highway and re-emphasize ancestral waterways as a corridor of abundance.

asphalt breaking rhizomes

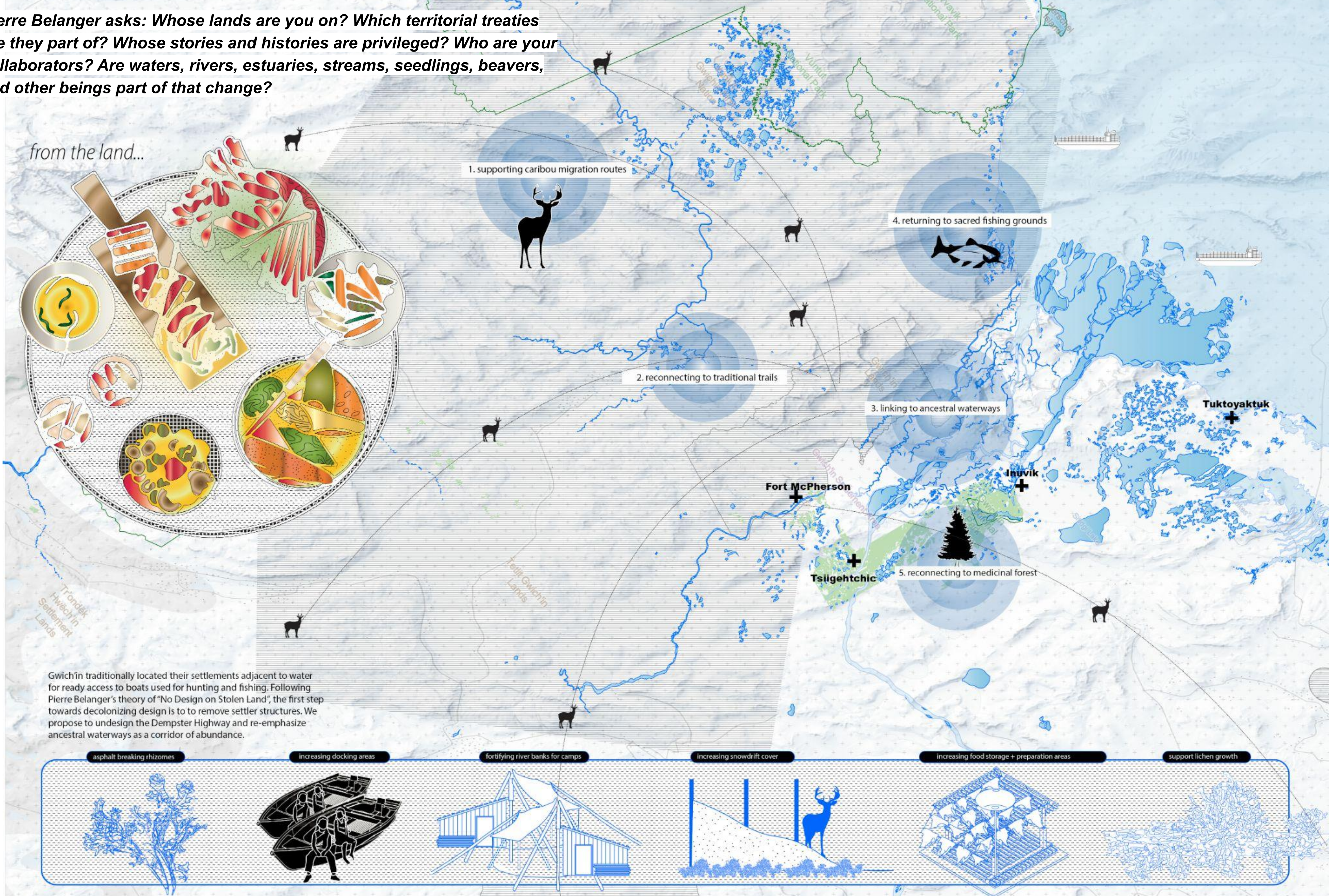
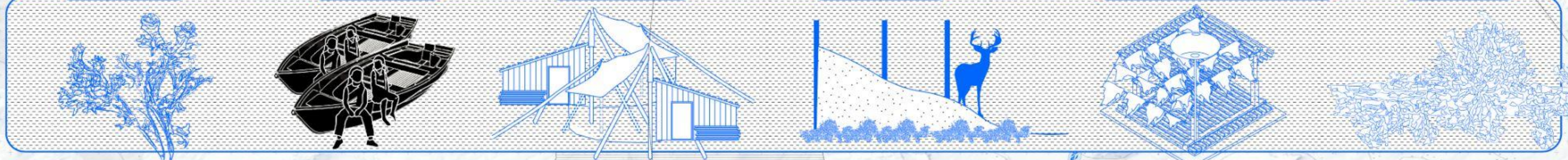
increasing docking areas

fortifying river banks for camps

increasing snowdrift cover

increasing food storage + preparation areas

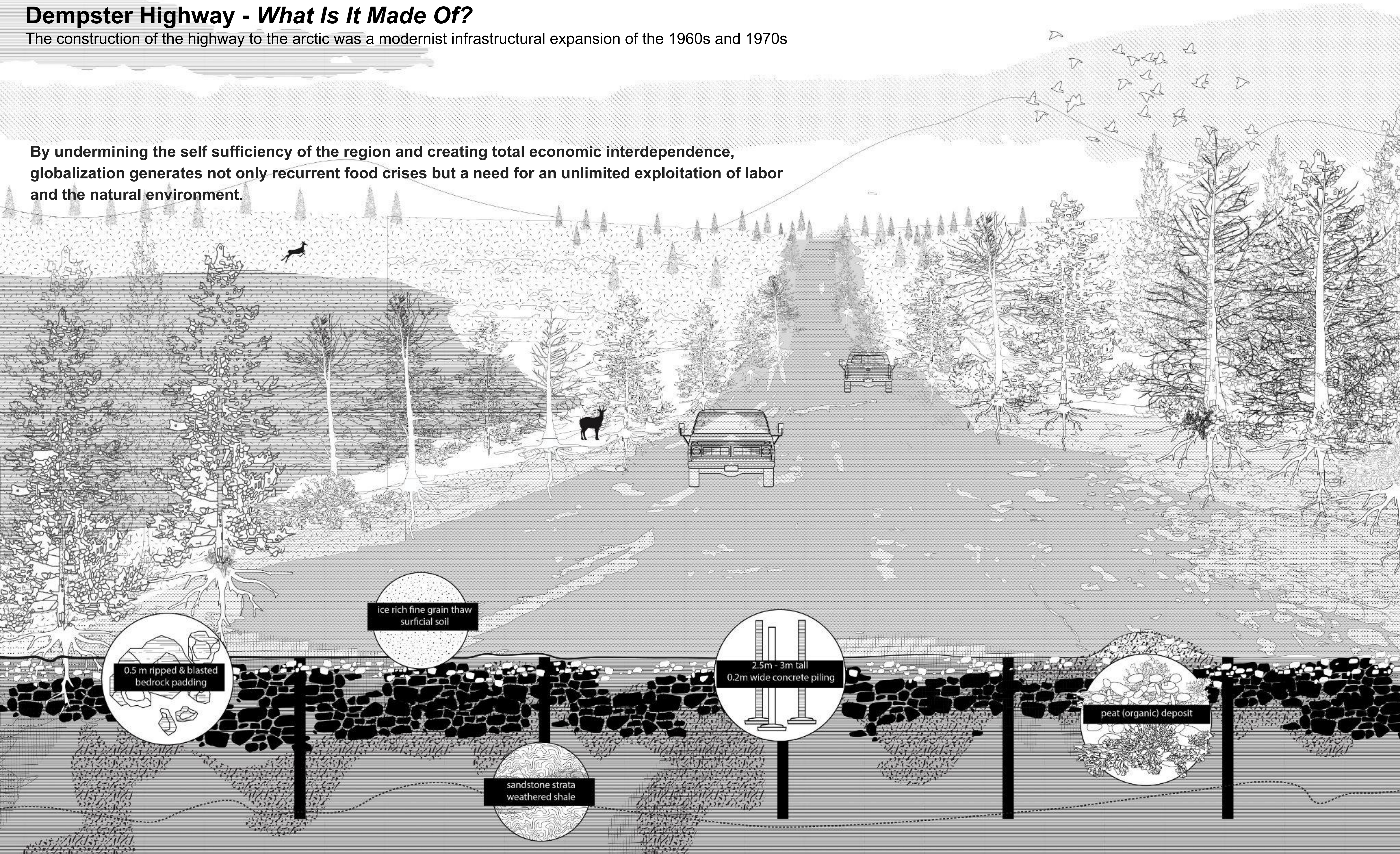
support lichen growth



# Dempster Highway - *What Is It Made Of?*

The construction of the highway to the arctic was a modernist infrastructural expansion of the 1960s and 1970s

By undermining the self sufficiency of the region and creating total economic interdependence, globalization generates not only recurrent food crises but a need for an unlimited exploitation of labor and the natural environment.



0.5 m ripped & blasted bedrock padding

ice rich fine grain thaw surficial soil

2.5m - 3m tall  
0.2m wide concrete piling

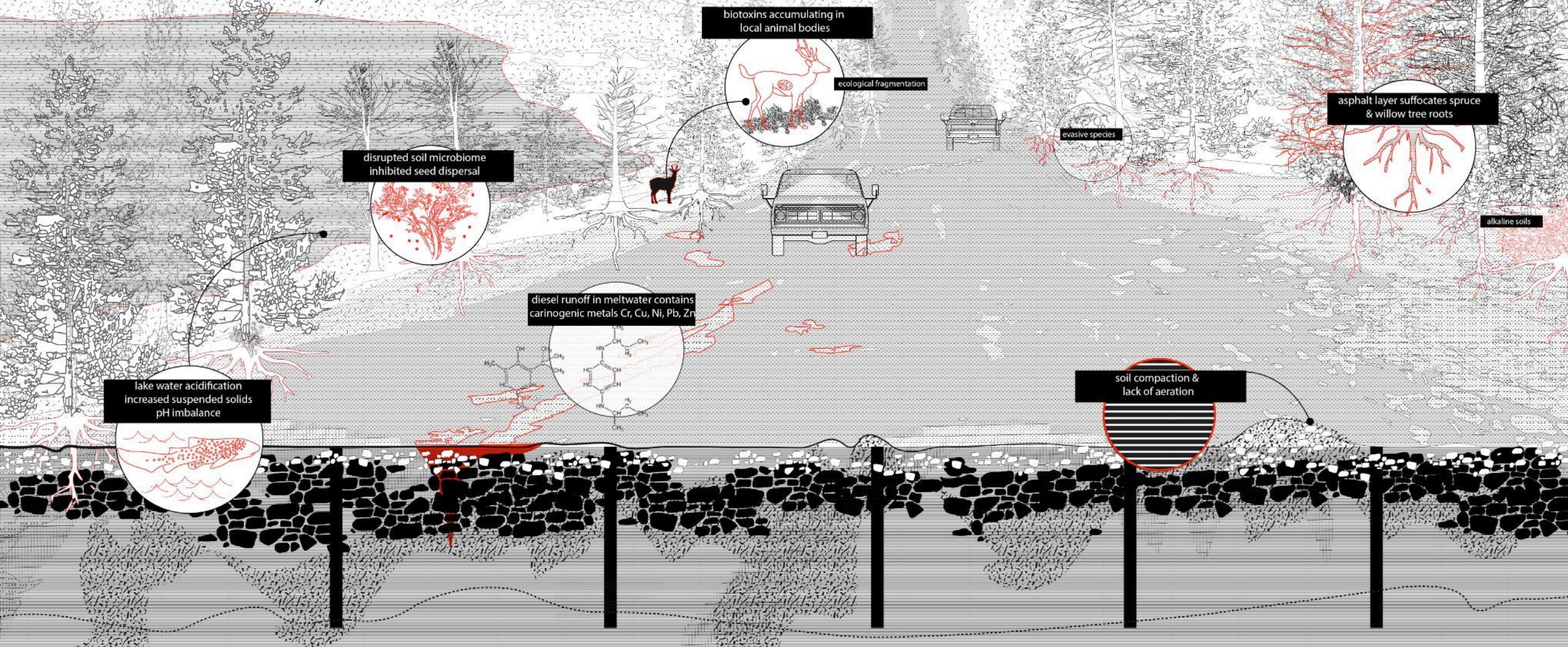
sandstone strata weathered shale

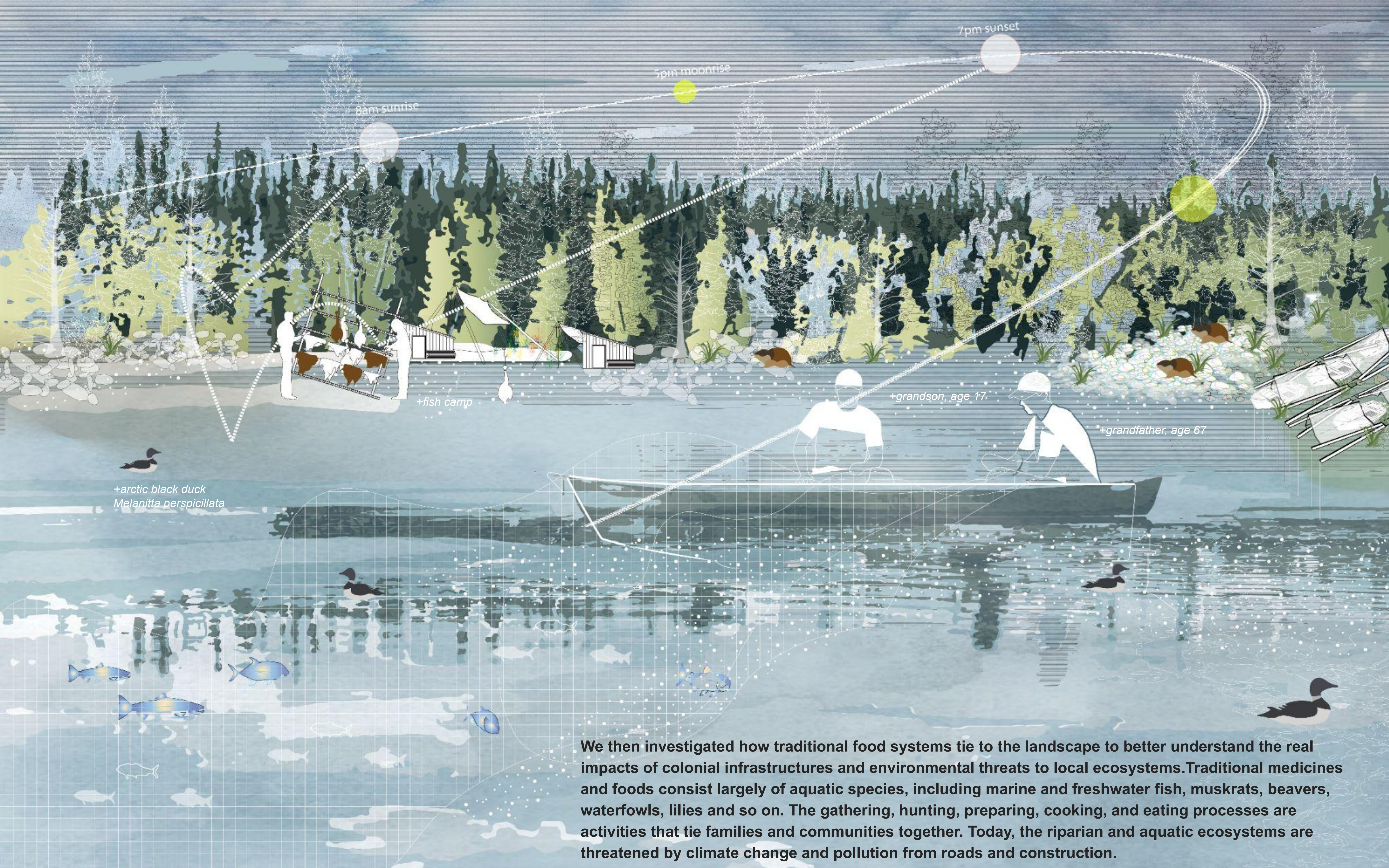
peat (organic) deposit

# Dempster Highway - Toxin Bioaccumulation

Local communities and local ecology lifeways currently bear the environmental cost of the highway

The Dempster Highway is an example of these issues. It releases pollutants into the landscape and fragments critical habitats essential for traditional food preservation and socio-environmental sustainability. This creates a vicious cycle; as local and traditional foods become scarce, communities grow more dependent on grocery stores and imported foods that must be transported by the highway. Cultural ties and lifeways are destabilized.





8am sunrise

5pm moonrise

7pm sunset

+fish camp

+grandson, age 17

+grandfather, age 67

+arctic black duck  
*Melanitta perspicillata*

We then investigated how traditional food systems tie to the landscape to better understand the real impacts of colonial infrastructures and environmental threats to local ecosystems. Traditional medicines and foods consist largely of aquatic species, including marine and freshwater fish, muskrats, beavers, waterfowls, lilies and so on. The gathering, hunting, preparing, cooking, and eating processes are activities that tie families and communities together. Today, the riparian and aquatic ecosystems are threatened by climate change and pollution from roads and construction.

.Traditional medicines and foods also depend on species that live on the land, including caribou, berries, hare, forest birds, and so on. The gathering, hunting, preparing, cooking, and eating processes are activities that tie families and communities together. Today, these habitats are threatened by habitat fragmentation and climate change,



+embankment

+drying fish

+mother, age 41

+son, age 29

+boiling muskrat

+muskrat drying

+caribou drying



+fish camp

5am sunrise

noon +18 hours of daylight

+fishing

+phosphorous filtering embankment

1pm sunset

+grandmother

+bearberries

And I noticed that the permafrost is melting. We used to... go for berries, use to go out on the land, and we could drink water from anywhere. ...Where we go for berries ... sometimes [there were] little holes with water in it [and we would] take the water out and as you feel inside there's ice, right there. That permafrost is that close to the surface. And now you don't even see that, and it's scary to drink water any place. (Elder Mary Teya, Oct 14 2010)



-38 fahrenheit outdoors

+traditional smoking fish

+white spruce

+Ted Francis, age 29

+Friend, age 31

+gathering

+caribou

+youth member

+snow fence

+firepit

+roast fish



-38 fahrenheit outdoors

+Joe Snowshoe, age 78

+Susan Eddy, age 91

+Mary Koe, age 48

+Aaron Charlie, age 19

+daughter, age 26

*Shimmer is a gift.  
Shimmer is the seasonal kiss of mutually thrilling encounters  
Temporal patterns that emerge  
from more-than-human shimmerings  
and dreamings--pulses of ancestral power,  
of life riding a wave that is always coming:*

*that the world is not composed of gears and cogs  
but of multifaceted, multispecies revelations and pulses.*

*Landscapes shimmer when they gather rhythms  
shared across varied forms of life.*

*Shimmer describes the coming in and out of focus  
of multispecies knots,  
with their cascading effects.*

*Landscapes enact more-than-human rhythms.*

**“Shimmer Still Beckons”**, Arts of Living on a Damaged Planet: Ghosts and Monsters of the Anthropocene  
by Anna Lowenhaupt Tsing, Nils Bubandt, Elaine Gan, Heather Anne Swanson

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