Jane C. Waldbaum Scholarship Field Report
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This summer, with the generous help of the Archaeological Institute of America and Professor Jane C. Waldbaum, I attended the Tanana Basin Field School in Subarctic Archaeology, held in interior Alaska under the direction of Dr. Ben A. Potter, University of Alaska Fairbanks. My particular interest within archaeology is the field of Geoarchaeology, which integrates geographical and geological information in order to interpret the contexts in which archaeological remains are found. I am especially interested in soil science and how soil interpretation can help archaeologists predict where sites are most likely to be found, discover the processes by which artifacts were buried and transformed, and explain accurately the time scales found within a site. The Mead Site, along the Tanana River outside of Delta Junction, Alaska, is one which incorporates geoarchaeological analyses into its interpretation of the artifacts discovered at the site. I hope someday to particularly focus my geoarchaeological research in areas of high altitude and arctic climate, so the Mead Site, from which the Alaskan Mountain Range is visible, was a perfect beginning to my anticipated career.

At the Mead Site, we dug through late Holocene eolian dune soils down to the late Pleistocene, roughly 14.5 kya. The Pleistocene-Holocene boundary (ca. 11.7 kya) is marked by the end of the Late Glacial Maximum (ca. 13-10 kya); the end of the Pleistocene, from about 15 kya, is considered widely to be the emergence of Beringian humans into Alaska via the Bering land bridge. The loess (wind-blown silt) deposits we dug through were stratified and relatively unbioturbated, though seasonal freeze-thaw cycles caused cryoturbation to the existing soils. However, because slow deposition of loess was drawn out over long periods, and because aside from very small events of colluviation (sudden deposition of sediment fallen from a slope) there was relatively little additional deposition or erosion, we found that the soil strata in the site stretched across most of the site with little variability.

The artifacts found established that the Mead Site is a prehistoric hunting camp, where small groups of hunters would travel seasonally to a bluff along the Tanana River overlooking the floodplain of the large braided river caused by periglacial outwash. Among the artifacts found were stone tools such as bifaces, flakes, and microblade technology, and faunal remains, including bones and teeth from large ungulates such as wapiti and bison, rodent skeletons (likely associated with krotovinas - rodent burrows which interrupt and bioturbate the original depositional context), and fish vertebrae found intact. Also found were several hearths, sediments and residues from which are used in analysis to interpret the frequency of site visitation and subsistence behaviors. In these hearths, thousands of stone tool remnants mainly consisting of flakes and broken tools were found, suggesting that the crafting of stone tools was taking place in this camp site, while the finished tools were being used and discarded elsewhere. Of the faunal remains discovered, no skeletons were found whole, and no bones whatsoever were found in the strata above about 10 kya. This showed that the hunted animals were killed and butchered elsewhere, then the hunters would bring back the butchered pieces of meat to the hunting site for further processing. This also shows that before 10 kya, resources were plentiful,

and the hunters could afford to discard the bones after eating the meat; yet, after about 10 kya, the bones disappear from the archaeological record, which suggests that resources were scarce, and the hunters were using every piece of the animal they could get and leaving no part unused or uneaten.

As was explained above, the Mead Site tells us much about the subsistence patterns, resource scarcity, and flint-knapping methods of the Beringian people. Another aspect of the site which was particularly interesting to me was the appearance of several overlapping dark-colored paleosols (ancient soil horizons) near the bottom of each archaeological unit. In cross-section (a picture of which I have attached along with this report), it is obvious how each soil horizon has distinct transition lines based on color and texture. The paleosols towards the bottom of the cross-section show repeated and frequent cultural habitation, due to the high levels of phosphorus and carbon found in chemical analyses of these soil horizons. It is visibly apparent in these horizons the chemical changes that occur in soil when humans inhabit an area over time.

Though I have had many geology and soils courses in lecture halls and classrooms, the application of geology and soil science can only be truly learned in the field. This experience was instrumental to my growth as a geoarchaeologist, as it is my first experience applying my geological knowledge to the field of archaeology *in situ*, as it were. As a financially insecure undergraduate living in Pittsburgh, which is approximately 3000 miles away from Fairbanks, it is highly unlikely that I would have been able to have this experience without the support of this scholarship. I cannot begin to express my eternal gratitude both to everyone the AIA and to Jane C. Waldbaum herself for making this amazing opportunity possible for me.

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