## ALASKA

### WINTERTIME TRAVEL, ACCESS, AND CHANGING SNOW AND ICE CONDITIONS IN ALASKA'S COPPER RIVER BASIN

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In the Copper River Basin, less reliable snow and ice conditions have been increasingly common in recent years and present challenges for wintertime subsistence activities such as trapping, hunting, and gathering firewood. A new National Park Service technical report, written by anthropologist Odin Miller (2023) from the Ahtna Intertribal Resource Commission through a co-stewardship funding agreement with Wrangell-St. Elias National Park and Preserve, explores these impacts. The report is based on interviews with local residents who have extensive knowledge and experience with wintertime activities in the Copper River Basin. A few highlights from the report follow.

- In past decades, crossing rivers was less treacherous and could be done earlier in the fall and later in the spring. During midwinter, travel across or along rivers and streams mostly tended to be predictable.
- Over the course of several decades, people have observed large-scale changes in ice conditions. One of the most significant outcomes has been the difficulty this has created for trappers and others trying to access the east side of the Copper River during the winter months.
- Decreased snowpacks—especially during the early season—have increasingly presented an obstacle to wintertime access along the snowmachine trails used by trappers and others.
- Additionally, several interview respondents reported that increased shrub growth had made it more difficult to travel across the winter landscape, requiring them to cut trails through the forest—something that never used to be necessary.

The full technical report can be downloaded from https://irma.nps.gov/DataStore/DownloadFile/687226.

#### REFERENCES

Miller, Odin
2023 Winter Travel, Access, and Changing Snow and Ice Conditions in Alaska's Copper River Basin. Natural Resource Report NPS/WRST/NRR—2023/2508. National Park Service, Fort Collins, Colorado. https://doi.org/10.36967/2298854

### HUNTER'S CACHE FOUND AT THE LOST JIM LAVA FLOW, IMURUK LAKE, ALASKA

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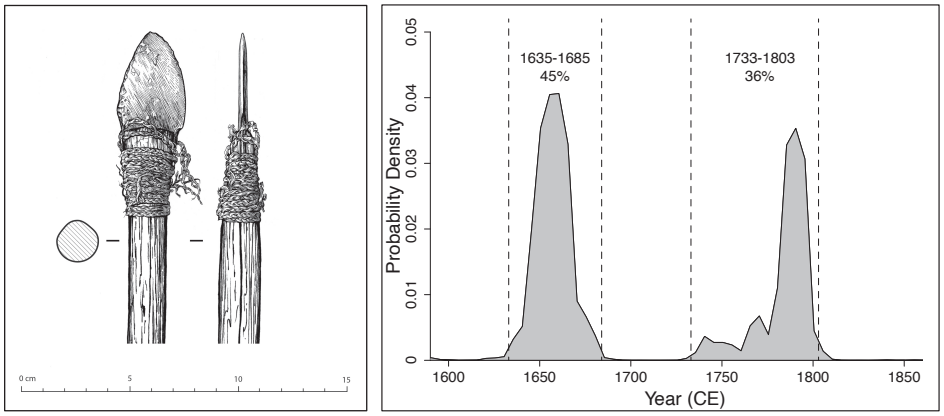
The Lost Jim Lava Flow is a pāhoehoe lava flow field located within the Bering Land Bridge National Park at the center of the Seward Peninsula in northwestern Alaska. The lava flow is less than 2,000 years old and consists of numerous collapse pits, lava tube segments, and a lava delta where it empties into Imuruk Lake (Hopkins 1959). In June of 2010, while conducting studies on permafrost in the region, two authors, Benjamin Jones and Guido Grosse, stumbled upon two archaeological sites located in collapsed lava pits in the area near where the lava delta enters the lake (Fig. 1). One pit contained a hunter's cache with exceptionally well-preserved traditional hunting and boating equipment that included two double-ended wooden kayak paddles and the wooden shaft fragments of three caribou lances. One of the shaft fragments has a tanged or shouldered, ground slate end blade (lance head) still lashed in place with braided sinew. Two other shaft fragments have clefts in one end like that which holds the ground slate blade, while another ~2 m long shaft fragment does not display a cleft for an end blade. The other pit contained a fire hearth, but no associated artifacts were identified. The artifacts were left in place in their original position and NPS staff was notified about the findings and location upon return from the reconnaissance trip.

In July 2011, National Park Service archaeologists carefully collected its contents, which are now stabilized, treated, and stored in the NPS Alaska Regional Curatorial Center in Anchorage, Alaska (accession number BELA-00120). The list of collected and cataloged materials numbers 14 items, and these conjoin to form an apparent total of five tools: two paddles and three lances (Fig. 1). The

*Figure 1. Collapsed lava pit (left), the hunter's cache (upper right), and the hearth (lower right) discovered at the Lost Jim Lava Flow, Imuruk Lake, Alaska, in June 2010.*

finds are noteworthy for the exceptional organic preservation and relatively intact nature of the tools, including wood, perishable fiber hafting, and a single still-hafted stone weapon tip (Fig. 2).

In June of 2013, two samples from the lance with the tanged slate end blade were submitted to Beta Analytic for radiocarbon dating. The samples consisted of a piece of wood from the lance shaft and a piece of the braided caribou sinew that was tied to the wood $^{14}$C sample. Using the IntCal20 calibration curve (Reimer et al. 2020), the 95% calibrated radiocarbon age ranges and probabilities for the wood sample were 1526–1555 (6.2%), 1633–1683 (49.3%), 1737–1755 (4.2%), 1761–1801 (29.2%), 1930–1932 (0.3%), and 1938–1950 (5.7%) CE (Common Era) (Table 1). The age ranges and probabilities for the sinew



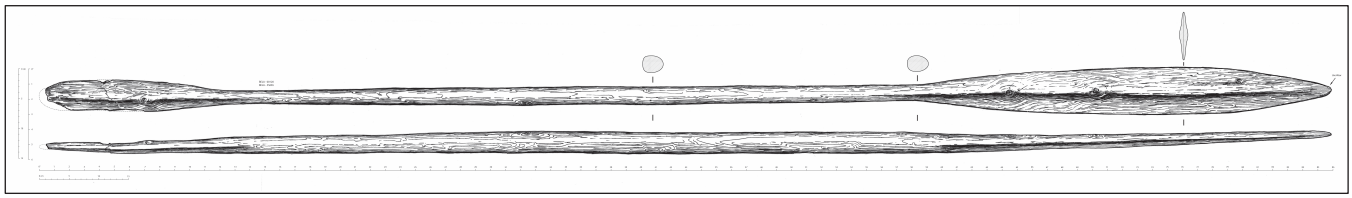



*Figure 2. Professional sketch of the lance and blade (upper left) and the kayak paddle (bottom). Illustrations by Eric Carlson. The summed calibrated probability density age ranges for the two samples (upper right).*

*Table 1. Radiocarbon dates from the hunter's cache. Bold age ranges show the likely time periods of samples.*

| Lab Number | Conventional Radiocarbon Age[1] ± 1σ | 95% Calibrated Age Ranges (CE)[2] | Material | δ$^{13}$C (‰) |
|---|---|---|---|---|
| Beta-350955 | 230 ± 30 BP | 1526–1555 (6.2%), **1633–1683 (49.3%)**, 1737–1755 (4.2%), **1761–1801 (29.2%)**, 1930–1932 (0.3%), and 1938–1950 (5.7%) | Sinew | –17.8 |
| Beta-50956 | 240 ± 30 BP | 1531–1536 (0.9%), **1636–1684 (42.6%)**, **1733–1803 (42%)**, 1928–1950 (9.5%) | Wood | –22.7 |

1. d$^{13}$C-corrected age.
2. Calibrated with the Intcal20 curve (Reimer et al. 2020).

sample were 1531–1536 (0.9%), 1636–1684 (42.6%), 1733–1803 (42%), and 1928–1950 (9.5%) CE. We exclude the post-1900 age ranges because of the precontact nature of the tools and the very low probabilities associated with them. If we take the summed calibrated probability density age ranges for the two samples (Ramsey 2001), the most likely time when the wood was grown and the caribou was alive, occurs between 1635–1685 CE (45%) and 1733–1803 CE (36%) (Fig. 2).

The Imuruk Lake region and lava fields have sites thought to be associated with late precontact human use and occupation (Schaaf 1995). Previously, a large caribou processing site on the northern shore of Imuruk Lake has two radiocarbon dates placing it in the 1500–1750 CE period (Harritt 1994). Two previously undated house features associated with the lava field on the east side and south side of Imuruk Lake were assigned to the pre-1750 CE period based on artifact typology and the lack of items of European manufacture. An additional nine special use sites in the lava fields were also previously identified but no artifacts had been recovered from any of these sites, and they were all tenuously assigned to the pre-1750 CE period. Thus, the dates on the Lost Jim Lava Flow hunters cache begin to concretely delineate the ages of precontact use and occupation of the lava fields for the first time.

The area surrounding Imuruk Lake was a place where the territorial boundaries of four nineteenth-century regional groups met (Schaaf 1995). Ray (1964) noted the presence of an abandoned nineteenth century settlement called Mitlakmiut located on top of a hill near a spring on the west shore of Imuruk Lake where piles of caribou antlers are visible at the surface. Daniel Qakiqsinauraq Karmun, Sr., born in Deering in 1926 to a reindeer herding family, a former director of the Kawarek BIA Reindeer Program in the 1970s, and a respected Indigenous leader in the region, describes communal caribou hunts that date to the late-1800s: "My brother would tell me stories about caribou during the latter 1800s right up there at Imuruk Lake. There were people—Natives that lived there—would have a trail from the lava beds up to the south side where they had their camps. And whenever the caribou would come around, they would use the lava beds as a source of getting them" ('Episode 4: The Caribou Crisis' Transcript | Project Jukebox 2023). By the early 1900s caribou populations on the Seward Peninsula had crashed to the point that communal caribou hunts were no longer viable (Burch 2012).

It is likely that a more diverse suite of artifacts and records of past human use remain to be discovered in the late Holocene lava tubes and collapsed pits in the Lost Jim Lava Flow near Imuruk Lake. The use of the region during precontact times and throughout the historic period might provide an interesting lens on the shift in tools and techniques for subsisting in this crossroads region of the Bering Land Bridge Park and Preserve during a period of rapid climatic and socioenvironmental changes associated with the Little Ice Age (LIA; 1250–1850 CE), post-LIA warming (> 1850 CE), and European contact (> 1816 CE).

## REFERENCES


Burch, Ernest S. Jr.
2012 *Caribou Herds of Northwest Alaska, 1850–2000*. University of Alaska Press, Fairbanks.

'Episode 4: The Caribou Crisis' Transcript | Project Jukebox [online], 2023. Available from: https://jukebox.uaf.edu/episode-4-caribou-crisis-transcript [Accessed 7 Feb 2023].

Harritt, Roger K.
1994 *Eskimo Prehistory on the Seward Peninsula, Alaska*. U.S. Department of the Interior, National Park Service, Alaska Regional Office, Anchorage, Alaska.

Hopkins, David M.
1959 History of Imuruk Lake, Seward Peninsula, Alaska. *Geological Society of America Bulletin* 70(8):1033–1046.

Ramsey, Christopher B.
2001 Development of the Radiocarbon Calibration Program. *Radiocarbon* 43(2A):355–363.

Ray, Dorothy J.
1964 Nineteenth Century Settlement and Subsistence Patterns in Bering Strait. *Arctic Anthropology*, 2(2):61–94.

Reimer, Paula J., William E. Austin, Edouard Bard, Alex Bayliss, Paul G. Blackwell, Christopher B. Ramsey, Martin Butzin, Hai Cheng, R. Lawrence Edwards, Michael Friedrich, and Pieter M. Grootes
2020 The IntCal20 Northern Hemisphere Radiocarbon Age Calibration Curve (0–55 cal kBP). *Radiocarbon* 62(4):725–757.

Schaaf, Jeanne M.
1995 *Late-prehistoric Iñupiaq Societies, Northern Seward Peninsula, Alaska: An Archeological Analysis, AD 1500–1800*. PhD dissertation, Department of Anthropology, University of Minnesota, Minneapolis.