

A TRIP THROUGH TIME

Photo: Peter Maibier



Photo: Bruce Bennett

Exploring an ancient landscape on the Blackstone River

By Karen McColl

On a paddling trip, there's a lot to feast the eyes on: the river for obstacles, the mountains for scenery, the forest for wildlife. But only when we look more closely at the landscape does it reveal important clues to the area's history.

During a week-long pack-rafting trip on the Blackstone River, in northern Yukon, last summer, my friend Shannon Stotyn, a biologist, got me excited about something right at my feet: plants. It was fun spotting pretty and new-to-me flora around our campsites and on hikes, but the significance of these leafy wonders was lost on me until we returned home.

"Plants can tell us stories from long ago," explains Bruce Bennett. He coordinates the Yukon's Conservation Data Centre and is known for his encyclopedic knowledge of plants and personal herbarium with more than 3,000 species—one of the largest personal collections in Canada.

If, as Bennett suggests, we take a closer look at plants in the Blackstone area, we learn about an ancient landscape where woolly mammoths and giant bears once roamed. He says a botanist many decades ago played a role in unlocking part of its mystery.

The Blackstone River, in the Ogilvie Mountains north of Dawson City, travels through the eastern fringe of Beringia. During the last ice age, roughly 18,000 to 28,000 years ago, when most of Canada and the northern U.S. were covered by ice

sheets thousands of metres thick in places, an area between the Yukon and Siberia remained relatively ice free. Swedish botanist Eric Hultén coined this area Beringia in the 1930s, as he sought to explain how the same plants were found on both sides of the Bering Strait even though they didn't have the ability to send their seeds that far. He concluded there must have been a land bridge between Asia and North America during the last ice age that facilitated the migration of people, animals, and plants. The Bering land bridge—the floor of the Bering Sea—was exposed because much of the world's water was in a frozen state, resulting in lower sea levels than today.

ICE-AGE PLANTS

A major appeal of paddling the Blackstone is the access to spectacular hiking, which my group took advantage of as much as time and weather permitted. Often, a short trudge through black spruce, over ankle-twisting hummocks and tussocks, led to ridges that quickly rose above the treeline. On these walks, Stotyn would frequently stop with an exclamation of delight and pull out her phone. Sometimes I would crouch beside her in the foliage, peering at the latest specimen catching her eye. On Hart Ridge, a long spine connecting the Blackstone and Hart river valleys, she saw Yukon bellflower, Alaska phlox, and one-flowered anemone. On another hike, she found hardy slipper orchids, Arctic bladderpod, and American throwax (identifications later confirmed with iNaturalist, an app where experts like Bennett weigh in.)

Bennett says about 250 Yukon vascular plants (those with stems, leaves, and roots) are considered Beringian, meaning they were likely present during the last ice age. Some of these species dispersed widely.

"Some species have no problem travelling around the world," Bennett says, while others evolved in geographic "islands" and couldn't move out of a specific area.

That's why the Ogilvie Mountains, a specialized habitat that includes the jagged peaks of Tombstone Territorial Park as well as those we paddled through on our trip, are home to plants found exclusively in the Yukon. Those include the aptly named Ogilvie Mountains spring beauty and Ogilvie Range locoweed. Other Beringian species, like Porsild's poa, also have limited ranges in Alaska and the N.W.T. Bennett says this grass, common in the Ogilvies, is unusual for having male and female parts on separate plants (instead of both on the same plant), which limits its ability to propagate.

ICE DAM

To reach the starting point for our trip, we drove north for a couple of hours on the Dempster Highway. The northern edge of the Cordilleran ice sheet, which covered most of western Canada during the last glacial maximum (while the Laurentide ice sheet covered most of the rest of the country), was south of the Dempster, near the Stewart River, says Jeff Bond, head of surficial geology with the Yukon Geological Survey. Bond compiled the most comprehensive map of Beringia available, published in 2019, showing glacial limits and water courses 18,000 years ago. One reason Beringia was spared from the reach of the massive ice sheets was because of its relative aridity. Large coastal mountains, like those in the St. Elias Range, blocked precipitation coming from the Pacific Ocean jet stream, creating a rain-shadow effect.

"You very much were in an unglaciated environment," Bond says about the Blackstone, "and that's of course very unique in Canada."

"PLANTS CAN TELL US
STORIES FROM LONG AGO."

BERINGIA FACTS

The last **glacial maximum** (when ice coverage was most extensive) was about 18,000 year ago.

Beringia refers to the area between Yukon and Siberia that was mostly **ice free during the last ice age**.

The Beringian ecosystem is known as **mammoth steppe** and was rich with grasses, herbs, and plants. It was also home to mammoths, steppe bison, Yukon horses, American lions, scimitar cats, and giant short-faced bears.

The **first people** in the Yukon are believed to have migrated from Asia after the last ice age.

The **transition** from the last ice age to the present warm period was completed about 11,000 years ago.

Today, the Bering Strait is 85 km wide and less than 50 metres deep (source: University of Washington).

Source: Yukon Beringia Interpretive Centre



Beringia still had glaciers, but they were separate from the Cordilleran and Laurentide ice sheets, he explains. Bond says the Ogilvie Mountains had a series of alpine-valley glaciers, perhaps similar to the Rocky Mountains in Alberta today. Those glaciers fed the rivers and creeks below in the grasslands ecosystem, known as mammoth steppe. For that reason, paddling the Blackstone today is a bit different than it would have been 18,000 years ago, Bond surmises.

“It would have ... potentially had more of a braided channel, so it could have been a little trickier to traverse,” he says, adding that the water would have been milky with sediment. (Now the Blackstone River is meandering but swift, with rust-coloured water owing to weathered shale.)

Once the braided channels were navigated, an ice-age float down the Blackstone would have had a much different finale than today. Instead of emptying into the Ogilvie River, some 125 km from where we put in, the Pleistocene-era Blackstone emptied into Glacial Lake Hughes, a massive body of water formed by the Laurentide ice sheet damming the Ogilvie River.

“It would have been a very interesting place to see at that time,” Bond says.



Image: Compiled and interpreted by Jeffrey D. Bond, Yukon Geological Survey.

Photos (this double page): Nicolas Lamieux Photography

PERSPECTIVES ON TIME

If glaciers can shape a landscape and plants can tell us stories from long ago, then rocks catapult us unfathomably further back in earth’s history. Retired geologist Grant Abbott says paddling a river is like doing a “trip through time.” The Blackstone River, he explains, cuts through sedimentary rocks, including sandstone, limestone, and shale. There, rocks are as old as 300 to 500 million years and, in one small area, up to 1.7 billion years. That makes the most recent ice age seem like yesterday.

As a geologist for the Yukon government, Abbott spent three summers camped in the Ogilvie Mountains finding out what types of rocks are where, when they formed, and the processes that put them there. He spent several years after that developing a geological map of the area. “It gives you insight into how the world formed,” Abbott says about his work. “It gives a deep perspective of time and our place in time.”

My knowledge of geology is limited, but I do appreciate the aesthetics of rocks. One day, from our river-side camping spot, my friends and I followed a mostly dry creek bed to a picturesque canyon with caves and fossils described as “magical” in our hiking guide. Indeed, it was. Another afternoon, we got up close to a bunch of rocky turrets standing sentinel on a ridgetop. These castle-like rocks, or castellations, were ubiquitous in the upper Blackstone valley and embellished the otherwise nondescript mountainsides that greeted us around many bends of the river. Abbott says these castellations formed because they were more resistant to weathering than the surrounding rock. But he doesn’t find them impressive. “There’s nothing special about them,” Abbott said with a chuckle. “Sorry.”

But perhaps these rocks are special, if only because they are still there, because they didn’t get pulverized by an ice sheet. Together with the plants, valleys, and river itself, these rocks help to paint a picture of a time long, long ago. **Y**

