Life Along the Lakeshore:
A Faunal Analysis of a Late Holocene Lakeside Site in Interior Alaska

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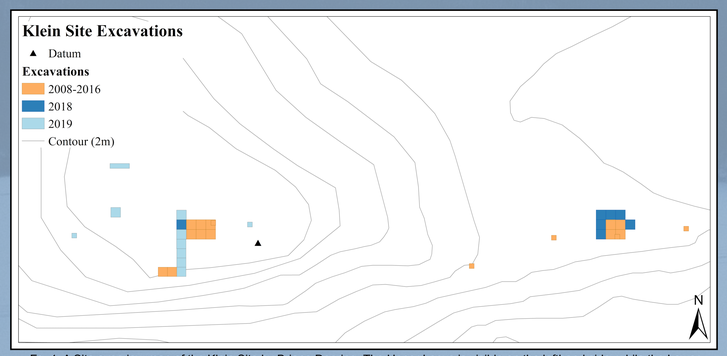
Introduction

Late Holocene subsistence practices on interior Alaskan lakes are poorly understood (Potter 2016) by archaeologists, despite the known importance of lacustrine settings and resources in Dene oral histories as well as ethnographic records from the post-contact period (Andrews 1975; Bernet and Ruppert 2001; Guédon 1971; Hilmer 2019). Initial analyses of faunal remains from the lower locus of the Klein Site (XBD-00362), a multicomponent site in the Tanana River Valley are presented here. The results indicate a broad diet breadth including fish, waterfowl, small mammals, and large ungulates. This work will be combined with ongoing analyses of the upper locus of the site, as well as the nearby Bachner Site (XBD-00155) to reconstruct diachronic subsistence patterns on the shore of Quartz Lake.

Although there is evidence that a change in subsistence patterns associated with the Athabascan Transition took place between 2000-1000 cal BP, the cause and speed of this transition remains in question (Doering et al. 2020: Kristensen et al. 2019, 2021). This change has been characterized as a shift from specialized big game hunting with associated high residential mobility, to a greater reliance on fish, caribou, and other highly seasonal resources, paired with increased logistical mobility and reliance on storage (Potter 2008, 2016:537-538). Some researchers argue that this shift took place over a short period of time, possibly in response to environmental shifts triggered by the White River Ash east event (Clague et al. 1995; Fast 2008; Kristensen et al. 2019). Doering and colleagues (2020) argue instead that this change in subsistence practices was gradual, taking place between 1800-1200 cal BP, in association with an increase in population. Regardless of the speed at which this transition took place, it remains unclear to what degree this change impacted subsistence practices in lacustrine contexts.

Site Background

The Klein Site is located on a sand dune that overlooks Quartz Lake from its North Shore (Fg. 2). The site spans roughly 100 m in length and features two loci, referred to as the Upper Locus and Lower Locus (Fg. 1). The Upper Locus is located on the western end of the dune and is roughly 5m higher in elevation than the lower locus, which is located 50 m to the east. The two loci together contain components spanning 4800-750 cal BP (Reuther 2013:349-350). Excavations at the Klein Site have been conducted since 2012, with Carol Gelvin-Reymiller, Joshua Reuther, and Briana Doering consecutively leading excavations. This poster considers results of the analysis of faunal remains from 0-30cmbd within the Lower Locus, representing the Late Holocene component.

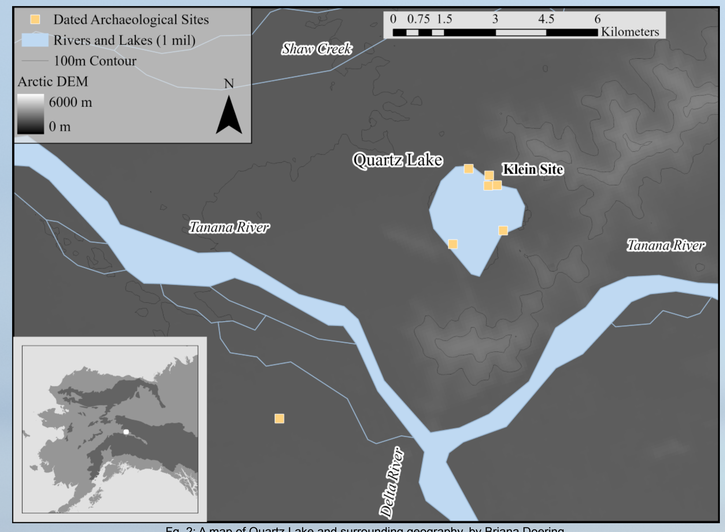


Fg. 1: A Site overview map of the Klein Site by Briana Doering. The Upper Locus is visible on the lefthand side, while the Lower Locus is visible on the righthand side.

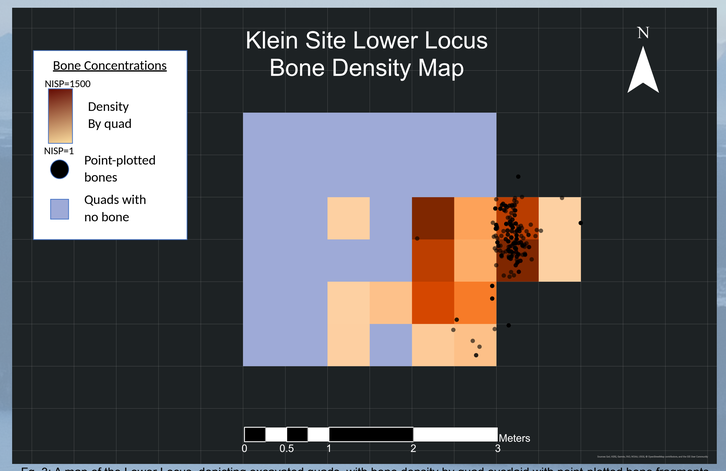
Methods

Site catalog numbers often denoted multiple bones or bone fragments, which were subdivided into the smallest possible groups based on shared taphonomic and morphological characteristics. Maximum length in mm was recorded for the largest specimen in a group, while the total weight of the group in mg was recorded. Counts were obtained for bone, teeth and antler. Finally, a suite of taphonomic markers including weathering, root etching, cut marks, percussion marks, as well as carnivore and rodent damage were recorded when present.

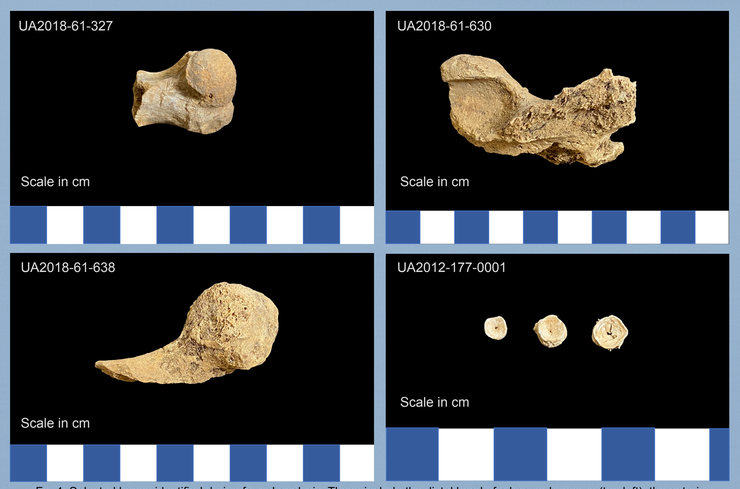
Taxon and other variables were assigned to specimens when possible, often by comparison to the University of Wyoming Archaeological Repository's zooarchaeological reference collection. Element, portion of element, and segment of portion were also recorded based on the tripartite system employed by Gifford and Crader (1977), and based on the modifications made by Anderson and colleagues (1994). Elements were sided when possible. Degrees of epiphyseal fusion were recorded, and bones were characterized as unburned, indeterminate, burned, partially calcined, or fully calcined. Specimens were assigned a minimum size class when possible, based on Hillary Hilmer's (2019:46) size class system.



Fg. 2: A map of Quartz Lake and surrounding geography, by Briana Doering.



Fg. 3: A map of the Lower Locus, depicting excavated quads, with bone density by quad overlaid with point-plotted bone fragments.



Fg. 4: Selected bones identified during faunal analysis. These include the distal head of a beaver humerus (top left), the anterior articular facet of a lumbar moose vertebra (top right), the head of a large mammal rib (bottom left), and three fish vertebrae.

Results & Implications

4017 individual specimens across 584 catalog number entries have been identified at the lower locus of the Klein Site, with 251 catalog numbers assigned a size class. Of these, mammal bone make up the majority, with an NISP of 448. Large mammal bone dominating that subset of the assemblage, although fish and bird bone are also well represented (Fg. 5). These results stand in contrast to Doering and colleague's study (2020:480-481), which indicates that cooking was focused on fish across the whole span of occupations at the Klein Site based on the isotopic signatures of hearth residue fatty acids. This difference may be due to the highly fragmentary nature of the assemblage, and the likely taphonomic bias in favor of large mammal bone, or may indicate that hearth residue analysis methods need further refinement. However, further research is required to determine which line of evidence provides a clearer picture of prehistoric subsistence practices.

Another initial pattern worth highlighting is the conspicuous lack of teeth and skull fragments identified during analyses. For example, despite examining more than 4000 bones and bone fragments, no tooth enamel was identified, a surprising fact given that teeth are among those skeletal elements which preserve best, along with being more numerous than other elements in an individual. This might be suggestive of differential transport of low-utility elements from kill sites (Binford 1978:60-61), or could simply imply earlier stages of butchery and animal processing took place nearby, but not within the excavated portion of the site.

The majority of the analyzed assemblage is burned, partially calcined, or fully calcined, with 85.6% of the total assemblage falling into these categories. The predominance of burned and calcined bone in this assemblage might be explained by the presence of a hearth feature within the excavated area of the site, by the better preservation of burned and calcined bone, or by unburned animal bone being processed elsewhere. Finally, bone is heavily concentrated in the eastern portion of the lower locus (Fg. 3), in close association with a hearth feature.

Future work will include the analysis of faunal remains from the deeper layers of the Lower Locus of the Klein Site, all layers of the Upper Locus, and from the nearby Bachner Site. Bone fracture freshness by site and level, relative frequencies of taxonomic categories, and other variables can then be compared diachronically. Finally, species level identifications for fish bone will help establish the changing environment of Quartz Lake across time.

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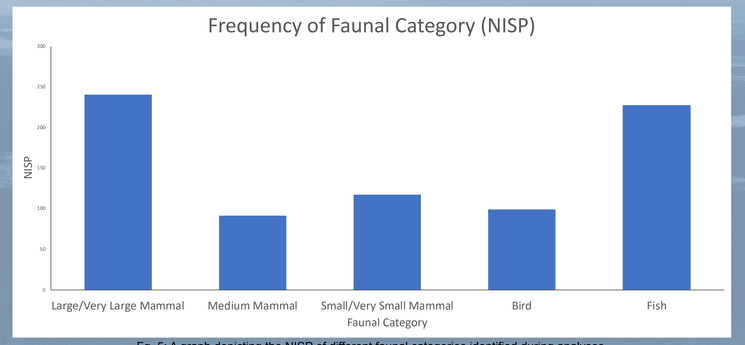

Fg. 5: A graph depicting the NISP of different faunal categories identified during analyses.

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Background photo by Eric Coppercurrent, depicting a view of Quartz Lake and surrounding landscape. Used with permission.