



Paleo-Eskimo Culture at Matcharak Lake



Thousands of bones and artifacts, well-preserved within the permafrost layer, were found at Matcharak Lake. The 2008 excavations have already confirmed many assumptions about Denbigh people 4000 years ago—the extensive use of bone and antler as tools, and that these earliest of Paleo-Eskimos were skilled artisans.

As archaeologists, we realize that the record will always be incomplete; therefore, we must work with the information we have.

Paleo-Eskimos are the ancient ancestors of modern Eskimos, as recognized through archaeological studies throughout Alaska, Canada, and Greenland. In Alaska, the earliest members of this group are known from a distinctive stone tool technology known as the Denbigh Flint Complex (say DEN-bee). When archaeologists talk about Denbigh, they are not only referring to their material culture, i.e. the stone tools, but also to the people who made them. More broadly, Denbigh people are part of the Arctic Small Tool tradition, who were the first humans to colonize most of Arctic North America 5000 years ago.

The importance of bone

It is believed that Denbigh Paleo-Eskimos, after processing animals for consumption, would often discard the unusable remains in camp, away from where people were working and sleeping. Rarely are the bones of this type of *midden* (prehistoric trash dump) discovered at ancient archaeology sites in the Arctic.

Although 75 to 100 Denbigh sites are known in Alaska, only a handful (literally) of bone fragments are known from all of these sites. Without bones, questions about diet, seasonal mobility, and hunting strategies are unanswerable, although archaeologists have proposed numerous hypotheses about Denbigh life-ways.

However, at a recently-discovered site near Matcharak Lake, in Gates of the Arctic National Park and Preserve, the conditions of shallow permafrost and the ongoing formation of peat were just right to preserve the discarded remains of numerous Denbigh meals—perfectly preserved until excavation in 2008. With the discovery of a frozen bone midden at Matcharak Lake, archaeologists can now begin to reconstruct the behavior of these Native Alaskans.

Archeological discovery

The Matcharak Lake site perches on a 15-meter (45-foot) terrace between Matcharak Lake (see photo) and the Noatak River. It was discovered through routine archaeological survey of the upper Noatak River drainage in 2007 by Andrew Tremayne and Cody Strathe, both student archaeologists for the National Park Service. Prior to this discovery, no prehistoric sites were known in the area.

Recognizing the potential for recovering *organics* (e.g., bone, antler, teeth, and plants) associated with Denbigh Flint Complex tools, National Park Service archeologist Jeff Rasic arranged for a team of archeologists, including Tremayne, to excavate a portion of the site in 2008.

Excavation at Matcharak Lake

To access this site, a crew consisting of Tremayne and four other archeologists were flown by float plane directly to the area of excavation. Technical



equipment was flown in, including a *total station* (surveying instrument) for recording the exact location of artifacts and bone, and screens for sifting dirt to capture very small artifacts. For three weeks, the crew worked patiently and slowly, waiting for the permafrost to melt enough to actually dig in the soil.



Learning about Denbigh

At the Matcharak site, Tremayne and the others recovered thousands of bones of various kinds (caribou, fish, and migratory birds), along with tools and incised-bone art work. Now, the work of archeologists can unfold further as they begin to address some of the questions that have puzzled them for years.



For his part, Tremayne has chosen (for his Master's thesis at the University of Wyoming), to analyze the site's animal remains, focusing on what the bones reveal about the diet and hunting strategies of site occupants. However, as Tremayne explains, because Matcharak Lake is a localized, small-scale mountain camp, he can only really talk about how these Paleo-Eskimos behaved while at that camp.

The discovery of unrivaled preservation of bone, including the articulated caribou thorax (top), at Matcharak Lake, makes this a very important Denbigh site.

Incised bone artwork (middle) and designed bone tools (L & R, lower). The tool at right is associated with a caribou mandible and bone fragments.

Testing hypotheses about Paleo-Eskimo life-ways

Some researchers have suggested there is evidence that Denbigh people spent their winters in the mountains and the summer on the coast, but the presence of at least one caribou fetal bone, fish, and migratory birds at Matcharak Lake supports the hypothesis that, at some point, Denbigh occupied Matcharak Lake in early summer or spring. If Denbigh hunters were specialized caribou hunters, the expectation would be to find mostly caribou bones. So, what explains the fish, birds and other mammals represented in the midden?

Tremayne plans to analyze the bone samples in greater detail to determine exactly what species of animals were exploited and how frequently each is represented in the bone midden. A spatial analysis of the bone and artifacts will attempt to demonstrate a timeline of activities and food procured by Denbigh as they waited for the annual caribou migration to occur. Once the caribou arrived in their massive numbers—representing massive numbers of calories—all subsistence activities would have been geared towards taking as many caribou as possible.

But how is it possible to test this hypothesis? Tremayne will look for differences in radiocarbon ages of the bone and charcoal, and also use stable isotopes recovered from the teeth of caribou found in different levels of the deposit, in order to determine if the camp was only occupied once, or numerous times over generations. If there were separate times that Paleo-Eskimos occupied the site, it will be important to determine if there are different animals represented during the separate occupations.

Solving the puzzle of whether Denbigh were caribou hunting specialists, or if their diet was broader and more generalized, will have to wait until the radiocarbon and isotope analyses are complete.

Future directions

Having finally recovered animal bones associated with a Denbigh site, it is certain that any future site discoveries will be compared with the Matcharak Lake assemblage. Only a larger sample of Denbigh sites with preserved bones will help answer the questions: How did Denbigh diets differ from coast to mountains? What other foods and animals were used by Denbigh and why? How have diet and subsistence strategies changed over the past 4000 years? Did Denbigh people travel to the coast for part of the year?

Additionally, knowing the geological conditions that led to the excellent preservation of this ancient camp, archeologists can design more efficient survey and testing strategies that should help future expeditions locate other important Denbigh camps.

Archaeologists realize that the record will always be incomplete, and the best theories must be proposed with the information at hand. For the time being, Matcharak Lake has expanded the archeology database about Paleo-Eskimo culture in Alaska. Future excavations at this site should provide even greater detail on camp organization and activities. Until then, Tremayne will work with what he has.

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For more information

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Archeologists dig for bone and artifacts in the permafrost (left).

The Matcharak Lake site is in western Gates of the Arctic (location as dot and circle on maps).