

Rock Art and Archeology: Investigating Ritual Landscape in the Mongolian Altai Field Report 2012



William Fitzhugh, Richard Kortum, and Jamsranjav Bayarsaikhan, Editors
Ming Archbold and Laura Sharp, Producers

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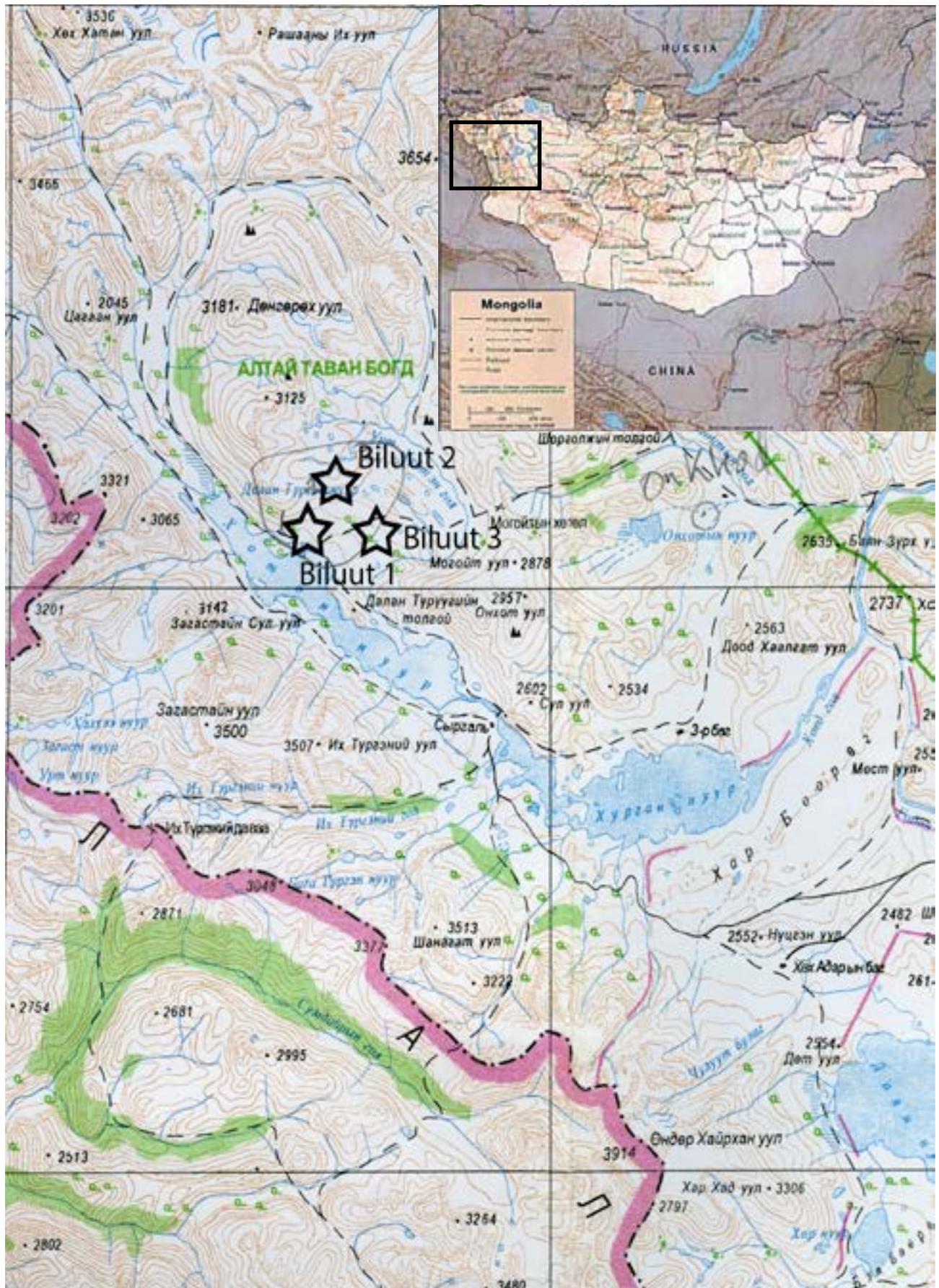


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Archaeological Reflections on Mongolia As Seen from Western Asia

By Frank Hole, Yale University

[Editor's note: In June and July 2012, Frank Hole, retired Yale professor of Middle Eastern Archaeology, visited and participated in archaeological projects in the Egin Gol region of northern Mongolia and the Altai Mountain region of Western Mongolia. His impressions on landscape, cultures, and archaeology provide context for viewing Mongolian archaeology in relation to cultural developments in Western Asia.]

Through the generous offer of Richard Kortum, Bill Fitzhugh and Bill Honeychurch, I was able to visit two archaeological projects in Mongolia in June-July 2012. As my particular specialty in the Near East has been the study of nomadic people and their archaeological remains, I was especially interested in how northern herders used their landscapes and managed their livestock. Two weeks in each camp provided only an impressionistic glimpse of the different adaptive strategies in the two disparate regions, but I hope my observations will be useful.

My impressions of the landscape while in the field have been sharpened by referring to the large number of photos that I took. The two regions, north-central Mongolia near the Russian border and the town of Teshig; and Lake Khoton in the Ulgi province at the base of the Altai Mountains, have contrasting environments. The landscape of the North is forest-steppe, with hillsides forested with larch, while the vast intervening plains are grass-covered. Even in an unusually dry year, the entire region was green, masking the obvious degradation resulting from over grazing. Survey probing showed that there is a shallow soil over the entire region overlying either bedrock or a loessic deposit. In contrast, the Lake Khotan region is glaciated terrain with substantial patches of permafrost, moraines, kames, kettleholes and permafrost. Snow was still visible on the ground in places although ice on the lake had melted. Much of the terrain consists of rocks and boulders with shallow soil, and degraded vegetation. Only in high and relatively inaccessible locations are there larch trees, although the Altai Mountain slopes across the lake are forested. While some commercial farming was seen in the North, it is likely not possible in the lake region owing to a very short growing season. The Project camp area in Biluut hills next to Lake Khoton is rugged, with relatively small open plains, although the plains to the east, at Tsagaanagat and elsewhere are vast. In both regions there are flowing streams with riparian vegetation, both apparently sourced by snow melt. After leaving the immediate environs of Lake Khoton the topography becomes more like that in the North, except it is much drier and is not forested.

While my cursory views of these landscapes cannot be considered a thorough sample, it was augmented by our drives between Ulaanbatar and the Yale camp in the north, which traversed generally hilly, arid country similar to the drive between Ulgi and the lake. My impression is that it is generally more arid in the west; rather than grassy plains and much of the vegetation is steppe shrubs, and on some plains there is considerable drifting sand.

My impression is that northern and western Mongolia have little in common with the Near East. Despite it being an abnormally dry year, in both regions of Mongolia the landscape was green (but very seriously degraded from overgrazing), with larch forests covering the hills in the north, unlike the Near East where precipitation occurs in the winter and by summer all palatable vegetation is brown. In some ways the land in the North is familiar, as I recognized the same complex of plants (but different species) as on my land at 3000m in Colorado!

The Yale camp is in Buddhist territory, while the Smithsonian camp is in Kazakh/Islamic territory. In the former there are abundant aboos, both elaborate and minimal, indicating sacred places where "offerings" of various sorts are deposited in and around piles of rocks. I saw no overt symbols of Islam in the western region other than mosques in the towns.

While I had expected to see ger camps, the portable dome-shaped structures that are home to the pastoralists, I had not expected to see log cabins, corrals, and animal sheds, indicating permanent emplacements. None of these was occupied while I was there, but I was told that they were used seasonally.

The style of the log cabins differed in the two regions, as did the gers. The relatively isolated cabins, with outbuildings, especially in the Mongol area are like those one once found across the American West. Further solidifying this illusion are the Mongols riders and herds of horses. In fact, the horse is the preferred means of travel as “roads” in these remote stretches of Mongolia have little to recommend them.

It occurred to me within a few days that rather conceive of the modern pastoralists as nomadic, recognize that they are semi-sedentary herders with rather circumscribed territories. This may well be an artifact of the Soviet era or of individual property rights, but since it is apparently workable, it may have some reasonable antiquity. What we apparently see then, is a settlement system where ger camps of several households move together seasonally and individual households repair to their cabins at other times. The cabins in the north, with sheds for livestock are on open, exposed plains, while those near Lake Khoton are in sheltered locations. The latter are winter houses, but I was told that those in the North are used in summer, despite the fact that none was occupied when I was there. There is ample opportunity to study the modern ger camps and I observed some places where ger camps had been in the recent past and whose study might inform archaeology.

It would seem worthwhile to conduct ethnographic inquiry of the local herders to understand the settlement system, while further research into local history and government policies would illuminate their effects on modern herding practices. While the Soviet system limited herd sizes, they have now ballooned to an unsustainable point, with resultant degradation of the pastures. This increase in herds must also contribute to changes in settlement pattern. Nevertheless, there must be clear environment determinants of where and when people use different parts of the landscape.

Despite the different ethnic and religious backgrounds, as well as environment in the two regions, some aspects of settlement patterns seem similar, implying a deep-seated set of customs and traditions that prevails across vast regions and across wide political gaps. This notion is reinforced by archaeology, which reveals similar physical remains in the two regions. The Khirigsuurs, burial mounds and other ritual sites are common to both regions, but they are seemingly larger and more varied in the West.

While the Smithsonian project centered on excavating ritual structures, the Yale team focused primarily on survey to locate possible settlements. This consisted primarily of systematically sampling the entire landscape with the use of post-hole augers. This strategy assumes no prior knowledge of where sites might be and that the sampling interval ~ 30 m, will detect remains of gers (based on one ethnographic study). Since most of the surveyed landscape is nearly flat and distant from water one is hard pressed to imagine a priori where a ger would be placed. Rather than gers, today it is the log cabin complexes that are on the plains. The few traces of pottery turned up in the auger holes on the plains are tantalizing evidence of what we do not fully understand. In casual observation I noticed that gers are likely to be found on somewhat elevated land near water and possibly with access to wood, although the ubiquitous, carefully stacked, cone-shaped dung piles by the cabins in the north belie the need to use wood for fuel there. Why similar dung piles are not found in the West where trees are scarcer is a question.

There were some 10,000 years following the retreat of ice from the two regions during which some occupation might be expected. This probably spans late hunter-gatherers, Neolithic pastoralists and their later derivatives in the Bronze, Iron and Mongol periods. The latter groups are much in evidence, but the earlier are sparse. A question that cannot be answered as yet is how life differed during these periods. The stone-built monuments are evidence of ritual, but tell nothing about where and how the people who built them lived. Perhaps the large stone circles are ger rings (a la tepe rings). However, as I understand it, they have yielded little or no evidence of domestic activities. In the North I examined some sub-recent ger campsites to see what I could find. Apart from some burned wood and trampled surfaces, and an occasional broken vodka bottle they were pretty clean. Not a good sign for attempting to find ancient ger camps, except that their location on the landscape tells where people liked to live. Could people have built log cabins before the advent of iron axes? In Europe they did, but no sign of polished stone axes has turned up, implying that wooden structures are probably a recent phenomenon.

While survey and its strategy have focused on Neolithic/Bronze/Iron Age remains, what strategy should be employed to find the first (Neolithic) pastoralists, or hunter-gatherers? Based on my general un-

derstanding of hunter-gatherer life I would expect sites might be found along vegetated streams rather than in the open. They might also be found near or at sources of lithics, and where game could be hunted. Following this is the beginning of some kind of pastoral life with herds. Was this carried out by pedestrian herders? The florescence of nomadic life must, however, date to the Bronze Age Early Nomadic period 8th-3rd centuries BC when dependency on the horse enabled semi-nomadism. Presumably, then, the nature of settlements must have undergone some changes when it became possible to move gers either by horse, camel or yak.

I tried to take in as much of Mongolia as I was able, constantly asking myself “why.” What created the present landscape? How may it have been different in the past? Why did the people build the hundreds of stone monuments and who among them, did they commemorate? What is the relation between the log cabins and the gers? What is the best strategy for discovering evidence of past cultures? Is there a model that will serve across the millennia and the varied landscape?

Geologic processes have formed much of the landscape, ranging from glacial terraces, kames and potholes in the West to vast plains and low mountains in the North. In the North there is a great deal of loess, presumably of glacial origin, but when was it deposited? In one site we visited, being dug by a Belgian team, at least a meter and a half of loess covers a Paleolithic site, probably dating 30-40,000 years ago, whose laminations imply a different deposition process. Clearly it is rarely possible to find such a site by examining the surface alone. At another site tested by the Yale team, loess seems to incorporate Neolithic artifacts, whereas above it is a Bronze Age layer. Is this a case of true stratification or merely movement of artifacts through bioturbation? How did the Last Glacial Maximum affect the two regions?

The rock art studies in the West are particularly interesting and contrast with findings in the North where there may not be suitable smooth rock surfaces to peck or engrave. It appears that whenever there is a smooth rock face (other than lying flat), it was potential canvas for imaging animals. Thousands of these adorn surfaces in the Khoton project area and they largely consist of horses and antlered animals; rarely are humans depicted. Unfortunately there is no easy way to date any of these other than by style and superposition. Their location above grazing grounds suggests that herders whiled away their time watching their herds below. To my eye at least there is nothing to suggest that the depictions have ritual or religious significance, and it is clear from the styles that both experts and novices created them.

Excavation of the khirigsuurs and other monuments reveal a systematic approach to construction, but within the different styles, there is some variability, largely in embellishments. Do these differences reflect changes in fashion over time, or differences in the person(s) who built or were buried in them? Unfortunately little cultural material has emerged from the excavations, but bits of bone and an occasional iron artifact may provide dates. Why, in the land of the famous and elaborate Pazyryk tombs, is so little found in most khirigsuurs? Considering the hundreds of stone monuments, most on relatively open land, is there any underlying system to their location and conformation? That is, how do monuments of different type occur on the land? Is one monument related to another or others? Since many can be seen on satellite images, it should be a relatively easy to discern any system although the palimpsest effect of millennia of construction may obscure any patterns. Obviously it is of great importance to be able to secure relative dates for the monuments.

While open expanses lend themselves to visual appreciation of pattern, many of the stone structures and tombs in the West were in visually concealed locations, suggesting that they were not always meant to be viewed from afar. Neither marking of territory nor display of power and prestige would seem to have been motivations for such sitings. Whatever the motivations may have been, at some time in history, they ceased to be constructed. Why did a tradition that lasted for more than 2000 years end? Was there a functional replacement? Apparently not, at least among the modern Mongol/Kazakh pastoralists.

Mongol/Kazakh diet is notoriously oriented toward meat. Today this is usually served with potatoes or noodles, which provide starchy carbohydrates. Both of these are “imported”. Potatoes, a New World crop has a relatively recent history, while grain could have been imported much earlier from southern Mongolia or China. The question is, what did people eat before they had access to these products? We may compare the Mongols with Plains Indians in America, whose principal staple foods were meat from wild game. As with the Mongols, they ate the entire animal, including the organs, blood and bone marrow. They did, however, supplement this through collecting tubers of native plants (such as Indian breadroot, *Pedimelum esculenta*),

as well as wild greens and berries. In historic times, they traded with corn-raising Indians. The Indian breadroot could be dried and mixed with meat to make pemmican (a stored, highly nutritious food, similar to jerky). As we were digging we uncovered a native tuber, which some of the Mongol workers consumed with relish. Perhaps this was a staple in the old days, a question that might be answered through ethnographic inquiry, and it would also be interesting to learn traditional practices of gathering wild plant foods and how they were used. Whatever the case, the need for dietary supplements to meat must have played a role in when and where herders and hunter-gatherers camped. Even some cultivation of the tubers might have been possible.

Effective archaeological survey starts with a thought process, using ethnographic and historical knowledge, and an appreciation for what it takes to survive in a particular landscape. How do you (and any livestock) get the necessary food, water and shelter? Level of available technology, size and density of human and animal populations, seasonal and interannual changes in weather and availability of resources all have to be factored in. This ignores social factors, which I deem secondary to survival, but ethnic/tribal/religious factors may also play important roles.

I left Mongolia with a keen, but superficial, sense of the vast differences between nomadic pastoralism in the Near East, and the semi-sedentary pastoralism of Mongolia. Nevertheless, I returned home with many more questions than answers about this fascinating land. Having never lived in or visited landscapes like those of Mongolia, I learned something new each day. Only long-term experience on the land will reveal answers to the host of questions that can be raised.

I am grateful for having had the opportunity to visit two fascinating field projects, which continue to occupy my thoughts back in New Haven.

PART I

Introduction and Overview

William W. Fitzhugh, Richard Kortum, and Jamsranjav Bayarsaikhan

Mongolia 2012 Field Report

This monograph reports on archaeological and art historical field work carried out from 28 May through 5 July, 2012 by a joint American-Mongolian team at the Biluut Petroglyph Complex located approximately 12km west of Sirgal on the northeastern shore of Khoton Nuur, in Bayan Ulgii aimag's Tsengel soum. This year's research comprises the second and final field season of a three-year project supported by the National Endowment for the Humanities, with assistance from the Smithsonian Institution, East Tennessee State University, and the Mongolian National Museum. The 2012 project was joined for three weeks by an international field team led by Dr. Jean-Luc Houle of Western Kentucky University.

Goals

The general goals of our project, "Rock Art and Archaeology: Investigating Ritual Landscape in the Mongolian Altai", has been to conduct research on the large complex of petroglyphic art found on the Biluut Hills, to develop an archaeological culture history for this region with special attention to geographic mapping and excavating monuments and ritual sites (deer stones, standing stones, mounds, burials, ovoos, etc.), and to combine data from rock art and archaeology in order to better understand the ancient cultures that inhabited or transited this location and the ways that they integrated themselves into a ritualized landscape. Specific goals included: (1) GIS inventory and mapping of all ca. 11,000 rock art images and ca. 300 archaeological monuments; (2) establishing cultural chronologies for both sets of data; (3) seeking linkages between rock art and archaeological data; (4) excavating key sites to determine cultural affiliation, age, and function; (5) exploring external relationships; (6) collecting data for environmental and ethnographic reconstruction; and (7) working with local people and government authorities to facilitate education and heritage preservation. The latter has become increasingly important because the Biluut Petroglyph Complex is located in a spectacular national park targeted for tourist development, and because site looting and rock art defacement are occurring.

Our focus for the 2012 season was to complete the rock art documentation, concentrating almost exclusively on unfinished sections of Biluut 1, seeking out ritual monuments that are structurally, culturally, and chronologically unlike those investigated in 2011, acquiring paleoenvironmental data from the Peat Valley bog, searching for the remains of previously unknown dwelling sites, and exploring the hinterlands beyond the Biluut Hills region, especially to the north and northwest, and across the lake to the southwest.

Problems of Glacial and Holocene Geological History

One set of issues we have not yet been able to research fully involves the geological history of Khoton Nuur and the Biluut hills. The region's geomorphology is of particular significance for understanding the study site's potential for Paleolithic and Early Holocene rock art and archaeology. At the height of the last glaciation approximately 12-15,000 years ago Khoton Nuur was filled with a river of ice fed by glaciers flowing from the Altai Mountain crests located to the west and northwest. Gravel deposits, moraines, and glacial erratics abound throughout the valley, which exhibits descending tiers of kame terraces lining the hillsides on both sides of the lake. The chronology of deglaciation has not been established, but the presence of high moraines between the lower (eastern) end of Khoton Nuur and the Magoitiin Gol 25 km to the northeast indicates that a large glacial flow passed down this way during the late Pleistocene from northwest to southeast, leaving a series of lateral kame terraces and recessional moraines. The upper limit of this ice-flow has not been deter-



Fig. 5. Kame terraces and glacio-fluvial channels in valley north of Biluut hills. View North.

mined, but in the region of Biluut appears to be several hundred meters above the current lake level. Originally, we believed that this terrace sequence might be used to establish relative dates for archaeological sites and rock art. However, the presence of >4,000-year-old rock art only a few meters above the lake level indicates that the modern water level was established at least by that time. Apparently the draw-down of the glacier and subsequent lowering of ancient Khoton Nuur happened much more rapidly that we had initially supposed. While site elevation may not prove helpful for the late Holocene, studies of the geomorphology and deglaciation history still may be of value for dating Early Holocene sites and for

determining whether any of the rock art in the lake basin could be of Paleolithic origin, as Jacobson-Tepfer has claimed for many of the 375 or so petroglyphs at Aral Tolgoi at the west end of the lake. The attribution of an ostrich-like figure at Aral Tolgoi might be questioned since a similar figure is found only a few meters above the present water level of Khoton Nuur near our Khuiten Gol Delta-2 site.

At the mid-Holocene time slice we still need to collect data on the vegetation history of the Khoton Nuur region. Information on the sequence and timing of re-vegetation following glacial retreat is almost entirely absent from extreme western Mongolia, making it difficult to interpret the economy and natural environment of its earlier inhabitants. A single lake core from Khoton Nuur, reported by Russian researchers, may provide some answers; but the dates obtained from its lowest sediments—ca. 40,000 years—appear to be considerably at odds with the younger-looking glacially-polished bedrocks. Most likely this date reflects contamination from reworked sediments laid down during an interglacial period.

At a more recent block of time, discovery of a deep peat bog near the headwaters of the Peat Valley stream that trickles slowly in a southerly direction between Biluut 3 and 4 provided us with an opportunity to investigate late Holocene history. In 2011 we took preliminary samples from a peat exposure that had been cracked open by a thick layer of subterranean ice. Radiocarbon dating of one of the lower samples produced an age of ca. 5500 years. In 2012 a small crew led by ETSU biology graduate student, James Phillips, assisted by biology undergraduate Diana Velasco, systematically sampled and recorded several vertical sections of peat. These samples are now undergoing analysis by Phillips under the direction of paleobotanist and ecologist Dr. Michael Zavada of Seton Hall University (formerly Chair of Biology at ETSU). A preliminary report on this work is included herein.

2012 Research Teams

This field season the project hosted more than 40 individuals, including researchers, associates, field assistants, students, volunteers, drivers, guides, cooks, and photographers. The ETSU team was led by Dr. Richard Kortum who in 2004 discovered the Biluut rock art sites and has subsequently worked at this location nearly every summer since. His six students included Jami Bennett, Lindsey Farris, Taylor Malone, Jim Phillips, Alix Starnes, and Diana Velasco. Kortum was assisted in the rock art recording effort by Jargalsaikhan (Jagaa) Baatar from Olgii. Dr.



Fig. 6. Meg Tracy and Alix Starnes working on child skeletal remains from Peat Valley 2A.

Catherine Chen, a statistical and GIS specialist from ETSU's Department of Geosciences, spent two weeks at Biluut conducting site surveys and mapping projects. Dr. Randy Wykoff, Dean of ETSU's College of Public Health, spent a few days with the team at the start of the season, and Professor Emeritus Dr. Frank Hole, an eminent Near Eastern archaeologist from Yale University, joined in our last two weeks of excavation work. A third visitor was our Mongolian sponsor, Dr. Jumperel Saruulbuyan, Director of Mongolia's National Museum, who joined us at Khoton Lake during our final week to conduct interviews with members of nearby herding families belonging to the far-western branch of Mongolia's Uriankhai ethnic minority. Bayaraa's 10-year-old son Khusla, seven-year-old White Falcon, daughter of our cook and driver, and her month-old baby sister, were also welcome members of our rock art & archaeological community.

The Smithsonian group, led by Dr. William W. Fitzhugh and cartographer Daniel Cole, included interns Ming Archbold of Notre Dame, Katelyn Braymer of Geneseo College, and Meg Tracey, a Smithsonian intern. Jam-sranjav Bayarsaikhan (Baayaraa) and Egiimaa Tseveendorj, also of the Mongolia National Museum, led the Mongolian archaeology team. Those members of our field crew included Otgonbaatar Ayush, Khuslen Bayarsaikhan, Batulzii Byambadoo, Kim Dammers, Uranchimeg Ganbaatar, Burentogs Ganbold, Lkhagvaa, Enkhsaikhan Lkhagvajav, and Sod Tset-sentsogt. A fourth research team led by Dr. Jean-Luc Houle of Western Kentucky University, was comprised of British zooarchaeologist Lee Broderick, Finnish GIS and lithics specialist Oula Seitsonen, and Australian archaeologist Peter Woodley. They were joined by students and volunteer fieldworkers Kalli Beasley, Stephanie Bernier-Monzon, Patrick Hughes, Theresa Nelson, Lana Noble, Emily Potter, Robert and Pamela Service, and Samantha Wolner.



Fig. 7. Ming Archbold on Khoton herder camp dung pile. View SE.

David Edwards of Flagstaff, Arizona again served as project photographer. Dave also oversaw the camp's water, sanitary, and waste disposal systems, and served also as a very competent medical officer. In conjunction with Kortum, Canat Cheriyasdaa, owner and operator of Blue Wolf Travel Company, Ltd. in Olgii, shared responsibility for logistics. He supplied the project's camp, food, and travel systems with cooks, food, equipment, and drivers. Bayaraa arranged our archaeological permits, and Canat handled our border and national park permits. Owing to an absence of extreme storms and an unusual lack of rainfall, the project lost not even one full day of work due to weather. We were not so lucky in the medical department: three crew members had to leave the field early because of conditions that could not be remedied on-site, one returning to Ulaanbaatar and two to the United States.



Fig. 8. Egiimaa Tseveendorj inspects a milking stool at Kazakh herder camp at Khoton Nuur south shore.

Project Calendar

The Smithsonian and ETSU research teams assembled in Ulaanbaatar on May 23-24. After rounding up supplies and equipment, we flew to Ulgii on 27 May, joining there the Mongolian Museum group that had traveled in an equipment van that left UB three days earlier. After a snug night at the Blue Wolf HQ ger camp, we traveled together in a convoy of vans west to Tsengel, then south up the Hovd River to the bridge just east of Mogoit, and from there on through the eastern folds of Tavan Bogd National Park to Khoton Lake and our Biluut camp. We arrived the evening of 28 May and began to set up camp. Houle's team, assisted by Bayaraa, had already begun their archaeological surveys one week earlier. Our fieldwork began immediately the following morning and continued, with rest days once a week, until 6 July, when we packed up camp and returned to Ulgii for a night before flying back to Ulaanbaatar.



Fig. 9. Richard Kortum, Egiimaa, Jean-Luc Houle and Bayaraa at Kazakh ger visit.

One van and our equipment and specimens took the overland route back to UB. On 9 July most of the American team flew home to the States. Houle's team, along with Bayaraa, left Biluut on 19 June. We spent 39 days at Khoton Lake; and, with four or five days devoted to rest or intermittent breaks for weather spells, we worked a full 34 days at archaeology excavations and rock art recording.

Highlights

GIS Mapping

Dan Cole, assisted by Catherine Chen of ETSU, conducted site surveys collecting GPS locations of archaeological sites and rock art in the Biluut hills area. Cursor surveys were made on the south side of Khoton Nuur, at Aral Tolgoi, and at Tsagan Asgat at the eastern extremity of Khurgan Nuur, 55km east of Biluut. Site positions were recorded for over 2,000 locations, to be integrated with the over 1,800 GPS positions collected during the 2011 field season. These data will be analyzed and correlated in relation to one another and to the topographical landscape data. Combining satellite imagery with geographic information yields a comprehensive view of the layout and orientation of petroglyphs and archaeological features across the hills and valleys. In addition to collecting location coordinates and elevations, site relations to slope and aspect (directional orientations) can be determined, and statistical analyses can then be performed on the density, areal extent, clustering, and linearity of the features.

Rock Art Studies

This season's rock art team led by ETSU's Richard Kortum focused on the lower slopes and terraces of Biluut 1 at sections designated Biluut 1-C and Biluut 1-D. A total of 4,580 individual figures were recorded: 2,625 on B1-D and 1,955 on B1-C. Twenty data points were recorded for each image, and photographs or tracings on transparent plastic sheets were made of Mongolian deer, wheeled vehicles, and other figures of special character and interest. These investigations reveal that a large number of petroglyphs at Biluut have been damaged in recent years by graffiti and other forms of vandalism. These images provide rare glimpses of Mongolia's ancient past, but they are fragile and need protection. If this alarming trend continues, the world will lose a great treasure.



Fig.10. Dan Cole recording modern Khazak burial mounds near Khuiten Gol.



Settlement Pattern Studies

Jean-Luc Houle's team canvassed nearly the entire study area with high-intensity surveys that recorded surface features, documented surface finds of ceramic and lithic materials, and conducted controlled sub-surface test-pitting to locate buried features and deposits. These techniques had resulted in the identification of many

dwellings and activity areas in the Khanuy Valley in north-central Mongolia at which subsequent excavations revealed some of the first detailed information on domestic life and settlement patterns for Bronze Age Mongolia. Domestic activities and culture has been one of the weakest areas of knowledge in Mongolian archaeology, and it was hoped that the higher, more exposed lands of the Mongolian Altai might offer better conditions for locating settlements, middens, and associated features. These surveys produced detailed maps of hundreds of lithic and ceramic find spots and, most importantly these surveys produced only modest returns: information on a number of lithic and ceramic find locations, and—most importantly—two rectangular structures with central hearths and other internal features that have some resemblance to the 2011 Early Bronze Age Peat Valley-1 site.

As promising as these results are, they nevertheless leave many thousands of years of Biluut prehistory almost totally lacking in information concerning settlement and domestic life. The contrast between the minimal traces of settlement activity compared to the extensive surface inventory of ritual and ceremonial structures is striking. Settlement and domestic research at Khoton Nuur will require much more intensive effort and perhaps the application of remote sensing technology. In addition to work at Biluut, Houle's team conducted one-day surface surveys at Aral Tolgoi, Tsagaan Asgat, and along the southwest shore of Khoton Nuur. Their program also included interviews with herders, intended to elicit information on regional ecology, modern settlement and seasonality patterns, carrying capacity, and other factors needed for models to reconstruct prehistory cultural life. A preliminary report on Houle's work, written in Mongolian, is included in this report.

Landscape and Ritual Archaeology

This aspect of the Khoton Lake project was carried out by the Smithsonian-ETSU team directed by Fitzhugh and the Mongolia National Museum team led by Bayarsaikhan and Egimaa. The latter group, whose work is reported below in the Mongolian language, investigated four sites: a large oval earthwork of probable Turkic period; a Pazyryk boulder burial; a large boulder mound burial of a Genghissid warrior; and a probable Turkic burial mound with a series of large eastward-oriented balbals. Another Turkic site is the largest constructed earthen feature we have seen in the Khoton Nuur region; it consists of a low oval or rectangular berm-and-ditch perimeter with rounded corners, with two stone features at its center. One of these was a Turkic-style vertical slab enclosure with a slab-paved interior; the other feature contained a deep post-mold in which a large wood post had been erected. Several bovid or large mammal bones and some ceramics were also recovered from excavations of these two features.

The Pazyryk grave was a large mound in the same burial complex where the Pazyryk horse and human burial was excavated in 2011. Unlike the latter site, our 2012 excavation produced both a sacrificed horse with an iron bit and small bell under its mandible, as well as a log crypt containing a human skeleton and an intact ceramic vessel with spiral designs, bits of gold foil, and masses of decayed felt or other organic material.



Fig. 11. Dave Edwards photographer and seasoned medic and camp director.

The Genghissid warrior grave was found beneath a mound constructed with massive boulders, located at the bottom of a high ravine along the northwest face of Broken Mountain just east of Biluut 3. In addition to its well-hidden location, the body itself had been placed under the western edge of the mound where it would not have been found by looters. In fact, it was only due to the diligence of our Mongolian excavators that we happened to find it. The site was also found to contain several iron-tipped arrows and a sheep or goat knuckle-bone gaming piece with a hole cut through it, as was the custom during this period.

Their final project explored a looted Turkic ritual complex on the south side of Khuiten Gol. This site had the usual slab-

edged enclosures, but of very large dimensions; it was accompanied by an unusual double-line of very tall standing stones or balbal slabs that extended east of the enclosures for approximately 20 meters. Several of these balbals were engraved with figures of hunters and prey—a rare instance of cross-connection between archaeology and rock art, and one that provides potential post-*quem* dates for these particular figure-types and styles.

The American team began work at the 2011 Peat Valley-1 site with its rectangular Early Bronze Age dwelling. This structure has meter-wide wall foundations, a central hearth, and four peculiar V-shaped trough features inside the structure in each of its four corners. Nearby at Peat Valley-2, a complex of boulder enclosures produced large core tools and charcoal dating to nearly 6500 BP; in a small circular pavement mound dating 4700 BP we found a partial juvenile skull and more stone core tools.

A large pavement feature at Khuiten Gol Delta-1 produced masses of unworked quartzite debitage, thick plain pottery, and a date of 1900 BP, but no human remains.

Khuiten GI Delta-2 was a small *khirigsuur* which contained the skeleton of a frail and perhaps diseased juvenile dating 2700 BP—right on target for the *khirigsuur* period.

At East Bay-4, in its Mound 3, part of a cemetery consisting of eight similar mounds with square margins and standing corner stones, we found a slab-lined grave box containing the lightly flexed skeleton of a crippled adult lying on its left side and wrapped in felt or wool material, dating 3000 BP. This mound thus occurs during the early part of the *khirigsuur* period; but the typical *khirigsuur* architecture was lacking.

A boulder mound at the Cranium site on Biluut 1D contained the broken remains of a human cranium and jaw and teeth fragments dating 2800 BP. This one, too, dates to the *khirigsuur*-deer stone period, but lacks the typical architecture. Several ritual sites devoid of human remains were also excavated. At the Arrowhead Mound, high on the crest of Biluut 4 beneath the crags of Broken Mountain, we found a medieval iron arrow point on a small stone pile next to a small circular hearth.

At Peat Valley-3 one of two identical square structures with internal oval pavements and charcoal- and bone-filled hearth features dated to 3400 BP.

At the Quiver site (Biluut 5.3) we excavated a Turkic-era slab-bordered square feature with an internal standing stone and an external shouldered ‘man-stone’ along the feature’s east side. Underneath slabs between the two standing stones we found the remains of a birch-bark quiver with three iron-tipped arrows. Among the paving stones were a large number of ceramic sherds, and at the northwest corner of the feature was a small boulder hearth. Birch bark from the quiver dated this ritual feature to 1350 BP.

Finally, at Aral Tolgoi we found three mound alignments. Each of these alignments consisted of from 12 to 30 “chained” ovoos, and crossed the hillcrest in a north-south orientation. Each mound tested contained burned bone and charcoal which, at Aral Tolgoi-2, produced a Medieval period date of 900 BP.

Summary

These sites provide clear evidence of a long and nearly continuous history of ritual structures that mesh nicely with the chronology of 2011 burial and ritual finds. Thus we have established a 7000-year chronology of habitation and mortuary and ritual life in the Khoton Nur region. Half of these sites are mortuary constructions; the other half appear to represent variations on a long tradition of ovoos-like ritual features utilizing fire ceremonies and ritualized eating and offerings of animal remains, weapons, ceramics, and other materials.

One of the most interesting results of our Summer 2012 excavation season is the presence in the Biluut region of numerous archaeological complexes that are synchronous with but architecturally different from those cultures or complexes known from the central Mongolian steppe. We provisionally interpret this as evidence for a “frontier dynamics”, whereby cultures and empires centered outside western Bayan Ulgii expand and contract their influence, allowing local Altaian traditions to adapt and survive. Thus we

have both deer stones and khirigsuur expressions coexisting with at least two other local traditions; we have Pazyryk dates overlapping with Xiongnu; and we have a total absence of imperial Xiongnu physical culture. It seems to us at this time probable that the reasons for the expansion and contraction of external influences here and the existence of different local cultures and traditions is related to the region's complex and challenging topography, pockets of geographic and demographic isolation, and a high degree of cultural and linguistic diversity, as is seen also in the region's ethnographic and linguistic diversity today where Mongolia, Xingiang China, Kazakhstan, and Russian Gornii-Altai converge.



Fig.12. Desert lizard near Tsengel.

PART II

Project Field Journal 2012

William W. Fitzhugh
Arctic Studies Center
Smithsonian Institution
(transcribed by Ming Archbold)

Friday, May 25

Ulaanbaatar

This morning we had a breakfast meeting at Zaya's Hostel (our home base in UB) with the US Ambassador to Mongolia, Jonathan Addleton, and his wife, Fiona. A few health and development officials, American and Mongolian, accompanied them. Our entire team crammed into Zaya's breakfast room to enjoy the company of our visitors. The Ambassador gave a short speech touching on five themes in US-Mongolia relations. It was very good and down to earth, and we got some good student reaction. He's a great person to represent the US here – interested in everything and not just business. He and his wife, a very nice Scottish woman, have travelled widely throughout the country, and very simply at that – meeting the “grass roots”. Mongolia will have a new US Ambassador later this summer. Ambassador Addleton will then go on a special mission to Kandahar, Afghanistan, to help with rural development – his major specialty before his ambassadorship. I hope he manages to be safe there. It certainly speaks well of his dedication. His wife has been interested in working with engineers to develop a more efficient ger stove that retains more heat and would reduce pollution. Jonathan and Fiona have been good friends of the Kortums for years (Richard's wife, Theresa, was a US diplomat in Mongolia from 2000 to 2002), when Jonathan was working here in the development area. After breakfast, Zaya (the hostel owner) got us going with a deep discussion of Mongolia's future and how to modernize yet retain its distinct culture and values. She has shifted her interests from working with children, schools, and aid organizations to operating at higher levels with the government, businesses, and wealthy/powerful individuals who can be convinced to make changes from the top. One of her pet projects is to make UB a more wholesome place to bring up children – cleaning up the filth and dirt from schools and city streets. As she put it, “Make public spaces more like the environment I provide for my hostel guests.” A good cause! I hope it works. One of her daughters is a manager for Volvo here in UB. Zaya was definitely all fired up during our “seminar conversation” as she still wants to change her world for the better, especially with the assistance of foreigners who she thinks are willing to give much energy and knowledge to Mongolia. She was very impressed that such an important man as the US Ambassador was willing to come for breakfast at her small hostel to talk to a group of visiting students. This she said would be a good example to Mongolian officials. Of course none of this would have happened had Richard and Theresa not known him for many years.

After the breakfast discussion, Amar Bat (Zaya's son-in-law) and I made a visit to the immigration office to extend visas, which took all morning. Amar Bat recently was schooled in Texas as a heart surgeon's apprentice. He speaks excellent English, but can't use these skills in Mongolia because they don't know how to do stents and other modern methods of heart surgery.

The other principal investigators Dave Edwards, Richard Kortum, Dan Cole, Bayaraa, and I lunched with Saruulbuyan, the director of the National Museum of Mongolia at the restaurant on



Fig. 13. Mongolian Research Team 2012.

the backside of the Museum. He mentioned that he was planning to terminate the loan agreement with Don Lessem for the GK exhibit because the artifacts were overdue on their loan periods, and also because of some unspecified rumors and problems. One of the problems has been that his museum is getting few financial or travel benefits from the exhibition because all the loan fees are taken by the Ministry of Culture. Perhaps it may be possible to begin a new agreement directly with his museum. Now that we are reprinting our GK catalog, it would be nice to have more museum venues in the USA.

On another note, traffic in UB has now got to such a state that much of it is gridlocked through the center of the city from 11 AM to 6 PM. Trying to hire a cab from the museum to go shopping for digging gear was hopeless. We had to walk all the way to the northern ring road north beyond the university to get to a hardware store, which turned out to be closed. Then, it took a half hour to get a cab to return because no traffic was moving. It took another thirty minutes to get to the ‘black market’ where we bought buckets, shovels, etc. Then another thirty to forty minutes to get back to the museum where our expedition van was waiting to depart for Ulgii with a few members of our project’s Mongolian research group – Egiimaa and Tugsoo (from the museum), Kim Dammers (American archaeologist and ESL teacher), another student, and Ultsi the driver. The van was filled to bursting so I don’t think it will be a very comfortable three-day drive. They need to be in Ulgii by late afternoon on Sunday, the day we arrive there by plane. Traffic is making it impossible to move through the city at all during working hours, and many people must be suffering hardship simply because of that. Yet everyone who wants to get ahead wants a car! This year, Putin has just instructed his oil people to make sure Mongolia does not have another gas shortage like last summer. I wonder what concessions he gets from Mongolia for that! Almost all gas/diesel used in Mongolia comes from Russia, whereas almost everything else in Mongolia comes from China.

Saturday, May 26

Ulaanbaatar

Another sunny morning in UB. Richard took the crew to Gandan Monastery, while I worked on email and laundry. I started working on my Finnish co-author Harri Luukkanen’s boat chapter for the book we are preparing on Eurasian bark and skin boats. We had lunch at Café Amsterdam on Peace Avenue. The café is a foreigner’s hangout, fully equipped with Wi-Fi and a book-rack stocked with books in English. There, I met up with Will Gardner, a graduate student at Yale’s Anthropology Department. He has been working with Richard on Frank Hole’s (a former Yale anthropology professor) travel plan to visit us out in Khoton later in the season. He and his Mongolian student (from Yale) are working just north of Egin Gol, Bill Honeychurch’s (a Yale anthropology professor) long-term research area. Will Gardner is researching the region’s settlement archeology. Frank will be with him and his team for a couple weeks before flying out to visit our project.

Supper was at Sho, an organic sushi restaurant run by Saruulbuyan’s son, Sainyeruut (Sean). I had first met Saruulbuyan in 2001 during my first visit to Mongolia with Ed Nef, who was providing

a donation of horses to the Tsaatan (Dukha) reindeer people in Khovsgol. On our return to UB, Saruulbuyan invited me to attend the big UB Naadam. Sainyeruut was young then, but over the years Sean lived for several years in California where he picked up the sushi business. He's a very open and friendly guy, wears long shorts, a sweatshirt, and sushi apron. Fortunately, he has had good success with the restaurant and found people eager to try sushi here in UB, where fish has generally not been available – at least certainly not good, fresh fish. He gets his fish flown in by Korean and Japanese suppliers and he's soon to become an agent for supplying other sushi restaurants in the city. His restaurant's location is in the heart of the downtown area.

In addition to the good sushi meal, we had a couple of good meals in our previous days in UB down near the circus south of the State Department Store. The upstairs Indian restaurant Delhi Darbar and one east of the circus were very nice. The students did much cruising around in the Department Store and a bit of sightseeing around Sukhbaatar square in the city center. This part of the city is quite attractive and bright at night. The square was full of families with young kids playing with light wands and model cars and trucks. There seem to be fewer indigent kids hanging around public places than in the past, and most of the people on the streets are well-dressed. No one on our group got pick-pocketed this year (but there were several attempts after we returned in July!).

We never got a chance to meet David Tinnin at the ACMS (American Center for Mongolian Studies) office in the Technological University. I will do this on our return in July. There is still talk about moving the National University out to the town's east end, to start "thinking" about a subway line down Peace Avenue and a real plan to move the airport 40 km further to the southwest, freeing up lots of good building land. We'll see what happens once the June 28th elections have been held. Apparently the country is in quite a state of ferment and the outcome of the election is very much uncertain. Email from Zaya's worked well until Sunday morning and I was able to get some communication off to the Smithsonian and even got a bit of a start on editing Harri Lukkanen's boat manuscript.

Sunday, May 27

Ulaanbaatar to Ulgii

A slow morning as there was not much that could be done except prepare for our 1:10 EZnis flight to Ulgii. At least it wasn't 7 AM. My washed clothes had dried and I was able to leave some extra clothes and papers in Dave Edwards' tote bag in Zaya's storage closet. Zaya was getting some new guests on board, including an Earthwatch volunteer from Scotland who will be working on a wild sheep project southwest of UB. No problems at the airport with crowds or traffic, except that we were 69 kilos over the baggage weight limit. Turns out the plane was also expected to be full and therefore way over capacity. People or bags would have to be left behind. But enough "no-shows" avoided that catastrophe and we, and all of our things, made it aboard. Looking down at the ground from the air, everything is still totally brown. During the tough springtime, there is little grass and not much rain. But it has been overcast most of the way.

We arrived in Ulgii at 4:30 PM. Canat of Blue Wolf Travel met us at the airport where we found all our baggage despite the threats of being overweight. Our arrival was through some mountains that were completely topped with snow and snow showers were falling occasionally in the valleys. Within a few minutes, we were in our ger quarters, and soon after were treated to a full dinner in the lodge – but without the father and son musical team that performed for us on our arrival last year. Dave Edwards and Jagaa went off to the black market to find some gear we needed while the

students explored the town and Randy, Dan, and I went online for our last email business. When the sun went down, it got quite cold and before long everyone was in bed discovering their sleeping bags were not as warm as they had thought. Worse, the cold seemed to stimulate bladders, and most of us had to make at least one foray outside, where we were immediately detected by the “night-watchmen” dogs that set off peals of howls among their friends across the town.

Monday, May 28

Memorial Day!

I woke up at 6:30 to test Blue Wolf’s “hot water” advertisement – and found a new water-heater in the men’s room that provided some lukewarm water. Breakfast was kasha and egg salad on bread. I managed to get a few last emails off and had Canat’s office print out more site forms. Last night, we retrieved most of our cached gear from Canat’s basement. Our gear was jumbled in with an immense pile of Dave Edward’s old horse trekking stuff – saddles, tents, freeze-dried food and what-not. Our generators were the most important recoveries, but we failed to find any digging gear. Jagaa took me to his neighbor who supplies the black market with hardware and I was able to buy very weird-looking mason trowels, as well as nails, more shovels, a couple small picks, etc. The price came out to be 65,000 tugriks. Plans to leave at 9 AM dragged on as usual with last-minute purchases and arrangements, but we finally managed to leave at 11:30 in three vans and Jagaa’s jeep. The trip out was pretty uneventful. Beautiful weather, no traffic (!!!) and we did not have to stop at Tsengel and hunt down the governor to sign our permit; Canat had taken care of that. After a quick lunch along the Hovd River of horshurs (a fried patty filled with lamb meat) packed by the Blue Wolf team, we got within a stone’s throw of the Hovd River bridge when our van burned out its right front wheel bearing and started smoking. Repairs took only a bit more than one hour. This is just where one of our vans broke something on their drive shaft last year. A jinxed spot, it seems.

The mountains across Khoton looked like they had a bit less snow than last year, and we found the Khuiten Gol River ford was much lower too. Most surprising was the absence of any ice on Khoton Nuur. Last year it was nearly solid and lasted more than a week into the project. Less snow this winter, and perhaps not much recent rain. Hopefully this pattern continues, but the locals seem to say this is likely to be a wet summer, like last year.



Fig. 14. Vans en route to Khoton Nuur.

We arrived at our camp at around 9:00 PM with just enough light to set up our tents and meet Jean-Luc Houle, Bayaraa, and three of Jean-Luc’s colleagues, Peter, Oula, and Lee. They have already found two habitation sites and lots of flints. They told us the new (old for me, from an earlier stint on the job) park director had come by and informed them all tents have to be at least 200 meters from the shore, so we will have to move ours or be fined! We ate a good noodle soup dinner and then were off for a clear and quiet night’s sleep.

Tuesday, May 29

Lake Khoton

I woke up at 6 AM when the sun hit the tent, shooting the inside temperature up like an oven. To beat the rush, I moved my tent up to the top of the hill. After breakfast everyone moved up the hill, and we managed also to move the small office ger by picking it up from the inside and, like a ladybug, guided it up by calling out directions “Left! Right!” to the ‘blind’ lifters inside. We also had a research meeting with Jean-Luc and his assistants – Peter Woodley (archaeologist), Oula Seitsonen (a Finnish GIS and lithics researcher), and Lee Broderick (zoo archaeologist). Bob and Pam Stewart are also with Jean-Luc’s team. I know him from ACMS meetings. He is a Mongol culture expert and Pam is interested in archeology and they have been volunteering for several years. We settled some general work plans and objectives and will be sharing lots of data. They have found a couple



Fig. 15. Base camp with Altai Mountains reflected in Khoton Nuur.

of dwelling sites and we’ll probably start tomorrow expanding the Peat Valley house excavation with one team and one of their new sites at the north end of Peat Valley.

During a tour of last year’s sites and a few rock art locations with our team in the afternoon, we found more calcined bone and some slag in the tent-ring next to the Peat Valley 1 rectangular structure – a good sign! Dave Edwards organized the outhouse construction so now we have an American-style tent privy and a Mongolian screen privy with two boards over a pit. Camp is taking shape, huge as it is, including hand-washing stations at the privies and at the entrance to the dining ger along with a water filtering station. We also held a team orientation

meeting that covered all the bases from personal hygiene to archeology. Dave did a great job on that score, as well as in the construction of camp facilities. I have never been part of such a large field crew before – almost forty people on the patch of glacial outwash that is our field camp! During the afternoon, Dan got the generator running so we can now charge batteries. All day the weather has been sunny and gorgeous, and many people of our group already have red noses.

Wednesday, May 30

It was a really fine day today, especially for the first day of digging. It took a while to get the crew organized because we had a combined team – Bayaraa’s and ours. The two vans were stuffed to the gills. We gridded out the Peat Valley site, setting a series of squares around the outside of the house and almost immediately



Fig. 16. Moving the office ger farther from the lake shore.

began to find burned bone and a few flint flakes. We kept at it all day, breaking our students in with Meg's coaching. The Mongolian students roared ahead of us and by the end of the day, we had all the turf and upper level cleared. Very few things were found, and no tools. I think we had to go down another ten cm to reach the Neolithic level. In the meantime, I took Jim and Diana up to the peat bog that they have to sample for Mike Zavada more extensively than I did last year. We picked a few new locations and they spent the day cutting profiles and awaiting the frozen parts of the peat to thaw. Some shelldrakes, horses and yaks watched their progress. This is the strange peat bog that Zavada says has no pollen, only diatoms – at least in the samples he processed that I collected here last summer. In addition to the excavation, we did some surveys and found several new burial features that we may work on in a few days. While we were digging, a herder who lives in the winter place Dan and I visited last year came by to watch. He has a Caucasian-looking face like nothing I have ever seen here before. I took a photo of him and his horse with Bayaraa and his son Khusla that will really show the difference. The herder makes four moves throughout the year, based from his winter house – one in spring to the lake, then back to the winter place, then about a week from now to the White River at the head of the lake for summer, and then back to the winter place in the fall.

The Mongolian men in our group have been catching fish already – three weeks earlier than last year. Ice is out earlier too. Our herder friend told Bayaraa he had killed fifteen wolves this past winter – many young ones and several adults. The water filtering systems are working very well this season. Fresh water from the lake goes into a big plastic barrel covered with cheesecloth to strain out moss and big impurities. The spigot at the bottom has a canister filter and from there to the outlet/fill tube of plastic. Hand-washing stations are at the privy and dining ger using an outboard motor tank house as a pump between a pail of water and a copper tube fastened to the side of a waste water pail. You pump the bulb with your foot and water squirts out the faucet-like copper tube into the pail. Standard river-trip gear, Dave says!



Fig. 17. From left to right: Ming, Jami, Meg, and Katie at work on Peat Valley-1 site.

The spigot at the bottom has a canister filter and from there to the outlet/fill tube of plastic. Hand-washing stations are at the privy and dining ger using an outboard motor tank house as a pump between a pail of water and a copper tube fastened to the side of a waste water pail. You pump the bulb with your foot and water squirts out the faucet-like copper tube into the pail. Standard river-trip gear, Dave says!



Fig. 18. Bayaraa, son Khusla, and Khazak herder at Peat Valley-1.

Jagaa went to the army base to register our passports after dinner. No problems there. This year, we don't seem to have the permit problems we had last year.

Thursday, May 31

Two of the girls have been sick with stomach problems – Jami and Katie. Hope it does not become a general problem. After breakfast this morning, Randy Wykoff (Richard's colleague) left for home and his duties as dean of the ETSU School of Public health. He loaned me his travel

mirror, which I will return to him when I'm home. He was a great visitor to the project, pitched in with help, and was a delightful companion. He is hoping to get some health school exchanges started

with the Mongolians.

Another beautiful warm day, with hardly any wind at Peat Valley. Today we split the digging teams into two groups. Bayaraa, Kim, Tugsoo, Egiimaa, and the rest of the Mongolians went to the Biluut rectangular (Turkic?) enclosure site east of the Khuiten Gol and we returned to Peat Valley (Biluut 3.3) and excavated around the outside of the house, finding a small scraper and a microblade, as well as lots of fire-cracked rock at the northwest corner. It has been pretty thin pickings so far. Dan and Catherine then surveyed south along the hillsides and climbed up high on the hill, getting a great view of the land and the lake below. They found some small mounds high up and a pair of standing stones, one large and a small one next to it. They seemed to be in stone slab boxes. Dan brought walkie-talkies, so we could communicate.

During the afternoon, dark rainclouds rose up over the mountains to the south, but they never advanced over this part of the lake. Harbingers of the coming days I expect! Jean-Luc brought some of his students over to see our Peat Valley site. Jim and Diana spent a second day preparing sections in the peat bog. Things are going well except they broke a shovel handle. Tomorrow, they will chop through an ice lens to try and reach peat below the lens.

At around 9 PM, both teams came together for a ‘social’ in our dining ger. It became filled to overflowing with only two candles and a ton of noise. I slipped out early, overcome with heat and noise, and called Lynne and Lauren. Lynne was upbeat and has finished revising two chapters in her Mikak book. Weather in Vermont was okay and everything was fine. No more rat problems at our house in DC. Lauren was upset by some problems with an Alaskan tour at the Smithsonian that did not come off right, but all other things were going well – especially with the Inuit Studies Conference (ISC), etc. There have been some good developments with the Russian and Norwegian Embassies for the Inuit Studies Conference time.

Friday, June 1

Today is my brother Josh’s and sister Portia’s birthdays. Weather was fine again, but some thunderstorms approached at the end of the afternoon. We finished the outskirts of the Peat Valley-1 house and moved over to the tent ring east of the mound. We dug a 1x8 meter trench through the middle and found only a couple of flint tools. The ash dump with calcined bone on the east wall turned out to be recent. It is hard to say if the boulder ring was associated with the burial mound or the rectangular house.



Fig. 19. Excavating Peat Valley-1. View SE.

Today was also “Mother’s and Children’s Day” in Mongolia. We gave salutations to our cooks and to their daughter, White Falcon, who is now seven years old and a real mother’s helper, especially with her little baby sister. At lunch, there was a crisis when White Falcon, from their sleeping tent alongside the dining ger cried out, “There’s a mosquito eating the baby!” Everyone from the

kitchen staff ran out to save the baby. Our food is just as good as it was last year, although later on the Mongolian team complained about not getting enough meat! However, the rest of us found the presence of many fine vegetables – including tasty red and green peppers, and occasionally fruits – a welcome addition to our diet.

We had three youngsters come by the site this afternoon, on horseback – a couple of 6-year old boys and an 8-year old girl. The students gave them some trinkets, including hand cream, as they had no candy on this occasion. The kids loved it nonetheless. I was just walking back to the group as the gifts were being given, but when I returned, the kids ran off – scared of me apparently! They stopped their horses fifty meters away and passed around their new hand cream. The kids come from two herder families (we had just met the father) with the ger in the hollow south of the site. They were gathering all their animals for the migration to the White River up beyond the north end of Khoton Lake.



Fig. 20. Our cook's daughter, White Falcon with her baby sister, Lela.

Later, I called Lauren and all seems fine now with the Alaskan tour. I then called Portia to wish her a happy birthday. She was flabbergasted by getting a call from Mongolia, the first I've made from here on her birthday in many years! While I was calling, the moon came out from behind the clouds. Beautiful. There were spatters of rain throughout the night.

Saturday, June 2

It was a sunny and warm day again! At breakfast, there was some discussion of the water filter, which has been slowing down to a trickle at the tap. Dave does not think it's clogged with crud from the lake, but wonders if the filter is in upside-down. I hope not, since we've been drinking this

water, and some filters don't work backwards!

We returned to Peat Valley 2 and continued work on our three test squares. Ming and Alix made a map of the structures and then started turfing the circular slab pavement along the site's southern edge. As our three test pits got down to 12-14 cm, we began to find cultural materials. Test pit 1 (mine) started producing charcoal in a clayey soil, sometimes stained with red ocher. Katie found bone, and Meg did also. Partway through the morning, Bob and Pam Stewart of Jean-Luc's crew came by on their lithic survey.

After lunch (beef slab, rice cake, and carrot salad), we returned to Peat Valley 2 and got 15 cm deeper into three test pits. Meg's produced two tools – a cleaver and a modified cobble flake. I found a heavy stone spall pick and a couple of simple choppers. Test pit 1 (mine) produced a charcoal sample, red ocher stains, and calcined bone. Test pit 2 (Katie) produced calcined bone and unburned bone – a phalange and some split long bones. Test pit 3 was Meg's. Jami was back in gear after some intestinal distress and she, Ming, and Alix cleared the burial pavement on the south side of the boulder alignment. We'll be ready to map it tomorrow. Squalls held off for the afternoon. We were quite lucky in the site's location in the ravine, shielded from the strong west winds.

Midway through the afternoon, a handsome herder riding a Palomino-like horse and driving a herd

of black yaks came by just as Katie was having a bathroom break. Whoops! He had just previously stopped to visit with Jim and Diana at their peat-coring site. Jim tried to explain to the herder why the peat can help reconstruct the past – all without speaking any Mongolian or Kazakh. But it seemed more effect was had by Diana’s drawings of the herder’s horse and a yak with smiling faces! He dropped by our dig next and I showed him the stone cleaver. He took it and made a couple chops at his leather harness strap – shades of Charlie Tooktoshina in Labrador opening a can with one of the Maritime Archaic stone axes I had just excavated at the Ratters Bight site in 1974.

Dan and Catherinee have been charging around the country in foot surveying sites in every direction. At first, Catherinee seemed to have trouble with Dan’s long-distance pace, but now she’s right on top of the hiking, even making it to the top of the high kame terrace north of the ‘West Bay’ (now more accurately known as the ‘medical clinic’ area) sites. It’s amazing that she gave birth only a few months ago and was able to leave her child with her parents for her three-week trip to Mongolia. Gutsy!

Bayaraa’s son, Khusla, is also here and having a great time with the crews. Bayaraa gave me a gift of two dels (traditional Mongolian dress worn by men and women), which he had promised in return for our hospitality in DC last fall. I can’t wait to see us in them together!

After an excellent lamb stew dinner, a jeep full of officials dropped by, ostensibly to say hello, but probably to make an informal camp inspection since the park ranger had told us not to camp within 200 meters of the water. Even though the dining ger is too close, they seem to have allowed that as we got no pushback and everyone was in a relaxed, joking mood. The officials even stayed for some dinner and tea! At least everyone (on their side!) was sober and professional—it was not always that way last year! We promised some illustrations for their new national part information center, which is still



Fig. 21. PV-2 Test Pit-1 showing red ocher and charcoal stains in SW quadrant.

empty after having been built last summer. As they left, they said we could expect rain soon. They also noted that Naadams here would be early because of the national parliamentary election on June 28. (It turned out there were no local Naadams before our July departure, so the students were never able to experience this traditional annual Mongol/Kazakh sports festival.)

I had a lake bath this evening. It was very windy and cold, and the bath was incomplete as I could not bring myself to stick my head in the water! My arthritic right hip is acting up, but I can still get around with it.

Sunday, June 3

Today is Sunday, but nevertheless a work-day. The weather started out fine, but then grew windy.

Thunderstorms and squalls surrounded us but never hit. We seem to be in a ‘weather sweet spot’— nice for archaeologists, but not for herders, who badly need rain here now. As we drive back and forth, we found everyone on the move. This seems to be the day to migrate – trucks loaded to overflowing with gers and flocks being driven by horsemen, herds of horses, yaks, and cows. Most head for the White River further up the lake in the northwest. Others come in behind them from the northeast, taking summer quarters here and vacating when the “real” owners return in the fall. This migration seems very synchronized to these few days.

Our driver, Bolka, dropped us off at our site and took Dan and Catherine down to East Bay where they climbed up to the highest kame terrace and walked back to the north towards us. However,



Fig. 22. Khusla, Bayaraa’s son, in the driver’s seat in one of our vans.

Bolka did not understand Dan’s instructions and when we went back to pick them up for lunch, they weren’t there. Fortunately, we were able to communicate with Dan’s walkie-talkie and found them. In the end, they kept hiking and we brought them a lunch when we rendezvoused at Peat Valley. During their hike, they saw some interesting sites, including some enclosures like Peat Valley 2, very high up. They were hiking on the highest kame terrace. Sheep and a few herders use that high country, but they were high up on the hills and nowhere near us. They report some green valleys beyond the ridge, to the north.

Work at our site went well. Meg and I finished our test pits. Mine was 50 cm deep, with charcoal all the way down, but the only artifacts were heavy stone tools and modified cobbles. Meg had similar finds with a cobble cleaver as the most diagnostic tool. No flakes or pottery. Plenty of charcoal and fire-cracked rock. No calcined bone in my or Meg’s test pits, but Katie had lots of burned and unburned bone – one a recognizable caprid middle digit according to Lee Broderick, Jean-Luc’s zoo archaeologist. We also began digging two 50x50 cm test pits to the north of Test Pits 1 to 3 and found the edge of the site. Jami started a 50x50 cm test pit in the upper most ring enclosure. There still remains the question of site function. The site location would be excellent for a game drive down from the north as the site is at the last constriction in the gorge before the Peat Valley brook enters the broader valley to the south. The large choppers and pick would be useful for butchering, but the Peat Valley 2 site has calcined caprid bones and unburned long bone fragments, which signifies domestic activities. With the occupation levels more than 50 cm deep, the rock “walls” could be serving as dwelling walls. The problem is the large amount of earth to move. We also cleaned and mapped two levels of rocks in the circular grave pavement at the south edge of the boulder alignment. There was quite a bit of charcoal beneath rock level 2. The pavement was circular and very neatly fitted – all slabs were schist and came from the rock outcrop next to the site.

We visited Bayaraa’s oval “Turkic” enclosure site on the way to base camp. Under a circular rock mound in the center of the rectangular/oval trench and mound enclosure they have found vertically-set remains of a wood post about 20 cm in diameter. The pole had been stabilized by wedging rocks in the hole. South of this mound is a slab-bordered feature, set vertically, where they recovered a single piece of grey, plain, Turkic ceramic. Plenty of charcoal for dating. This is the largest earth-work we’ve seen around Khoton Nuur.

The students are into playing cards this evening. Catherine's tent blew over when a squall hit during lunch. Richard and I rescued it and put in a few stakes – she was using only thin wire stakes and no guy-lines. Oula found a leaf-shaped biface on Biluut 3 yesterday, similar to the one Richard had found last year. Oula thinks it could be Paleolithic. They also have a core scraper like the one we found in Peat Valley 2.



Fig. 23. US students digging the Peat Valley-2A burial. View NW.

Monday, June 4

A lot's already happened, but it occurs to me that we have another full month left out here! The last few days, we've seen herders collecting salt from one of the dried-up lakes near East Bay. Salt collects not only in seasonally-wet lake beds, but also in patches on the open land where water is wicked up from the ground, carrying salt from decomposing rock and soil. Collecting salt for the animals before winter is especially important. In spring, animals get it by licking the ground's white patches. I tasted it, and it's quite mild – about half as salty as table salt.

Patchy clouds and sun today, and showers around us but so far not on us. We returned to finish Peat Valley 2, backfilled the test pits, and excavated down in the burial, striking bone and what looks like an infant's face bones. There was no evidence of disturbance. A pebble tool and fire-cracked rock was found about the same level as the burial – 22 cm below ground surface. During a bathroom break, I found a cairn on the gravel ridge west of the stream, and southwest of that are a series of small rock cairns, some with "pole holes" in their centers. They seem to have been made as part of a hunting drive system. This idea is reinforced by the presence of two crescent blinds facing upstream (north). The peat bog team (Jim and Diana) nearly completed their bog sampling.

After lunch, the weather started threatening us, but we went out to try and finish the Peat Valley work. Dan mapped the cairn system which runs nearly the entire southern edge of the high terrace on the west side of the ravine. One of the cairns had in it a leg and skull of a sheep– probably fairly



Fig. 24. Mongolian students excavating Turkic enclosure site. View NW.



Fig. 25. Turkic ditched enclosure. View to NW.

recent deposit. Meg and Alix continued with the burial, which now seems to be the poorly preserved remains of a child. Dave and Taylor photographed Peat Valley 1 and Taylor climbed the Biluut 3 hill for some overview shots. Rain ended everything and we returned to camp at about 5 PM. One important find came from inside the burial – another cobble tool from the brown sand, along with fire-cracked rock. But perhaps this link with the enclosures nearby is due to its being in the in situ brown soil rather than in the burial context. Taylor was the last one to reach the van in the rain, and in racing down Biluut 3 he made a spectacular entry into Peat Valley, slipping on the water-soaked grass by the stream in a sliding tackle motion with all his camera gear, coming up unhurt but soaking wet.

After a soup dinner, the girls made a run for the Sirgal store for soap, wet-wipes, and candy, with Jagaa as driver and chaperone. They all returned with grins and lively stories of our local Khoton “department store” that sells a little of everything you don’t need. In the evening, a full moon rose for a moment between the clouds at the east end of the lake, and then disappeared. It was the first full moon of the summer. Jagaa told us that in his home town of Bulgan, they are celebrating the full moon today with a big festival based around one of the thirteen large ovoos situated in the Altai range. The spring religious event is thought to bring plenty of rain and good summer conditions. The event also includes wrestling and horse-racing— making it a sort of ‘religious Naadam’. He was asked to organize the event but wanted to work with us instead. Jean-Luc’s team has a beer cooler built into the ground—a very civilized idea but contrary to the no-drinking policy of our group, which is composed mostly of college students. Jean-Luc’s group has organized a game of lawn bowling using beer cans and round stones, with cricket throws, etc. They had huge fun with this. There seems to be lots of partying into the night on their side of the camp.

Tuesday, June 5

Dave announced this morning that in spite of his admonitions, in less than a week we had used up all our toilet paper. Use in excess of his ‘two rolls per day’ allotment and we would suffer the consequences!—the consequences being that we now have had to pay 20,000 tugriks for 40 rolls (a ‘case’) at the Sirgal store! We have two side-by-side privies – one is the traditional Mongol/Kazakh pit with a 3-sided fabric wall, open on the 4th side. The other privy is our enclosed tent. Most prefer



Fig. 26. Crescent blinds and caprid remains in hunting drive on west side of Peat Valley gorge.



Fig. 27. Caprid head and limb cached in hunting drive cairn in Peat Valley.

to use ours – including many of Jean-Luc’s team, so we like to see them as the toilet paper-mongers. At least now we seem sufficiently fortified with supplies.

It was a bit of a “spotty” morning for our team’s day off, but there were various plans for washing clothes and hiking around Biluut 1. Dan, Richard, Egiimaa, and I went with Jagaa to survey the south shore of Lake Khoton west of the Army base. We were joined by one of Jean-Luc’s vans with his students and Bayaraa. The road was pretty poor and it rained a bit, but we were able to get a good idea of the



Fig. 28. The US students walking towards the Sirgal store. Glacial Kame terraces in background. View N.

area's potential which, put simply, is "not much". The major component seems to be Pazyryk, which we found represented by a series of nine mounds – all probably looted and borrowed from, and a few khirigsuurs. These are located on the south shore opposite the Biluut hills. Only one standing stone was found at the nearby river, marked by a square inset slab boundary—and therefore probably Turkic. We checked out the high terrace (an eroding bank of glacial cobbles and clay) on the north side of the river valley that cuts back into China, and found nothing.

Although we had a rather fruitless survey, we had a warm reception at the ger of the family living closest to where the river exits the mountains. This ger has a beautiful interior decorated with many fine Kazakh tapestries around beds set into the walls like stalls. We were served milk tea, twist pastries, and soft and hard cheese, by a 19-year old girl with her two daughters helping. They arrived here a month ago from their winter place located north of Khoton Nuur. Jean-Luc asked a number of questions about the number of sheep and goats they own, to which they responded around 100. The family also owns a couple of cows, horses, and yaks – a modest stake for a household with grandpa, husband, wife, and daughters. Grandpa came in while we ate to fetch something. He is a wonderful young man with a great weathered face. These people live at the edge of the forest and,



Fig. 29. Biluut 1, 2 and 3 seen from south side of Khoton Nuur. View to N.

although they cannot cut timber without a special permit, they can use dead wood, which is everywhere in the forest. They also systematically strip wood from old larch stumps in the field and forests. These scars shine bright orange against the weathered grey stumps and give the forests flashes of color. I was glad to see so much young growth in the forest behind their house, and the forest floor was colored a gold carpet of last fall's fallen larch needles. The fine Kazakh tapestries were the work of the old man's wife, now deceased I believe. After the visit, we turned back, having

seen the eastern part of the south shore as far west as Tsaagan (White) River. I think the reason for so few archaeologist sites is the area's remote location – off travel routes and communication corridors and backed up against the mountains. It is a nice and pretty place to live, with plenty of building space and fuel, good country for cows, yaks, and horses, but not ideal for sheep and goats. Restrictions on cutting wood and the Chinese border just beyond the first line of mountain ridges also add to the difficulties. Jagaa says some people who come here to the south shore for summer live in Tsengel in the winter, board their animals during the rest of the year with relatives in the



Fig. 30. Our Khazak hostess serving us the traditional steaming milk tea, fry bread, and cheese chunks.

country, and retrieve them for the summer so they have food, milk, and meat.

Back at camp, we found much laundry on the sides of the gers and girls with clean hair. A volleyball net had been erected near the cook tent and was in full action. I did my laundry and it dried in nearly one hour, even in the evening. Passing the Khoton shore earlier in the day we found many seagulls and cormorants, attracted to the good fishing. “Bad birds” said Jagaa – a worldwide sentiment about these fish eaters. At dinner we talked about extending our surveys to Aral Tolgoi, and Jagaa continues to want Bayaraa and me to visit the Pazyryk site he knows about, which would be a day’s drive and hike or horse ride to the northwest. I doubted we would be able to manage this excursion.

Wednesday, June 6

It was a cold last night, but it warmed up during the day such that I was tempted to wear shorts in the afternoon – a big mistake as my knees got all banged up on the gravel! We went first to backfill Peat Valley 1 and to complete excavating the Peat Valley 2 burial. While that was taking place, Dan and Taylor (with his camera) climbed to the top of Biluut 5 – the last of the ‘Biluut’ hills up against Broken Mountain, where Dan had found a Medieval iron arrowhead. I was concerned about being able to make it with my gimpy right hip, but it turned out not to be a serious problem, and it was okay coming down as well. There are some excellent places up there – kinds of hidden “grottos” with flat areas protected on all sides by cliffs or gravel ridges, and one just before you make the last climb to the top of Biluut 5 west had four intact burial mounds. There is much evidence of visitation by herders and animals, but we did not see any prehistoric signs other than the mounds below the towering cliffs of the mountain. North of the arrowhead mound are a series of polished rock panels, two or three with old-looking rock art figures. One, nearest to the burial, was an elegant bull, and another further one was a yak with horns shaped in a circle. Lots of modern graffiti stained the rocks with names, dates, and knife point images – one of an owl’s or raptor’s talons. I sketched the burial and partial circle and hunted for other signs but found none. We should try and get back up here to excavate the arrowhead burial and one of the four mounds before the project is over. It’s a glorious and powerful place with views from the southeast, the west, and the north. The location would make a fitting burial site for a warrior-chieftain, as long as you have a horse to carry the deceased up the hill.

During the afternoon we gridded up the Khuiten Gol Delta-1 burial pavement site and began the tedious task of cleaning the surface. Its nine meters across, with rocks not tightly packed. We had found this site several years ago and thought it resembled an Early Bronze Ager mound we had excavated near Tsaaganuur on the Shishged River. We immediately began to find lithic preforms and flakes of quartzite among the turf, but no chert. Taylor canvassed the area with the metal detector and found pieces of iron boiling pans and horseshoe



Fig. 31. Seven Pazyryk (?) burials on south side of Khoton Nuur. View S.

nails. Taylor had hiked up Biluut 5 with Dan and me in the morning to do some interviews with me – first at Peat Valley 1, then at a Turkic standing stone (later identified as the Quiver site) on the way up to Biluut 5, and then at the Biluut 5 arrowhead mound burial. Dan surveyed north of Broken Mountain with Catherine and found a few mounds.

The evening had a riot of sports sounds from the volleyball field (Mongolians) and the bowling game with a big round rock and beer cans (Jean-Luc’s team). I wrote notes, and Dave hoped for a powerful charge on his helicopter drone batteries (they still did not work!). After supper, some of the girls went with Jagaa to visit a local family who has a satellite phone he wanted to use. The girls had a memorable evening of talk and music. Without better chairs and tables and a more powerful light, it’s hard for me to work in the lab ger past sundown, about 9:30, so I usually hit the hay then.



Fig. 32 Medieval arrowhead found by Dan Cole at Biluut 5.1.



Fig.33. Biluut 5.1. arrowhead site mound and hearth ring. View S.

Thursday, June 7

The morning started off fine, but turned squally after mid-morning. We continued clearing the surface of Delta-1, finding more quartzite cores and flakes, and three small pieces of calcined bone. Right from the start, we were serenaded by a camel standing on the terrace across the river. Diana sang back and he answered, and so it continued for several cycles, back and forth. It begins with a guttered, creaking call and ends in a rising whine. After a bit, a young herder came by and pitched in with our turfing, staying to observe for an hour, also talking with Bolka, our

driver. After lunch, we returned and completed about two-thirds of the pavement, finding a few small pieces of calcined bone, some ashy soil in the middle of the pavement, and more flakes and cores. Still no finished tools. Another herder stopped by to see what we were finding, which was not very impressive from his point of view.

A few squalls and storms passed through during the afternoon, but we got a full day in, losing Jim for the afternoon due to a sore back which he had injured years ago. He stayed in camp and worked on his peat sampling report. Dave tried using the helicopters again and found it worse than before – he thinks because the instructions to charge the battery for 114 minutes were wrong and fried the battery. Later explanations invoked the 2000m elevation and the thin atmosphere. He will try with the other battery tomorrow. Needless to say, he’s very disappointed. Dan and Catherine hiked the high terrace north of “North Bay” and found some cairns, a few mounds, and many glacial kettle ponds. Some of the ponds had turned to peat and are frozen internally, but none with any open exposures that he noted. They would have to be cored with drills! Bayaraa’s Turkic site has produced



Fig. 34. Our “singing” camel at the Khuiten Gol Delta-1 site.

west end of the lake in a great, grey veil of mist and sheets of rain. Taylor and Diana were up on the south side of Biluut 1 watching it arrive, hiding in the lee of the big boulder. “The most impressive thing I’ve seen all summer,” one said. News from Lynne was that she’s working on Part IV of her book, the last part, and is very pleased with it. That’s great news! Weather in Vermont has been cool and rainy – good for writing. Another item was that Mikki had run away and she could not find him until the next morning as she was putting up notices in town. She discovered him at Wing’s supermarket, where he had shown up when the staff came to work at 5 AM – he was no worse for wear apparently and he seemed quite pleased with himself. This is the first time in years that he’s run off, and the first time without his neighbor dog-friend Wag as a companion.

More work on the Delta-1 site, clearing the surface rock, finding more quartzite flakes –some quite large, but no finished tools. The singing camel visited us again for a while, and a herder passed the time with Bolka, who has little to do but polish his van windows. During the afternoon, I found a small cruddy piece of pottery near the east edge of the mound in a gravel lens on top of the old ground surface. The pottery is poorly fired and has a plain surface with a blackened interior. That type of gravel does not appear elsewhere on the site and must have a subsurface origin nearby – perhaps beneath our back-dirt pile. It does not come from our “burial mound.” Later on, we found more of that pottery in the same area, and also deep in the center of the mound, so I guess it is associated. Bayaraa and Jean-Luc think it’s Bronze Age, and if it is associated with our mound, it should be Early Bronze Age because of all the lithics.

This is day off for Jean-Luc’s team, so there is lots of laundry hanging on the gers. There was plenty of partying late into the night too – people stumbling into my tent lines, folks trying to learn Mongolian songs, and general carousing. It got quite cold, but I’m pretty used to it now and have

a couple pieces of pottery in the past few days, and today, half of a cow’s mandible in the western trough of the enclosure. Possibly ritual? They are checking for the other half and will dig more cuts through the dike/ditch oval. On the way home, we ran out of gas and had to suck the dregs from one of the van’s empty tanks, providing just enough to get home.

Friday, June 8

There was a big storm last night that struck just as I was starting to call Lynne, which delayed me thirty minutes. It was over as suddenly as it began, swooping down from the



Fig.35. Khuiten Gol Delta-1 pavement mound. View N.

been wearing my “Ted Stevens” silk underwear. As we were finishing dinner, the cook’s husband, Conti, landed a very large fish – four or five pounds. I guess he caught it by baiting his hook with a small fish. There are big fish out there if you have a good casting rod and bait! They have scales, a hump on the head, and pink under-color.

Saturday, June 9

This was perhaps the finest day for weather yet – all day not a cloud in the sky and temperature in the seventies to eighties. We had a full day clearing a 3x3 meter square in the center of Delta-1 and immediately found both charcoal and more of the same pottery we found outside the mound yesterday, much of it around a small stone feature in the mound’s center. This is reassuring, but so far it has not led to finding a burial or anything else. There were no second-level rocks, and under the surface rocks only brown sand trending to sterile tan, except for the small Feature 1 area.

We also dug the semicircular enclosure attached to the south side of the pavement and found nothing there at all. Frustrated by the lack of a burial or pit, I decided to open up the rest of the mound east of the 3x3 square, hoping to find more of the ceramics beneath the gravel lens we found in that area, or possibly something else interesting. We still hope for a village or domestic structure associated with the mound. Several large quartzite cores were found among the pavement rocks, and lots more flakes. It seems like people were detaching flakes for cutting and scraping from these cores while they were embedded in the ground, at least in some cases.

Dave got some great overhead shots of KGD-1 with his wide-angle camera on a pole. They show the whole excavation area. Today, he hung out and got some ‘people’ shots. We had a war council with Jean-Luc’s team this evening and planned three day trips to Magoit, Tsagaan Asgat, and Aral Tolgoi. Dan climbed Broken Mountain today and found a couple mounds on the top of the white-striped peak north of the arrowhead mound. Today was warm and windless and many of us got a bath in the still-frigid lake.

Sunday, June 10

Overcast and hazy at breakfast, but the sky cleared and we had a good morning for digging. Diana and Jami went to dig with Peter and found it “very organized”! We worked on Area 2 at Delta-1 and found more ceramics in both that area and Alix’s pit in Feature 1. I tested two areas in Area 1 to be sure we weren’t missing a central burial, but all except Feature 1 are sterile. The gravel lens in Area 2 produced more ceramics and got more interesting when I found a piece of bronze/iron at the intersection of the ground and brown sand – perhaps a burial. It seems like a piece of sprue. Jean-Luc came by and began shovel-testing the site area for settlement sites, but only found a single sherd, near our site and beneath one of the ethnographic camps. It seems like the same story from his other surveys here – very little evidence of habitations. The afternoon was more productive in sherds from both Feature 1 and Area 2. We excavated the gravel “trench”, found a large rectangular quartzite paving block, and Alix continued to find ceramics in Feature 1, even some that appeared shattered and buried in place. Why there is such a wide distribution of ceramics is a mystery – almost as if the mound has been looted. But that does not explain all the ceramics in the interface of the brown sand and gravel levels because the gravel was surely put down after the ceramics.



Fig. 36. Meg Tracy breaking surface turf.

Monday, June 11

Overcast and a bit lowering but the only morning I did not need a jacket. In the end, the day turned out nice and cool in the afternoon, which was good because we were working hard digging a one-meter wide trench through most of the KGD-1 mound. Yet the archeology was not up to par. The only interesting thing was a rim sherd from a different pot than what we've found before. The purpose of the trench was to try to locate the "owner" of the mound, but all we could confirm was the feature we found yesterday with the large pot fragments. We still have two squares with possibilities, so we can have a bit more hope, but not much! While Meg was taking a break from the trench today, she tested one of the stone rings near our mound – nothing found, like the results Jean-Luc had. There must be lots of early habitation in this big spring camp area near the Khuiten Gol Delta, but we've been unable to find it. In brighter news, today we had a herd of eight to ten camels keep us company – very curious animals, all the time staring at you and standing stock-still, their ragged winter coats streaming down in tatters. Also, more large fish were caught today with small fish bait. Richard Kortum and our non-meat-eating crew are consuming these critters, though I've had a few tastes.



Fig. 37. Alix Starnes carefully handling a piece of ceramic.

Much of our dig crew has developed maladies of one sort or another. Meg's broken wrist of years ago is acting up; Katie has large ugly abrasions on her thighs from the zippers on her pants; Jim's slipped disc injuries from years ago make kneeling and excavating difficult for him, so he has been doing double-duty as back-dirt carrier; Jami and Alix have other problems, but have been able to work anyway. Plus, a cold has been going around. So far, I've not been hit, but my right leg does not want to see too much strenuous action. But these minor maladies have not slowed us down or been a serious problem.

One thing different from last year is the relative lack of 'outings' from camp. Most are content to hang and play volleyball, mingle in the van etc., rather than go hiking. Every night, there are card games or social events of one sort or another, while the old types can usually be found in the work gear writing notes or transferring photos. The two teams seem pretty well integrated now, and for the past couple of days Jami and Diana went digging with Peter's crew. Dave used his GoPro camera to shoot some high vertical pictures of Bayaraa's Turkic period sites, and got good results. This evening, his handyman skills, needed all the time around camp, were useful for repairing Bolka's tent poles.

Tuesday, June 12

Today was the crew's day off and they were making plans for games and laundry. Jean-Luc and his team wanted to survey Aral Tolgoi for comparison with the Biluut region and Khanuy, so we left in one of his vans – Jean-Luc, Oula, Pam, Bob, Bayaraa, Dan, Meg, and I. They have an extra row of seats in that van so it was comfortable enough, even on that bad road. The morning was clear and cool and stayed that way all day. The trip up (only 13 kilometers as the crow flies) took an hour and a half. We checked in at the military base and started surveys – Jean-Luc on the flats, and Dan, Meg,



Fig. 38. Digging a 1 meter wide trench through KGD-1.

and I on the hill, beginning at the north end. Pretty quickly we found rock art, including the famous ostrich-looking creature that Jacobson uses to claim a Paleolithic date for some of the art. I don't know about that, but much of the rock art we saw does look archaic, with wide, deeply-pecked outlines and dark patination. Not much is similar to the bulk of the Biluut carvings.

We also documented a line of twelve cairns, mostly made of slabs, that curve north across the ridge. One had been opened and in it we found charcoal and a bit of bone. Burned bone was also in the first mound. Bayaraa has seen

similar mounds in Hovd and believes they are recent and related to the ovoo tradition. We asked the brigade captain (the “mayor” of this region’s population of herding families) who was camped at the store at Aral Tolgoi (he covers the region from Sirgal to Aral Tolgoi and has been in that job for four years), but he had no knowledge of this tradition. Many of the rocks are well-covered with lichen, so they are not recent at least. We lunched on our packed sandwiches on the river bank next to the store, where we had a nice reception by the brigade captain. His ger was a mixture of nice, old traditional tapestries and new, gaudy-colored “Wal-Mart Mongolia” styles. Unfortunately, I did not take pictures! The brigade captain told us that the total animal herd size for this brigade region from Sirgal to Aral Tolgoi is now 43,000, which is up from the low of 37,000 after the dzud (Mongolian term for a snowy winter) three years ago. He also clarified that there are about 1100 people registered in this unit today.

After lunch, we took up the survey again, this time from the south end of the Aral Tolgoi hill, and found several more mounds and two more cairn alignments. The central one we called the “Big Bull” alignment since its south end starts a few meters west of a wonderful bull pictograph that appears rendered and in action pose – very rare for early pictograph art. This alignment has 24 cairns. Dan GPS-mapped the cairns, while Meg excavated the interior of one and found charcoal and bone as in the northern ovoo line. Perhaps a new cairn is added at each annual ovoo celebration – a festival like Bulgan’s Altai 13 ovoo festival that we heard about from Jagaa. The ride home was interrupted by several breakdowns that provided for some impromptu



Fig. 39. Our van crossing the infamous bridge on the way to Aral Tolgoi.

archeological survey. Oula found a bit of chert and a red sand-tempered pot sherd at one location (We later returned to this ‘Milk River’ site.). This was near where Dan documented a khirigsuur with two hearth circles on its west side and perhaps a horse mound on its east.

There was a beautiful peachy sun set this evening – one of the many glorious sunsets we see routinely here. Back at camp, the volleyball net has been seeing constant evening use the past few days. The players range from experts to beginners, with the best running all over their team’s side trying to make miraculous saves, interrupted by mad dashes to keep our only ball from rolling into the lake. During one match, Resa, a student from Jean-Luc’s team, had to run into the lake waist-deep in order to save the ball from drifting away.



Fig. 40. Sheep and goats at Aral Tolgoi. View W.

Wednesday, June 13

Jean-Luc’s team leaves in a week, and they are still hoping to visit Magoit and Tsagaan Asgat for comparative data. This morning began overcast, but burned off during the morning. Meg, Alix, Katie, and Ming continued digging the last two units at Delta-1. Meg drew a stratigraphic profile along the 3.5 meter trench’s south wall, which is mostly sterile deposits and a rodent burrow in the area near our pottery feature. The rodent burrow may explain the deep and dispersed ceramics and complex stratigraphy. In the final two 1x1 meter pits just north of our ceramic finds, they only recovered one small piece of pottery. Nothing new was found. Definitely no burial in this mound!

The rest of the group gridded out the Khuiten Gol Delta-2 site where there is a small, round khirigsuur next to a huge boulder and rock art panels having some beautiful images of animals and people, including another ostrich-like creature. Dave took shots overhead before we started turfing, or more accurately, chipping away the upper cemented soil level.

We often see some very interesting birds at this site. One this morning looked like a red-billed stork or crane. Most of the herders here have now moved up-lake to the Aral Tolgoi region, where we saw large numbers of gers yesterday. The grass is much better there in the summer whereas Biluut tends to be very dry. We’ve been here for two and a half weeks, and still haven’t had more than a dusting of rain compared to last year. However, that could also end very soon! Later in the afternoon it did! An approaching storm appeared and forced us to abandon the sites. We had returned to Delta-1 and left Meg, Ming, and Katie to finish their squares, while the rest of us took the van to the Delta-2



Fig. 41. Aral Tolgoi-1 Big Bull Cairn.Chain. View N.

site to continue turfing. After a couple hours, the sky blackened and we left to pick up the others and take overhead shots. Doing this with a long, metal pole before a lightning storm is not recommended, but we were early enough to be safe – despite expressing some gallows humor. The pictures were excellent.

On the way back to camp, I visited Richard’s team on Biluut 1C, where he has some wonderful Mongolian deer images. I also inspected a looted burial nearby, built into the steep side of the hill a couple hundred feet from the



Fig. 42. Our completed 1 meter wide trench at KGD-1. View W.

deer images. Unfortunately, the burial is probably not associated with the images, as it is not a *khirigsuur*. By the time we got back to camp, it was storming and everyone ran to weigh down their tents. As usual, it was over in 20-30 minutes, but the system seems to have ushered in a period of unsettled weather. I wouldn't mind this weather if the rain loosens up the hard-pan soil. After dinner, Dave offered me a beer from his stash and we had a nice talk about our previous work with NGS and where it's gone since then.

Thursday, June 14

Bayaraa started excavating a second (after 2011) Pazyryk mound yesterday, with hopes of better (not looted) finds than he found in last year's dig at this site. Our team spent a rousing and demanding morning backfilling *Khuiten Gol Delta-1*, a task that took three hours and lots of strained backs. The women (which is most of the team!) did a magnificent job of it, even wrestling some very large boulders back into the site! In the midst of the operation, the Mongolian cooks from Jean-Luc's team came by to select a goat for Oula's birthday dinner. We tried to lure them over to throw a few rocks (backfilling) with us, but they were too smart for that trick. Later, they returned to collect dung for cooking the critter. Lindsey had to take a pass on backfilling because of some nerve problems – no feeling in two of her fingers and one side of her back, so I sent her on a search for lithics. She returned a couple hours later with my hat, which she said was up on top of a large boulder about a quarter mile away. I have no idea how it got there. Perhaps I had left it at the new site, *Khuiten Gol Delta-2*, and a herder found it and put it on the rock! After another one of the cook's fabulous (and huge-portioned!) lunches, we returned to *Khuiten Gol Delta-2*, having given the crew an extra half hour of lunch time. It was hard work breaking the ground, but we eventually succeeded and began clearing the turf levels.

By late afternoon, a storm overtook us and we had to hightail it back to camp. On the way we saw our volunteer ger dog (the girls have named him *Budgie*) trotting away from Jean-Luc's camp with a large object in his mouth. He appeared a bit furtive and as we converged on his path (back to his ger I suppose), we could see that he'd stolen the goat head which Jean-Luc's team had been planning to cook and eat along with the rest of the animal for Oula's birthday. Not now! The birthday feast was much appreciated nevertheless and we all sat around as the milk-can "pressure-cooker" was opened and its contents (goat, carrots, and potatoes) were shared around. Of course, the hot rocks that had cooked the dinner were passed around the circle, hand-to-hand. Tradition says the longer you hold them, the better your future luck! Ouch!

In other news, our generator has been acting up recently, constantly cutting out, perhaps because of dust or fuel problems. It's not made to run on 80 octave gas, which is all they sell in most places outside of UB. It's all Russian-supplied and, unlike last year, when Russia caused an economic crisis in Mongolia by failing to deliver gas (diesel especially), Putin now has promised not to interrupt delivery. Well, we'll see how this year's election goes and then see about fuel politics. Later in the evening, I called Lynne and found her very excited about discovering a large heron rookery west

of Bald Mountain in a swampy area with small ponds. She'd been watching herons fly west over our house from the river in the evening. Now the wildlife folks are excited, as they have not known of a rookery in this region. There are about 14 nests apparently. I also tried calling Lauren but could not reach her. The next morning Jagaa solved our generator problem, discovering someone had over-filled the oil reservoir.



Fig. 43 A storm descends.

Friday, June 15

Dave and Taylor were with us all day to photograph the cleaned surface of the KGD-2 khiriguur mound. After lunch, we tore into the middle of the big oval ring of boulders in the mound's center and by 4 pm we came across fragments of wood beneath one of the rocks. It was pretty deteriorated but seemed to be remnants of a timber rather than a plank, running southeast/northwest, perhaps part of a coffin or a burial ceiling. We've never seen anything like this in a khiriguur before, and no wood has been preserved in the other mounds I've seen. So besides giving us a certain carbon-14 date, we may have good preservation with other finds in the burial. There was no indication of pigment, etc., but the wood was very fragmented and its surface was gone. At this point, we called it a day, realizing we'd now have to open the entire mound from the outside-in, plus we were all too tired and cold to continue.

This was a good day for archeology, even though it was windy and showered a bit. The overcast in the morning gave way to sunshine patches, but in the afternoon, strong westerly winds made digging dirty and cold, even though the showers mostly evaporated before they reached the ground. The south side of the lake got drenched several times. I had gotten so dirty, I decided to take a bath after dinner even though the wind was strong and cold! I found the experience "bracing," as the Brits would say. Sometime in the afternoon, we noted that a Russian couple had arrived in a Land Rover, camping a few hundred feet from us. It was unusual in that they don't have a Kazakh guide.

During the evening, Jagaa took some of the students to visit a family, and they returned raving about the experience and about the Kazakh customs of hospitality they were not accustomed to, for instance, not wearing a backpack into a ger; leaving your hat on; how to receive a cup of tea with your right hand or both hands, but never your left; how to indicate you wouldn't like a



Fig. 44. Khuiten Gol Delta-2 Khiriguur excavation begins.



Fig. 45. Taylor Malone and Dave Edwards using the GoPro to photograph KGD-2. View SE.

Delta-2 khirigsuur. We began by removing all the rocks except the outermost mound rocks, and the central oval of large boulders. Within the first five minutes of work, Katie tripped on a grid line while carrying a rock and banged her knee and head. Her knee had had surgery for ACL repair in the past, and it took her several minutes of serious moaning before she was able to tell us that she had not ripped tendons or ligaments, just had a painful impact. We evacuated her to camp where she spent the rest of the day with her left leg bandaged and raised up. Dave gave her a thorough first aid check and addressed her on what to do and what not to do. Meg also is good at first aid and assisted Katie.

By lunch, we had cleared all the rocks in the central mound and we began looking for the pit outline so that we could follow it down. This was a slow process, using four 50 cm trenches. If we don't bump into cultural material this way, we'll go down from the middle until we do. We removed all the large, inner oval boulders, but there were still large rocks deeper than them in the center. The wood we found yesterday remained untouched today and would have to be quite high up in the burial. Dan came out for a while to mark some new mounds I found along the shore, one looking like a square Turkic mound with a square stone slab box on its top. Dave stayed with us long enough to shoot some overheads with Taylor and then went to Bayaraa's Pazyryk site for the same. Bayaraa's team was getting into the sub-mound pit and by dinner was neatly down to two meters. Some members of our group are having constipation problems. Jagaa got from a local herder a concoction they use for treatment – a cheese product (they also

re-fill by putting your hand over the cup; how to sit according to social hierarchy or age – men on the left as you enter and women on the right (the wife's side of the ger), etc. After I managed to warm up, we sat around in the dining ger with the card-playing ETSU students, who really enjoy each other's company. We do have a great team this year and the Smithsonian Institution folks – Ming, Katie, and Meg – mix well with them.

Saturday, June 16

Most of the storms today passed us by, so we had a full day's work opening up the Khuiten Gol



Fig. 46. The US students digging trenches at the KGD-2 site.

use whey and enemas!), and it seems to be having some effect. Jagaa also worked on our trusty Honda generator (Paula DePriest's, really!) which has been cutting out. He found the oil level too high and cleaned the gas filter, which had some dirt in it. Hopefully that does it, as the juice has become critical for much of our work. Did I mention earlier that Jagaa saw a Marshalltown trowel hanging on the wall of a neighboring ger? Could it be a fine trophy from a loss, or possibly a gift? Katie seems better tonight and may be able to work tomorrow. Jim Phillips has been spending his



Fig. 47. The strange-tasting cheese used for a Kazakh constipation remedy.

time doing botanical surveys for the research project with Dr. Michael Zavada, who has moved from ETSU to Seton Hall University in New Jersey, as a dean, but still wants to be involved with our paleo-environmental work. We really need his help to determine the chronology of deglaciation.

Sunday, June 17 - Father's Day!

A fair bit of rain fell last night and early in the morning, for the first time actually wetting the ground. Reports from the constipated class were positive, both for those having eaten the gravel mixture (unknown ingredients) and the whey that Jagaa got from our ger neighbors. We left for the site expecting

good results there as well. But hopes for archeological finds diminished as our trenches failed to reveal any cultural signs. We turned to digging in the central core where we had found a piece of wood (could it be a bow?). Some curious cows visited us as we were all busy digging. One ate some of our back-dirt and another got interested in licking the salt-encrusted bottoms of the rocks we'd excavated. A big rainstorm ended the dig just as Richard and Jagaa arrived to see about our progress. Richard immediately found a large, bifacially flaked chert piece near our site! It has a "Paleo-feel", but is just a core knife in appearance. What a diagnostic Paleolithic tool should look like here, I've never been able to figure out, as Asia does not have the same or comparable diagnostics as Europe or Africa.

Returning to camp, lost in a grey stormy gloom, we had to turn out two herders who had taken refuge in the van from the storm, talking with Bolka, with their horses tied to its rear bumper! I was afraid we'd be towing the horse in behind the van, but the herder mounted and was off into the rain before we started. Lunch was "hamburg steak" (hamburger!) in sauce, rice garnished with raisins and corn, and tomato-cucumber salad! After lunch, we returned to the site with Richard, Jim, and Jagaa so I could show Richard the nearby mounds. By mid-afternoon, we got down to excavating the wood, which turned out to be (probably) a large log, as it was quite thick (3-4 cm) and wide (10-15 cm). The wood is rather rotted but partly intact. Beneath it appeared sterile soil, but I had Meg dig much deeper with the shovel. Soon I heard a wild whooping from the ladies helping her, as the top of a skull appeared, marked only by a small shovel ding. Sure enough, way down about 30-40 cm under the wood, a small skull rested upright in the pit. Buried standing up? Sitting? How unusual! It was small yet had closed (but not fused) sutures. We soon found the edge of the burial pit close to the north side of the skull, and then to the southwest we found a few strange, tiny vertebrae without spinal processes. Slowly appeared the mandible, a few tiny ribs, and what appeared to be a humerus. At



Fig. 48. A lively ride home with White Falcon, Diana, Alix and Jami.

this point, we covered the skeleton with plastic and sand and began enlarging the pit so we could excavate it properly tomorrow. This is a very strange khirigsuur burial, with the head upright and quite deep under rock cover. Is it a dwarf? Its sutures are closed, yet it has such tiny bones and strange vertebra. Invalid? We'll know more tomorrow.

Dan and Dave returned to camp from Tsagaan Asgat at about 8:30 PM in the pouring rain, having had a great day, much of it in the rain also. Jean-Luc was very impressed with the region and its cultural complexity compared with Khoton. Dan said he was glad he brought his computer with its satellite maps to help the driver find the route since he did not know the way. They arrived home just as we were beginning a group lecture for the students. Soon after, Dave appeared to tell us that



Fig. 49. Rain storm over Altai. View S.

Lindsey was in tough shape with possible appendicitis complicated by constipation and some local remedies she took today. Jim's mother is a physician and he was able to reach her with the sat phone for consultation. Lindsey moved into the work ger for the night, to be warmer, have light, and be able to be monitored. Jim, Dave, and Meg are doing a great job providing support and care.

Monday, June 18

Lindsey had a comfortable night sleeping in the work ger, and her condition was no worse, but no better, in the morning. We waited a couple hours to see if this morning's pills had any effect. They didn't, so at about 10:30 AM, she left for Ulgii by jeep with Jagaa, Dave, and Jim. The diggers took a couple of hours to visit Peter Woodley's two house excavations at the head of Peat Valley – one a square boulder tent ring with a central hearth and an early and late component, and the other a large rectangular structure with two hearths and small rock walls – maybe for a log or sod/plank foundation. It's too large a structure to have been a tent. We'll have to see what the carbon-14 samples say since the artifacts (a few flints and ceramics) are not diagnostic, and too few. Peter is an excellent excavator – very tuned in to soil conditions and stratigraphy. On the way to his site, we inspected Richard's "race-track" rock passage on the Biluut 4 hillside and found it to be 4-5 meters wide, bordered by small rocks, with 15-20 transverse rock alignments at uneven distance intervals. There's also a long line of single rocks leading from the midpoint of the double-lined passage to the peak of the nearest Biluut 5 (Broken Mountain) peak. Could it have been for sports? For ritual? Then we briefly visited Bayaraa's Pazyryk mound excavation and found a beautifully preserved log coffin and no evidence of looting. The top of the coffin had fallen in, all the body was there but in poor condition. Later in the day, they recovered one nice long-necked ceramic vessel, some gold foil, an iron bit with the horse, and a broken iron knife. The pot has the typical Pazyryk spiral decoration. The horse had been killed by a

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Monday, June 18

Lindsey had a comfortable night sleeping in the work ger, and her condition was no worse, but no better, in the morning. We waited a



Fig. 50. KGD-2 skull and a few vertebrae and ribs emerging and head twisted up 90°.



Fig. 51. Rectangular structure excavated by Peter Woodley's team. View NE.



Fig. 52. Single line of rocks aligned with Broken Mountain peak. View E.

blow to the head.

Reaching our site at about 11 AM, we excavated the "dwarf" but did not take up the bones until the afternoon. It was a pitiful sight, seeing this person lying there with his head cocked up, maybe snapped, at 90° from his supine body, which was also missing both feet and most of both ankle bones. He/she probably did not stand more than 85 cm, yet must have been in his/her early teens, evidenced by his/her erupting molars – still inside the mandible. The tooth row is also abnormal – only 12 teeth in the skull and the mandible (maybe this is a developmental issue and not a genetic condition?). Front-to-back the skull is 15.5 cm and has a width of 13.3 cm. The hands are as small as a baby's hands, and the feet are missing below the tibia and fibula. Since the hand bones are present, the feet



Fig. 53. A larger rectangular structure with central hearth features. View NW, excavated by Peter Woodley.



Fig. 54. Enkh brushing off the Pazyryk wooden horse coffin with a burial coffin. A horse burial was found along its north side.

should have been too, so they must have intentionally been omitted, perhaps to keep the individual's spirit from wandering. After excavating the bones, it was too windy to backfill, so we started work on a small mound a couple hundred meters southeast of Delta-2, by the shore. The mound had a small stone box on top, mostly built with slabs and a couple of large unmarked upright rocks, now broken down.

Back at camp, we learned over a satellite phone call with Dave at Canat's lodge that the Ulgii hospital would not admit Lindsey and that she would have to go to UB for treatment. It had been decided that both she and Jim would then fly home. A big loss, especially for the rock art part of the project, as Lindsey was Richard's field recorder. Later in the

evening, the vans went to Sirgal “for supplies” – gas certainly, and ostensible wet-wipes, but many of the Mongolians and our ladies also went for “party supplies”. When they returned, the rest of the night was one huge and boisterous party with whooping and hollering until 3-4 AM!

Tuesday, June 19

Today was a holiday for our crew and we had breakfast an hour later, at 8 AM – a good thing as some of our group had been reveling with the Jean-Luc departure party. There was also a need for some psychological counseling after the party. Too much booze and late hours makes for misunderstandings – and some of our crew were upset. At about 10:30 AM, Dan, Richard, Ming, Taylor, and I went off with Bolka to visit the mound two-thirds of the way to Aral Tolgoi that Dan had found and thought might be a khirigsuur with a horse mound. It turned out the mound was not a khirigsuur and the horse mounds were recent burials; but next to the mound we found flints eroding and in a test pit Ming had started, Taylor found a beautiful late Neolithic or Early Bronze Age pencil (microblade) core and, nearby, a second microcore with two prepared platforms. From the eroded surfaces nearby came some utilized flakes of green slate or chert. No ceramics or charcoal, but lots of fire-cracked rock. Three test pits showed scattered but limited concentrations, mostly on the south edge of “Milk River” terrace, surrounded by marshy lands near where the river enters. It is a good site to return to for systematic work and the best early lithic site of the season. Of course, it was found on the day Jean-Luc’s group and their lithic expert, Oula, departed!



Fig. 55. Pazyryk mound with horse and human burial. View NW.

We returned at three for a late lunch and some clothes-washing in a fairly chilly afternoon. Camp is very quiet now, with everyone but Dan and me sleeping or decamped! Our bustling mountain-lake metropolis has been dealt a demographic blow with the Jean-Luc team’s departure, Bayaraa and his son, Khusla, among them. Bayaraa left us with reports of his work to use for the governor’s report. From our side, Lindsey and Jim are bound for the United States. Dan called UB and reached Zaya’s Hostel, learning that Jim and Lindsey had not yet arrived as their plane departure from Ulgii



Fig. 56. We had a sad moment when we found out that Lindsey and Jim were heading back to the US.

had been delayed. He also reached Dave in Ulgii and put in an order for supplies (we desperately need more zip-lock plastic bags). Dave and Jagaa should be back tomorrow. I spent the rest of the afternoon on notes. In the evening the gang watched a movie in the cooking ger on Richard’s computer.

Wednesday, June 20

It was pretty quiet in camp last night without Jean-Luc’s team and their lively drivers! The night before, Jean-Luc “passed out” vodka in the controlled Mongolian way, passing the cup, but even under these conditions there was enough to fuel plenty of revelry. Our folks have recuperated and are ready for work again, which for

both the Mongolian and US teams means backfilling our two sites. For us, that took only a bit more than one hour. We then turned to the stone-box mound, Khuiten Gol Delta-3. It wasn't much fun cleaning the surface and preparing it for photography.

Towards lunch time, we were driven back to camp through rain squalls. It was a scare when Dan did not show up for lunch. He had been driven out with Egiimaa's crew and was going to walk up the backside of Broken Mountain, his "last" foray at its various ascents (it turned out he returned several more times!).

They returned without him and we were concerned, since he was hiking alone and had not left a walkie-talkie with Egiimaa. All's well that ends well though. He walked into camp at about 2 PM having reached the top, found a new mound, and realized he'd not brought his rain pants. He was soaked from the waist down.

By afternoon, Egiimaa's group had nearly finished backfilling and was preparing Pazyryk Mound 3 for excavation. At Khuiten Gol Delta-3, we recorded and removed several layers of slabs and by dinner time had uncovered a set of slabs radiating out from the center of the mound, looking very much like the top preparation of a burial. We'll see if so in the morning. The small stone box on top of the mound was empty, and maybe the three large slabs on the surface nearby had covered it, and been thrown off. Unfortunately, nothing has been found in the upper soil.

One of the local herders told us that there are still maral deer in the forest on the north side of Biluut 1 – the same type of (deer stone!) deer that we saw there last year. This means the enforcement of hunting restrictions must be working. Another bit of related news is that the logger (from a nearby ger) who cut and hid 40 timbers behind our camp last year is now in jail in Tsengel. Dave and Jagaa arrived at 8:30 PM from their mercy trip taking Lindsey and Jim to Ulgii. There they saw a Kazakh doctor who was wearing a pink hustler cap with US \$100 bills on the band. He was "absolutely worthless," Dave said, "something out of Saturday Night Live." The Kazakh doctor wanted no history and prescribed nothing useful. Dave got some laxative and Lindsey took it and it had good effect. Jim decided to accompany Lindsey home and also save the project \$500 extra airfare, so

Dave left Jim and her at the airport, but their plane to Ulgii was delayed for hours. We later found out that the SOS hospital in UB recommended by the embassy was helpful but could not make a diagnosis. They fly out of UB tomorrow morning.

Thursday, June 21

A herd of horses came by our camp last night and could be heard munching grass down by the nearly dried-up kettle pond behind my tent. Then in the morning, there was a ravenous outburst from the magpies and ravens fighting over scraps left at our garbage dump. They were so loud it seemed like they were fighting it out on the top of my tent! After breakfast, Dave and Taylor



Fig. 57. Milk River mound with flints and ceramic finds. View NW.



Fig. 58. Site with balbals between Biluut and Aral Tolgoi. View SE.

came to our site to photograph the rocks in our third level, then went on to shoot the Pazyryk mounds. The weather drizzled a bit but it was cool and fostered pleasant working conditions. Our excavation went well, finding more slab pavement throughout the feature, as well as a sturdy vertical slab. But in excavating the prime area for a burial we did not find anything – at least not by lunch time. The architecture of the mound is interesting and carefully done, so it would be a shame not to get cultural information.

After lunch, I showed Egiimaa and Jerry the Khuiten Gol Delta-2 bones. They think it's a 10-12 year old based on its sutures (not fused), and said that the row of 12 top and bottom teeth is not abnormal, but simply immature, so maybe this is not as strange a person as I thought. There is, however, a lot of inbreeding here (and probably in the past) and maybe that is part of the story. Our 1.5 hour lunch break was actually warm and windless, unlike the past few days, so I took a bath and washed some clothes. We returned to the site with Dave and Taylor to photograph the mound, and we mapped it before disturbing the pavements at that level. In our test pit west of the vertical slab we found a bit of broken and partly burned mammal and, possibly, bird bones crushed and embedded in an organic matrix just above sterile soil. A final meal? But for whom? And where is he/she? We began exploring the southeast side of the mound to see if a body could be found there, but a rainstorm caught us before we could find out. Then we returned to camp where Dave gave me a beer from his Ulgii stash and I spent an hour on notes. Dan showed me his map of “alignments” (lines created by aligned khirigsuurs, etc.), and the lines point in every which direction! Well, it is a beautiful mid-summer night – June 21 – but there is no bonfire tradition on this day in Mongolia.

Friday, June 22

Rain off and on last night and a glorious rainbow emerged just before sunset.

I called Lynne and found things okay at home, despite an uncomfortable heat spell with temperatures up in the nineties. She's almost finished the final revision of her book and will send it off in a couple weeks. Alix and Diana have been sick with stomach problems the past day and were trying to discover the culprit – whether it be poor hygiene in the kitchen, food problems (the Mongolians thought the tomatoes smelled peculiar—but they tend to criticize all aspects of Kazakh cooking!), etc. Our work tent has this year become the food storage locker and smells like one, with legs of lamb hanging around the inside along with Richard's



Fig. 59. Pazyryk ceramic jar from Mound 2.



Fig. 60. KGD-3 with surface cleaned and lower site level slabs exposed. View SE.

and my laundry, computers and electronic gear being charged up, and boxes and bags of groceries (carrots, cucumbers, potatoes, bread loaves). There is plenty of chance for microbes to cultivate, and many ways for them to spread around, despite Dave's hand-washing stations and privy procedures. Fortunately, the girls seem to be coming back to life today. We can't afford to lose more of our team to sickness, or worse – evacuation.

In the morning, we dodged raindrops while getting to the bottom of the Khuiten Gol Delta-3 site. It was very disappointing to not find a burial or any trace of what this structure was all about. All we can say now is that it had some special ritual purpose, which the builders had put much effort into. After picking up Dan down the shore before lunch, we stopped at the group of mounds by the side of the road west of East Bay. There are seven or eight of them, all looking like square khirigsuurs with standing stones in their corners. All have fully paved interiors and most have slab burial covers, some displaced and others appearing intact. However, none have fences or hearth circles and there are no inner circular mounds. This seems strange and needs investigation – perhaps an early or a late khirigsuur tradition? They are grouped in a tight cluster and it's the only place here or anywhere I've seen mounds like this. The burials appear to be very close to the surface and are probably in poor condition, so dating may be a problem.



Fig. 61. Meg teaching Ming how to draw a stratigraphy profile at KGD-3. View N.

During the afternoon we returned to Khuiten Gol Delta-3 to finish searching for any cultural material and to draw a profile, which Meg taught Ming to do. It's not a very informative illustration since hardly anything was found. Even the small bones found yesterday at -85 cm deep may be suspect to modern (rodent?) activity, since no charcoal or other material was present. While the profile was being drawn, White Falcon (the cook's daughter who had accompanied us this afternoon for the first time at a dig site) and I tested the big circular boulder structure on the hillside above the rock piles, finding a couple of flakes but nothing to indicate it was a cultural construction. That girl

of age seven is a very determined creature, and very smart. I returned to our main excavation and the crew expanded the pit nearby to the margin of the mound's outer surface, finding more slabs but not a trace of definite human activity. Nothing but sterile gravel and sand, often intermixed, with some brown stains. It seems like this was a ritual site with lots of construction preparation but little in the way of a deposit, unless it was in the box at the top of the mound. After collapsing the mound walls, we had to accept defeat and backfilled the structure. At least the spitting rain ended and temperatures stayed down.

I crashed early after dinner, feeling a bit woozy from something – maybe the colds and diarrhea that are going around. These days a long sleep is somewhat challenging because of my aching hip and leg bones. Except for my right hip, which gives me a limp during the day, the rest of me is fine, so why the leg aches? I could always take aspirin, but I would hate to do that.

Saturday, June 23

Egiimaa tried to reach Director Saruulbuyan by satellite phone last evening to see if/when he will be coming out here, but the reception was too poor to make the call! In the morning, we started work on the East Bay-4 cemetery which I inspected yesterday. There are nine square burials about



Fig. 62. Our fearless driver, Bolka.

5x5 meters, oriented north-south. Most have corner posts and indications of slabs in their centers. They have cobble-paved interiors and look like mini-khirigsuurs except for the lack of a fence, hearth rings, and radials. Some seem disturbed but several look intact. We chose S3 as our target. A few passers-by seemed to recognize us and stopped to help, driving a big empty truck—maybe they are Canat’s men. One of the men pitched in and started shoveling the site’s borderline, knowing exactly how to do it! They also knew Bolka and had a long discussion with him. I’ve been studying Bolka’s driving and how he masterfully avoids potholes and bumps by energetically swerving back and forth. He seems to take every abnormality in the road surface as a personal challenge to be negotiated to the best of his ability. The end goal is to drive as fast as possible with the least discomfort to

passengers and the vehicle. Weather was gorgeous – hot and sunny for a change, though there were quite a few gnats. Dan went out surveying down the shore highlands east towards Sirgal, and stayed out for lunch. He found some interesting mounds. We returned and cleared the site West Bay-4 in the afternoon and had Dave and Jami photograph it. Nothing found on its surface. Towards the end of the day, we finished in time to have a “beach break” on the fine West Bay strand in front of the site. I used the occasion of good water and a fine day for a quick bath. Everyone seemed to enjoy the early break and change to make sand castles.

Sunday, June 24

Another day of spotty weather, but as usual, here one area can get deluged while others stay dry. After a nice, clear morning, big storms came up after lunch, but all the rain fell on camp and not on the site area. Leaving our rainy camp at 2:30, we could see that the northern slopes of Biluut Valley were covered white with sleet. When Egiimaa’s team got to their site, they had to shovel the sleet from their excavation pit. The storms threatened our site but never struck.

The morning work included a visit to the Pazyryk site where Mound 3 was being excavated. Egiimaa’s team had gotten halfway down the burial pit, which was nicely outlined with rock fill. Around the mound were several circle hearths, similar but smaller than Khirigsuur hearths. They would seem to be associated with the Pazyryk mound, but in some nearby areas these circles are not next to mounds. Furthermore, these hearths are on the eastern and southern sides of the Pazyryk mounds, while in khirigsuurs they are on the west and northwest. Perhaps these hearths and balbals are Pazyryk burial features, as well, as Turbat later on told us, and that they sometimes occur with Turkic burial mounds. Another possibility is that this site area was formerly used by khirigsuur people. This is certainly a key site area for the Pazyryk Biluut people, so we should try to understand it better. If Dan could spend a couple days here working with an archeologist, he could prepare a detailed map of all the features.

After leaving the Pazyryk site, we arrived at the West Bay-4 cemetery site. Today, Enkh helped us and made great contributions – he’s full of energy and digging know-how. With his assistance, we were able to clear all the rocks from the surface (after Dave’s photo) and by afternoon had

come down on a central core of huge slabs. These had been laid down in the clean sand, and when they were raised, we found a vertical slab-lined coffin with no stone cover (there may have been a wooden one, but there were no definite wood traces). By the end of the afternoon we were able to reveal an adult person, probably a woman, in fair condition with some organic substance present in the central lower part of the grave (felt? cloth wrapping?). We had some local people stop to see what we were doing just when we were lifting the skull and had bones sticking out of plastic bags. That was enough for them, and they retreated very quickly. We only had time to remove the long bones and skull, and reburied the rest under sand and rock, hoping it would not be disturbed overnight. No artifacts of any kind appeared, but we did get some good bone and charcoal samples. The skull did look very grisly when it came out, with lots of adhering roots and congealed sand, though the real horror was our girls who promptly had their pictures taken with the skull for their Halloween masking parties and what not. The body was buried twisted halfway on its left side, with the head more slightly elevated and turned to the right. The body barely fit the space in the coffin and was only 50-60 cm below ground level. Our Mongolian colleagues say these graves are probably from the Mongun Taiga (“Silver Forest”) culture, a Bronze Age phenomenon known from southern Russia (Siberia), rather than Medieval age as we have been told earlier.



Fig. 63. Alix and Ming profiling East Bay-4. Mound 3 after cleaning. View S.

Monday, June 25

We returned to West Bay-4 to finish excavating our burial and were pleased to see it had not been molested overnight. As expected, the left side of the body was poorly preserved from being underneath and wrapped in the 1-2 cm thick organic deposit that extends in a compact mass from neck to pelvis. We collected samples of the organic mass for analysis. Some looked like it was felt, others of fur, and some seemed to have woven texture. None of the left ribs could be recovered and the left pelvis was also deteriorated. All these bones had mostly turned into a white pasty consistency. Dave photographed samples and we also photographed the pronounced S-curve to the spine that seemed greatly deformed before burial. Once again, no tools were found, but the organic mass suggested the deceased had been wrapped in garments, furs, or textiles from head to toe, but most extensively, the torso. A couple groups of tourists stopped by, one with Mongolian and Kazakh people, but their interest was more academic than yesterday’s group that found us with bones in our hands. We were able to



Fig. 64. An adult skeleton emerging from the West Bay-4 Mound 3 burial.

finish excavating by lunchtime and backfilled the site. The Mongolian Pazyryk team reported more horse bones in the upper fill, again indicating the site had been looted. Nevertheless, yesterday they found parts of an armor-piercing arrowhead, the shank of a rusted knife handle, and what may be part of a bronze coin and other bronze bits.

The afternoon was more leisurely. Since we had to meet Dan at East Bay at 4 PM, we spent an hour surveying sites on the east side of the Khuiten Gol that I had not seen for a couple years. The large Turkic site with big balbals, some with petroglyphs on them, seems to have been heavily ransacked and may not repay excavation. But there are other balbals in the area that look intact. Passing by the Pazyryk site on our return to East Bay-4, we found Egiimaa's team missing – off making telephone calls to the museum. Saruulbuyan still expects to visit Khoton for a couple days, and Bayaraa is busy with preparations in UB for more surveys. At East Bay-4, Alix cleaned up our excavated bones and I did a stratigraphic section of the site and described its construction.



Fig. 65. From the left: Katie, Jami, Diana, Frank and Alix.

In the afternoon, Frank Hole arrived to stay for a week, coming from several weeks in Egin Gol with Will Gardner's Yale project there. There were lots of rainstorms at the time, and he arrived here in the midst of a hailstorm, having had quite a day's travel – starting in UB at 3 AM, having breakfast at Blue Wolf in Ulgi, and then enduring eight hours of a "hard road" to Khoton! He'll stay in Jim's empty tent, which is quite accommodating. Along with Frank came some very welcome baggies, which we were out of!

Later in the evening, I called Canat and asked for more plastic bags, and Jagaa made a run to Sirgal for gas. Quite a few students went along with Jagaa and bought booze to celebrate Meg's 26th birthday. Returning to camp, they had a big, loud, and messy party in the dining ger, keeping the cooks and Dave up until 2:30 AM.



Fig. 66. The well-used tent privy.

Tuesday, June 26

The dining ger was in shambles in the morning. At breakfast, we had a 'showdown' and the older folks vented at the culprits. It turned out that Baku and Conti, our cooks, had been partying with the students as well, but surely not until 2:30 AM! Nevertheless, we partly cancelled our rest day, and had the students work with Dave all morning, cleaning camp and closing down Jean-Luc's latrine, which we judge (hopefully correctly!) will not be needed if Dave "redistributes" the piled-up mass in our toilet effectively!

Dan, Richard, and I went to the Pazyryk site for the morning and GPS-mapped all the structures and features in the vicinity, while Egiimaa's team continued to work their way down



Fig. 67. Stone circle halfway up to Biluut 5.1 Arrowhead mound. View SW.

among the horse bones, finding scattered pieces of rusted iron, bits of a bronze bridle buckle, and in the afternoon, a small bronze bell suspended under the horse's mandible. There is probably no human burial in this grave since it's so small. During the afternoon, we surveyed the mounds on the east side of the Khuiten Gol, trying to see what might be a good excavation target. Several large mounds appeared to be intact – a couple that might be feasible, and others too large to accomplish with our small team.

Wednesday, June 27

This was a fine day, fortunately with no storms because we spent the day up on the

mountain excavating the arrowhead site. Frank Hole and Dan accompanied our team and he and Dan spent much of the day talking and wandering about on the mountain, and looking at sites like the Turkic khirigsuur burial ground south of Biluut 5-1. On the way up the Biluut 5 hill, Meg found some pottery at the Turkic standing stone site (Biluut 5-3), as well as a hut circle (5-2) a bit higher out the hill, with a piece of worked chert wedged between the rocks. At the arrowhead site, we gridded out the partial hearth ring and mound, photographed, and dug. The site turned out to be less interesting than I hoped, but we were able to obtain a bit of charcoal from the center of the hearth ring immediately north of the mound and a piece of split long bone of a large animal beneath one of the mound rocks. Unfortunately, no more arrowheads or a burial. It seems like this crest-top feature must be a devotional or ritual site with a fire offering ceremony (like an ovoo) in which an arrowhead was the major offering – preparation for a war, hunt, or some other activity. There was lots of dust flying into our faces as we backfilled, and Meg, who has not been able to clean her contacts because of spillage of her cleaning solution, had an optical catastrophe causing her to go nearly blind. It set her off running down the hill way ahead of us, and we found her way down the valley after Ming spotted her far off in the east, going the wrong way! Her eyes were beginning to give out up on the hill, damaged by all our dust, and she felt a desperate urge to reach flat land and the road. Ming was lucky to catch a glimpse of her before she completely disappeared, at which point we'd have had a huge search party scouring for her, mostly in the wrong places.

We confronted another catastrophe back at camp. The Mongolian team had spent their day off processing and photographing Pazyryk artifacts, using up most of our toilet paper in the



Fig. 68. Students enjoying the view north at Arrowhead site atop the Biluut 5 hill. View N.

process!

Thursday, June 28

It was a quiet night and morning – a relief after several days of unpredictable and stormy conditions. We decided not to return to the high hill and instead to work on the standing stone at the opening of the ravine. Meg had found pottery there yesterday, and that clinched the decision since pottery has been so scarce at our sites. By lunch we had cleared the surface, finding many sherds – all from a single vessel it seems. In the afternoon, we cleared the thick layer of cobbles from inside the square enclosure and found sherds mixed in with them. Egiimaa took us to see a mound hidden in a high ravine north of Biluut 5, the same one that exits to the south next to our standing stone. Big, huge boulders! Someone really wanted an inconspicuous burial! An intruding Xiongnu warrior? An outcast? In the end, she decided not to dig it because it is so far a walk from where a van can go and there is not enough time left (she reversed this decision a few days later and had great results!). Instead, they will spend some time on the “Turkic” site with rock art balbals, on the northeast side of the Khuiten Gol.

When we arrived back in camp and I was about to jump in the lake to remove the dust, a well-dressed man appeared beside me – “Hi Bill, good to see you again!” It was Ronald Slutz and his wife Pamela (former US Ambassador to Mongolia), who were on a pleasure trip following Pamela’s retirement from the State Department. They’re on a circuit tour with staff from Blue Wolf. They had mentioned their trip to me in the spring, and I had urged them to drop in and visit us, but I’d since forgotten. Their email message to me several weeks ago came too late for me to receive. We had a great evening talking with them and their guides, reminiscing our associations and their visit to our digs in Khovsgol when Pamela and Ron were in UB during her Ambassadorship. I also was able to have a good talk with Lynne and found her “two days” from finishing her Labrador book! Hurrah! Well, finished at least with this final shortened version, which will go to Breakwater Press in St. John’s, Newfoundland next week, and hopefully result in a contract. Despite the positive ambience surrounding camp that evening, a cloud hung over us because of Meg’s damaged eye. Fortunately she was able to reach her eye doctor via sat phone and he, of course, urged her to get immediate treatment, or scar tissue could form permanent damage. She will be driven to Ulgii tomorrow.

Friday, June 29

Another fine day! This morning we had to say goodbye to Meg who was leaving with Jagaa for Ulgii, then to UB, for the ‘SOS’ hospital because of her blurry vision is persisting. Jagaa will return tomorrow with Saruulbuyan, the director of the National Museum of Mongolia and our project’s official sponsor. The Mongolian parliamentary elections were yesterday and Jagaa spent much of the night monitoring the results in one of our neighboring herders’ camps. It sounds like the opposition Democratic Party (DP) got a majority of seats and will take over the government from the Mongolian People’s Party (MPP), which had been called the Mongolian People’s Revolutionary Party (MPRP) prior to 2010. However they will have to form a coalition government and likely will have to partner with the MPRP. The name-change from “MPRP” to “MPP” in 2010 has been a huge controversy in the last few years and, in 2011, members of the original MPRP who did not welcome the name-change decided to reform the MPRP, and elected Nambaryn Enkhbayar (president of Mongolia from 2005-2009) as head. Anyway, the Democratic Party winning the parliamentary elections is a hopeful change, but who knows whether it will reduce rampant corruption. We headed back to our small standing stone to remove the slabs and, lo and behold, found a birch bark quiver and three arrowheads! The artifacts were below two slabs just east of the standing

stone, between the standing stone and the strange small “man stone”. The quiver’s bottom half was preserved but the upper half was gone. The iron-ring attachments on the side were present and the three arrowheads, two armor piercing and one broad-bladed type, are all quite badly rusted. A terrific find in any case. Tugsoo and Egiimaa think the arrowheads and pottery are Turkic period. We can date the organic deposits on the inside of the pottery, which is not decorated and has a simple rim and flat base. This was a wonderful little find and will give us important information on these boxed standing stones features.



Fig. 69. Our Biluut 5-3 Quiver Site with turf and surface rocks removed. View S.

After lunch, we started on the northernmost of two square structures that Dan and I had found last year on the south side of the Peat Valley stream. The square structures are located right next to each other on the point of a terrace, and are identical in size and shape – both having oval hearth or burial features near their northern walls with cobbles inside a border of slanting rock slabs. By dinnertime, we got so far as clearing the surface and removing the cobbles, and were assisted at the end by a SWAT team of Mongolian colleagues, who appeared and took over our work. It turned out there was nothing in the oval feature except cobbles. But immediately to the south, traces of charcoal appeared.



Fig. 70. Frank Hole at Quiver site.

On the way back to camp, we stopped to see what the Mongolian team had done with the balbals at the Turkic site with petroglyphs. They had excavated and erected them, making an impressive double row of very large stones stretching out east from the mound. The largest stone had etched on it four or five ibex and a hunter with a bow! These are the largest balbals I’ve ever seen and the only ones I know with rock art on them (at least on two of the stones). The site now looks like a small-scale version of the Ushigin Uver deer stone site near Muron!

Saturday, June 30

Spotty showers and strong winds in the afternoon. We returned to the “Budgie” site (the nickname of the dog that has been a frequent camp visitor and had copped the goat head from Jean-Luc’s camp!). He has since visited our excavations on several occasions, most recently at our Peat Valley terrace site. There, we quickly determined the oval feature was neither a burial nor a hearth. It bottomed out at 12 cm on sterile ground, but when we followed traces of charcoal just in front of the feature down, a deep charcoal-packed hearth appeared, and as we got into it, charred bones of “medium” mammals and some birds appeared. The bones are of sheep and goats most likely. Huge chunks of charcoal were also present. This gave a new perspective to an otherwise enigmatic site – with two identical structures side-by-side, one north of the other. Nothing else was found in the structure, which I think

was a ritual offering site in which animals (?) were killed on the “altar” (Feature 1) and cooked/burned in the hearth (Feature 2) in a single ceremony. Thus this was certainly not a domestic structure. After lunch, Katie, Ming, and I climbed the hill and made a quick excavation of the Biluut 5-2 boulder-ring hut site on the south side of Broken Mountain, finding nothing but a few “possible” lithics. We returned to back-fill the ritual site (Budgie site) in the late afternoon and it got quite windy, drenching Katie, Ming, and me in dirt.



Fig. 71. Turkic or Pazyryk mound with east stretching line of balbals with petroglyphs. View NW.

Back at camp, Jagaa arrived at around 7:30 PM with Director Saruulbuyan,

having dropped Meg off at Canat’s camp for the night – her flight departing for UB on Saturday



Fig. 72. Mongolian team posing with their Turkic Petroglyph Balbals. View E.

morning. On Jagaa’s way back with Saruulbuyan, they passed through a catastrophic thunderstorm and flash flood in the Magoit Valley in which sheets of water were falling, flooding the flat central valley and washing away several gers, some of which they saw floating away in the current. No immediate news of the final consequences. Jagaa had never seen the likes of such a storm before, but it reminded me of a similar, though less disastrous flood we experienced at Ulan Tolgoi some years ago. Upon his arrival, Saruulbuyan treated us to a bottle of Chivas Regal scotch at an evening gathering/welcome party on

the terrace behind camp, at which we hatched a plan for a rock art conference in late August 2013 and a series of conservation posters for schools, museums, and parks to try to educate the public about rock art, deer stones, and general archeological conservation. A beautiful evening greeted us, with a three-quarters full moon and interesting cloud formations over the mountains. It was too late to call Joshua (my son) in London to congratulate him on his birthday – 42 I think! I’ll call him tomorrow. Later, after I was asleep, a tourist group arrived and disturbed everyone by driving around through the middle of our tent area. The tourists, young women, are Canat’s clients – American English teachers who have been living in UB for a year and are on a lark.

Sunday, July 1

It was bright, sunny, and windy all day. More tourists have arrived in a van and camped down the shore to the east of the Biluut 1E rock art panels, while the American English teachers from UB left after lunch. Egiimaa headed off to her highland ravine mound, with Dave and Frank in tow for photos and a climb nearly to the top of Broken Mountain. They had a blast there with the view. Our

little mound (Biluut 1D) next to a huge erratic boulder eventually produced some central slabs, but by the end of the day, there were no positive signs of a body or other material. Jagaa and Richard, accompanied by Saruulbuyan, finished recording Biluut 1D images, and Dan and Taylor hiked up beyond the kame terraces to the north and found a huge broad valley full of gers – maybe as many as 90 gers, but only one small herd. It would be nice to know more about what’s going on in this ger valley and how it fits with our settlement system here at the lake.

After supper, Professor Turbat of the National University of Mongolia dropped by with part of his



Fig. 73. Peat Valley-3, S-1, after excavation.

team, and we had a nice chat about our mutual projects. He was enthusiastic about the idea of a rock art conference in August 2013. His crew’s camp is accompanied by a French team (mostly a film crew), which is shooting a movie while Turbat’s crew is excavating two Pazyryk tombs not far from the Sirgal Army base. Last year, Turbat found some fine wood objects with good preservation. This year, they’ve just gotten started, but the preservation is not so good. We will visit the site later on. He also knew about the Mongun Taiga (Silver Forest) cemetery and has excavated some similar graves, never finding artifacts but noting fabric traces in the chest area of the remains. He believes the graves are Middle Bronze Age, which

could make them prototypes for khirigsuurs – at least the square ones.

Monday, July 2

We had a particularly interesting morning followed by a pretty boring afternoon. It’s our last week here at Khoton, and the crew is speaking more and more about what foods they’ll eat when they get to UB and the US. While digging, the American students are full of esoterica, especially about movies and movie stars, songs and singers. They chatter “I hate that actor,” or “I love that song,” and are always pestering me with questions like, “Dr. Fitzhugh, what’s your favorite movie of all time?” or “If you could be a character in your own movie, who would you be?” I guess they get bored with digging and need diversion when there is nothing exciting being found, which is about 90% of the time. My mind wanders too, but not in those directions. I guess when you’ve had a lifetime of experiences, they fill the void in your mind more than pop culture does. I usually find myself pretty consumed with the practical issues of digging – how to get around that stubborn rock, or what that suspicious stain in the soil is?



Fig. 74. Saruulbuyan (right) watching Richard and Jagaa document rock art at Biluut 1D. Note the glistening polished rock surfaces. View NE.

For work, we returned to the small Biluut 1D mound and got below the big slab that stopped us yesterday. For a while I was convinced it was going to be an empty grave, but soon Jami turned up

a piece of soft, mushy bone. That led to very careful dental pick work, and we ended up with two pieces of cranium, part of the right jaw and its teeth, and a few other pieces. It did not seem like this individual's skull had been crushed just by grave rocks, so maybe there had only been pieces of the skeleton that got buried. Poor preservation was certainly a factor, but not to account for the missing post-cranial parts! Nothing of that was found at all. The body had been buried under an open-centered rectangle of slabs beneath a smooth elongated vertically-set stone that was right above the cranium. The burial was shallow also, accounting for poor preservation. Only some of the teeth were reasonably well preserved. We recorded everything and backfilled before lunch. Richard, Dan, Jagaa, and Frank had gone to Tsagaan Asgat for the day and did not return until the evening.



Fig. 75. Biluut 1-D mound excavation. View N.

After lunch, we visited Egiimaa's Tsurkhii Mountain ravine site, from which they had turned up a skeleton buried out on the edge of the stone mound so that ancient looters would not find it. They were lucky to have found it themselves, as the builders had left a "fake" burial chamber in the center of the mound. With the body, they found several iron arrowheads and a knuckle-bone charm with a hole pierced through it, a common charm used by Medieval warriors. Why he was buried in a grave in a hidden ravine is a story we'd love to know! As one of our last efforts, with only a couple digging days left, our American crew decided to open a Turkic standing stone enclosure that we found in the plateau at the upper end of Peat Valley. The two standing stones in the enclosure were broken off near their bases but are very large. Nearby are several large khirigsuurs and many hearth rings.

After dinner, Pierre-Henri Giscard—part of the Turbat team and the excavator of Gol Mod 1 Xiongnu site in the Khanuy valley—and the film crew came for a visit. Richard took them to see and film some of the rock art and afterwards, we had tea around the ger stove. It had been a very windy day, but the night was quite calm – lucky for me since the zipper in my Shangri-La GoLite tent door has been acting up and is very difficult to close. Dan's and Dave's Go-Lite tents have had the same problem this summer.

Tuesday, July 3

Today is our final day off, and most everybody kept close to camp washing clothes and bathing, except me, as I decided to wait for the warm shower in Ulgii. Ming and Taylor made a trip to the gers over near the medical clinic yesterday, taking some small gifts and a list of questions Ming had drawn up and had Jagaa translate and write down in Kazakh. Lacking other suitable gifts, I suggested they give out bunches of our excess nails! Apparently, Ming's interviews about mining and development were a great success, visiting several gers, playing with



Fig. 76. Tsurkhii Mountain Ravine mound. View SE.



Fig. 77. Children of a herding family excited about the marker pens that Ming gave them.

kids, and getting some interesting responses to his questions.

Later in the evening, Bolka's van was used to transport two goats that Jagaa purchased to bring meat back to his home in Ulgii. Goat meat is twice as expensive there as it is in Khoton, and Naadam is just around the corner, so meat is needed! For several days now, I've not been able to locate my GPS. Seems like it has fallen out of my pack somewhere (later Egiimaa found it on the floor of the work ger, right where I've been sitting!).

Wednesday, July 4

The weather continues to be spotty, with showers interspersed with sunny periods, but we were able to work a full day. Jagaa left this morning with Saruulbuyan to help him do some interviewing of the Uriankhai people living in Sagsai, south of Ulgii. Then he is headed north back home to Ulgii. We were greeted this morning with many salutations from the Mongolians about our July 4th national holiday. They seemed to take it more seriously than we do! We had no plans for celebration – no parades, or fireworks, or much of anything of special note.

During the morning shift, we returned to finish excavations at Peat-Valley North. Upon arrival to our small Turkic enclosure site at the north end of Peat Valley, we encountered a nasty problem in the back of Bolka's van. While Jagaa's goats were being transported to camp last night, they had defecated all over the back of Bolka's van and over our archeological gear. What a mess and what a stink! Everything had to be washed before we could use it, which Alix diligently performed. While the tools were being cleaned, I climbed up the ravine mound, recently backfilled, looking for my GPS. Not there. I returned to the students and we started working on the site and found it more interesting that it first appeared, having in addition to the two standing stones, a hearth ring just to the south and a line of small balbals stretching south of the westernmost (largest) standing stone. We spent the morning cleaning the surface – a very hard, dusty soil, almost the consistency of talcum powder. The center of the enclosure was filled with cobbles and both of the standing stones had been broken off near their bases. This must have been an act of vandalism. A marmot had since taken up residence under the remnants of the uprights. During the next few hours, we completed the excavation without finding anything and were about to clean up and photograph when I lifted a slab in the southwest corner outside the enclosure slab and found some charcoal stains. Soon, a couple vertical stone slabs showed up and a small hearth with calcined bone appeared, placed up against the southern enclosure slab and in line with the largest (western) standing stone. There was not much bone, but enough to indicate an offering of animal materials.

Meanwhile, Ming excavated the circle hearth only a meter south of the enclosure and found calcined "medium mammal" bone, but no charcoal. By the end of the afternoon, we had cleaned everything up and were ready for photos and mapping. This wrapped up our excavations for the final season at Khoton! In the end, nothing fantastic turned up except one horse tooth, right outside the enclosure's east edge, and the external hearth. This final site did not produce a quiver, but it gave a nice bit of data on these "Turkic" enclosures with standing stones. The standing stone (the largest), in addition to the small hearth, also had a line of balbals extending to the south (not east as usual). The eastern,

smaller stone had no balbals. Things got a bit goofy as we backfilled the excavation. The girls were feeling their oats and painted up their faces with charcoal from the hearth! By this time, we were a bit overdue for lunch. Dan and Frank had already rendezvoused with Bolka and we all returned to camp pretty pleased that the fieldwork was done.

The rest of the afternoon was filled with camp chores – for me mostly completing field maps, profiles, and notes. Yesterday, I had finished writing up site descriptions for all the sites our US team had done for the report we need to give to the Tsengel governor. That was quite a chore and came to nearly 40 pages, with pictures. When combined with Egiimaa's material, it was about 60 pages. Towards the end of the afternoon, Ming brought Diana and Katie for another of his ger visits which, apart from amusement by the herders about gifts of nails, was very successful.



Fig. 78. Ming, Katie, Jami, Alix and Diana celebrating the end of our digging season by painting charcoal on their faces!

During the evening, we took the vans down to Sirgal to visit Turbot's Pazyryk excavations, which are out in the open plain. They had found some excellent material a couple years ago and had now opened two large mounds, one of which seemed to be a Turkic grave and the other, a 16-meter diameter Pazyryk grave. They were getting near the coffin of the Turkic grave and had, at about four meters depth, found the skeleton of a horse at the north side of a wood coffin – on track to open the grave which was, thankfully, frozen! Unfortunately, we will have to wait to hear the results. While there, we witnessed the experimental flight of a fancy helicopter drone the French chief, Giscard, had brought with the assistance of a Swiss team contracted for only two days' work. It was quite an amazing machine, with a camera/video that could be operated remotely. The rig requires two controllers – one for flight and another for the camera. While testing the machine, a couple horseback herders showed up, amazed by the contraption which buzzed around overhead like a giant bumblebee. It is somewhat evil-looking, but the herders' horses did not seem fazed at all. The actual filming the next morning called for a group of Kazakh horsemen in traditional garb to rush in near the burials, which would be filmed by the drone overhead and by a jeep racing alongside. As we marveled over this amazing machine, Egiimaa and Tugsoo searched out the local ranger who has to sign our permit. After an hour, they returned having successfully accomplished the task, which should have required him to personally inspect our sites to be sure we had backfilled them properly. Armed with our photos, Egiimaa and Tugsoo convinced him to do this remotely, as he had done last year when we tracked him down at a wedding ceremony!

Thursday, July 5

This was the last full day at Khoton, and like the recent days, it was one of spotty weather – mist, squalls, and some sun. In the morning, Dave Edwards set up his “white box” and photographed our more important artifacts. The white box is a neat white fabric unit held open by springy plastic rods, and gives excellent photo results. He and Taylor have also been preparing the overhead high-pole photos for all the excavations, which take the place of the time-consuming hand-drawn maps we used to do at each level of the excavations. The GoPro camera used with the high-pole has a bit of distortion in its wide-angle mode, but it's not too bad and you can easily interpret the corrections. At sixteen feet (full pole extension), you really get a bird's-eye view of even a large site. Alix and Katie

helped by packing all the skeleton collections in the morning so they could be safely sent back to UB in the van. When the Mongolians started packing the van, it was obvious it could not accommodate all the gear and collections, especially since Jean-Luc had left all his archeological gear – three big bags. So we traded one of his bags, which we would take by plane, for our artifact collections. I finished my notes and got all the carbon-14 samples sorted out and hidden away so we could run some dates ran quickly in the fall. We have 20-25 samples, and more will come from the Mongolian excavations. Where will all the money come from to run all these dates???

After supper, Dan gave a talk on his GIS work, and after that we had a small project completion party using as elixir the bottle of vodka Saruulbuyan had left us. This was lots of fun and included some singing performances by many of the team, both Americans and Mongolians – although we missed Bayaraa’s beautiful voice (he had left a couple weeks ago). While cleaning up, I discovered that the Mongolian team had been hoarding the tin foil! I had made several requests to Egiimaa for some small bits of foil, but she never delivered. Lo and behold, they had plenty left over in their dig kit – and this after I had been sharing my precious plastic bags freely with them! We made a good joke out of this and had fun with our natural hoarding instinct to be sure we had the material we needed for work. Plastic Ziplocs and tinfoil are as important as any tools we use!

Friday, July 6

Today we left Khoton at about 10 AM after striking camp, shutting down the privy, and dumping and cleaning up all the garbage. Fortunately, the weather was dry and our tents and gear could be packed without worries about mildew. Dave was insistent about dry-rolling, as he says tents will start to grow mildew in just a couple days. Bolka’s son showed up at about 8 AM with a big truck to pack up the two gers, which go back to Sagsai. We left camp and, after a stop at Sirgal for gas and sodas, we were on our way and made good progress, stopping for a brief lunch halfway down the Hovd River. Eating lunch, we got a scare, but not wet, from a big dark storm that just missed us.

While passing through Magoit, we saw the result of the flash flood Jagaa and Saruulbuyan had witnessed a week ago – big scars and mud washes down the sides of the hills and on the valley floor. It turns out that much of Mongolia has been having a very wet summer, just like last year. Will Gardner and his Yale colleagues working in the Egin Gol had six inches of snow last week! We passed through Tsengel quickly, leaving Egiimaa and

Tugsoo to get the governor’s sign-off for our report and permit. This year that went smoothly. Then our drivers took us on an excursion to Sagsai, not far out of the way to Ulgii, so that we could have a brief tea and relaxation in their home gers in mid-afternoon. This was a very pleasant diversion, and we arrived at Ulgii in time for a dinner at the Blue Wolf ger camp. Canat was his usual cheerful self and was pleased to take our gear for winter storage. Dave has all his horse-trekking gear from years past in Canat’s basement, and Richard leaves most of his stuff there as well. The most important piece of the cache we left was the still-unused generator. Paula DePriest’s generator we sent back to



Fig. 79. Turbat-Giscard team flies a drone to film a movie about their excavation.



Fig. 80. Kim Dammers, Giscard at Prof. Turbot's Pazyryk site south of Sirgal.

UB in the van after draining out its gasoline. It was a festive evening, and our students and the Mongolians had a late night social in the ger next to ours (the older folks), and we heard them carrying on until 2 AM.

Saturday, July 7

By six in the morning, the Mongolian van had left for UB. We had some trouble to rouse the sleepyheads on our team in time for the airport call at 8 AM. The scene at the Ulgi airport was familiar – a crowd of people and a huge pile of baggage, all of which had to be weighed. We had about 350 pounds of excess baggage, which was not as bad as we had imagined, as we were carrying some of Jim Phillip's and Lindsey Farris' gear left behind after their evacuation. Jagaa was on hand to say goodbye,

although he would be on a flight to UB a couple days later to see the archery contest at Naadam. We had said goodbye to our cooks – Baku, Conti, White Falcon, and Lashin – who had come to see us off at Canat's during breakfast, and to our drivers, who took us to the airport. Bolka, our driver, had become a special friend even though we barely had a word in common except "Stop!" and "Go!"

The flight on EZnis was comfortable and took three hours. I sat next to Frank and we had an excellent conversation nearly the entire way about comparisons between nomadic herding in Mongolia and Iran, his specialty, about the tenure process at Yale, and among other subjects. Fortunately, it was cool when we landed in UB and we noted much green grass from all the rain they've had here. There was a bit of consternation when Zaya's drivers did not show up on time, but eventually we were back at the hostel and able to get much needed showers and clean clothes. Jami was no longer with the group as her sister had flown



Fig. 81 Tsengel Villiage house.

in from Korea, where she's working as a teacher, but we saw her later at night during dinner. There was much anticipation among the ETSU ladies about getting a greasy pizza down their throats! However, our meal this night was at Delhi Darbar, the fine Indian restaurant. Much of the rest of the day was taken up by starting to deal with overfull email accounts. Mine was over allowable limits, and I could not even use it until much had been dumped and a new password was created. Near midnight, our great colleague Frank Hole left for his flight back to the US.



Fig. 82. Tsengel woman and her sons.

Sunday, July 8

A recent email I had checked last night was from Julia Clark, who was in UB getting ready for her PhD project in the northern area of Khovsgol. She came by Zaya's this morning for breakfast along with Will Gardner from Yale, who had hosted Frank at their Egin Gol project before Frank came to Khoton. Julia wanted to meet Frank and fill me in on her project, which involved settlement surveys north of the Shisged. Bayaraa was taking part in the work, and Peter Woodley from Jean-Luc's team had flown back to Mongolia to participate. We had a fine discussion and also talked about the Soya site where we had previously found Neolithic materials that would be further tested this summer as part of the project by Luke Barton, a new professor at University of Pittsburgh interested in Asian Paleo material.

At 2 PM, Dave, Dan, Richard and I met Saruulbuyan and Bayaraa at the restaurant behind the National Museum for an official end-of-project lunch. This was another like the pre-season meal in a small room with beer and vodka, and called for toasts about the success of the project, future work plans, and some official feedback on the fieldwork. Here Saruulbuyan wanted to mention some difficulties and problems that arose – mostly complaints from the Mongolian side about not having enough meat and having to work through Canat. Similar notions were expressed last year, and they seem rooted in ethnic differences and prejudices directed from the Mongolian side rather than the Kazakh side. At any rate, we brushed these comments aside and focused on the great success of our work and on ideas of future collaboration in a rock art and archeology conference in August 2013, a Smithsonian Institution Mongolian folk festival, renewed work on the Genghis Khan exhibit, and our forthcoming publications. All in all, it was a productive formal conclusion and was spiced up by the periodic interjections made by Dembereldorj (International Relations Secretary for the National Museum), who, given the timing of our lunch, was a few sheets to the wind even before we started.



Fig. 83. Checking emails was a popular activity in Zaya's Hostel.

Richard and I had a meeting with Ambassador Jonathan Addleton at his residence scheduled for 5:30 PM, so after lunch we cut across town and got ourselves caught up in a closed construction site from which we had to hunt for holes in the security fence to escape. While rustling through the weeds, we encountered two guys rifling through trash for saleables, and they were amused to see us squeezing through a gap in the sheet metal fence. Richard, a bit stouter than me, almost lost his shirt buttons! To make it worse, it was raining, so we arrived at the ambassador's house pretty wet, prompting his wife Fiona to ask if we wanted our shirts put in the dryer! It turned out we hardly saw the ambassador because he was deep into last-minute arrangements for Hillary Clinton's fleeting

six-hour visit to Mongolia – part of a big Asian swing tour. It was amazing he was able to see us at all given the timing. Fiona was very gracious keeping us entertained in the kitchen with tea and cookies. The ambassador wanted an update on our work this summer and was aware of Pam Slutz's visit a couple weeks ago. He is about to finish his ambassadorship and will go on to Afghanistan (Khandahar) on a US aid mission, where his technical expertise will be very helpful. Fiona will stay in the apartment in UB so he can visit when not in nearby Afghanistan. Ambassador Addleton is a real all-American "trooper" and I hope he manages to keep safe. After this visit, we walked to pick up our team at the Tumen Ekh, where they had tickets for a traditional music and dance performance, and after that, we ate dinner at Marco Polo, a "pretty darn good" pizza place.

Monday, July 9

Last day! And it began with a big search at Zaya's for Dave Edwards' missing bag, which had been left in Zaya's storage locker since May. Missing along with it were my bag of street clothes and some papers and books I'd brought or bought. It was not there or anywhere else, it seems. My stuff was not so important, but Dave's cellphone and some other gear were valuable. Whoever took it must have known it wasn't theirs. Zaya was pretty upset by the situation.

In the morning Richard and I met Dave Tinnin, the local ACMS (American Center for Mongolian Studies) director, at the Amsterdam Café for a snack to talk about ACMS work. He was accompanied at the café by a literature researcher from the University of Washington, Seattle, who knew my son Ben. Following that, I delivered some money to the museum for one of our drivers. Later, Richard finally brought the arrowhead he had found on the slopes of Biluut 1 to the museum. He'd been holding on to it like Gollum to the ring – Richard's "precious" – that he showed to everyone but always managed to forget to include with the rest of our archeological collections! In the end, Dan reminded him for the nth time and he had to make a special trip to the museum to turn it in, directly to Saruulbuyan, whom he met there. Later in the day, the Mongolian van should arrive with all our other collections, Egiimaa, Tugsoo, and the students after their marathon trip cross-country. Bayaraa was in touch with them by phone and they were making good progress.

At noon, I met Adiyabold Namkhai, our old Khovsgol project organizer, for lunch. He now has a third child and is doing well. His tourism and business consulting firms are making money and he keeps in touch with our northern Tsataan friends. He took his wife for a tenth anniversary trip to the US west coast this past spring. With growing kids, he's going to need a bigger condo than he has now in a couple years! It was great to see him. He also said Paula DePriest, a colleague of mine at the Smithsonian, was due in Mongolia in a few weeks.

In the afternoon, Zaya took to the street along the Hilary Clinton motorcade with a placard she'd made saying, "Student Exchanges Make A Better World", which she unveiled in the crowd. She was immediately collared by the police when she unfurled it, even though the slogan was apolitical – but of course, the police could not read English! They grilled her for a couple hours and let her go. She had hoped her placard would be picked up by the media and find its way into the news! Our students spent most of the rest of the afternoon packing or shopping for gifts. When we booked transportation to the airport for our 11:30 PM flight, we were told to be ready by 8 PM because of the heavy traffic still on the roads. We're lucky we did, as it was still blocked up on Peace Avenue. In our luggage were Jim and Diana's peat samples and my c14 samples, which came through fine. The flight got off on time from UB and in Seoul we said our goodbyes to Katie Braymer. Meg was dead to the world in the 'rest lounge' and I never got a chance to speak to her. In Dallas, Dan and I parted with

Richard, Alix, and Diana, but a huge lineup at the US Immigration checkpoint caused us to miss our connection to Washington DC, and we did not arrive home until 6:30 PM.

So ends the Khoton Project 2012! It was a pretty amazing, large, complicated, and productive expedition involving nearly fifty participants! Congratulations to Richard and everyone else for pulling it off. In addition to the wonderful work done by my US digging team (Ming, Meg, and Katie) I especially thank Ming for doing a wonderful job transcribing my journal, and adding a few useful notes, photos and corrections in the process!



Fig. 84 A beautiful sunset as we depart UB.

PART III

Field Notes and Maps¹

Aral Tolgoi-1 Big Bull Cairn Chain (GPS N48° 44.340' E88° 08.975')

Midway along the crest of Aral Tolgoi, with south end cairn located a few meters NW of a prominent piece of rock art I call “the big bull”. 24 stone cairns of varying construction and size running in a slightly curving line, generally northward. The line appears to have been built sequentially from the south to north, and some cairns appear to have been recycled to build the later northern cairns. We tested the center of #15 and found charcoal and a bit of burnt bone. A short report and sketch of AT-1 was made in 2011.

Finds: Charcoal



Fig. 85. Aral Tolgoi-1. Big Bull Cairn chain. View S.

Aral Tolgoi-1
 Big Bull Cairn Chain
 June 12, 2012

N48°44.340', E88° 08.975'

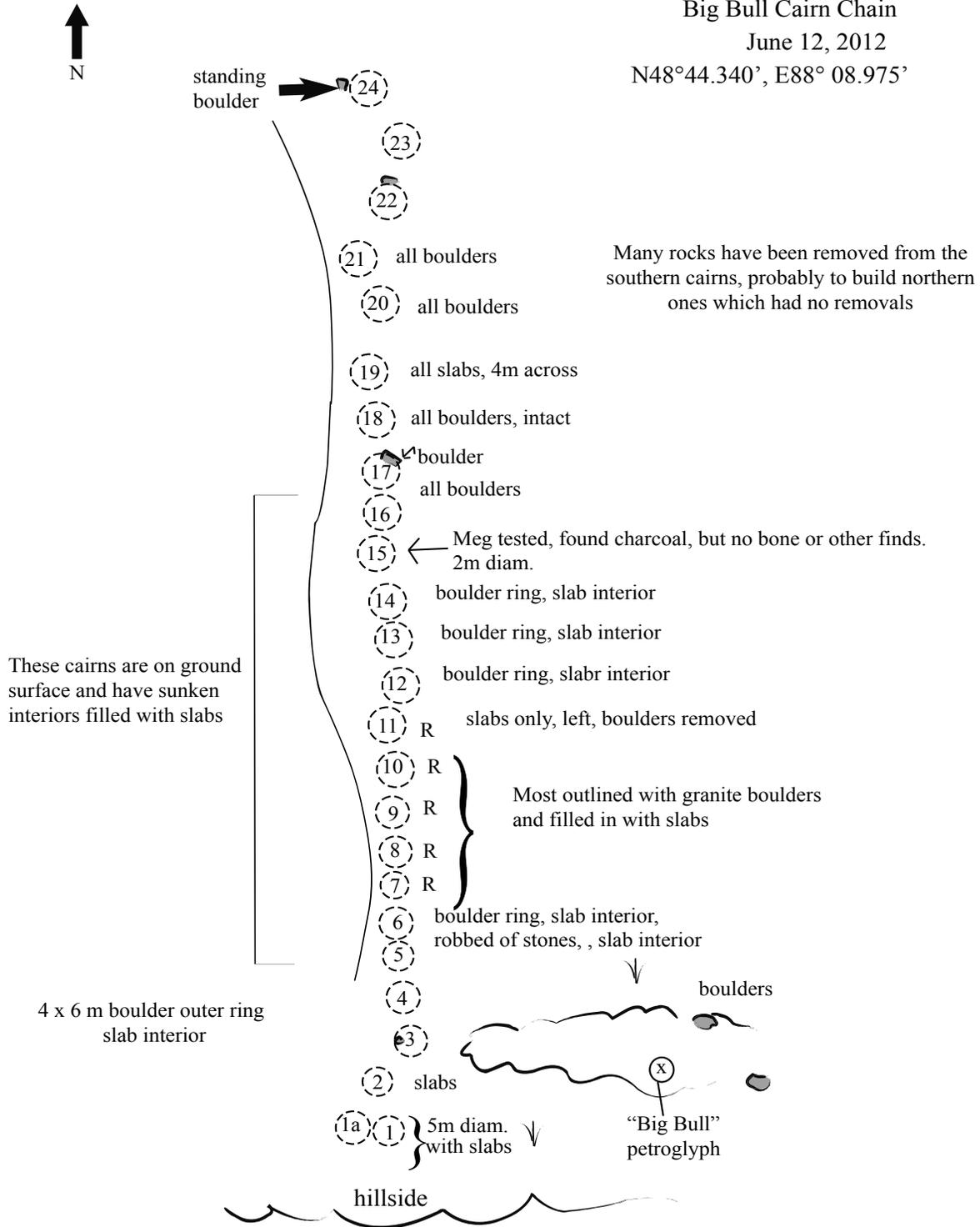


Fig. 86. Aral Tolgoi-1 Map.

Aral Tolgoi-2 (GPS N48° 44.346' E88° 08.931', 2197m elevation)

Northern end of Aral Tolgoi ridge crest, spanning the entire width of the crest. 12 stone features, round in shape and ranging from flush to the ground to piled-up mounds, mostly made of slabs of slate/greywacke. The larger mounds are on the southern end of the chain and are 3-4 m in diameter. The northern ones are 1.5-3 m. Mound 11 (next to northernmost) had been opened and we found charcoal, burned mammal bone, and burned bird bone - one piece of unburned bone also. Mound 9 Meg Tracy excavated and found charcoal and burned bone. No human remains, very shallow deposit, on surface, and covered with a slab. Often the cairn/ovoo was built around a circle of boulders, then covered over with slate slabs. Possibly a spring ovoo celebration like the current "Altai 12" Ceremony held every early summer to bring good fortune to animals and people. Maybe a new ovoo with offerings every year for 12 years?

Finds: Charcoal, bone

Date: 900± 30 B.P. (Beta-334568)



Fig.87. Meg Tracy inspects Aral Tolgoi-2 Ovoo Cairn Chain in which we tested two features. View SE.



Fig. 88. South end of Aral Tolgoi-2 Cairn Chain. View N.

Aral Tolgoi-2

June 12, 2012

N 48°44.346' E 88° 08.981'

Elevation: 2197 m

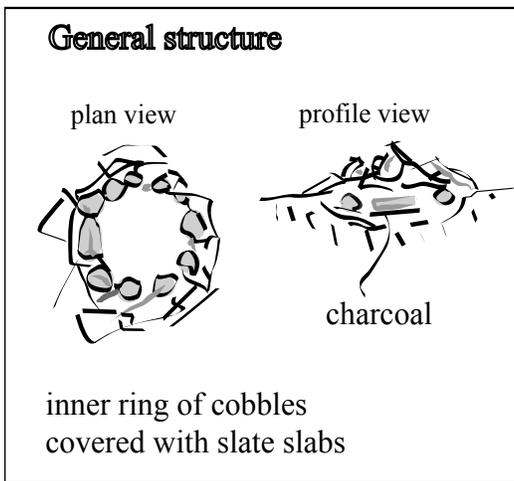
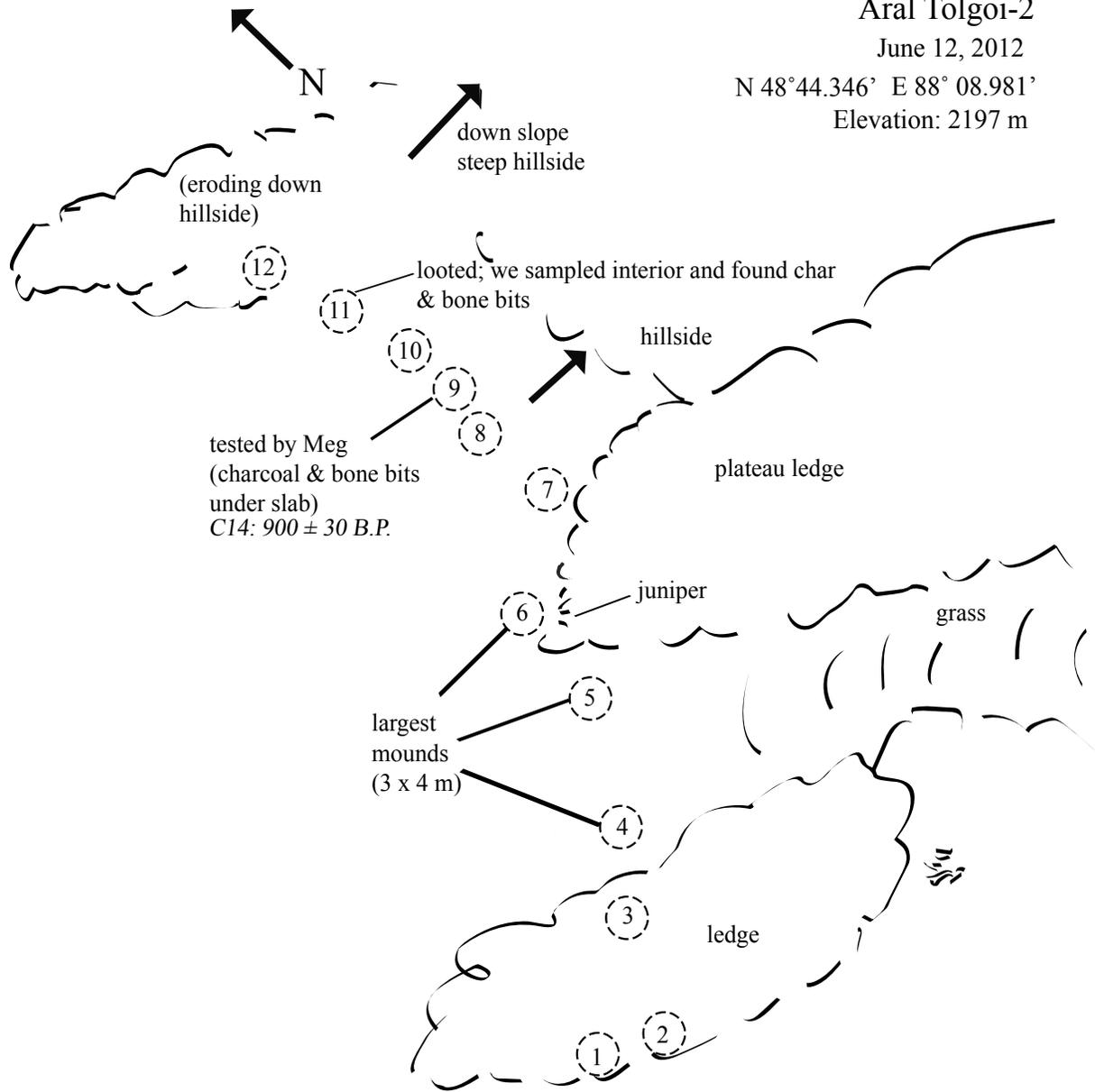


Fig. 89. Aral Tolgoi-2 Map

Fig. 90. Aral Tolgoi-2 looted feature 11 from which we obtained samples of charcoal and bones.

Aral Tolgoi-3 Watch Tower Ovoo System (GPS N48° 44.513' E88° 08.965)

We called this the “watchtower” ovoo system because it is next to a log cabin overlooking the Aral Tolgoi military base. It is found at the highest point on Aral Tolgoi hill and overlooks all of the country at the head of Khoton Nuur and the western part of the lake. The unusual feature of this ovoo system is its cross-shaped arrangement of mounds and cairns, some of which seem old and lichen-covered, while others are relatively recent. At the junction of the two lines, one running parallel to the ridge crest and the other across it, is a large stone mound. Just north of it is a rectangular (modern) pit, looking like a garbage pit. Some of the alignment features are pavements, others are small cairns. The ridge-top line aligns 350 degrees toward a distant peak to the NW. This line is 38 m long; the transverse line is much shorter and aligns to 45 degrees. Ethnographic interviews might reveal something about this site.

Findings: No testing



Fig. 91. Aral Tolgoi-3 Watch Tower Ovoo System aligned with NW peak. View to NW.

Milk River-1 (GPS N48° 43.291' E88° 11.500', Elevation: 2095m)

On an isolated terrace south of the Aral Tolgoi road near the mouth of the Milk River. Terrace is surrounded by marshy land - good horse pasture - and during early occupation may have been a peninsula or island in a higher stand of Khoton Nuur. Mound seemed to have a base with old lichen-covered rocks, covered by a newer building phase of recent origin. North side had multi-tiered boulder "wall" 4 stones high. At base of north side were two probably recent circular features, maybe modern burials. A third small feature lay east of the mound about 6-8 m away. Lithic component was noticed on the eroding bank south of the mound and along this terrace front for 50-100 meters, with scattered lithics and fire-cracked rock showing. Four test pits excavated. Pencil microblade core found in Test Pit 1. See Sketch Map.

Finds: Flakes, Utilized Flakes, Pencil Microblade Core, Rotated Microblade Core, Core Blanks

Milk River-1
June 19, 2012

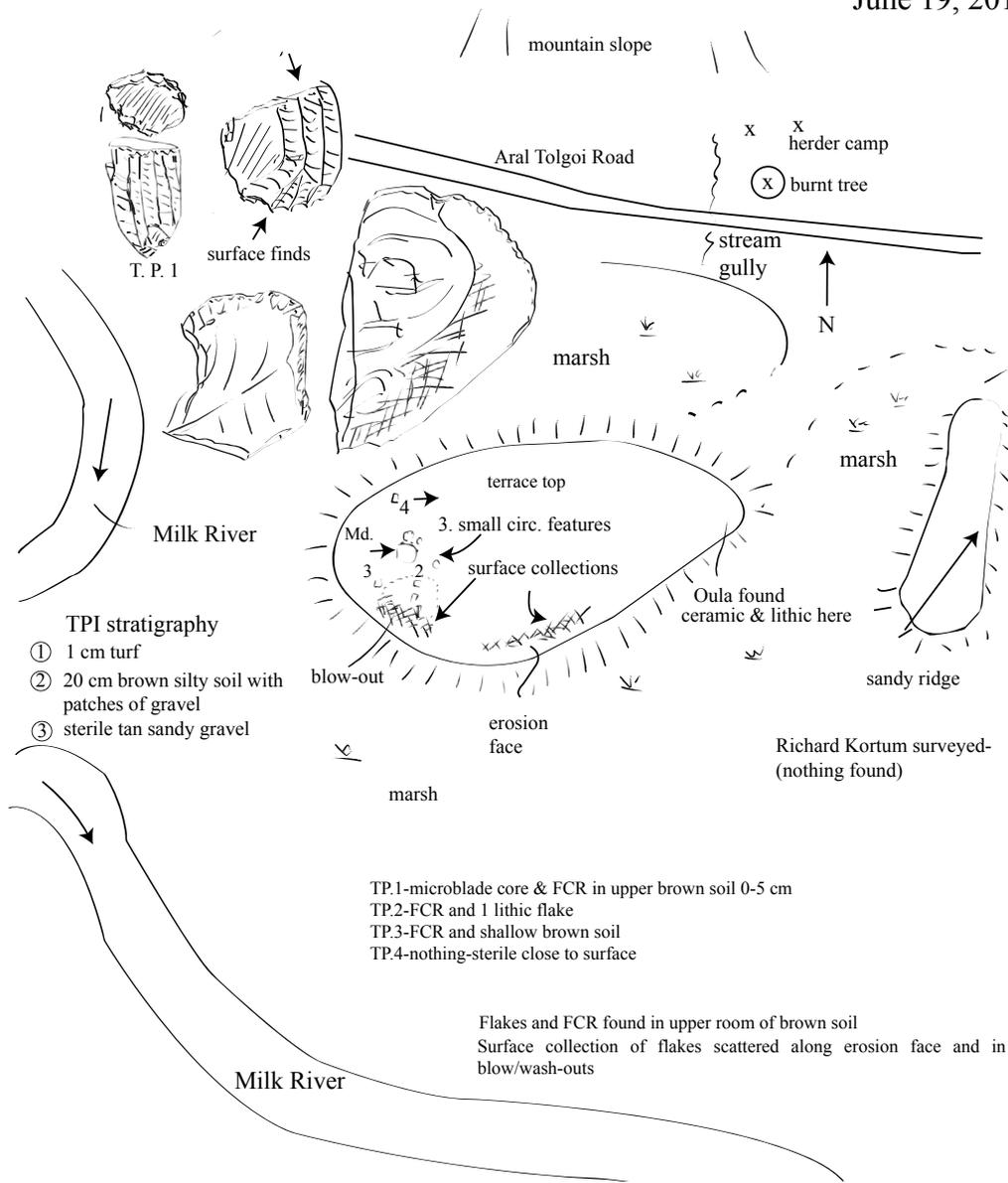


Fig. 92. Milk River-1 sketch map and flint finds.

**Aral Tolgoi-3
Watch Tower Ovoo System
June 12th 2012
N48°44.513, E88°08.965**

This site is located at the crest of Aral Tolgoi Hill about 50 meters NW of a log cabin watch post presumably built by the Army base below. This site's main line of cairns, mounds, and pavements follow the same orientation as the ridge crest which points at a distant high peak bearing 350°. A transverse axis bearing 45° crosses the ridge line. Alignment is composed of different types of features which seem to come from different time periods. The central cairn appears to have an old boulder base and a top of non-lichen-covered slabs of recent origin, perhaps as an ovoo with new stone contributions.

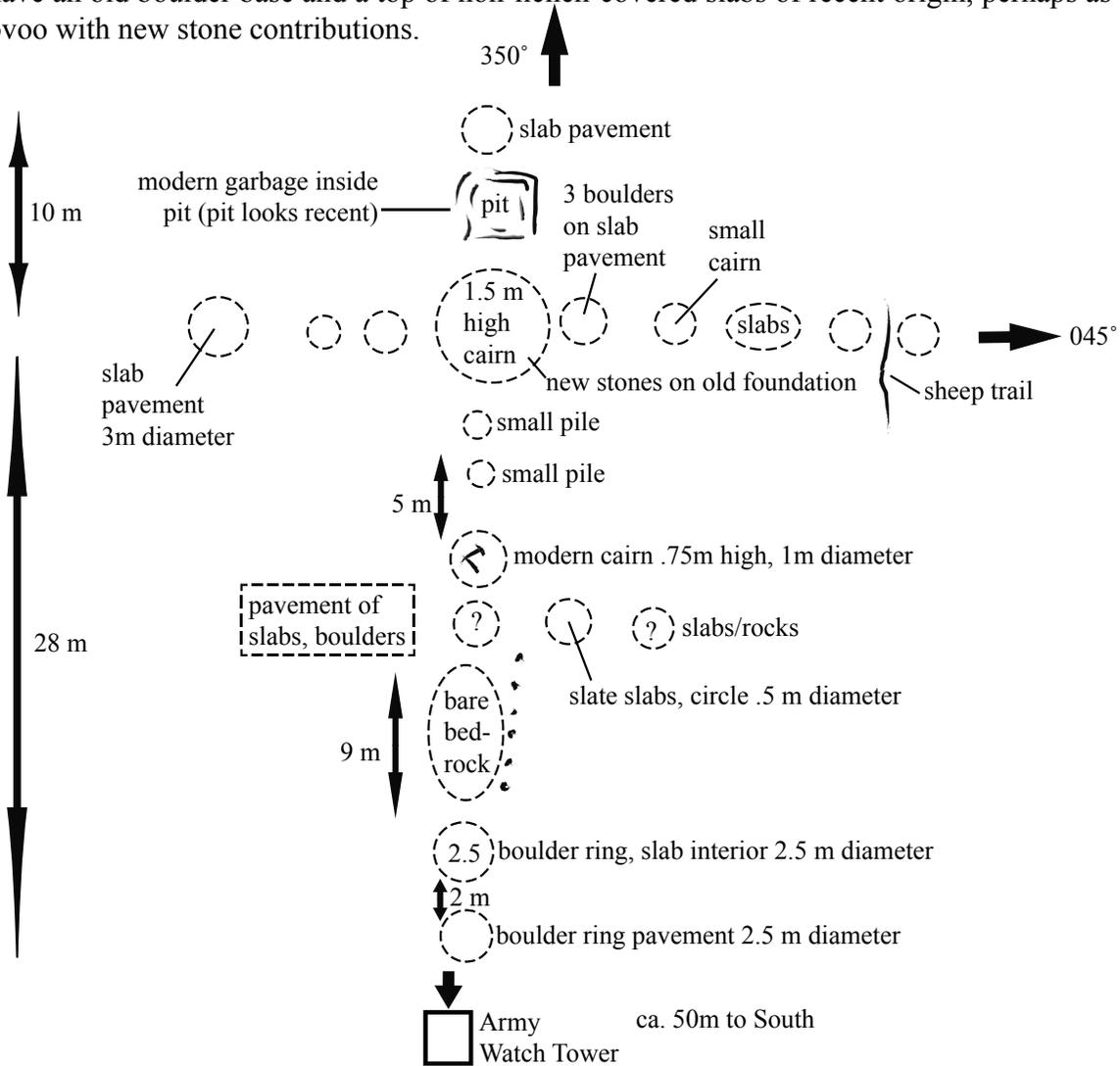


Fig.93. Aral Tolgoi-3 sketch map.

Biluut-1D Hillside Mound (GPS N48° 39.120', E88° 22.134', Elevation: 2106m)

SE end of Biluut 1 near the last of the rock art finds, a few meters north of a very large glacial boulder (cracked through the middle). Boulder mound only 4x4 m and 50 cm high. Two granite slabs at the east side of mound, but otherwise, it seems intact - unlike the larger (khirigsuur?) mound downslope and to the SE some 100 m. Southern end of the mound has been built up with large boulders in an attempt to level up the burial surface. No charcoal found. Beneath a rectangular arrangement of slabs and directly under a vertically placed glacial rock was a fragmented skull and part of a mandible, and several teeth. No post-cranial bones. Skull appears to have been crushed or fragmented before burial.

Finds: Skull fragments, teeth

Date: 2910 ±30 B.P. (Beta 334570) human tooth



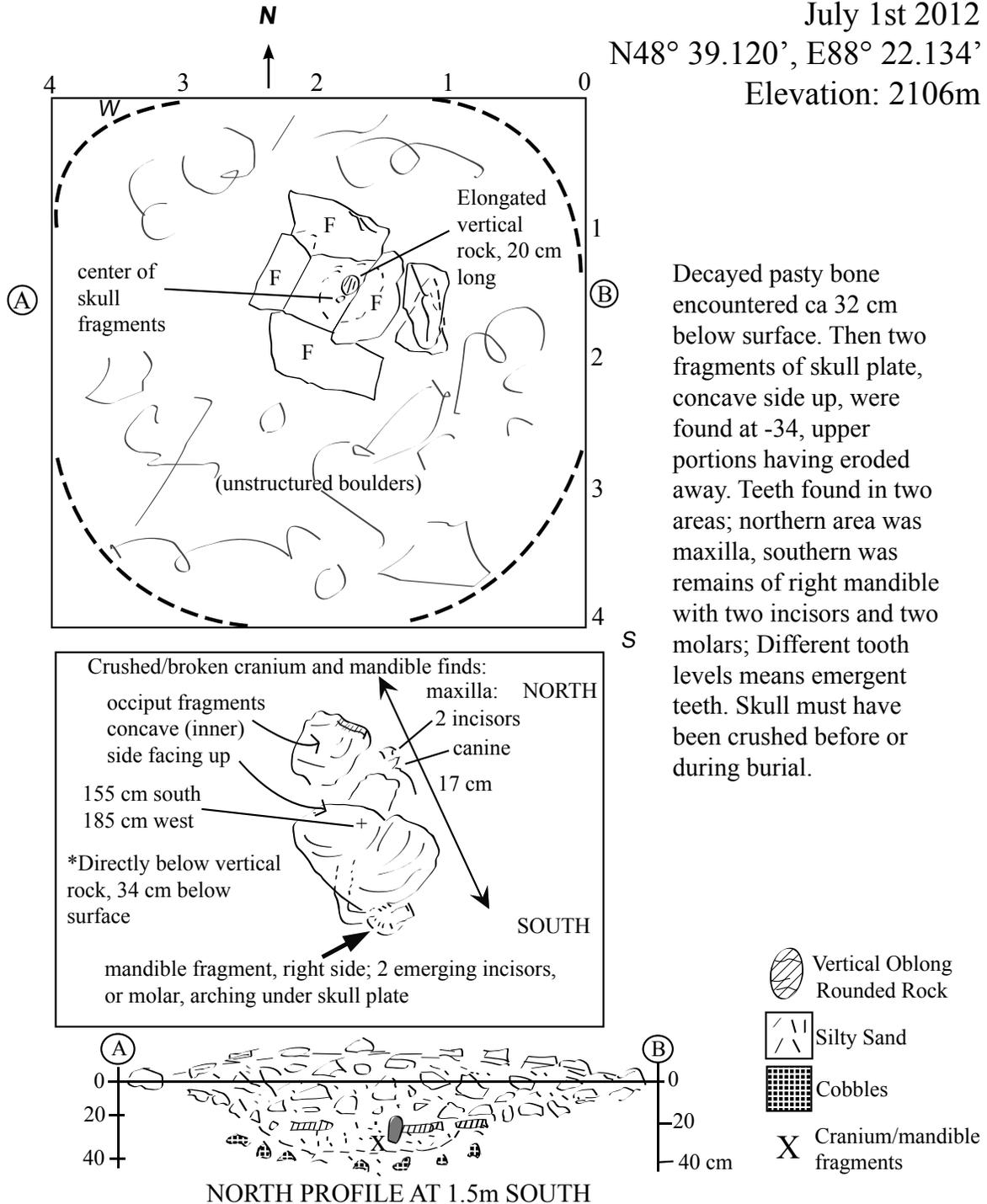
Fig. 94. Biluut I-D mandible and tooth remains.



Fig.95. Biluut I-D cranium fragments.

Biluut-1D
Hillside Mound
July 1st 2012

N48° 39.120', E88° 22.134'
Elevation: 2106m



No structure to mound surface. Rectangular arrangement of slabs at 20-25 cm BS. Clean, silty sand 25-34 cm BS. Cobbles and sand below 35 cm BS.

Fig. 96. Biluut-1D hillside mound map.

Khuiten Gol Delta-1 (GPS N48° 39.581', E88° 22.105', Elevation: 2083m)

On the southwest side of the Khuiten Gol River as it enters the delta, across from the high bank on east side of river. About 50-100 m from a Kazakh ethnographic camp SE of the mound. A low pavement mound only one rock high throughout, and about 9 m in diameter. No marked surface features. The mound was clearly visible on the surface but did not rise above the surface and only had a single layer of rocks. These rocks were more tightly placed together around the outside of the mound than in the center. On the surface we found numerous quartzite flakes that appeared man-made, and some showed retouch and casual use. These flakes were also present in the surface rock soil and in the upper brown soil below the rocks. Quartzite boulders were also present in the rock pavement and some of these also were clearly worked. No chert flakes or boulders were present. While clearing the mound (it cannot be called a "pavement" because it is too lumpy with boulders to work or walk upon), we found pieces of thick, poorly-fired sand/grit-tempered pottery at the edge of the mound along its east border. These sherds were at the bottom of an apron of clean gravel under the surface rocks and on top of the brown sand. Upon excavation, we found that the gravel layer, spread out in a cone shaped fan widening toward the edge of the excavation, had become concentrated in a channel running from the mound center to the east wall. More sherds of the same type were found beneath this deeper gravel deposit, as well as some blackened felt/root material – this may be a rodent nest or possible cultural remains. Charcoal was found in a number of places and was sampled. The gravel lens origin and function could not be determined. It must have been part of the mound's construction, involving excavating a channel and filling it with gravel before the rock layer was added. But other than the deposit of broken pot sherds (probably two pots were involved as we found two rim sherds of one size and a third one quite a bit thicker) and the possible felt deposit, nothing further was found in the gravel layer, which did not reach the center of the mound. In hoping to find a burial amidst the confusing stratigraphy seen in the pottery-bearing part of the eastern side of the mound, we excavated a 1 meter wide trench East-West between 4.5 to 5.5 m south. In the center of the mound, we began finding more potsherds associated with brown sand, which existed in pockets below the surface occurrence of this layer. Then in the center of the mound, we found a small slab feature and a small round rock associated with charcoal and potsherds. Below this were more sherds in both brown and tan soil pockets. The stratigraphy in the south wall of the trench south of Fea.1 showed a clean gravel area that looks like a squirrel nest, and this may also explain the patches of tan and brown soil that seem to "float" in otherwise sterile gravel. We extended work to two meters north of Fea.1 and the square to the east to see if more signs would emerge, but only one potsherd showed up, and the soil below the brown and tan layers was sterile. I'm quite certain there are no other cultural features in this mound after these explorations, but I don't have a good explanation for the wide distribution of potsherds and the significance of the gravel lens. Nor can I explain the large amount of quartzite flakes or their use. Not a single complete recognizable tool was found. Looting might account for the confusing array of finds in the mound, but there was no surface indication and no pit outline. So I think some ritual must account for burial of the "in situ" potsherds found in the "standing position" in Fea.1, followed by dispersion of the rest of the pots, followed by rodent displacement of Fea.1 and the surrounding areas. A 1x2 m test pit two meters east of the excavation border produced no gravel and no cultural finds.

Finds: Quartzite Flakes, Pottery, Charcoal, Felt-like Material

Date: 1910±30 B.P. (Beta 334572) Charcoal.



Fig. 97. Khuiten Gol Delta-1 excavation. View E.



Fig.98. Khuiten Gol Delta-1 trench and features. View W.

Khuiten Gol Delta-1

Fig. 99. KGD-1 mound surface rocks with trench and excavation units
(Photo: Edwards and Malone).

General Stratigraphy

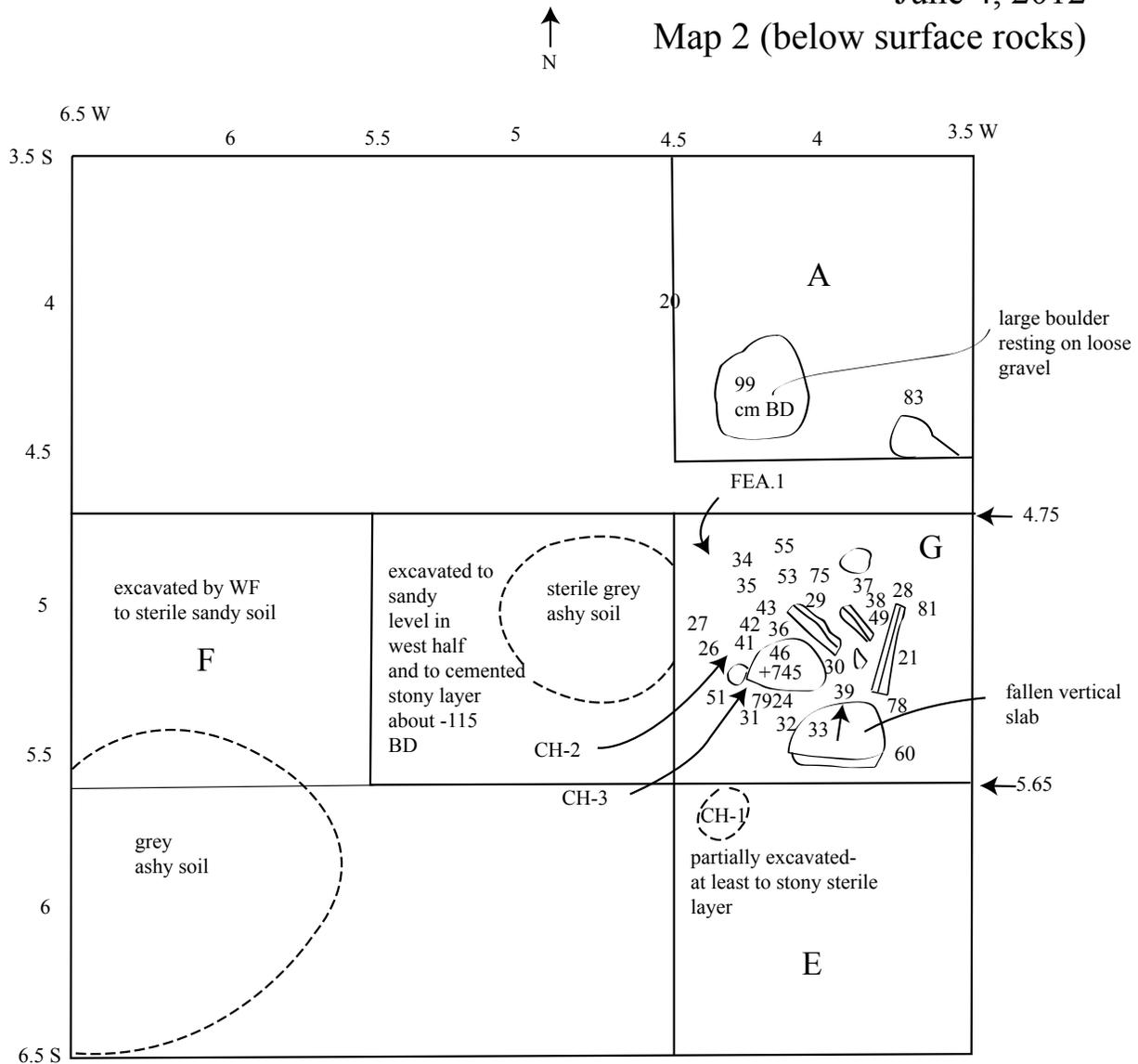
1. Mound stones (surface only)
2. Brown, loamy soil (no stones)
3. Tan, sandy/pebbly soil
4. Clean, sandy gravel
5. Cemented stony soil with pink clayey patches

The work here involved some major labor – excavating a meter-wide trench through the middle of the mound’s east-west axis, following the 5 south line. This trench incorporates the 1x1 square that contains Feature 1. We hoped this would pick up other features, a burial, or bring some stratigraphic clarity to the mound. The trench also follows the path of the gravel trough excavated earlier. The results were not very illuminating. Few artifacts were found and the stratigraphy remained unclear. Meg uncovered a patch of fibery, felt-like material in the middle of the eastern part of the trench, which began with charred stains about 20-25 cm from the surface and continued down into a pit that intruded into the sterile subsoil. This material was very root-infested but it seemed to be more than just roots, as charred/blackened material was also present. A sample (#80) was taken. A single rim-sherd was found at the north wall of the trench (#82), thicker than the two others we have recovered, and the first indication that more than one vessel is indicated in the mound ritual. Despite deeply-buried ceramics in the Fea.1 square – down to 117-125 BT we did not find any in the units on either side of it. This suggests Fea.1 was contained totally within this unit. Also we did not find traces of a pit leading to this feature, so the pit must have been contained within this 1x1 m square. The western end of the trench (west of Fea.1) was excavated to a sterile, sandy gravel that sloped down and was replaced by an indurated sandy-pebble-cobble mass that could not be excavated by trowel. No sherds, charcoal, or quartzite flakes. A pink clayey material was often present where the consolidated layer began. Squirrel holes are present in the south wall of Fea.1 and may be the cause of the patches of clean grey sand seen in Fea.1 west and south walls, and also for a patch of loose peat that is found in the south wall. Not a single bone was found in the trench excavation, except a tooth fragment.

Khuiten Gol Delta-1

June 4, 2012

Map 2 (below surface rocks)



Below the top rocks the soil was dark brown, containing quartzite chunks + flakes

- CH-1 charcoal stain in tan soil, below brown soil -58 cm BD, turned out to be a good dating sample beneath
- CH-2 is a deep sample associated with the deepest ceramics in the feature I area in brown/tan soil with some pebbles
- CH-3 charcoal sample from -81, base of FEA.1 pit

Fig.101. KGD-1 trench excavation Map 2 (below surface rocks).



Fig.102. Feature 1 rock slabs in Unit G. trowel points N. tape 50cm.

Khuiten Gol Delta-1
Map 3
Below rock pavement

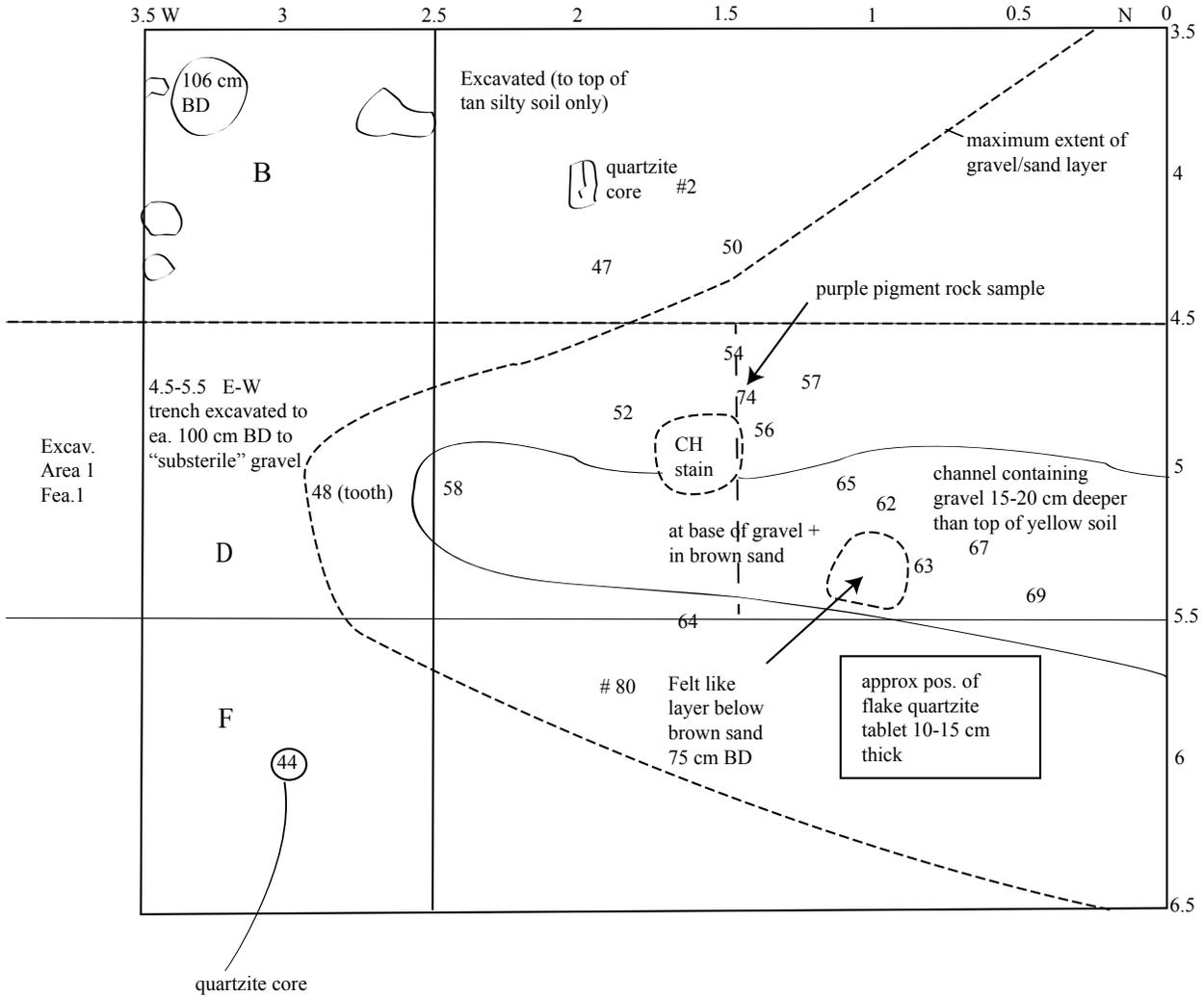


Fig. 103.KGD-1 Trench Excavation Map 3 (below rock pavement).

**Khuiten Gol Delta-1
Excavation Area 3- Map 4
June 4, 2012**

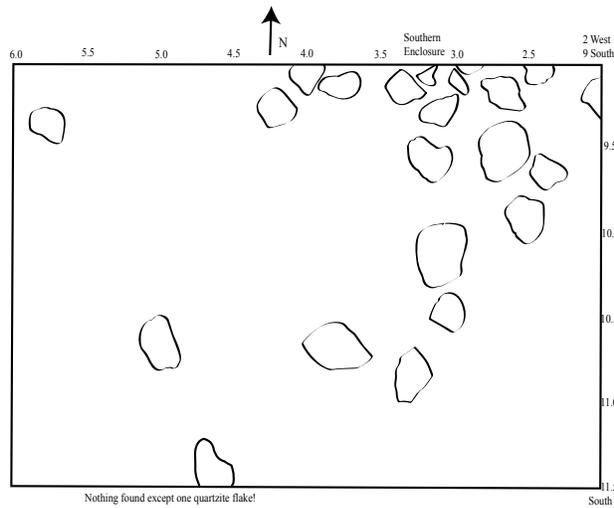


Fig. 105. KGD-1 worked quartzite pieces.

Fig. 104. KGD-1 Excavation Area 3 Map



Fig. 106. KGD-1 rim sherds (Photo: Dave Edwards).

Khuiten Gol Delta-1 Artifacts

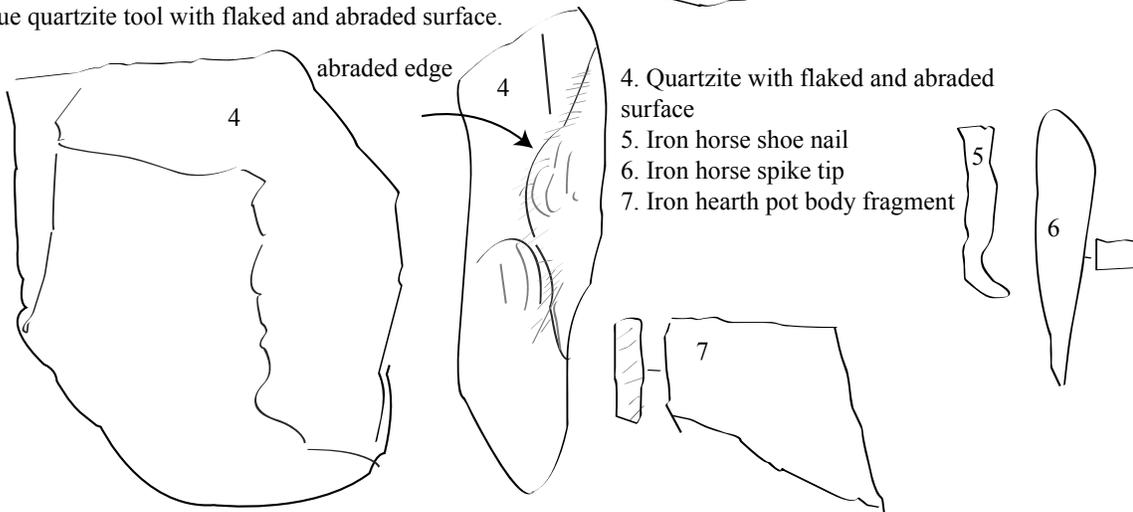
June 6, 2012

From surface cleaning

- 1 Quartzite biface preform
- 2 Grey quartzite worked pebble
- 3 Blue quartzite core



4. Blue quartzite tool with flaked and abraded surface.



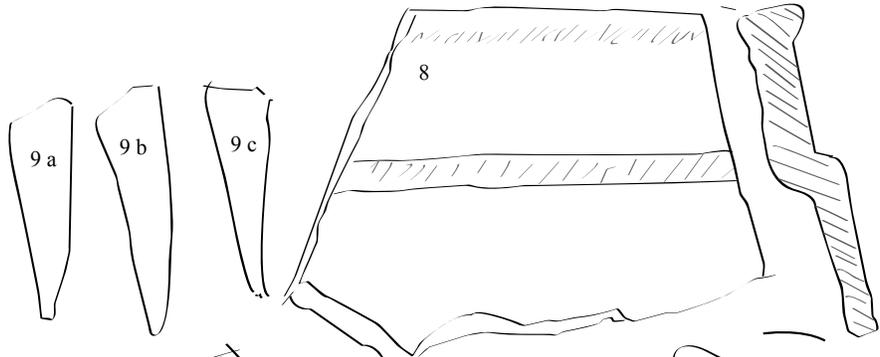
- 4. Quartzite with flaked and abraded surface
- 5. Iron horse shoe nail
- 6. Iron horse spike tip
- 7. Iron hearth pot body fragment

Khuiten Gol Delta-1 Artifacts
June 7, 2012

Surface/turf finds

8. Iron pot rim fragment

9/ Iron horseshoe nails (3)



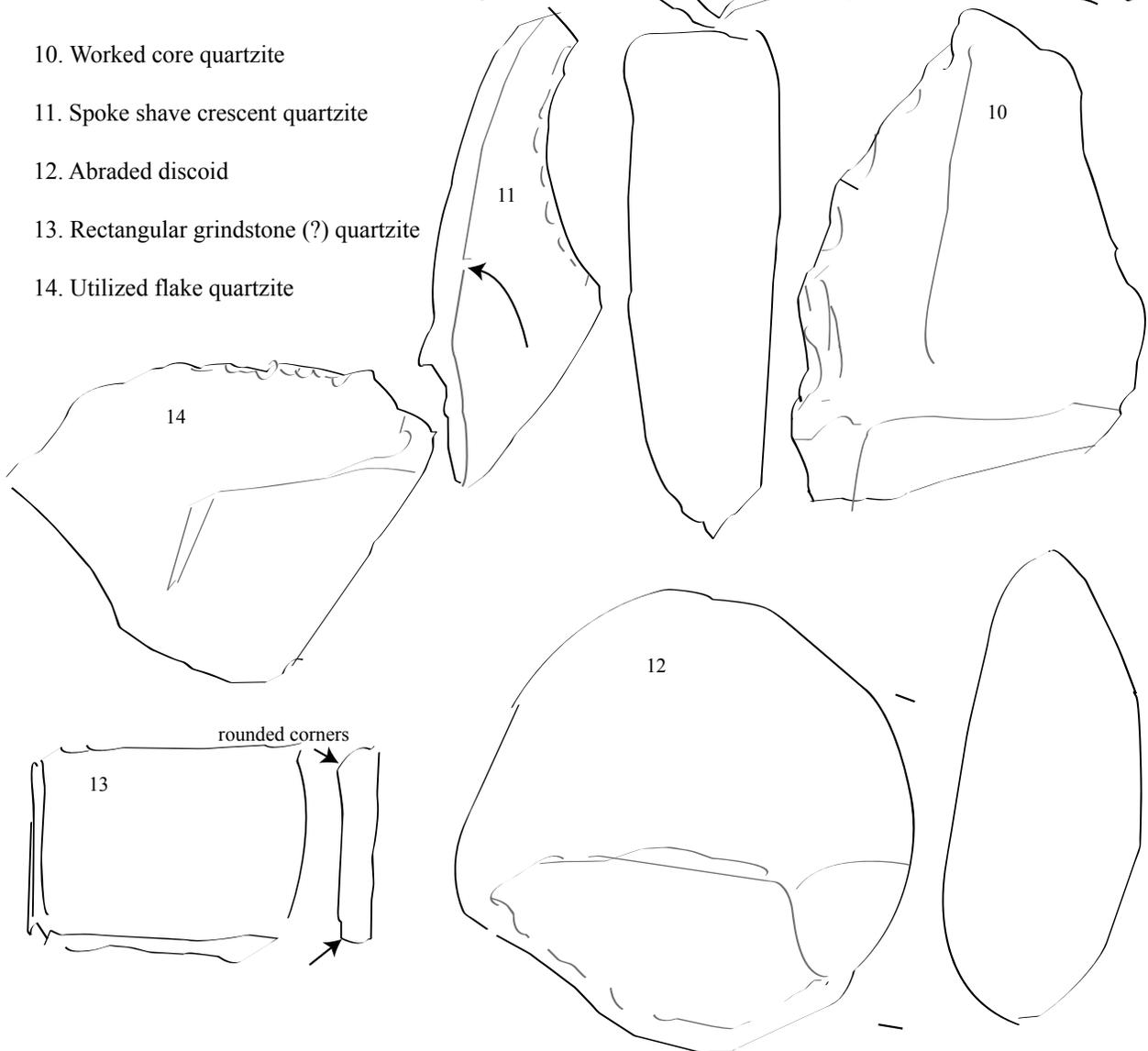
10. Worked core quartzite

11. Spoke shave crescent quartzite

12. Abraded discoid

13. Rectangular grindstone (?) quartzite

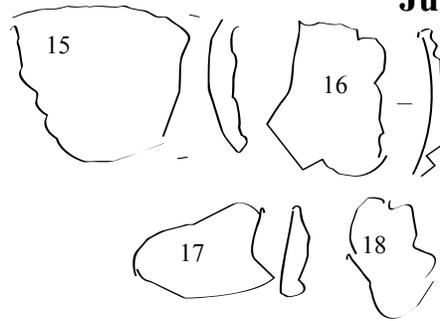
14. Utilized flake quartzite



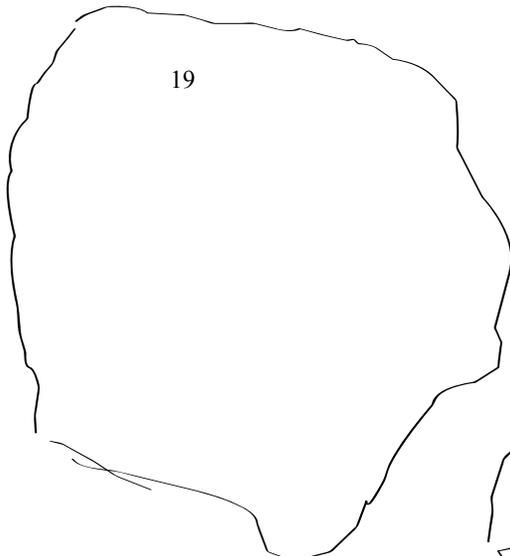
**Khuiten Gol Delta-1 Artifacts
July 8, 2012**

Artifacts from surface cleaning

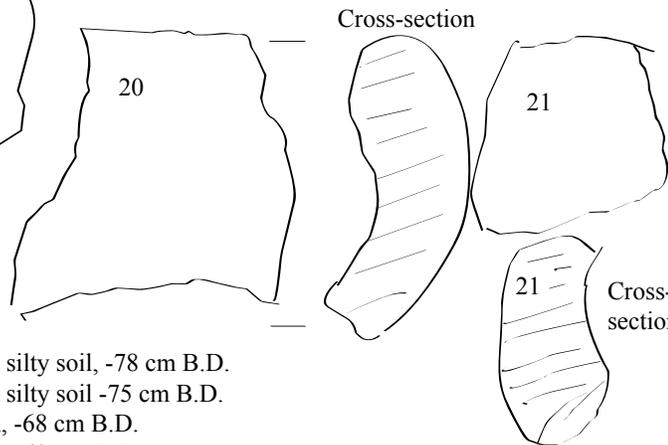
- 15. Pottery sherd (plain, spalled)
In sandy gravel soil 15 cm below surface
- 16. Inner surface fragment of plain ceramic-in
gravel/sand soil 10 cm BS
- 17. Ceramic sherd- plain- in gravel 10 cm BS
- 18. Inner portion of ceramic



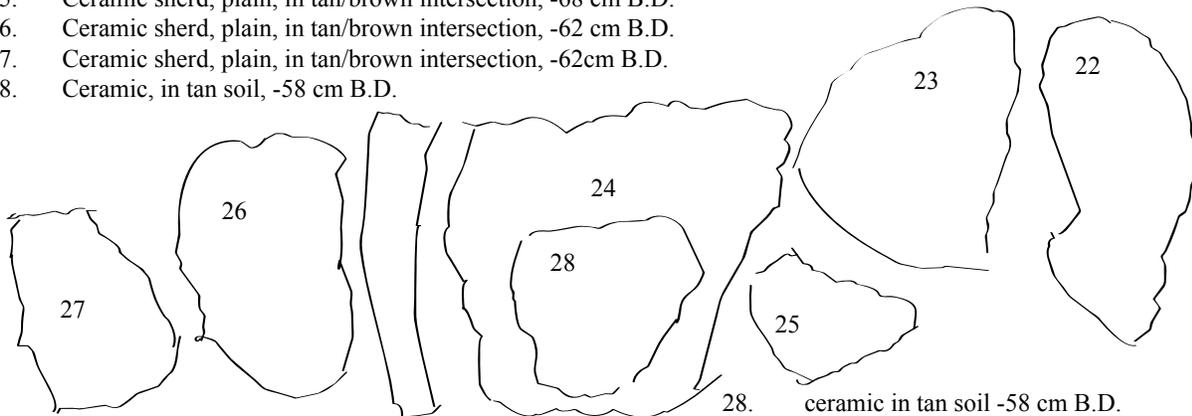
- 19. Large ceramic sherd of same vessel as #15-18 circa 0.7 cm thick, very poorly fired, blackened interior, sand/grit temper. Smooth exterior without decoration, blackened surface. Rootlets infiltrated



- 20. ceramic rim sherd, plain, grit temper -48 cm below datum post

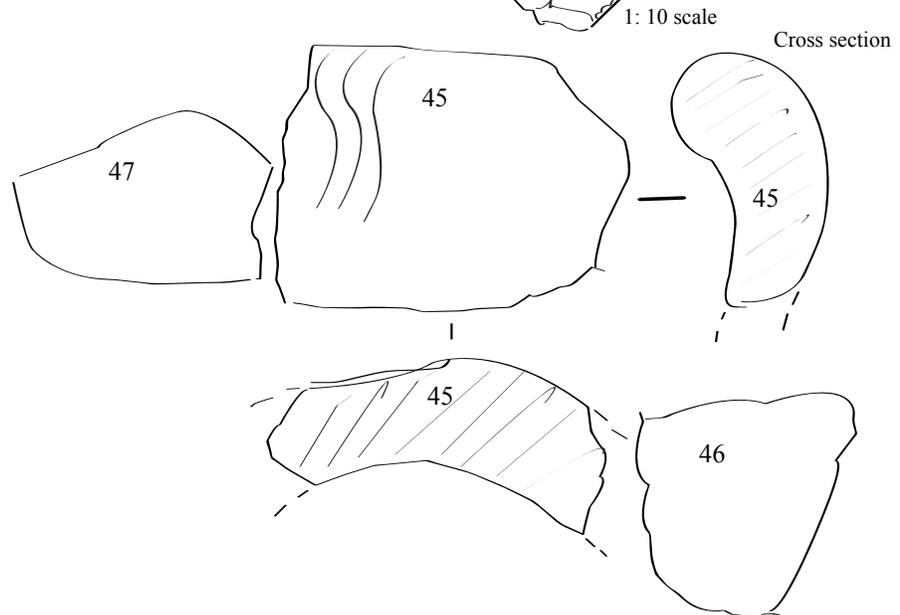
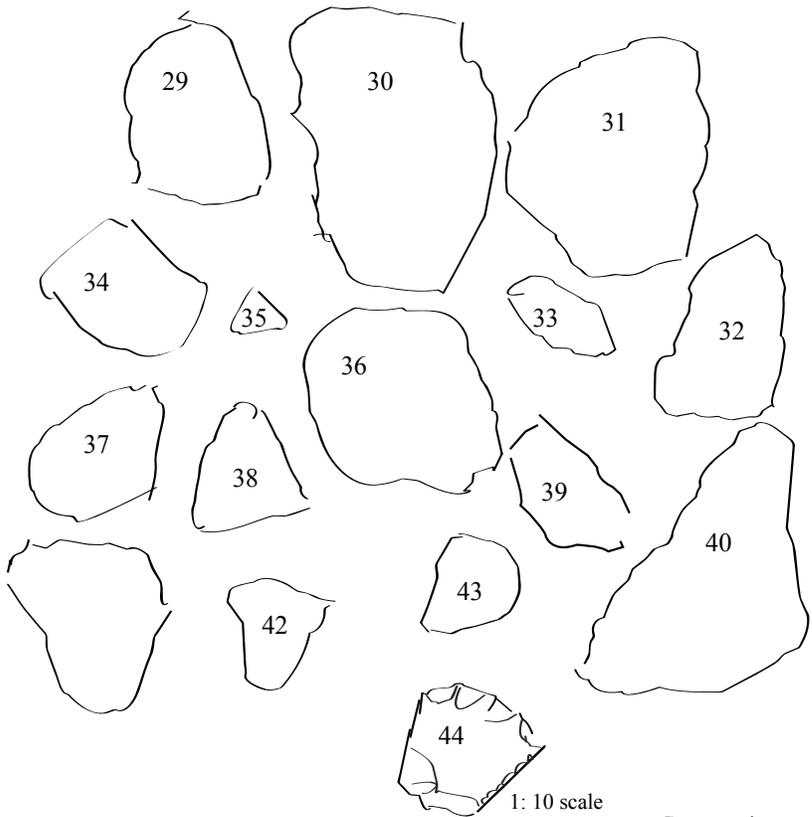


- 21. Ceramic sherd, plain, in tan soil, -68 cm B.D.
- 22. Ceramic sherd, plain, base of gravel, top of tan silty soil, -78 cm B.D.
- 23. Ceramic sherd, plain, base of gravel, top of tan silty soil -75 cm B.D.
- 24. Ceramic sherd, plain, in tan/brown intersection, -68 cm B.D.
- 25. Ceramic sherd, plain, in tan/brown intersection, -68 cm B.D.
- 26. Ceramic sherd, plain, in tan/brown intersection, -62 cm B.D.
- 27. Ceramic sherd, plain, in tan/brown intersection, -62cm B.D.
- 28. Ceramic, in tan soil, -58 cm B.D.



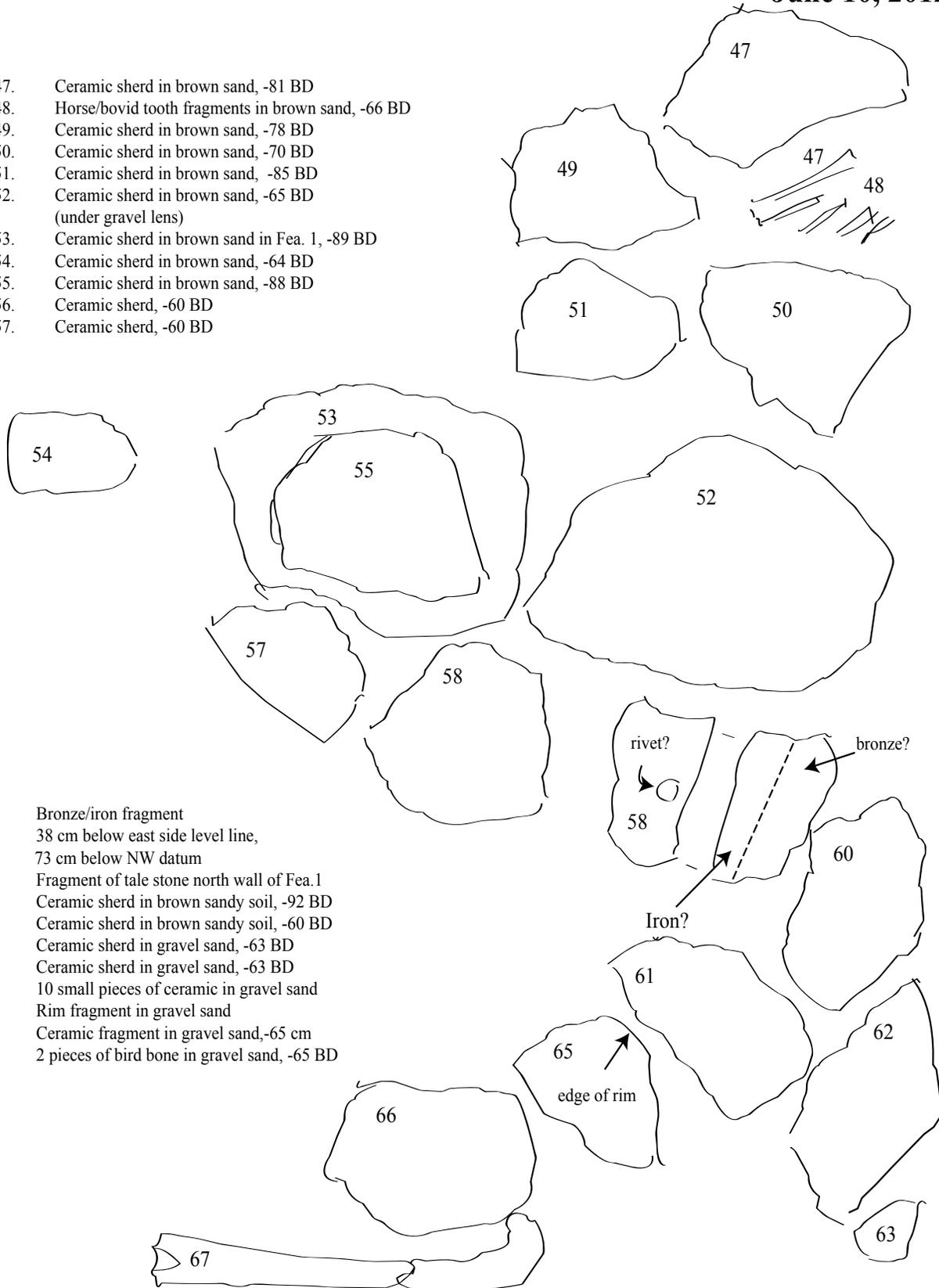
Khuiten Gol Delta-1 Artifacts

- 29. Ceramic sherd, -63 cm B.D.
- 30. Ceramic sherd, -65 cm BD
- 31. Ceramic sherd, -65 cm BD
- 32. Ceramic sherd, -65 cm BD
- 33. Ceramic sherd, -65 cm BD
- 34. Ceramic sherd, -65 cm BD
- 35. Ceramic sherd, -65 cm BD
- 36. Ceramic sherd, -68 cm BD
- 37. Ceramic sherd, -66 cm BD
- 38. Ceramic sherd, -66 cm BD
- 39. Ceramic sherd, -66 cm BD
- 40. Ceramic sherd, -71 cm BD
- 41. Ceramic sherd, -75 cm BD
- 42. Ceramic sherd, -75 cm BD
- 43. Ceramic sherd, -75 cm BD
- 44. Quartzite core, (plotted on MAP 1), 25 x 21 x 5 cm
- 45. Ceramic rim sherd, -81 cm B.D. in tan silty pebbly soil
- 46. Ceramic rim sherd, -81 cm B.D
- 47. Ceramic rim sherd, -81 cm B.D.



**Khuiten Gol Delta-1 Artifacts
Excavation Area 1/2
June 10, 2012**

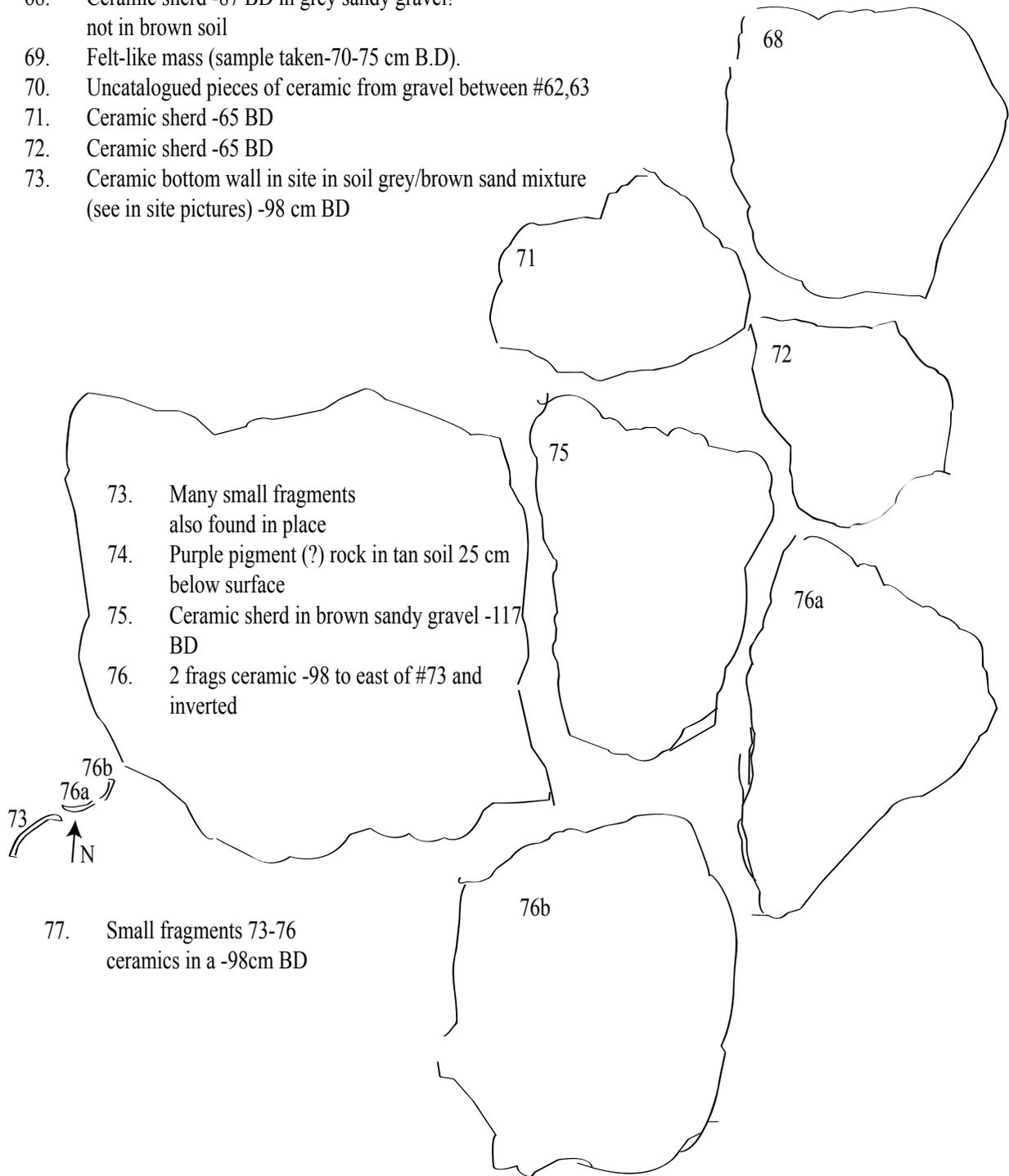
- 47. Ceramic sherd in brown sand, -81 BD
- 48. Horse/bovid tooth fragments in brown sand, -66 BD
- 49. Ceramic sherd in brown sand, -78 BD
- 50. Ceramic sherd in brown sand, -70 BD
- 51. Ceramic sherd in brown sand, -85 BD
- 52. Ceramic sherd in brown sand, -65 BD
(under gravel lens)
- 53. Ceramic sherd in brown sand in Fea. 1, -89 BD
- 54. Ceramic sherd in brown sand, -64 BD
- 55. Ceramic sherd in brown sand, -88 BD
- 56. Ceramic sherd, -60 BD
- 57. Ceramic sherd, -60 BD



- 58. Bronze/iron fragment
38 cm below east side level line,
73 cm below NW datum
- 59. Fragment of tale stone north wall of Fea.1
- 60. Ceramic sherd in brown sandy soil, -92 BD
- 61. Ceramic sherd in brown sandy soil, -60 BD
- 62. Ceramic sherd in gravel sand, -63 BD
- 63. Ceramic sherd in gravel sand, -63 BD
- 64. 10 small pieces of ceramic in gravel sand
- 65. Rim fragment in gravel sand
- 66. Ceramic fragment in gravel sand, -65 cm
- 67. 2 pieces of bird bone in gravel sand, -65 BD

**Khuiten Gol Delta-1 Artifacts
Excav. Area 1/2**

- 68. Ceramic sherd -87 BD in grey sandy gravel!
not in brown soil
- 69. Felt-like mass (sample taken-70-75 cm B.D).
- 70. Uncatalogued pieces of ceramic from gravel between #62,63
- 71. Ceramic sherd -65 BD
- 72. Ceramic sherd -65 BD
- 73. Ceramic bottom wall in site in soil grey/brown sand mixture
(see in site pictures) -98 cm BD



Note # 73

This sherd seemed to be in normal position for a standing ceramic vessel, but no other fragment was found nearby in “fitting” position, and 76a,b were curving the other way: The bottom of #13 was a mess of small fragments that had deteriorated when the pot was in situ.

Khuiten Gol Delta-1 Artifacts
June 11, 2012

- 78. Ceramic rim, -111 cm BD
- 79. Ceramic fragment in brown soil, -110 BD
- 80. Felt-like layer below brown sand, -75 cm BD
- 81. Ceramic frag in brown soil, -110 BD
- 82. Ceramic rim sherd, thick -86 BD
- 83. Ceramic rim sherd, -80cm BD
- 84. Slag-like rock no provenance (in back dirt)

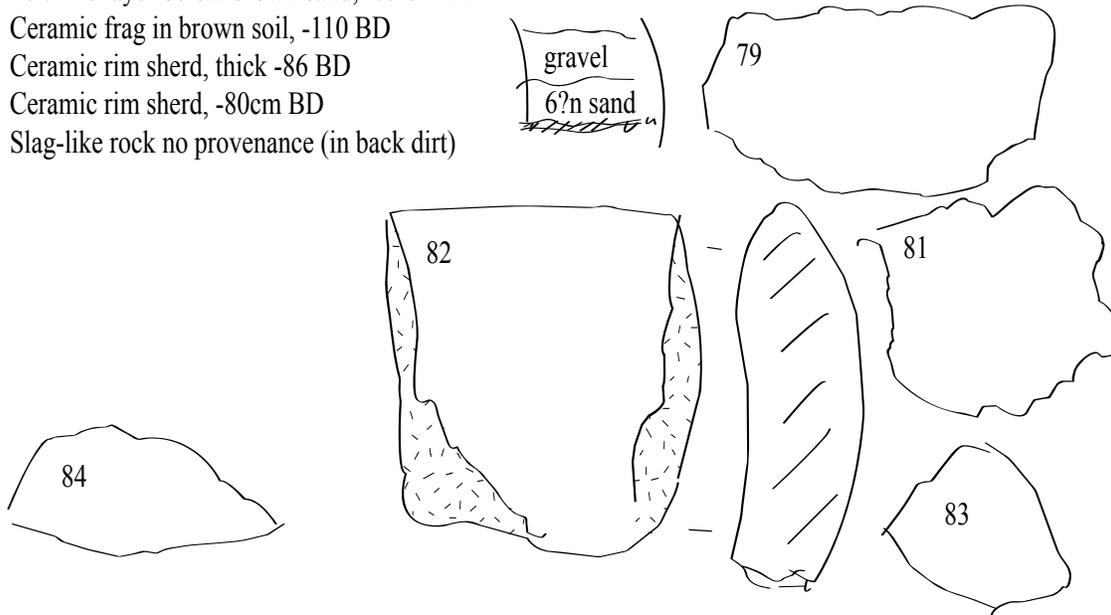


Fig.107. KGD-2 with central mound surface rocks removed, except those over central burial feature.

Khuiten Gol Delta-2 (GPS N48° 37.874' E88°, 21.506', Elevation: 2116m)

This site is located south of the Khuiten Gol Delta on a small point of land marked by a large split granite boulder and some small polished rock surfaces with a number of fine petroglyphs. Ten meters north of the split rock is a small khirigsuur with a circular fence 9 meters in diameter and a central mound about 6.5 m in diameter. Four radials are present bearing 45°/215° and 130°/130°, but are not placed perfectly symmetrically. Two hearth circles are present to the west (Feature 2) and northwest (Feature 1) about one meter outside the mound's circular fence. We excavated Feature 1 and found charcoal and a small amount of calcined bone, both collected. We cleaned the mound and plaza to the outside of the fence and excavated the top 10 cm of brown, to tan silty sand without finding artifacts. Mound rocks were removed after the cleaning and photography (GoPro wide-angle). This revealed an inner ring-oval with N-S orientation – of large boulders at mound center. When we began removing these after removing all mound rocks except the outer perimeter, we found wood remains under a boulder at the NE side of the oval. We top-photographed the entire khirigsuur again, with the oval ring in place and mapped the boulders and wood whose grain was oriented 330°. Later excavation revealed this wood was probably a log of larch rather than a coffin plank or burial cover. It's orientation was orthogonal to the skeleton we found about 30 cm beneath it. The log could be traced for 1.5 m beneath other boulders in the northern part of the oval and approximately crossed the area of the skeleton's head. Removing all rocks in the oval, we excavated beneath the wood and found nothing, until a final shovel probe to confirm there was no other cultural remains resulted in exposing the top of a human skull at -137 cm below datum. The skull was upright, facing east and had incompletely closed sutures and emerging molars. Only 12 teeth each in mandible and jaw. After finding the skull, we were able to ascertain the orientation of the skeleton, extending to the SW and expanded the excavation and found the limits of the burial pit, and were able to excavate the entire skeleton, lying facing up, arms out to the sides. Body orientation was 18°. However, we found both feet and most ankle bones missing. There were several remarkable things about the body – its small size only 67 cm from ankle to shoulder; its extremely small and thin bones (none noted to have been broken), and the age at about early teens (?). Only the 14th vertebra had the spinal processes fused with the disk – circa 8 years old? The position of the head must have required breaking the neck to twist the head upright and to the left 90°. That and the missing feet were peculiar. The small size suggests a midget who lived for more than a decade before being given a fine burial in a beautiful location with views across the lake and to the east. No artifacts accompanied the burial or the khirigsuur. It was also unusual to find a khirigsuur burial as deep as this one, some 30-40 cm below a central rock feature. The function of the wood timber is not understood since it seemed not part of the burial chamber.

Finds: A small human was found buried with head to north, head upright with face to the east. Age estimate 8-12 years, by skull sutures and vertebrae process fusion. Height only ~80 cm.

Date: 2800±30B.P. (Beta 334573) human tooth.



Fig.108. Khuiten Gol Delta-2 surface cleaned. View NE.

Khuiten Gol Delta-2
June 16, 2012

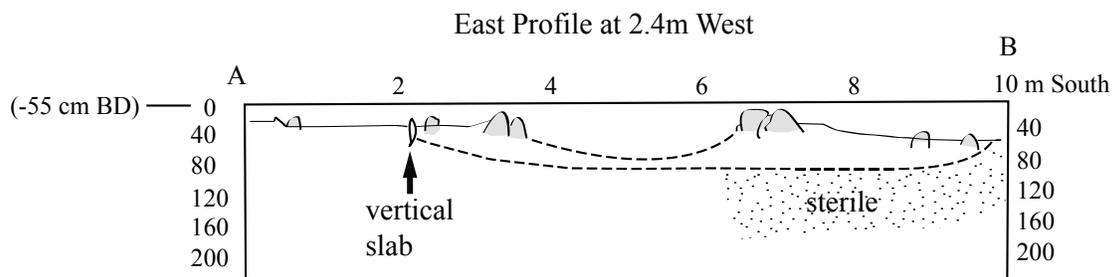


Fig. 109. KGD-2 Map and Surface Profile

GPS #107
 N 48° 37.874'
 E 88° 21.506'
 elev. 2116 m

Khuiten Gold Delta-2
 June 13th 2012

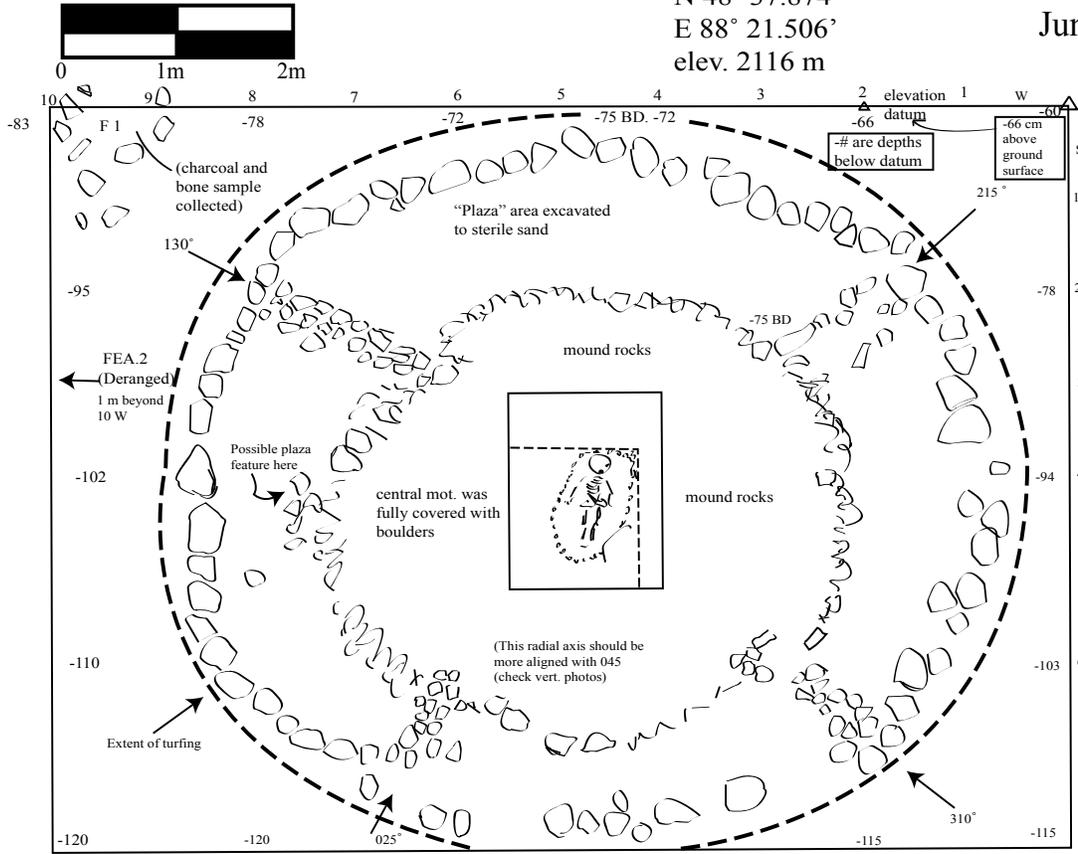


Fig.110. KGD-2 Excavated burial mound map.



Fig.111. KDG-2 First level rocks in mound removed. View N.

**Khuiten Gol Delta-2
Upper Burial Pit Map**

June 18 2012

N48° 37.874' E88°, 21.506'

Elevation: 2116m

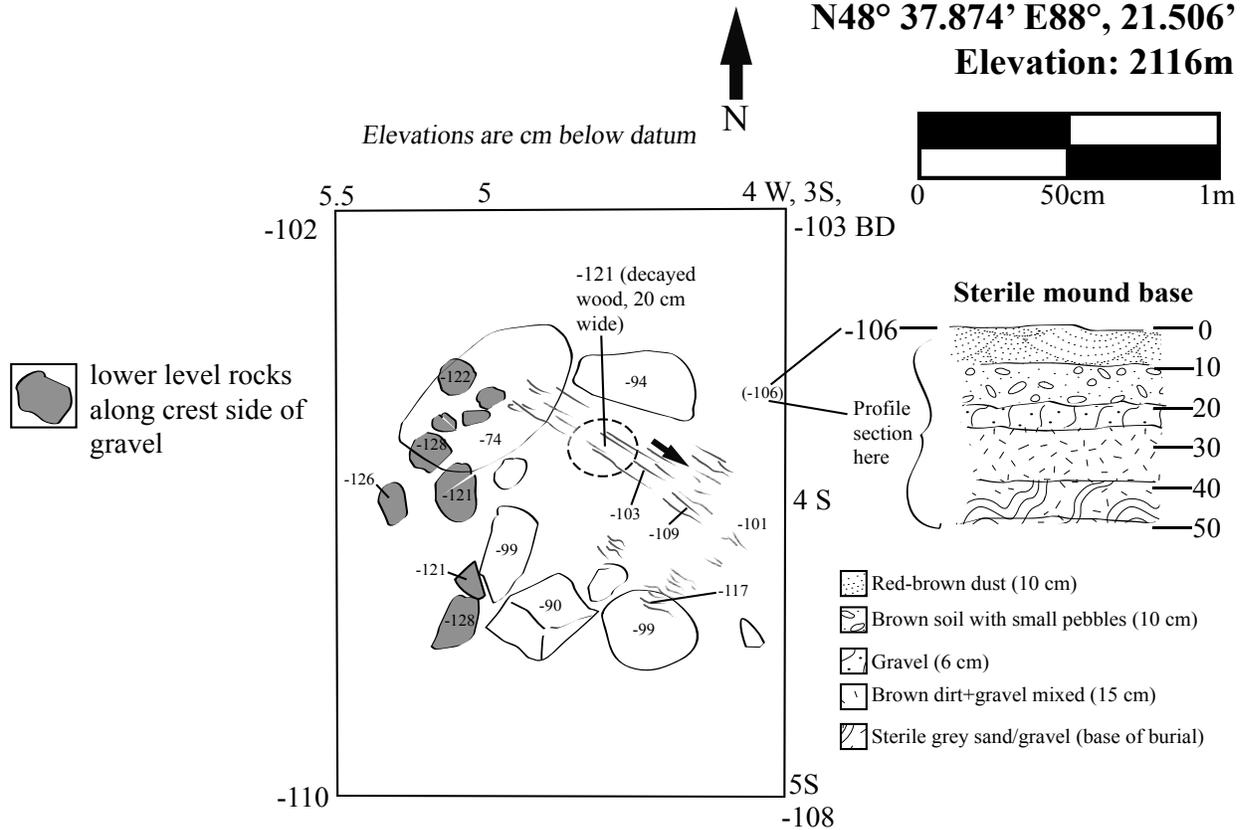


Fig 112. KGD-2 juvenile skeleton with cocked up-turned head and missing both feet. Head to North.

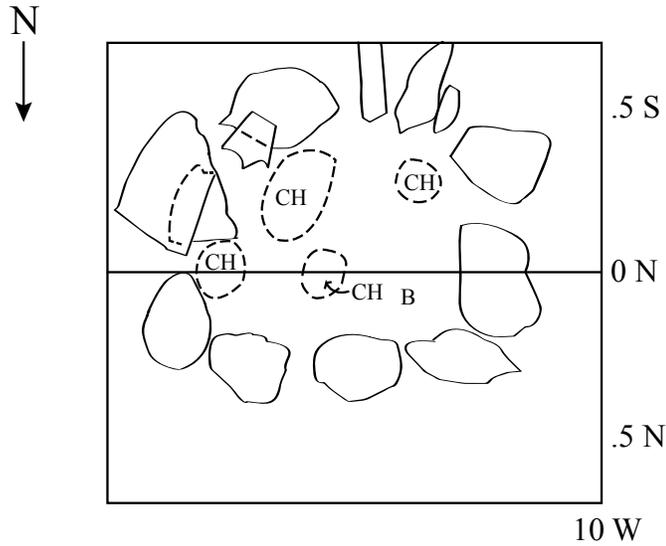


Fig. 113. KGD-2 "Footless juvenile" skull.

- 137, top of skull
- 149, bottom of skull
- 152, bottom of pelvis
- Body orientation 98 degrees
- Length shoulder to ankle: 67cm

Khuiten Gol Delta-2
Feature 1 Hearth Ring
June 19, 2012

Feature 1 hearth ring was 2 meters northwest of the Khirigsuur and measured as 1.0 x 1.50 m. 12 rocks (3 small ones) completed the circle. Bone (calcined) and a small amount of charcoal was found 3-5 cm below the surface and was collected. Charcoal stains were extensive, but few chunks were present.



Feature 2 hearth feature lay west of the khirigsuur. Its rock arrangement had been displaced somewhat, so we did not excavate it.



Fig. 114.KGD-2 skull views.

Khuiten Gol Delta-3

GPS N48° 37.842', E88° 21.514'

Elevation: 2092m

About 50 m SE of the big boulder at the first point west of the Khuiten Gol Delta and 95 m from KGD-2 khirigsuur. Mound edge is only a few meters from the Khoton Nuur shore. A small, low circular mound made of slatey slabs about 3-4 m in diameter. The edge of the mound is bordered by granite boulders. In the center of the mound's surface, there is a small stone box made of vertical slabs. Three large slabs with broken bases lay on top of the mound, perhaps having covered the box. If they had been standing in the mound, we would have found the broken basal stubs. This was a very disappointing site in that its interesting architecture and absence of looting suggested at least a good human skeleton. But nothing except architecture could be found. Perhaps something was once in the stone box on top of the mound, but we found nothing except bits of bone well below the standing vertical slab down in the center of the mound.

Find A few small bones from 81-85 cm depth BD - Some maybe burned. Possibly some of these are rodent related.

Date: 3090 ±30BP (Beta33474). Bone.

Khuiten Gol Delta-3

June 20, 2012

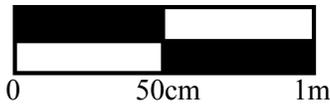
Stone Box Site



Fig. 115. Stone box on top of KGD-3.



Fig. 116. KGD-3 Mound with stone slab box in center. View S.



GPS
#110

N 48° 37.842'
E 88° 21.514'
elev . 2092 m

Khuiten Gol Delta-3
June 20th 2012
(Slab Stone Box Site)
Photo/Map.1

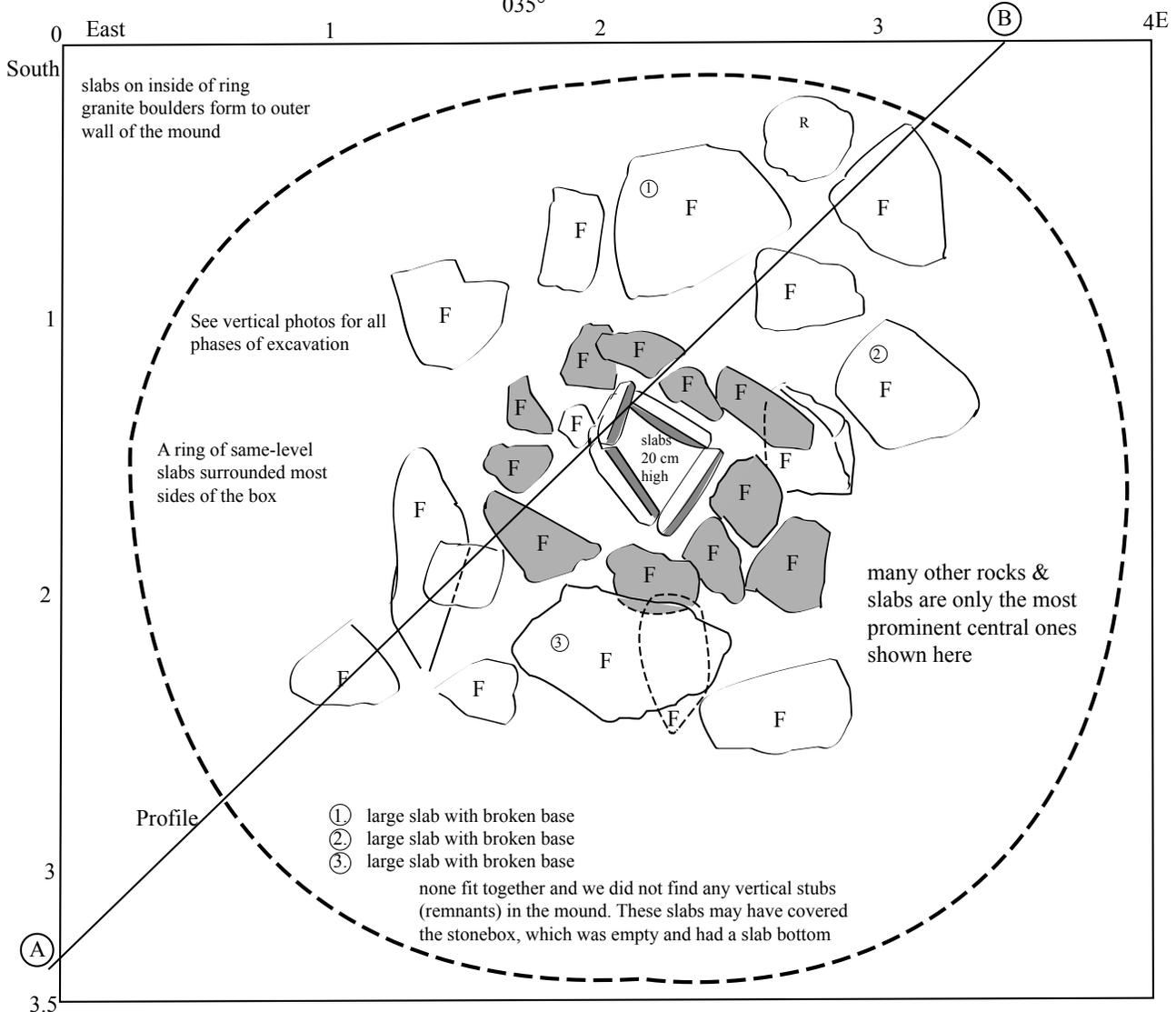


Photo 1 cleaned box surrounded by a ring of slabs

Photo 2 small rocks cleared revealing underlying layer of slabs, as above-only rocks in center of mound are plotted

Slabs inside mound boulder; round rocks make the perimeter

Photo 3 Beneath photo 2 about 10-15 cm were a rosette of slabs radiating from the center. We photoed these then cleared and found another layer of slabs, and a vertical slab on the east side of mound center

Photo 4 Level 4 rocks

Photo 5 The cleared floor grey sandy gravel at -81- to -85

Fig. 117. KGD-3 Mound Map

Biluut 3.3 Peat Valley-1 (GPS N48° 39.165', E88° 21.588')

Peat Valley, just below the gorge as valley opens onto the plain. Rectangular structure excavated in 2011. This year, we expanded the excavation 1 m beyond the outside of the wall around the south, west and north sides of the structure.

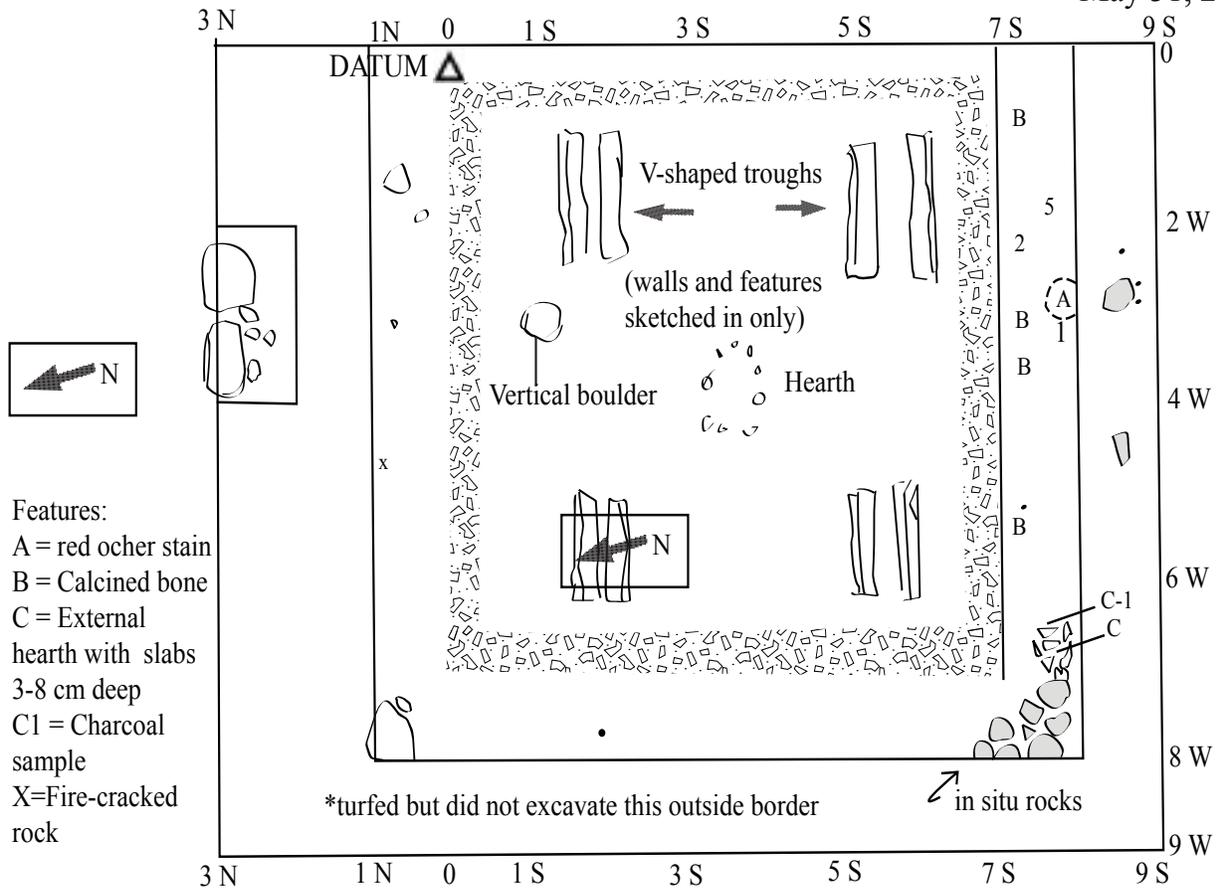
Finds: A few lithic artifacts



Fig. 120. PV-1 (Biluut 3.3) Rectangular Structure (Structure 1) view west. (Photo by Dave Edwards)



Fig. 121. PV-1 (Biluut 3.3.) Rectangular structure 1 north side. View NW. (Photo by Dave Edwards)

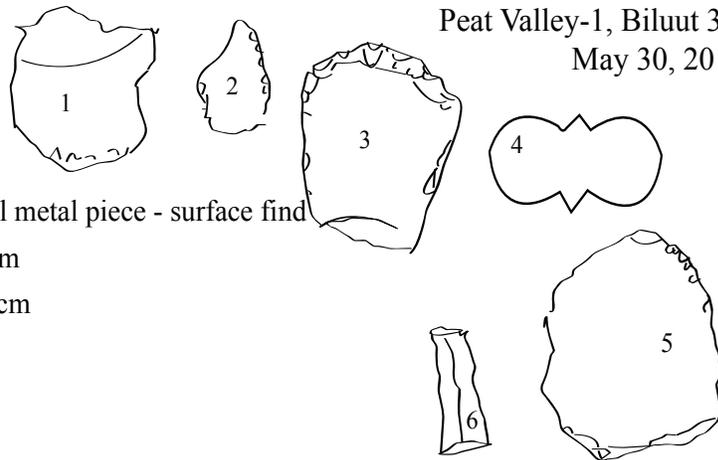


Last year we excavated this structure, clearing out 50 cm beyond the outside of the wall. This year we excavated 100 m beyond the wall and turfed out to 2.5 m. Since we found little of interest we did not excavate the whole area. The only finds of interest came from near the south wall- a small quartz utilized flake and a microblade. A chert end scraper was found on the surface SW of the excavation. A charcoal sample came from a small external hearth area at SW corner of the excavation. I did not follow the hearth to the south since there were no bones, artifacts, or flakes present.

General opinion from Jean-Luc is that this is a Neolithic or Early Bronze Age dwelling, similar to ones known in Southern Russia. No good answers for the troughs other than heated beds!

(Measurements from surface)

1. Utilized flake - 5cm
2. White quartz flake scraper - 6 cm
3. End scraper of grey chert - surface find
4. Butterfly-shaped ornamental metal piece - surface find
5. Tan chert flake scraper - 6 cm
6. Green chert microblade - 6 cm



Peat Valley-1, Biluut 3.3
May 30, 2012

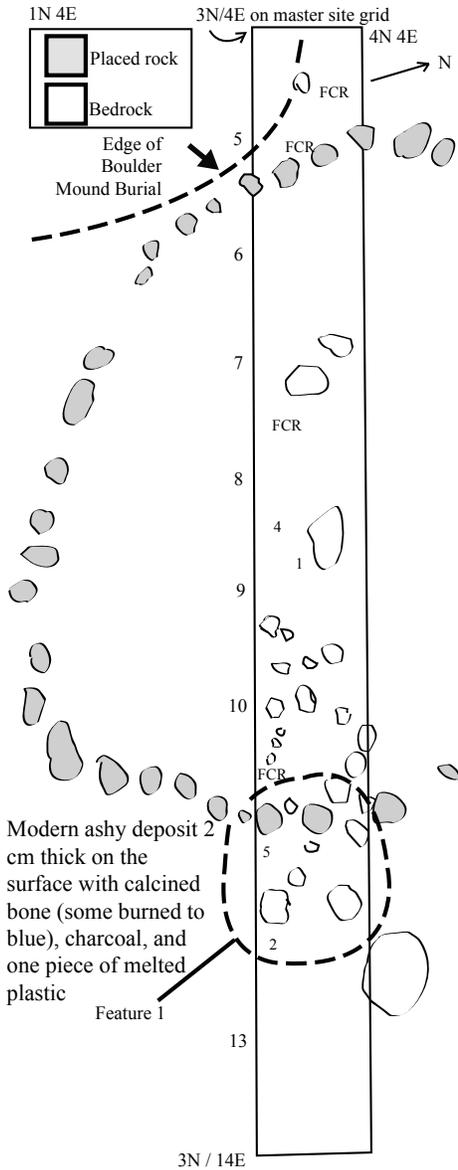
Flake tool

104 W of nail

24 N of nail

Fig. 122. PV-1 (Biluut 3.3) Rectangular Structure Map.

Peat Valley-1, Biluut 3.3
 Structure 2
 Stone Circle TR
 June 1, 2012



No sign of a door or any internal features. All rocks are heavily covered with lichens, like the rest of the rocks on the terrace



Artifacts:

1. 6 pieces of iron wire found with metal detector before excavation
2. Small piece of melted plastic in ash deposit
3. Utilized flake of chert
4. Biface fragment of chert
5. Melted plastic

This structure at Peat Valley-1 (Biluut 3.3) showed as a very clear, circular tent ring on the surface, and had a dump of ashes overlapping the Eastern wall. At first, it seemed like it was associated with the ring, but we soon found a piece of melted plastic along with the small pieces of calcined bone and part of an animal jaw. It seems like someone dumped the ashes from a tin store. The trench through the ring turned up only a few FCR and two Tanchert artifacts a small fragment of a biface and utilized flake. Deposit was very shallow, with 1-2 cm of surface vegetation (sparse) of silty sand and small gravel. Artifacts came from the upper 3 cm only. No hearth or sign of any internal features. No charcoal or bone. The ring seems too close to the burial mound to be associated, and the chert finds may mean it is association with the 3.3 rectangular house.



Fig. 123. Peat Valley-1 (Biluut 3.3) Stone Circle Structure Map.

Fig. 124. Peat Valley-1 (Biluut 3.3) structure 2 stone circle. View to SW.

Peat Valley-2 Biluut 3.4. (GPS N 48° 39.240' E 88° 21.618', Elevation: 2073m)

East side of Peat Bog brook 200 m upstream from Peat Valley-1. Site area is in a small enclosure between the last outcrop constricting the brook before it enters the open valley below PV-1. Site consists of several partial boulder enclosures and alignments that are not natural. However, there are also many in situ boulders that are too large to move and are deeply buried. The structure (cultural) rocks are resting on or near the surface. 1x1 m test pits in enclosures 2 (WF; TP-1), 3 (Katie; TP-2), 4 (Meg; TP-3). Are the three enclosures animal pens? Something else? A circular pavement of metagreywacke slabs lies adjacent to the southern boulder alignment and is a burial feature (Fea.1)

Date: 4690±40B.P. (Beta 334576). Charcoal, from TP-1, Level IV.

Finds: Charcoal, Soil samples (2) from TP-1



Fig. 125. PV-2 (Biluut 3.4) boulder alignments and test pits. View W. Baseline 300/120°.

Peat Valley-2 Biluut 3.4



Fig. 126. Peat Valley 2. (Biluut 3.4) boulder enclosures. View S.



Fig. 127. Peat Valley 2.(Biluut 3.4) enclosures. View NE.

N 48° 39.24' Peat Valley-2
 E 88° 21.618' Biluut 3.4
 Elevation 2073 M June 2, 2012

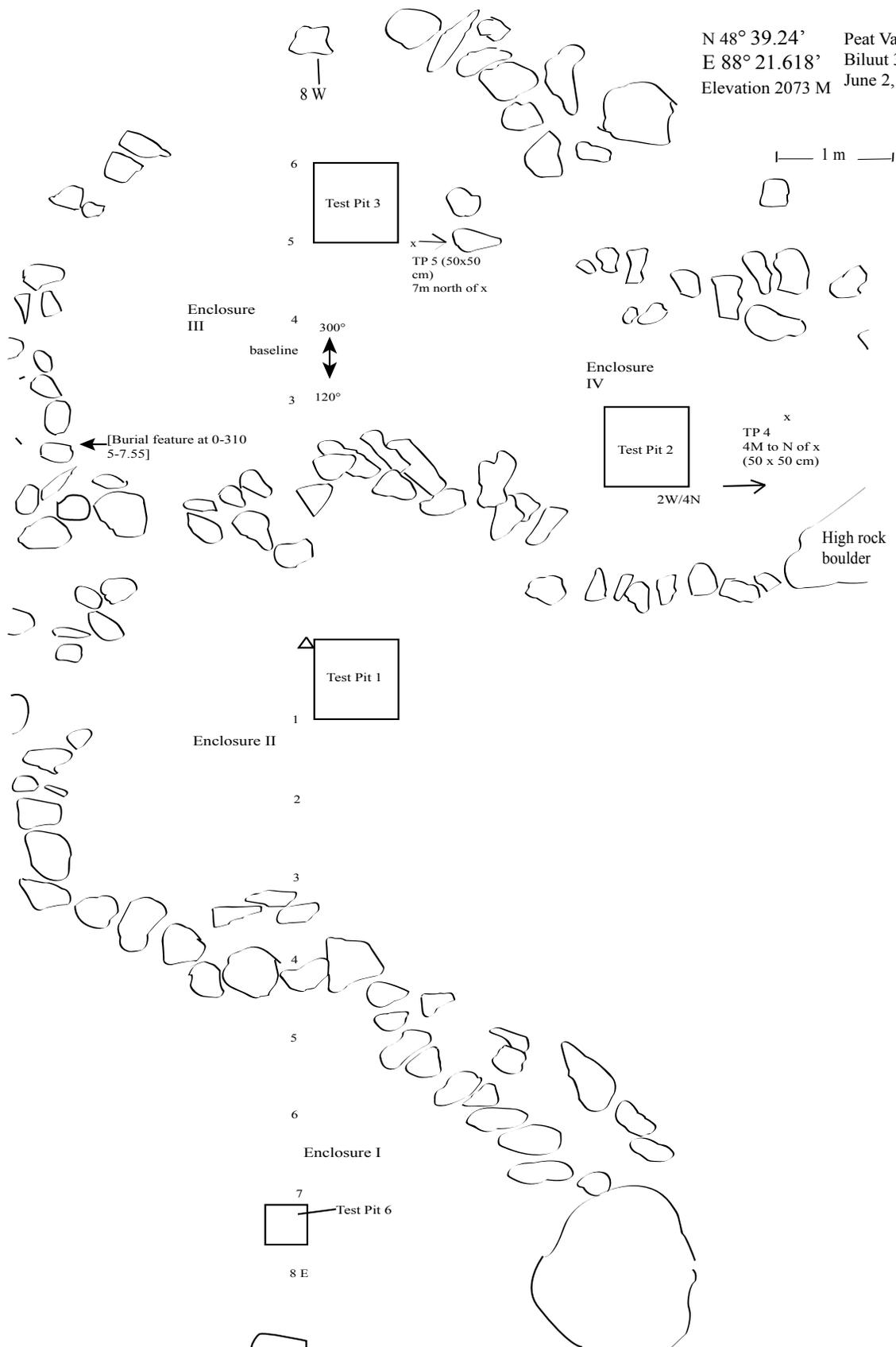


Fig. 128. Peat Valley -2 (Biluut 3.4) Boulder features and test pit map.

Peat Valley-2 Biluut 3.4, Test Pit 1

June 2, 2012

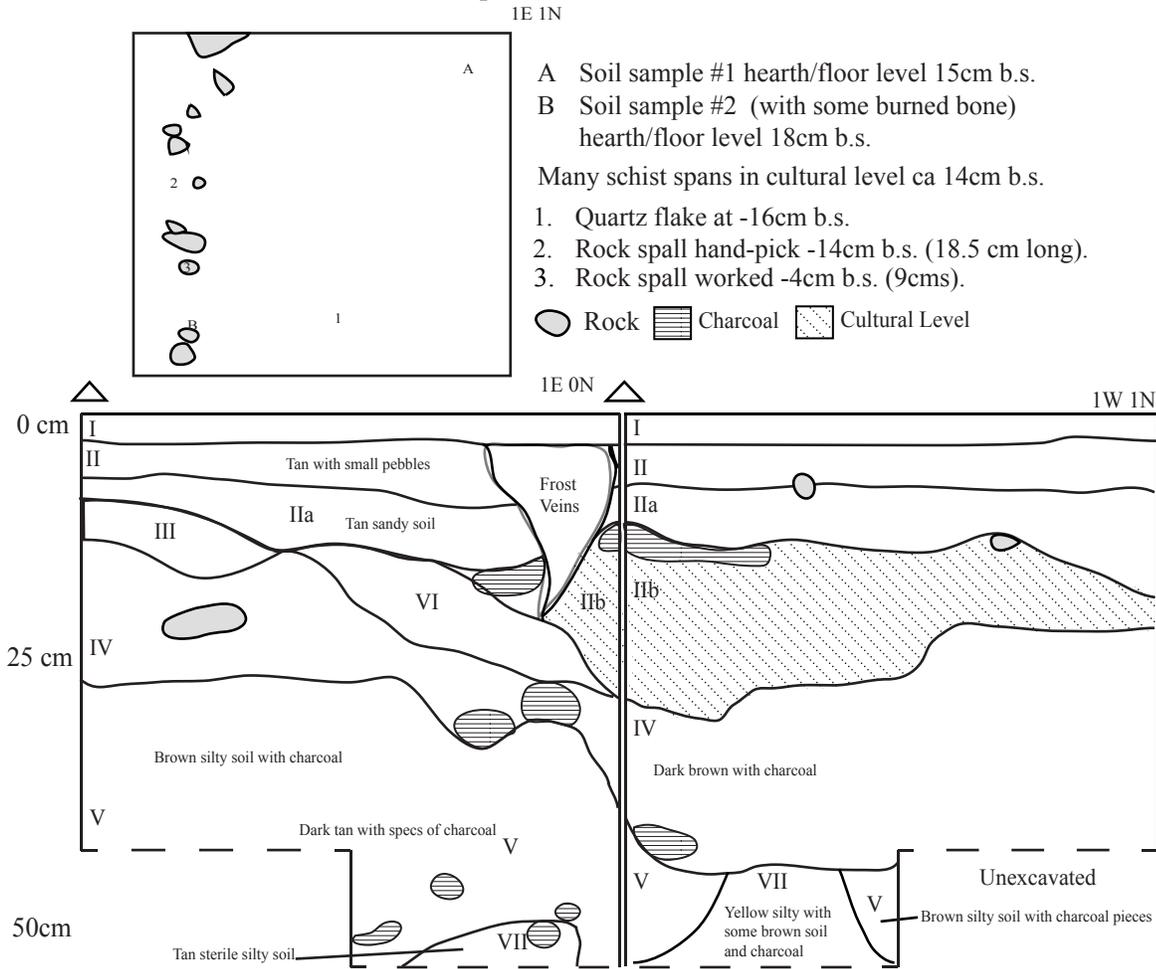
N48° 39.247' E88° 21.618', Elev. 2128m



Test Pit 1 – We (William Fitzhugh and Alix) began excavating this test pit in the afternoon of June 1 and found a tough 1 cm turf layer with saudy gravel at the surface mixed with grass and herbs. Below was 10-12 cm of fine brown loamy silt with very few rocks – only small river stones, occasional pieces of green schist, and a rare piece of fire-cracked rock. At 13 cm below surface, the soil changed to a clayey silt and charcoal flecks, pieces, and stains appeared. This soil was stained red in some places with red ocher. We collected charcoal (sample 1) from throughout the square, mostly from a few “hot spots”. We took a soil sample (sample 2) from the charcoal concentration in NE corner of the square. At the same level as the clayey soil begins, many small rocks (FCR, small schisty slabs, and flakes) appear for the first time. TP 4, 5 lie north of the enclosure rocks.

Fire-cracked rock is found within a few centimeters of the surface and down to the very bottom of the deposit. Tools were found only in the upper charcoal II-a and II-b interface, even though charcoal and FCR occurs through. Lower levels with char may result from intrusive frost action. The cultural levels deepen toward the west, in keeping with the sloping ground surface. Schist fragments are common in all levels with charcoal in small pieces, and seems always to occur in concentrated areas of charcoal-some association with cooking perhaps. The ground surface slopes down ca 10cm between 0N/1E and 0N/0E. West side of square surface is level.

One-meter test pits in each of the 3 western enclosures



- I Turf with loose silty alluvium (this year's despoit)
- II Tan sandy-silty soil with small pebbles
- IIa Tan sany soil
- IIb Cultural layer
- III Brown silty sand with small pieces of charcoal and FCR
- IV Dark brown soil with charcoal lumps and FCR
- V Brown silty soil with scattered charcoal
- VI Peaty circular patch (possible rodent burrow)
- VII Tan silty sterile soil with intrusive charcoal pieces

Peat Valley-2 Biluut 3.4

Test Pit 2

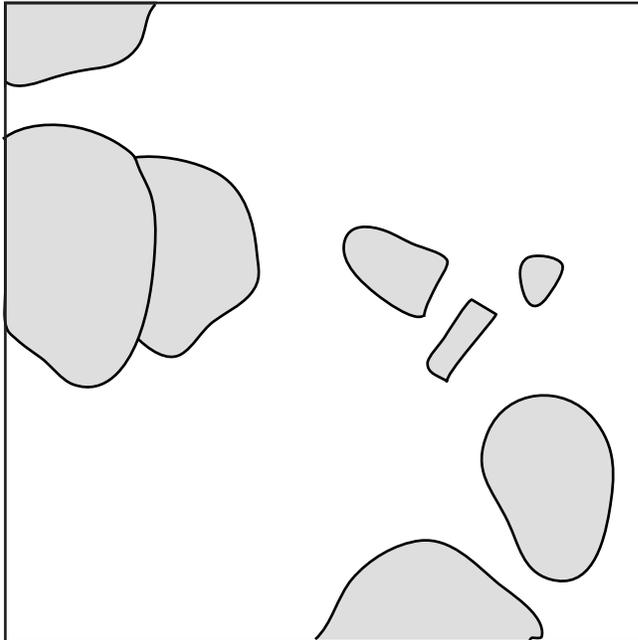
June 2nd 2012

N48° 39.247' E88° 21.618'

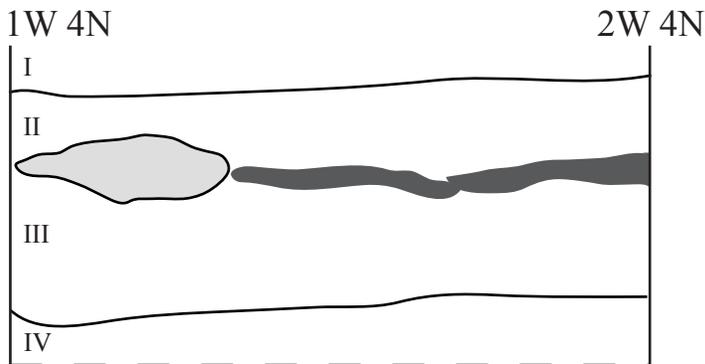
Elevation: 2128m



2W 4N



- Rock
- Charcoal and bone
- Calcined bone
- I Turf
- II Light brown sand
- III Brown soil, no charcoal
- IV Yellow sandy silt



Katelyn took quite a few rocks out of the upper 5-20cm. In the northern part of the square she has been finding calcined bone, and below 25cm some unburned bone (a phalange and split long bon), charcoal also.

Peat Valley-2, Biluut 3.4, Test Pit 3

June 2nd 2012

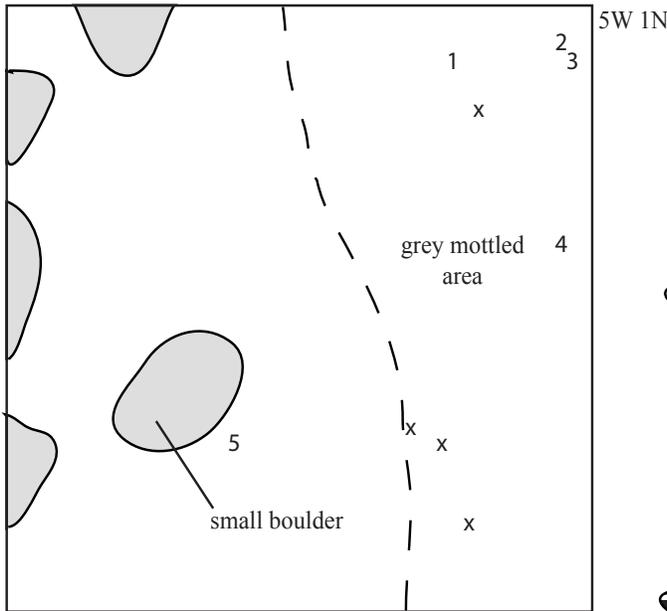
N48° 39.247' E88° 21.618'

Elevation: 2128m



TU-3 SW IN

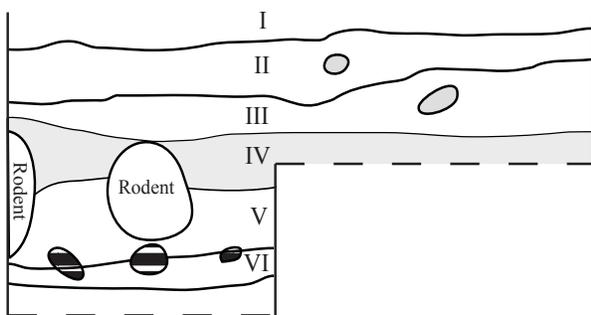
Meg Tracy began to locate artifacts at approximately 17 cm bs in light tan silty soil with lots of small-med angular shale gravels. (12-24 cm bs). (0-5 cm bs) surface sediment is white tan fine silt, vegetation consists of short grasses. (5-12 cm bs) is light tan silty sand with alluvial gravels and small cobbles. Soil is moderately compact. (24- cm bs) is a medium brown loosely compact loamy silt. Majority of artifacts so far are from 23-26 cm bs. The cultural level also has amorphous grey staining, primarily on the east half of the test unit. Charcoal flecks were present throughout the unit from approximately 17 to 26 cm bs and a few pieces of FCR were present as well.



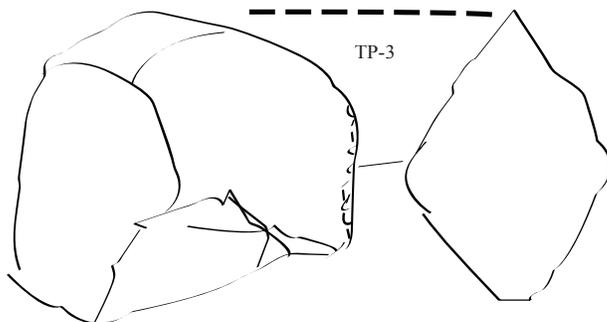
- Rock
- x FCR
- 1 Quartzite hammerstone 24cm bs
- 2 Green chert chopper/hand axe 23 cmbs
- 3 White/green quartzite flake (tertiary) 23cm bs
- 4 Flake 22cm bs
- 5 Flake 23 cm bc

5W 0N

4W 0N



- Small cobble
- I Loose white/tan silt
- II Moderately compact light tan sand with alluvial gravels and cobbles
- III Moderately compact tan sand with tabular shale gravels
- IV Loosely compact light brown loamy silt with mottled grey staining (cultural level)
- V Loosely compact yellow-brown alluvial sand with abundant gravels
- VI Loosely compact yellow-orange alluvial sand with smaller gravels



Peat Valley-2, Biluut 3.4
June 2nd 2012
N48° 39.247', E88° 21.618'
Elevation: 2128m

Test Pit 4 (50x50 cm) Turf level is 1-2 cm thick with grass and loose silt. Level II is 8 cm thick level of light brown sand. No cultural material. Level III is composed of cobbles and a single stone flake of green stone. Sterile level at 18 cm below surface.

Test Pit 5 (50x50 cm) Level I is about 10 cm deep and is a tan, silty soil. Level II is composed of small cobbles in darker silty soil with some charcoal flecks and particles. Level II is 4-5 cm thick, resting on sterile sandy gravel. No fire-cracked rock. Sterile gravel at 15-17 cm below surface.

Test Pit 6 (Enclosure 1) – Level I is 2 cm thick with turf and humus soil. Level II runs 2-12 cm below surface and is a sandy, pebbly, tan soil with small amounts of charcoal. Level III runs 12-18 cm below surface and is a brown soil with silt and few pebbles and charcoal pieces.

Peat Valley-2A
Biluut 3.4A
June 4, 2012
Burial Feature, Map 3

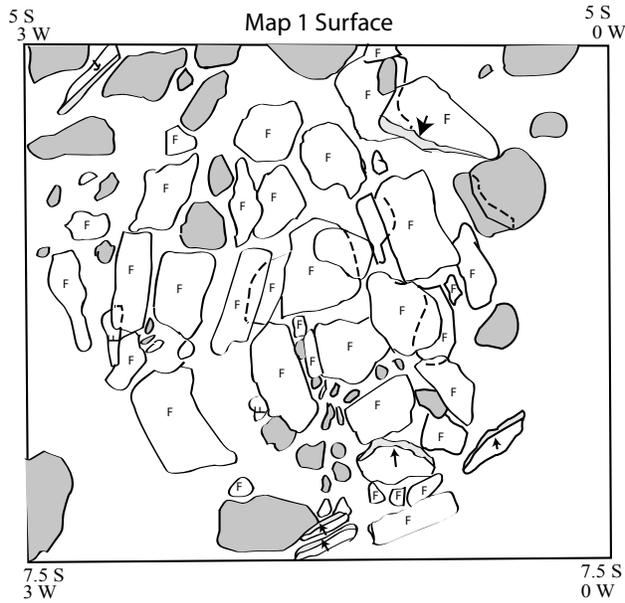
*Soil matrix is medium brown, silty sand with lots of small gravel and charcoal flecks. Modeled with light yellow/brown silt with little to no gravel. Most cranial bones are articulated, others are not. Few intact bones, few phalanges, and 3 rib bones. Few facial bones and possible signs of mandible, larger gravel, and charcoal found under cranium, and large gravel found in immediate area of cranium.

This feature appeared at the surface as a circular pavement 2.5 m in diameter made of flat slabs of metagreywacke. It was positioned in the middle of the draw between the gravel terrace front to the east and an outcrop of the same rock constricting Peat Valley Creek, which here is only 20-30 m wide. The north side of the burial pavement touches the boulder alignment running E-W through the site. The first layer of rocks was loosely paved, while the second fitted tightly together (more closely than the map shows). Upon removing all but the outer ring rocks, we found charcoal-stained soil in the northern part of the square. Chunks were sampled. Brown soil was found in the west and southern sectors and light tan soil in the eastern/southeastern sector. As excavation continued, brown silty soil became more gravelly, appearing to be in situ. The tan soil was subsoil brought to the surface from the burial pit. At 40cm B.S., bone flakes were encountered in tan soil, and when the bone area was isolated, its area was only 30x20 cm, apparently an infant burial – if human at all.
Date: 6480 ± 40 B.P. (Beta 334577). Charcoal.



Fig. 129. Peat Valley 2A. (Biluut 3.4). A boulder pavement burial. View NE.

**Peat Valley-2A
Biluut 3.4A
June 4, 2012**



Peat Valley 2A (Biluut 3.4A) Surface

Soil Patterns below 2nd level rocks at 20-25 cm below surface

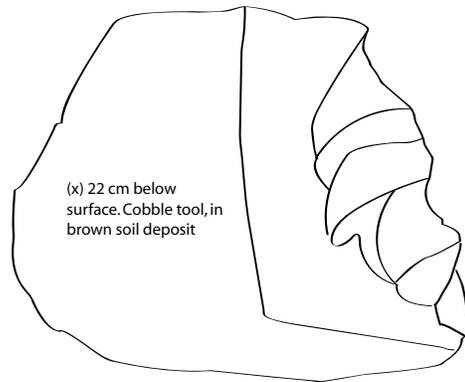
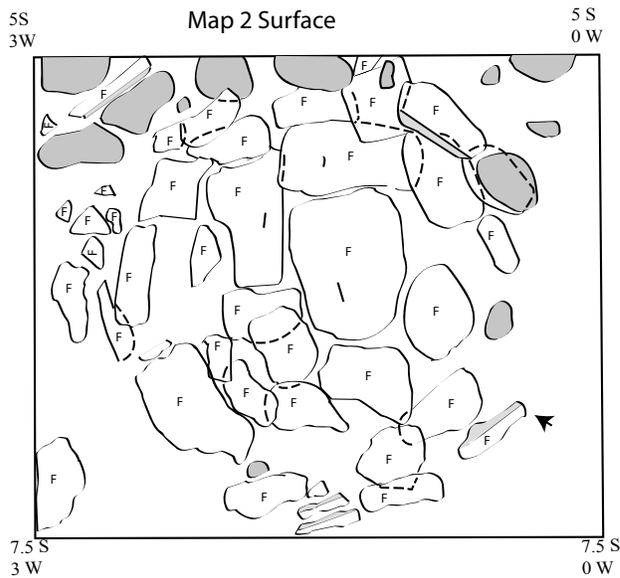
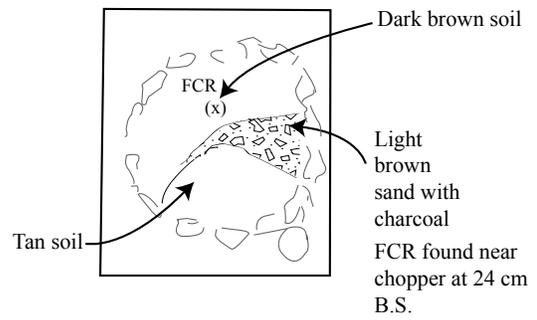
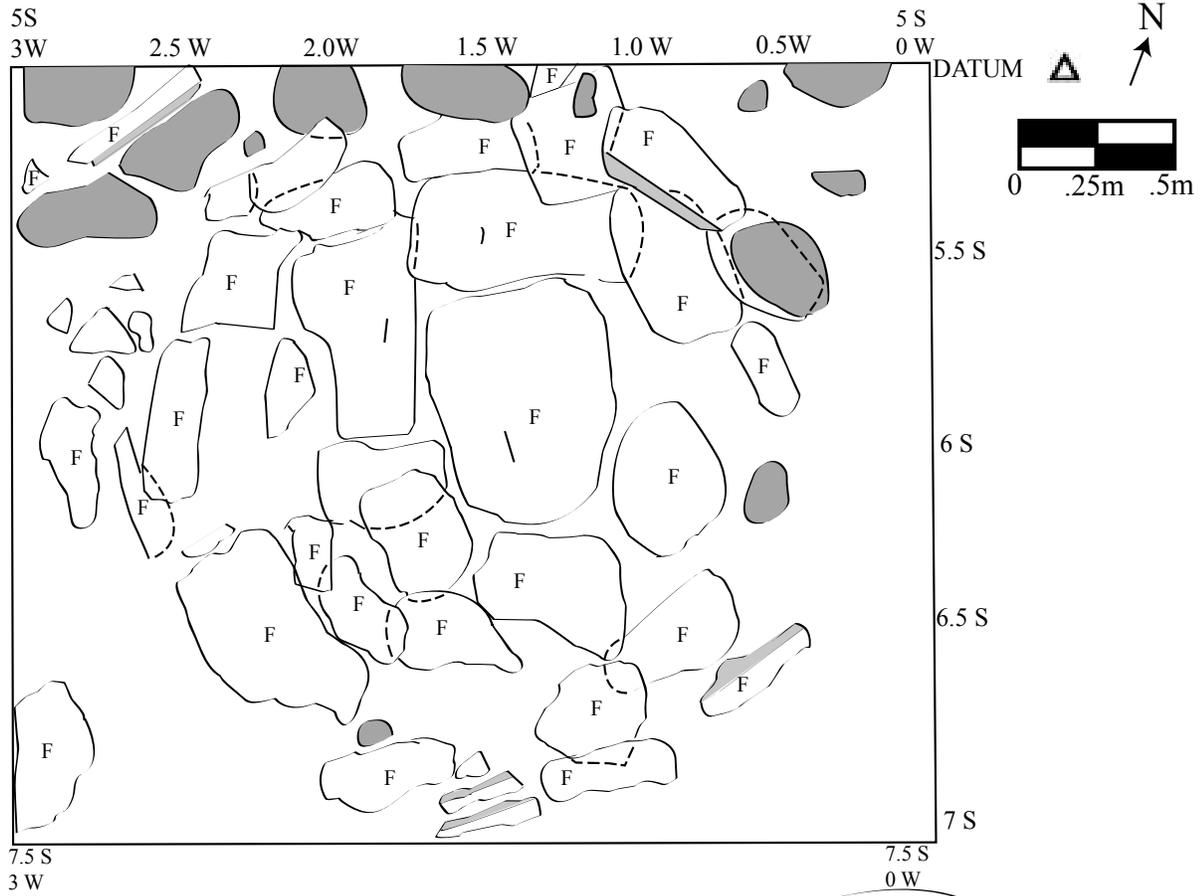
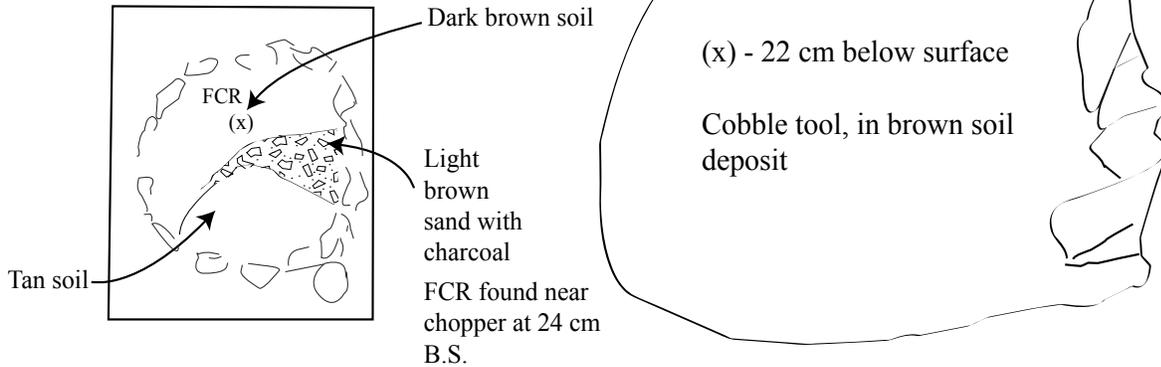


Fig. 130. Peat Valley 2A (Biluut 3.4A). Surface.

Peat Valley-2A, Biluut 3.4A
 Feature 1 - 2nd layer rocks
 Map 2



Soil Patterns below 2nd level rocks at 20-25 cm below surface



Peat Valley-2A Biluut 3.4A

June 4, 2012

Burial Feature, Map 3

3W

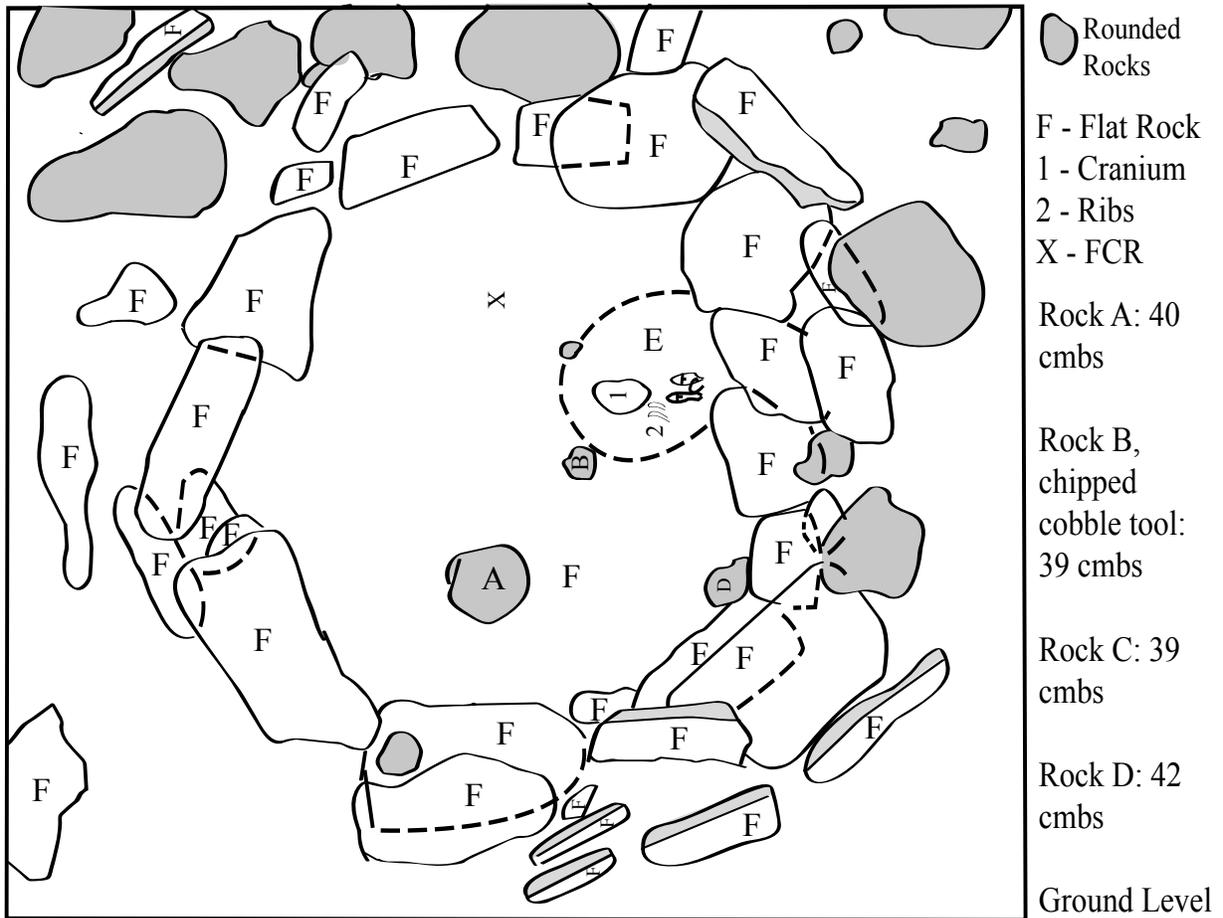
5S

Map 1 Surface

N

0 W

5 S



3 W

7.5 S

Pointed in direction of slant

0 W

7.5 S

*Preservation is poor – bones are extremely fragile. Site seems disturbed by rodent activity. Lighter soil matrix may be the result of bio turbation.



Fig. 131. Infant skeletal remains from PV-2A burial.

Peat Valley-3 (Biluut 3.5) GPS N48° 38.771' E88° 21.898', Elev: 2062m

On a small terrace spur on SW side of Peat Valley stream opposite spring house herder cottage on NE side of the stream. Two rectangular boulder-ringed structures about 5 m on each 4 sides, with an oval interior feature positioned at the north end of each structure. Border rocks are placed about 1 m apart and buried end-on. Excavation of the northernmost structure, S1, revealed the oval feature (Fea.1) containing slabs and cobbles, but no bone or artifacts. A 12-cm deep charcoal and burned bone hearth (Fea.2) was found a few centimeters south of the oval rock feature and large samples were obtained. Function may have been a ritual sacrifice site with burnt offerings, somewhat like a modern ovoo.

Finds: Charcoal, Bone

Date: 3470 ±30 B.D. (Beta 334579). Charcoal.



Fig. 132. PV-3, (Biluut 3.5) Structure 1 N at top.

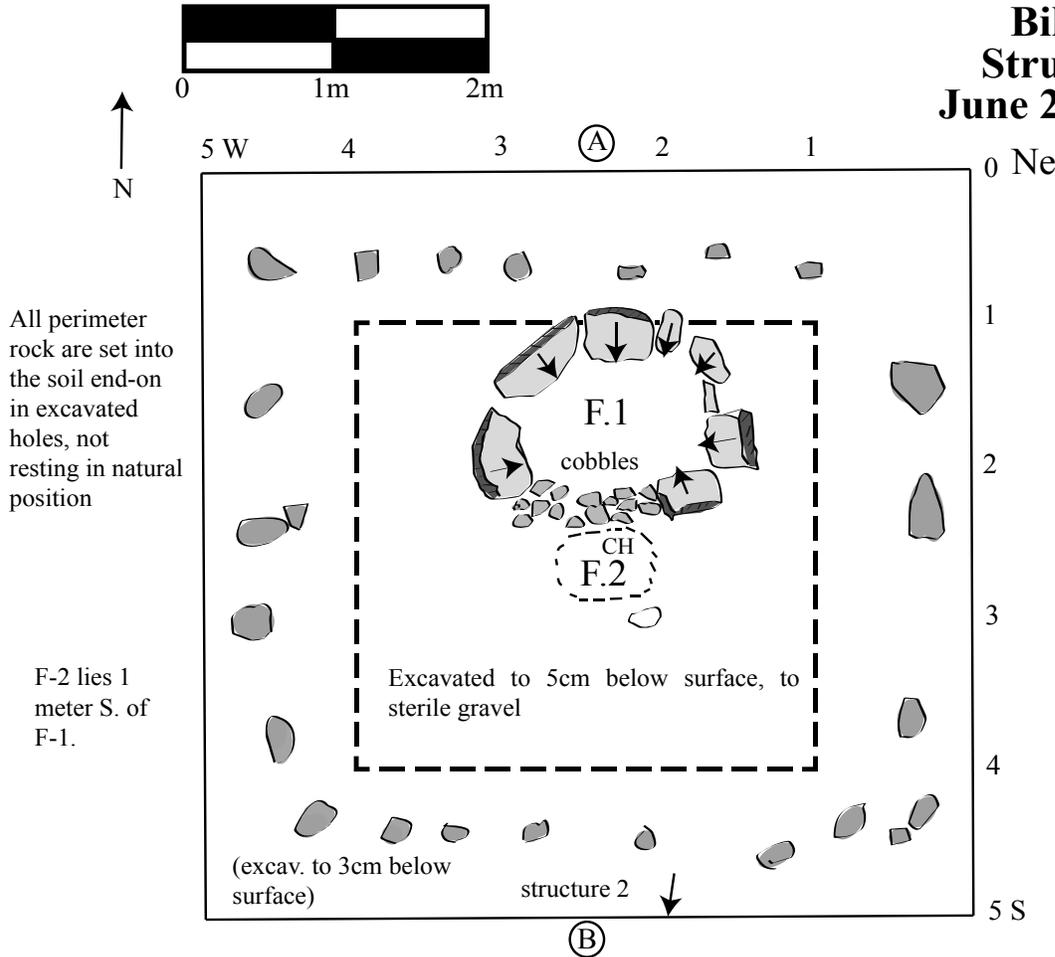


Fig. 133. Peat Valley-3, (Biluut 3.5-1) 5-1 before excavation. View N.



Fig. 134. Peat Valley-3, (Biluut 3.5-1) 5-1 oval pavement with stones removed and charcoal/bone feature excavated N.

**Peat Valley-3
Biluut 3.5
Structure 1
June 29, 2012**



- FEA.1 no charcoal or FCR or bone. Upper cobbles + a few slabs on sterile soil
- FEA.2 12 cm. deep pit filled with charcoal and burned animal bone. Mostly small/medium mammal (esp. sheep/goat) some bird. Excav. 12 cm into sterile soil. Vertical walls. One time use. 50x40 cm.
- F2: Charcoal stain 2-5 cm. from surface, then concentrated charcoal powder 5-8cm deep from surface, -then chunks of charcoal and burned but not calcined, bones to bottom of hearth. Baked soil all around edges of hearth and redenned earth ring around upper pit. No sand or cobbles at all in hearth. Animal bones mixed with charred wood followed by char coals buried with sand.

Profile view (A)-(B) to East in struct. 1

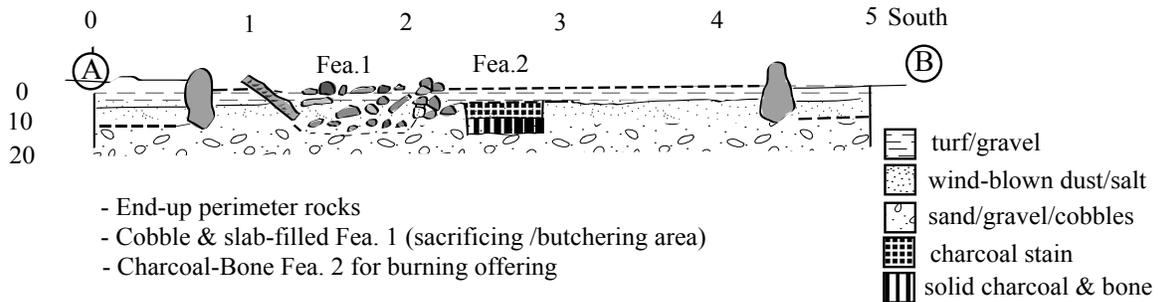


Fig. 135. PV-3 Structure 1 Map and Stratigraphy Profile.

Peat Valley North (GPS N48° 39.949' E88° 21.561')

North end of Peat Valley, in a small N-S plateau between Biluut 3 and 4. Two standing stones of slate, both broken off just above their bases, with broken parts lying in the enclosure. Standing stones inside a rectangular box made horizontal of slate slabs that incline outward. The largest standing stone was at west side of the box and the smaller to the east. Flat sides faced north and south. A circular boulder hearth (Fea.3) lies 50 cm and south of enclosure. A large, active marmot (?) hole exists inside the south enclosure wall and squirrel holes were encountered in the NE corner of the enclosure. After clearing the surface vegetation, we removed the soil to see if subsurface slabs were present but found the enclosure area filled with a mixture of sandy soil and cobbles. A horse tooth turned up just below the turf outside the enclosure in the NW corner of the excavation – probably related to the feature since sterile soil is close to the surface here. A patchy area of ash was found outside the western side of the northern wall, but no charcoal or other finds were made here. The enclosure slabs had been purposefully inclined outward. Nothing was found in the cobble soil inside the enclosure, and sterile soil began circa 25-30 cm B.S. here. An unusual feature appeared outside the west end of the south wall. Unlike the rest of the enclosure, here there was a cluster of flat slabs, some inclined upwards toward the vertical slab wall, and others flat under the turf. Beneath these slabs were two thin, upright slabs and between them, charcoal-stained earth. Below we found 10-15 cm of soil with charcoal and calcined bone, and around the edges of this small boxed-in hearth the earth was fire-hardened. The hearth rested directly on sterile subsoil and extended out toward the south only about 30 cm. The heart contained a small amount of calcined small mammal bone and seems to have been used only once. Excavation of the boulder ring hearth (Feature 3) a meter to the south produced small amount of calcined small mammal bone, but no charcoal. This hearth was located in line with the box hearth, the #2 (western, largest) standing stone, and the balbal line. I doubt that the ring hearth was part of the enclosure ritual because it seems unlikely that two fires would have been places so close together – less than a meter apart. Probably the circle hearth predates the enclosure and it may relate to several similar ring hearths nearby to the south (a string of 3 adjacent rings) and to khirigsuurs and mounds on the terrace to the east. The alignment suggests the largest standing stone #2, the box hearth, and the balbals are associated with ceremonies honoring a particular person and that the smaller stone was for a second, related individual, perhaps accompanied by Fea. 2 ashy deposit at NW corner of enclosure, mirroring the F.1 hearth at S.W.

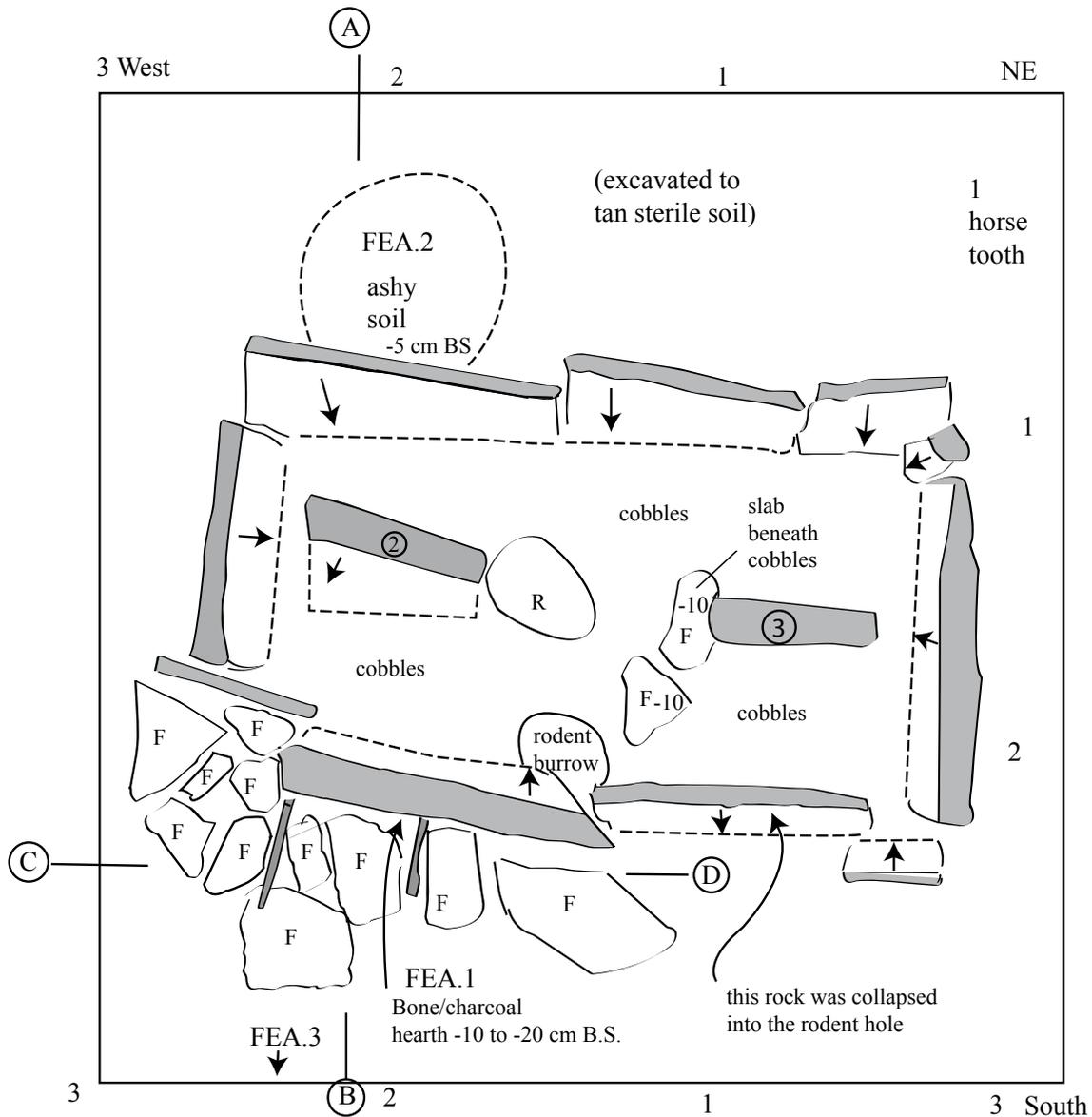
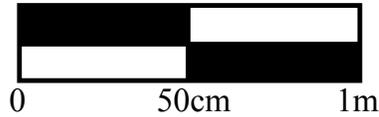
Finds: Horse or bovid tooth, charcoal, calcined bone.

Date: 1270 ± 30 (Beta 334575). Charcoal.

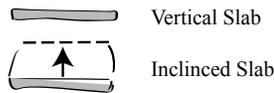


Fig. 136. PV North standing stone/slab feature map.

**Peat Valley North
Biluut 3.6
July 4, 2012**



- 1. horse or bovid tooth
- 2. Stelae #1: 20cm high at break
- 3. Stelae #2: 60cm high at break



*Slab border rocks circa 5-10cm above ground surface.

Feature 1 bone and charcoal hearth -10 to -20 cm below surface; found between two thin vertical slabs perpendicular to the south enclosure slab.

Highly-fired earth, covered with slabs.

Feature 2 ashy soil circa -5cm. B.S. at NW outside corner of enclosure.

Feature 3 hearth ring: 50 cm south of 35 2W



Fig. 137. Peat Valley North (Biluut 3.6) slab feature with broken standing stones after surface cleaning.



Fig. 138. Peat Valley North, Biluut 3.6. Standing stone feature with two broken slab standing stones and a ring hearth to the south. View N.



Fig.139. Backfilling Peat Valley North, (Biluut 5.3). View N.

Biluut 5.1 Arrowhead Mound (GPS N48° 39.722', E88° 21.960', Elevation: 2231m)

On the very crest of the Hogback we call Biluut 5, next to Broken Mountain, is a small mound only 2x2.5 m in diameter with a partial boulder ring 2 m to the north of the mound. Dan Cole found the site while surveying and recovered a medieval iron arrowhead lying on top of one of the slabs in the mound. We excavated the mound and ring and found a shallow deposit of boulders and slabs in the mound, which also contained a marmot burrow. A fragment of a large mammal long bone was found under a rock just north of the marmot burrow. Some charcoal and a bone fragment came from a hearth in the middle of the ring feature.

Finds: Bone, Charcoal, iron arrowhead

Date: 180 ±30 B.P. (Beta 334569). Feature 1 hearth circle charcoal. Recent contamination likely.



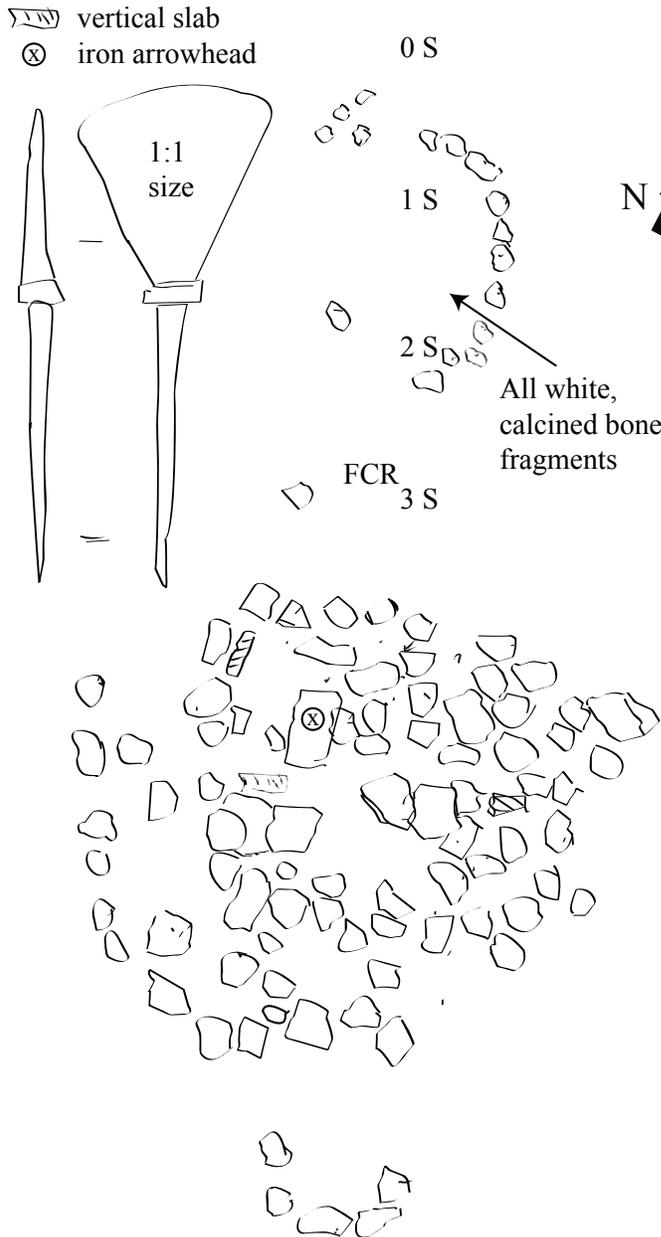
Fig. 140. Biluut 5.1 Arrowhead Mound excavated to first layer. View S.



Fig. 141. Arrowhead Mound before excavation. Arrowhead was on rock slab at left end of tape (50cm extended). View NE.

Surface Rock Map

Biluut 5.1
 Arrowhead Mound
 Surface Rocks
 June 6th 2012
 N48° 39.722', E88° 21.959'
 Elevation: 2236m



This is a rough sketch of the mound Dan Cole found at the top of Biluut 5 on a high hill ridge immediately west of Broken Mountain. The site has a small 3x3 stone mound and a partial cobble ring 2m to the north. "X" marks the spot on top of a surface slab where Dan found an iron arrow point of Medieval Period type, right out in the open air.

We returned to assess the site and photograph it but only had an hour to sketch the surface rocks and to scout the area with the metal detector. There were no signals of buried metal. A few vertical slabs, deeply set, were protruding from the earth and grass was growing between the rocks. All indications point toward a multi-layered mound burial and not just a surface cairn.

I excavated a test pit in the center of the partial ring to see if charcoal or bone showed, but nothing appeared in the upper 10 cm in a 20x20 cm area.

*We returned & excavated this site on 27 June.

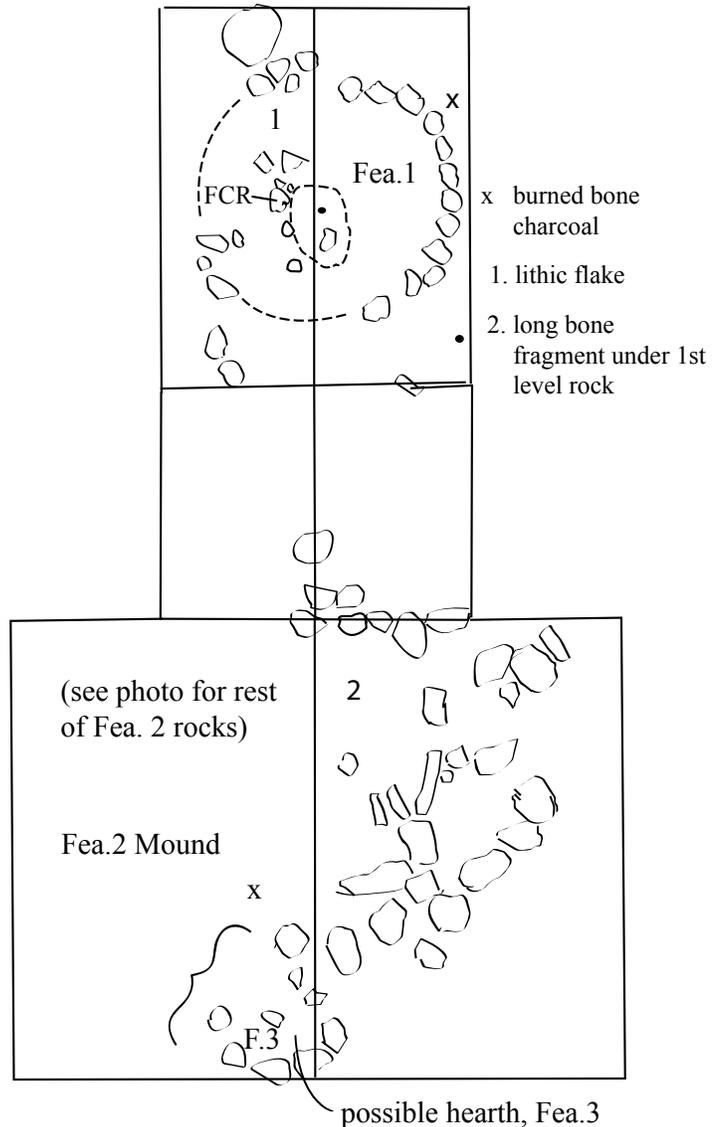
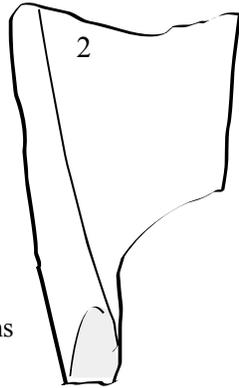
*There is an amazing view around all of Western Khoton Nuur from here.

This site is at the crest of a 300-400 m long ridge that connects to the western-most peak of Broken Mountain. North of the mound are 3-4 ancient petroglyphs (yak? bulls?) and lots of modern graffiti. The top of the ridge is only 20-30 m wide and is covered with glacial gravel and fine wind-blown soil.

Fig. 142. Biluut 5.1 Arrowhead mound.

**Arrowhead Mound Excavation
Biluut 5.1
June 27, 2012**

No rodent marks on this bone, which seems to have an axe or knife cut at the bottom.



We returned to the Arrowhead site to excavate the mound and circular feature on 27 June. After cleaning and photography, we excavated both to sterile soil. The circular mound was missing its western stones but had some FCR in the center, where we recovered some charcoal and a bit of bone. The mound had only two layers of stone and nothing more was found on the surface than the iron arrowhead. There was no structure to the mound and a marmot had burrowed into its northern side. Just north of the burrow we found a split long bone beneath one of the top rocks. Nothing else was found, and sterile ground was reached ca. 15-20 cm. below surface.

Fig. 143. Biluut 5.1 Arrowhead mound excavation map.

Biluut 5.3 Quiver Site
June 28, 2012

**Biluut 5 South Quiver Site (GPS
N48° 39.120', E88° 22.131')**

On way up to Biluut 5 Hill Crest site is a slate standing stone inside a box of vertical slabs, with a second smaller slab standing outside the east vertical box element. This stone has a rounded top and sloping shoulders, vaguely resembling a human head and shoulders. No marks on the stones. Several pieces of red pottery were found outside the south side of the box.

Finds: Pottery, Birchbark Quiver, Iron Points

Date: 1340 ±30 B.P. (Beta-334578). Wood/Bark.



Fig. 144. Biluut 5.3 South. Quiver Site standing stone mound.



Fig. 145 Three arrowheads and two iron quiver attachment rings found at Quiver Site (Photo by Dave Edwards).



Fig. 146. Quiver site. (Biluut 5.3).

Biluut 5.3
 Standing Stone Quiver Site
 June 28, 2012

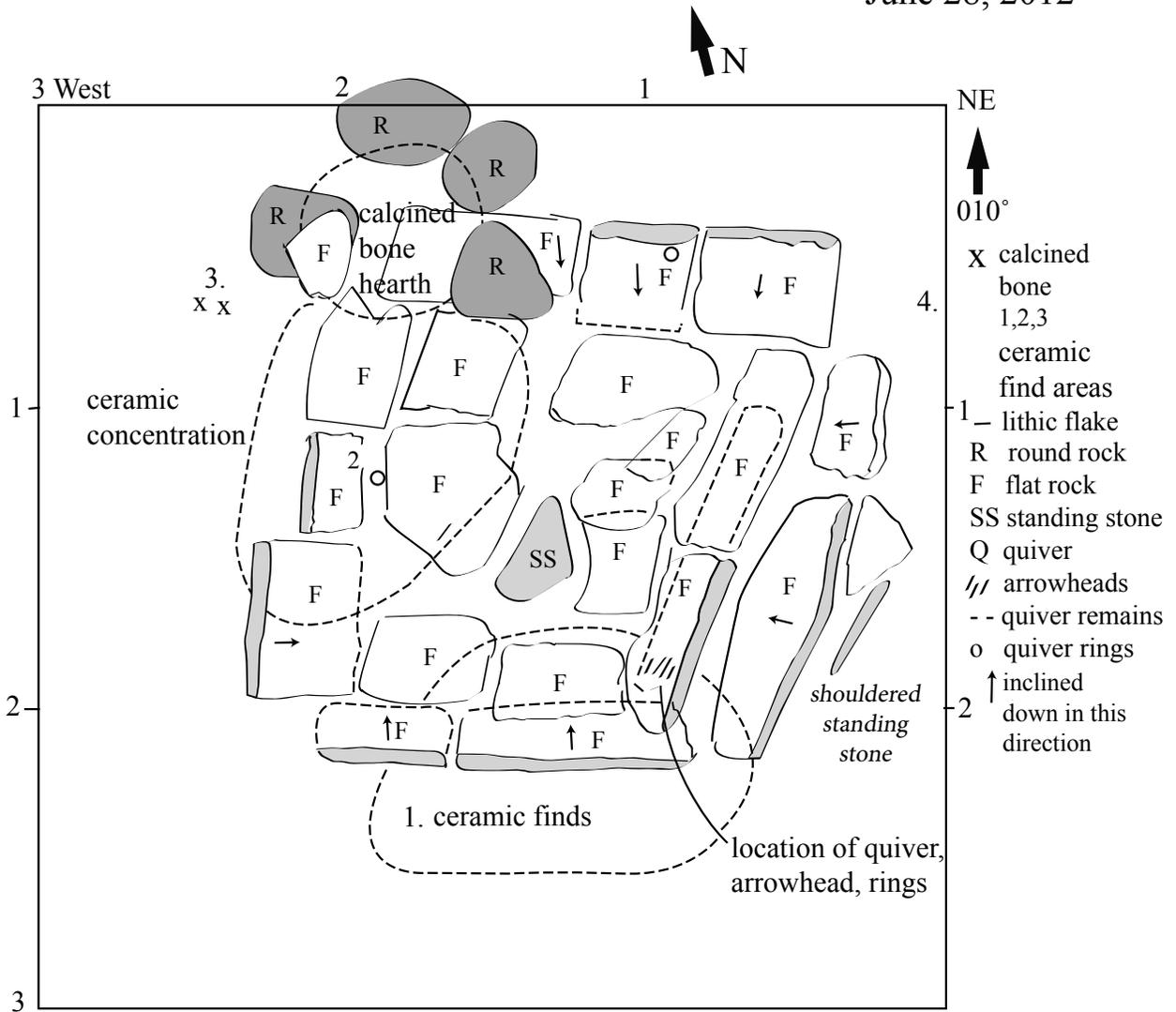


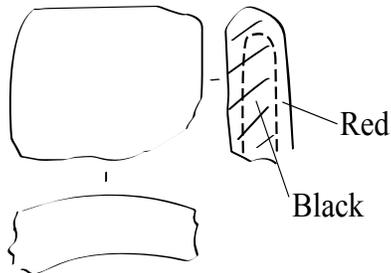
Fig. 147. Biluut 5.3 South Quiver Site Map.



Fig. 148 Quiver site. Remains of birch bark quiver with iron attachment rings and three iron arrowheads. View N to left.

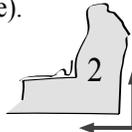
Bilut 5.3 Quiver Site Standing Stone

1. Ceramic fragments collected from the surface (45-50 fragments)



Sand-tempered, red exterior surface, black-fired interior of sherds. High friability, small pieces, no exterior decoration

2. Second ceramic distribution with sherd mixed in with brown soil and cobbles. Several ceramic bottom and rim sherds; one sherd with organic carbonized materials present (for food data and carbon-14 sample).



3. Small calcined bone fragments (bird or small mammal) in and under large boulders which rested in part on the enclosure slabs

4. Tan lithic utilized flake



Fig.150. Ceramics from Quiver site.

5. **Quiver of birchbark with three iron arrowheads:**

Iron tips: North end 65 cm from east wall, 1m from north. South end 107 cm from south wall, 1m from east wall

Quiver: 98 cm from arrow tips to North end of quiver/bark

Iron ring fragment: 170 cm from north wall, 87 cm from east wall. Found directly beneath slabs east of stela. Orientation 030°.

Fig.149. Bilut 5.3, standing stone quiver site artifact descriptions.

East Bay-4 Square Burial (GPS N 48° 38.170' E 88° 23.715', Elevation: 2095 m)

This site is located on a prominent terrace on the western shore of “East Bay” on the south side of the road between Sirgal and Biluut, only 50 meters from the shore. Nine square burials about 5x5 m in size, oriented nearly N/S - E/W. Each has a heavier boulder perimeter and smaller cobblestone covering the entire inner area. Most have upright or large stones at the corners, as in khirigsuurs. Some large slabs are visible, perhaps indicating looting. A hearth ring with one stone displaced outside the circle lies north of the mounds to the SW (See sketch map #). Lithic flakes and a core fragment were found on the surface and during the burial excavation, but a test pit south of Burial 4 (B4) was negative. We chose B4 to excavate because it was intact and seemed typical of the entire group of nine mounds present. A single hearth circle seems like a later khirigsuur addition to the site. The B4 feature is circa 5x5 meters, square, with larger rocks at the corners and the space inside the square border paved with cobbles. A single large boulder sat in the center of the mound and slabs of slate/greywacke were showing on the surface in the center and southern area of the mound. Otherwise, the surface was filled with cobbles and small boulders. As we cleared the surface, we found the area inside the perimeter filled with larger rocks and slabs mixed with clean, sandy gravel, probably excavated from the burial pit that we found under large slate slabs in the center of the mound. Soon, an oval pit emerged, followed by vertical slabs defining the burial coffin in the sandy soil. Inside, we found a body, probably female, oriented head towards 295°. The body was wrapped in felt and garments that seem to have included furs and textiles, but these materials were too degraded to identify in the field. The burial was placed on the left side, with arms on the north side of the body and legs slightly flexed, but extended. No artifacts or food remains were found anywhere in the mound. Eight other nearly identical mounds exist at this site. It seems likely that all of these burials are from a single period, as all are found in one place, organized in neat rows. We have seen no other sites like this – with square mounds filled with cobbles and with prominent corner stones. The person buried had excellent teeth, quite ground down, and was missing only one molar. We believe it was a woman, relatively elderly, and it appears she had a pronounced S-curve in her spine. There were no other obvious injuries. We believe the burial may be related to the “Silver Forest” (Mongun Taiga) culture – a Bronze Age culture known in Eastern Mongolia with square burials and no grave goods. Samples were collected for dating and analysis of the organic remains found under the body, which probably contributed to the poor preservation of the left side of the body by retaining moisture. The body length from skull to toes was 157 cm. There is a lithic culture component at the site, but we were not able to identify a site concentration. Interesting site. Could date to Mongun Taiga according to Tserendagva’s comment to Jagaa last year and confirmed by Professor Turbat. I had not inspected it earlier, assuming the burials were small khirigsuurs. They do have some khirigsuur features, like square shape, cobble-filled interior, slab grave covers. But differences include absence of a fence and plaza and no hearth rings.

Find: Skeleton, unrelated lithics on the terrace near the burials

Date: 3080 ±30 B.P (Beta-334571). Charcoal.

**East Bay-4
Square Burial Cemetery
June 23rd 2012**

*Dan Cole surveyed with GPS in 2011. Dave Edwards photographed all features on 6/24/13.

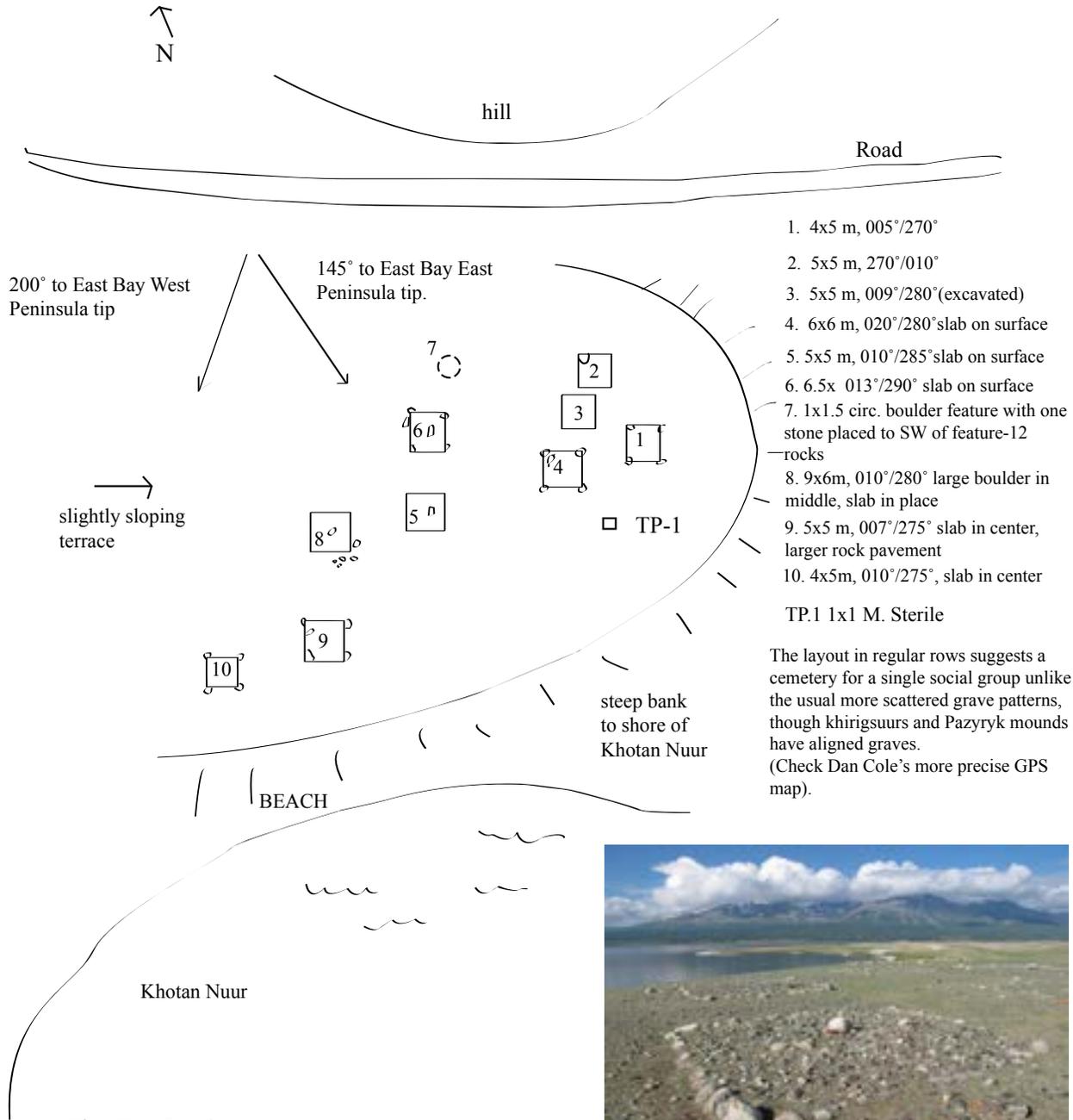


Fig. 152. East Bay 4. Mound burial 3. View S.

Fig. 151. East Bay-4 Map.



Fig. 153. East Bay 4, Burial 4 fully excavated with burial box and skeleton exposed. Photo: Dave Edwards and Taylor Malone.



Fig. 154. East Bay 4, Mound 3, showing slab covering beneath surface rocks. View NW.

East Bay-4
Mound Square Burials
Upper Level Finds
June 23, 2012

GPS 111
N 48° 38.170 min
E 88° 23.715 min
elv: 2095 m

- Burial Orientation 295°

- All elevation measures are from datum Δ at 30 cm above ground level

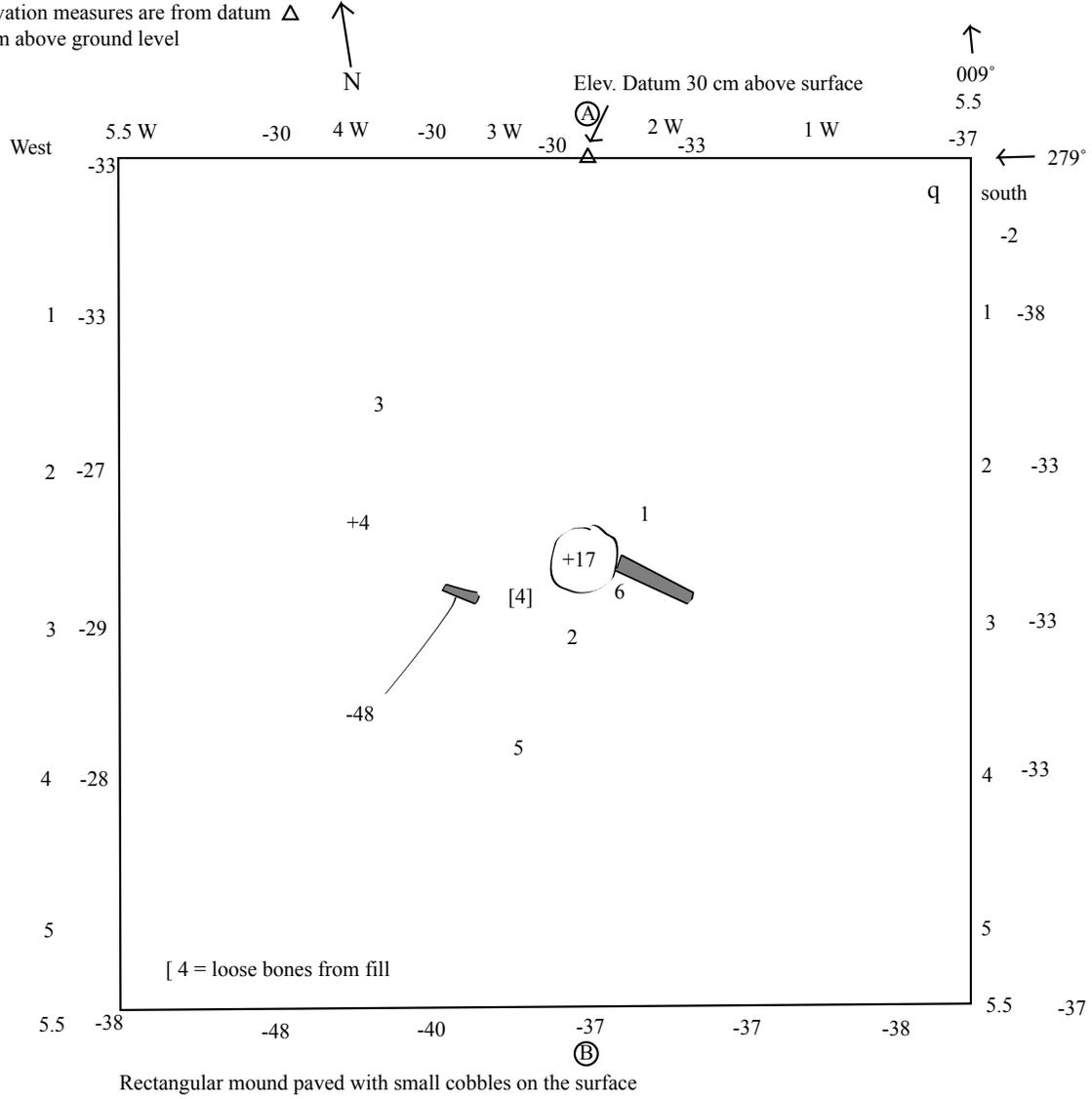


Fig. 155. Burial 4 Surface Map



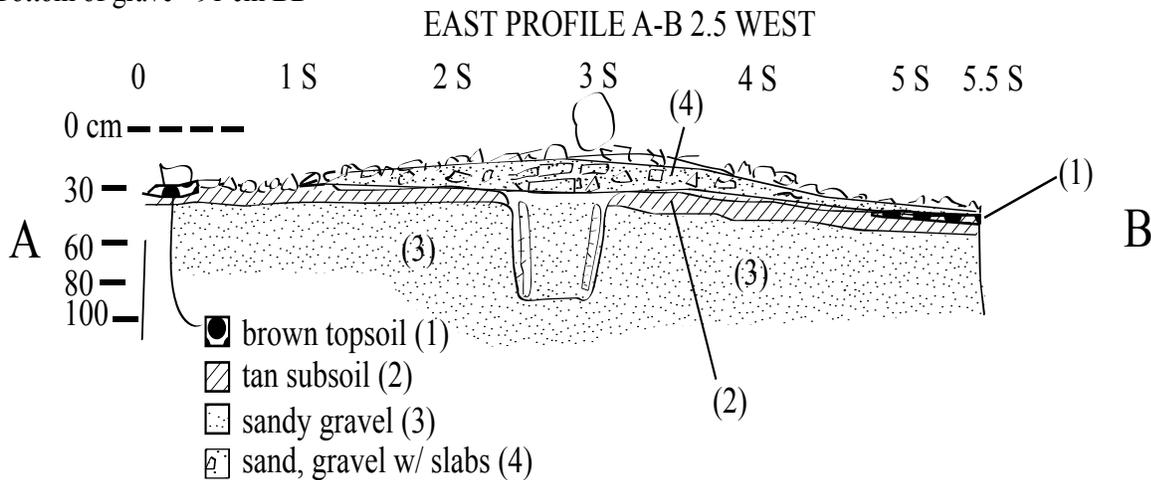
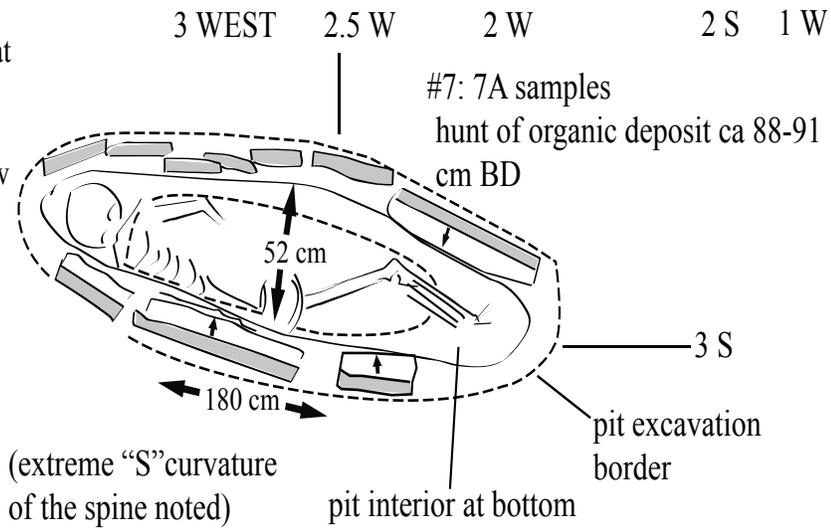
Fig. 156. East Bay 4. Mound 4 skeleton in place in burial with vertical slab retaining walls. Trowel points N. Tape at 50cm.



Fig. 157. East Bay 4. Mound 4 organic material found with skeleton.

East Bay-4
June 24, 2012

Burial Orientation: 295/300°
 Level measurements from datum
 30cm above ground surface.
 Burial Dimensions:
 180 cm pit length, 52 cm width (at
 widest)
 157 cm skull to toes
 Skull upper surface - 68 cm below
 datum (BD)
 Top of pelvis - 61 cm BD
 Bottom of pelvis - 85 cm BD
 Knees - 82 cm BD
 Ankle - 78 cm BD
 Right shoulder top - 68 cm BD
 Bottom of skull - 77 cm BD
 Top of skull - 62 cm BD
 Hands - 80 cm BD
 Deepest pit - 85 cm BD
 Width of pelvis - 29 cm
 Femur length - 46 cm
 Bottom of grave - 91 cm BD



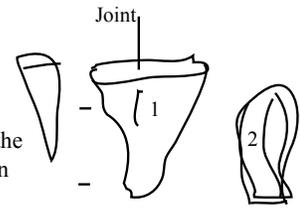
Construction: The burial pit was excavated 60 cm into the ground in the middle of an early square enclosure oriented 009°. The pit was oriented circa 295°. Sand from the pit was spread over the top of the tan subsoil (the original brown top soil must have been removed or not been present). Vertical slabs lined the burial pit. The body was placed inside on its left side, head partly up and facing NE. Burial pit was filled with sand and large slabs were placed over the pit and central part of the mound. No coffin lid was used. Large round rocks and more slabs were placed on the surface. Finally, smaller cobbles were used to cover the grave to ground level. Four larger stones were set into the corners of the grave square. A large single rock was placed on top of the center of the mound.

Fig. 158. Burial Map (top) and stratigraphy profile (bottom).

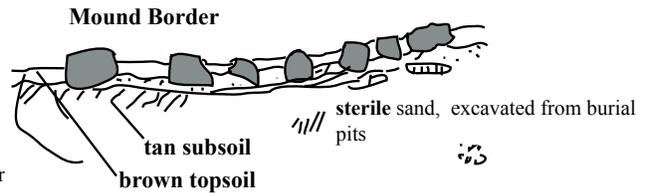
East Bay-4
June 24, 2012

1. Fragment of long bone joint surface under slab rock, -30 cm BD.
2. Tooth fragment in brown soil above central slabs, -29 cm BD.

After cleaning the surface and taking a photo (P-1), we removed all the loose stones from the top of the mound. There was a partial ring of large cobbles around the northern and western side of the mound center, and as we removed rocks a group of slate or blocky slabs on the southern side of the mound emerged. As we cleared toward the center large slate, slabs appeared there also, though it is uncertain if the southern slabs are part of this distribution. Under two slabs, we found a fragment of a joint surface (#1) and, nearby, a fragmented tooth. These were still at shallow depths (-30cm BD). Inside the square border rocks, the stratigraphy changed from natural condition of brown topsoil over tan subsoil. Inserted between these layers is a layer of clean sand that must have come from excavating the burial pit. This layer disappears as you go toward the center of the mound and its slabs and burial pit.



2nd over head photo of layer 2 central slabs.



3. Charcoal and long hone fragment under corner slab (NW corner slab in Photo 2), resting on tan sterile subsoil -42cm BD.

4. Loose bones from fill: 2 small knuckle bones; no specific provenance.

5. Lithic core fragment with utilized edge in upper tan subsoil -34cm BD.

6. Charcoal in grave box fill, -70cm BD.

7. Samples of organic material photographed by Dave Edwards with macro lens. These samples came from the chest area but similar materials were present throughout to 1-2cm thick organic material at the base of the burial. Some looked like fur, some textile, and some felt. The body was probably wrapped in these materials. No food bone detected. Organic material extended from neck to feet, but 2 cm at its thickest in the chest/pelvis area.

8. Lithic from edge of excavation.

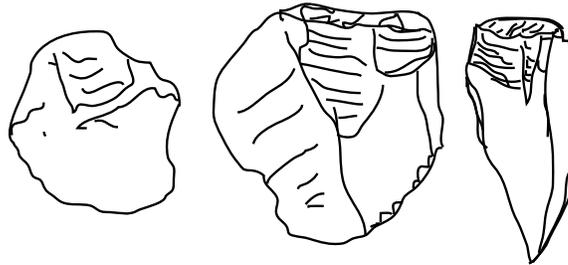


Fig. 159. East Bay-4, Mound bone fragment and artifact descriptions.

Aerial Photos

Photos By: Dave Edwards and Taylor Malone



Biluut 1-D Site Surface



Biluut 1-D Site 1st Level Rocks

Aerial Photos

Photos By: Dave Edwards and Taylor Malone



*Khuiteu Gol Delta-1 Site
1st Level rocks*



Khuiteu Gol Delta-1 Site



*Khuiteu Gol Delta-1 Site
Final Excavation*



*Khuiteu Gol Delta- 1 Site
Exhuberance!*



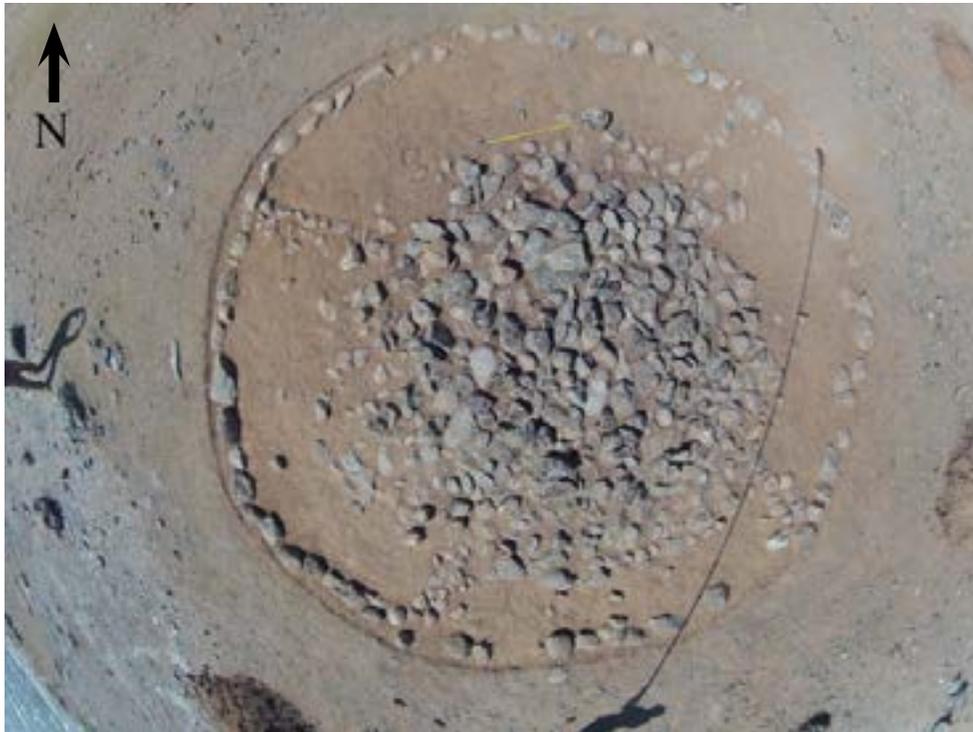
*Biluut 5-3 Quiver Site
1st Level Rocks*



*Biluut 5-3 Quiver Site
2nd Level Rocks*



*Khuiteu Gol Delta- 2 Site
Surface View*



*Khuiteu Gol Delta- 2 Site
1st Level Rocks Cleared*



*Khuiteu Gol Delta- 2 Site
Final Level With Burial Chamber*



*Khuiteu Gol Delta- 2 Site
Surface Removal*



*Khuiteu Gol Delta- 3 Site
Surface Cleaned*



*Khuiteu Gol Delta- 3 Site
2nd Level Rocks With Slabs*



*Khuiteu Gol Delta- 3 Site
3rd Level Rocks With Slabs*



*Khuiteu Gol Delta- 3 Site
Finals Excavation Base*



East Bay 4 Site
Feature 3
1st Level Rocks



East Bay 4 Site
Feature 3
2nd Level Rocks



*East Bay 4 Site
Feature 3
3rd Level rocks*



Team excavation on Feature 3 burial



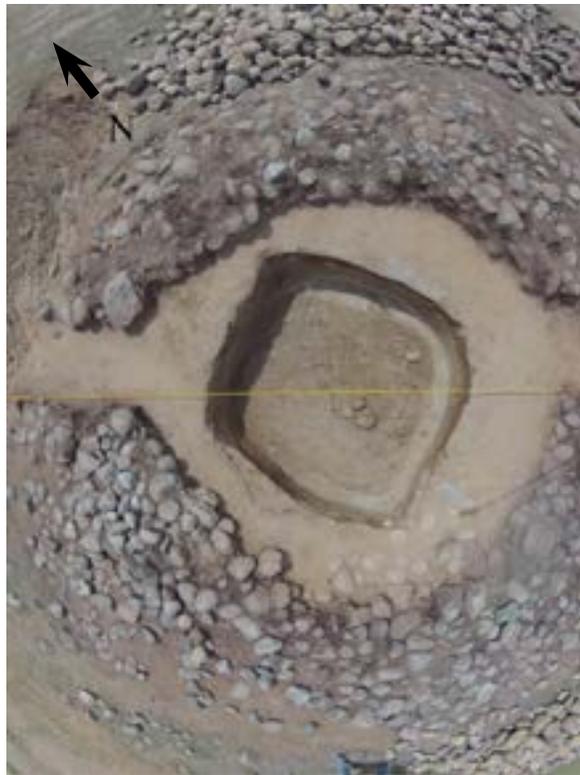
*Pazyryk Mound 2
Surface*



*Pazyryk Mound 2
1st Level Rocks and Satellite features*



*Pazyryk Mound 2
Upper Burial Pit*



*Pazyryk Mound 2
Burial Pit Above Horse*



*Pazyryk Mound 2
Upper Mountain Excavtion*



*Pazyryk Mound 2
Horse Skeleton*



*Pazyryk Mound 2
Horse Head*



*Pazyryk Mound 2
Horse head skull with bronze bell and iron bit*



*Khuiten Gol Turkic Enclosure
Overview to the North West*



*Khuiten Gol Turkic Enclosure
Overview to the North after Excavation*



*Khuiten Gol Turkic Enclosure
Overview to the South after Excavation*



*Khuiten Gol Turkic Enclosure
Overview Surface
View South*



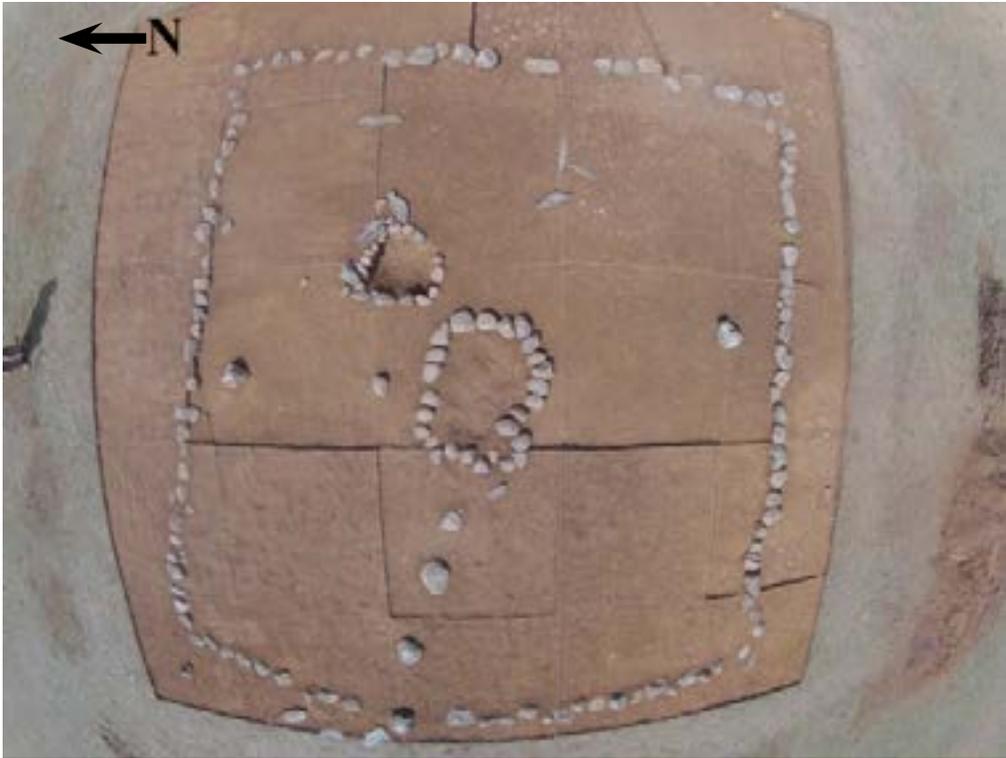
*Khuiten Gol Turkic Enclosure
Features 1 and 2*



*Khuiten Gol Turkic Enclosure
Features 1 and 2*



*KLS 35 Feature 1
Overview of Final Excavation*



KLS 35 Feature 2



*Peat Valley
Structure 1(top)
and
Structure 2 (bottom)*



*Peat Valley
Overview of North East*



*Peat Valley
Burial Biluut 2A
View North*



KLS 35 Feature 2



*Peat Valley
Structure 1 before excavation*



*Peat Valley
Structure 1 after excavation*



*Peat Valley
Excavating the charcoal pit*



Tsurkhai Mountain Mound



*Tsurkhai Mountain Mound
Level 1 mound rocks removed*



*Tsurkhai Mountain Mound
Excavating burial at the west edge of the mound*



*Tsurkhai Mountain Mound
View to the west*



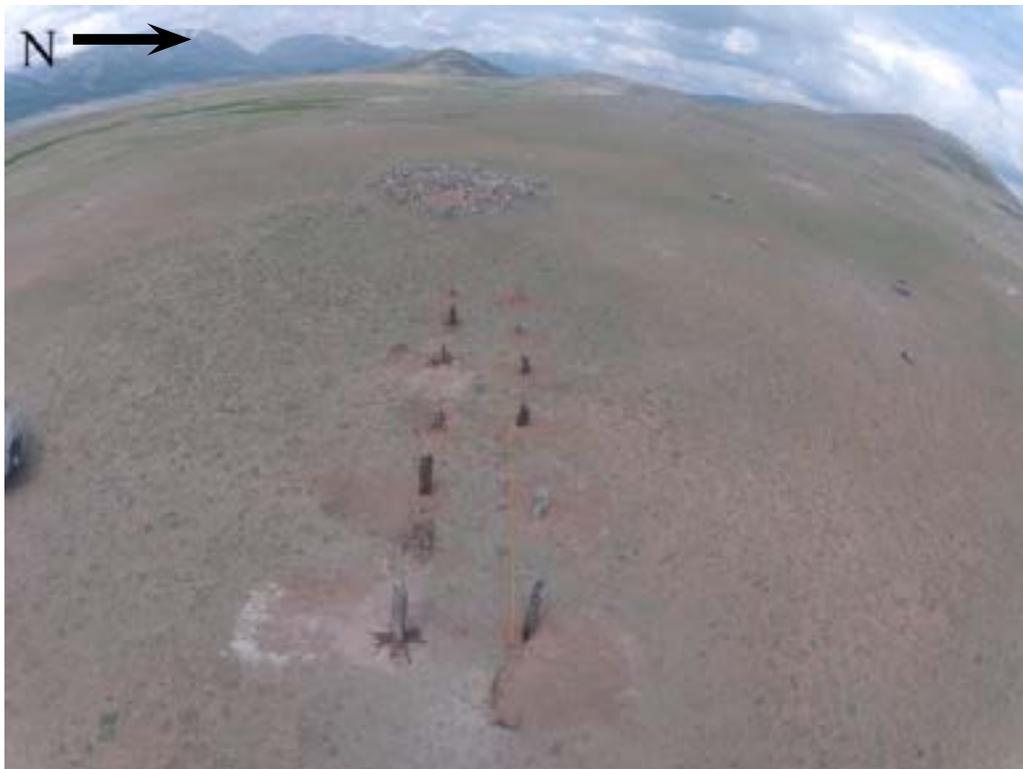
*Tsuurkhai Mountain Mound
Modern and Medieval*



*Tsuurkhai Mountain Mound
Burial exposed*



Zagestei Lake
Standing/Fallen Stones



Zagestei Lake
Standing/Fallen Stones after re-erection



*Zagestei Lake
Dave Edwards*



*Zagestei Lake
Tugso and Standing Stones*

Part IV

Smithsonian-ETSU Interim Report to Tsengel Governor

William W. Fitzhugh and Jamsranjav Bayarsaikhan

Following is a summary of archeological field work conducted by the American team in the Biluut Hills region of Khotan Nuur from 28 May until 5 June, 2012. Other sections of this report cover the research by Jean-Luc Houle's team on settlement surveys and The National Museum of Mongolia team directed by J. Bayarsaikhan and Egiimaa on burials and ritual sites.

Purpose of Research: This year's research was the second and final year of research on a project titled "Rock Art and Archaeology: Investigating Ritual Landscapes in the Mongolian Altai" funded principally by the U.S. National Endowment for the Humanities and the Smithsonian Institution in cooperation with the National Museum of Mongolia. The purpose of the project is to conduct research on the large complex of pictographic art found in the Biluut Hills region of Khotan Nuur, to develop an archaeological culture history for this region with special attention to geographic mapping and excavating monuments and ritual sites (deer stones, standing stones, mounds, burials, ovoos, etc), and to combine data from rock art and archaeology to better understand the ancient cultures of this region. Following is a summary of the activities of the 2012 fieldwork and brief accounts of the major sites and activities.

Site Reports

Peat Valley 1 (Biluut 3.3) GPS N48° 39.165', E88° 21.588' Excavation of this rectangular stone foundation (Structure 1) in 2011 was expanded in 2012 to include several meters around the outside of the structure. Several stone tools and flakes were recovered and two probable hearths were excavated. Discussion continues about the function of this unusual 7x7m building with its central hearth and four 'troughs' in each corner of the structure. Few lithic and bone finds and absence of a living floor make it unlikely as a house or domestic dwelling; rather, the small amount of burned bone in the central hearth suggests this structure was related to ritual activity. However, the function of the troughs lined with rock slabs and filled with small cobble rocks remains unclear, since they do not appear to be cooking or heating hearths. (Figures 1a, b)



Figure 1. 2012 Excavations at Peat Valley 1.

Figure 2. Peat Valley 1, Structure 1, restored. (Boulder burial mound S3 seen partially at right)

Ten meters east of Structure 1 we located and tested a large boulder 'tent ring' (Peat Valley 1A; Biluut 3.3A; GPS N48° 39.166', E88° 21.594') adjacent to a burial mound (Structure 3) that lies between S1 and S2. At the eastern end of the ring we found an ash deposit with bone fragments and modern wire, calcined bone, and other materials. Excavation showed the ash to be modern origin, from emptying a camp stove. Our east-west trench through the middle of the ring produced no other materials, and the age and function of this structure, and whether it is culturally associated with the S1 structure or the (later) burial mound remains unknown (Figure 3).



Figure 3, Peat Valley 1, S1 to left; S2 ring structure to right, S3 Turkic (?) burial mound in center.

Peat Valley 2 (Biluut 3.4) This site (Figure 4) is located at GPS N48° 39.247', E88° 21.618' 200 m north (upstream) of PV-1 on the east side of Peat Valley brook just before the PV gorge opens into the wider valley. The northern site area consists of several enclosures created by rings and alignments of large boulders. Test pits in the circular enclosures produced bone, charcoal, fire-cracked rock, and several possible flaked stone implements. These structures are interesting and need further investigation. Their use may relate to the hunting drive system consisting of regularly-spaced cairns on the upper terrace edge on the west side of the PV gorge.



Figure 4. Peat Valley 2 enclosure site test pits. View northeast.

Immediately south of PV-2A (Biluut 3.4A) in Area 2 we found a circular pavement of flat slabs (Figure 5). Beneath two layers of slabs was the skeleton of a poorly-preserved infant along with two flaked cobble tools and a charcoal sample.



Figure 5. PV-2 Areas A and B with circular pavement burial being excavated.

Figure 6. PV-2 burial exposed. View SE.

Aral Tolgoi 1 (GPS N48° 44.340', E88° 08.975') Surveys at the Aral Tolgoi, at the west end of Khoton Nuur revealed several interesting sites that have not received the attention given to the well-documented rock art at this location. Here we recorded three alignments created by a series of small rock mounds running across the top of the ridge of this prominent hill. The largest of these cairn systems is the westernmost and begins near the carving of the 'big bull' petroglyph on the south side of the hilltop. This system of 24 ovoo-like structures runs across the ridge in a N-S direction. Testing of Mound 15 produced charcoal and bits of burned small animal bone. The age may be Medieval to Recent and may represent a sequence of annual celebrations comparable to the Altai 12 Ovoo festivals held in recent times (Figure 7).



Figure 7. AT-1 boulder 'ovoos' viewed to S.

Aral Tolgoi 2 (GPS N48° 44.346', E88° 08.931') Similar but smaller than AT-1, this series of 12 small boulder or slab mounds (Figure 8) runs south-to north but at its northern end arcs toward the NW. This mound system is located at the northern end of the Aral Tolgoi ridge-top. Like AT-1 the mounds were built sequentially from south to north as the effects of cannibalizing southern mounds to build northern ones is evident. We tested Mound 9 and found charcoal and bits of burned and unburned animal bone. Many AT-1 and 2 mounds were built with a ring of boulders for the perimeter and filled in at the centers with slabs. The AT-2 mound sequence appears to have ceased when the line of cairns reached the steep northern hillside.



Figure 8. North end of Tolgoi-2 rock mound 'ovoo' system. View to SE.

Aral Tolgoi-3 (GPS N48° 44.513', E88° 08.965') This rock mound system is located 50 meters northwest of the small log cabin 'watch tower' at the highest point on Aral Tolgoi. It consists of a 40m N-S alignment of small cairns, pavement, and small rings with a large ovoo near its northern end, and a crossing E-W alignment of shorter length. The components of these two alignment features vary in age, some being quite recent and others, old. No testing was conducted at this location.

Milk River-1 Lithic site (GPS N48° 43.291', E88° 11.500') This site is located on a terrace remnant on the north side of the Milk River at few hundred meters from the road. A conspicuous boulder burial mound is found at the same location. From the eroding southern edge of the terrace we found a small collection of flint flakes and two microblade cores (Figure 9). This is one of the few Neolithic or early Bronze Age sites known from Khoton Nuur. Test pits in the bank immediately south of the boulder mound produced one core and some flakes.



Figure 9. A 'pencil' microblade core from Test Pit 1 at Milk River 1.

Khuiten Gol Delta-1 (GPS N48° 39.581', E88° 22.105') This large boulder pavement (Figure 10) is located near the southern mouth of the Khuiten Gol at the point where the river becomes a delta. This area is used heavily as a spring herder's camp and has excellent fish and bird resources. Bits of pottery and ceramics were on the surface of this 8m-diameter mound, and during its excavation we found large amounts of flaked quartzite which appeared to have been used as tools for cutting and scraping tasks. In the center of the mound we found a feature containing the remains of a ceramic vessel, and ceramics were found between here and the eastern edge of the pavement, between an upper gravel lens and the sub-soil. Charcoal and a mat of organic material (felt?) were found under the surface rocks in the southern part of the mound, along with ceramics, all undecorated. We never located any human remains, or slab structures suggestive of a burial, but we were not able to excavate the entire mound (Fig 11).



Figure 10. Khuiten Gol Delta-1 pavement, to N.



Figure 11. KGD-1 Excavation at completion.



Figure 12. KGD-1 after restoration. To NW



Figure 13. Undecorated pottery from KGD-1.

Khuiten Gol Delta-2 (GPS N48° 37.874', E88° 21.506') Last year we identified a small circular khirigsuur on the point west of the Khuiten Gol delta, near a concentration of early rock art. This year we excavated the mound, which was 7.5m in diameter and had four radials and two external circle hearth outside the fence on the west side of the mound. In the center of the mound we found a timber beneath an oval of large boulders (Figure 14) and beneath that, the nearly complete skeleton of a very small person, much smaller than the adolescent age suggested by tooth eruption and suture closures (Figure 15). Both feet were missing and were clearly not included in the original burial. The person seems to have been a midget, yet had been cared for and had been given a full khirigsuur burial in a beautiful geographic location. No artifacts were found. Samples of wood and charcoal from Hearth Feature 1 will provide c14 dates (Figure 16).



Figure 14. Khuiten Gol Delta-1 after surface soil and upper mound rocks removed.



Figure 15. Body of a small foot-less adolescent with arrested growth syndrome in KGD-1.

Figure 16. KGD-1 after restoration. View to Southeast.

Khuiten Gol Delta-2 (GPS N48° 37.874', E88° 21.506') This mound is only 50m southeast of KGD-1 and was 3-4m in diameter and built largely of slate slabs and had a small rectangular box built into the top center of the mound (Figure 17). A set of flat slabs encircled the box and others lay below the surface. Despite extensive excavation including trenching (Figure 18), the N-S axis of the mound we found nothing below the surface except a N-S vertical slab (beneath the box), and small bits of burned and unburned bone at ca. 81cm below the surface, resting on sterile soil. The site appears to have been a ritual site.



Figure 17. Khuiten Gol Delta-2 with stone box.



Figure 18 A. KGD-2 at completion of trench



Figure 18 B. Khuiten Gol Delta 2 after restoration. No turf was present at this site.

East Bay-4 (GPS N48° 38.170', E88° 28.718') This site intrigued us since last year because of its cemetery-like arrangement of nine square burial mounds, each the same size and with raised or large rocks at the corners of the mounds, and the arrangement of burials in neat rows and the raised corner rocks (Figure 19). Raised corner stones and square burial architecture are also features of khirigsuur architecture. Excavation of Mound 3 recovered the skeleton of an elderly woman (?) beneath a concentration of slabs (Figure 20) at a depth of ca. 80 cm below the surface. The body (Figure 21) was buried in a semi-flexed position on its left side, with hands in front and face turned slightly up and toward the east. Burial orientation was 295°. A thick mat of tough organic material (felt?) was found around the body from shoulders to feet,

and was thickest in the chest and pelvic area. No artifacts were recovered but charcoal and organic materials were sampled. This grave seems to conform to the “Mungun Taiga” (Silver Forest) culture defined in Russia and if so dates to the Bronze Age, offering a possible connection to later square khirigsuur architecture.



Figure 19. East Bay-4 showing Mound 3, v. S. Figure 20. EB-4 internal architecture. View NW



Figure 21. Burial between vertical slab walls at EB-4 Mound 3. Figure 22. Restoration of EB-4. View to SE

Arrowhead Mound (Biluut 5.1) GPS N48° 39.722', E88° 21.960' While engaged in a GPS survey Dan Cole found a Medieval period iron arrowhead (Figure 23) on a rock in a small mound built at the crest of Biluut 5 hill. Returning to map and excavation this 2m diameter mound and an adjacent semi-circular 1.5 m diameter hearth 2 meters to the north (Figure 24), we found a fragment of large mammal long bone in the center of the mound (Figure 25) and a small

amount of charcoal and ash deposit in the hearth. It seems likely this was a ritual offering site involving an animal and the deposit of an arrow for hunting or war (Figure 26).



Figure 23. Medieval Arrowhead from Biluut 5.1



Figure 24. (right) Excavation of mound and hearth circle, view N.



Figure 25. Restoration of Biluut 5.1, view N

Hillside Hut (Biluut 5.2, GPS N48°39.224', E88° 22.167') While surveying on the Biluut 5 hill, we found several small 1.5-2.0 m diameter boulder rings scattered widely on the upper slopes. We excavated on at this location, about 200 m upslope from the Quiver site (Biluut 5.3). This structure was 1.5m in diameter and had an opening on its SE side, perhaps a doorway (Figure 26). A single lithic flake was found between the rocks on the south side of the ring. No hearth or other internal features were found inside (Figure 27, 28).



Figure 26. Hillside hut (Biluut 5.2), view W.



Figure 27. Hillside hut, excavated, view N.



Figure 28. Hillside hut, restored.

Quiver site (Biluut 5.3; GPS N48° 39.120', E88° 22.131') Excavation of a two standing stones in a vertical slab box at the base of Biluut 5 (Figure 29, 30) produced the surprising find of a quiver with iron fittings and three iron arrowheads (Figure 31). The larger standing stone had been erected in the middle of the box feature and a smaller, thinner, but wider slab stood a few centimeters outside the east side of the box. This stone had been shaped into the rough figure

of a human with shoulders and a head. Four large boulders were found in the NW corner of the box, lying on top of the vertical northern vertical slab. Charcoal and calcined bone were found in the hearth. Undecorated, flat-bottomed pottery occurred in two areas, smashed into small pieces, south and west of the central standing stone. Beneath two slabs lying between the large central stone and the east wall of the box we found the remains of a birch-bark quiver with three iron arrowheads at its southern end. The arrow shafts were not preserved. An iron fitting with a ring was attached at the mid-point of the quiver, and a single iron ring was found between this fitting and the points. The quiver was made with two-ply birch-bark, the outer covering running across the quiver and an inner running the length of the quiver. Only the northern half of the quiver was preserved well-enough for its form to be identified; the southern half of the quiver (towards the arrowheads) was seen only as traces of bark.



Figure 29. Quiver site (Biluut 5.3), view NW.



Figure 30. Quiver site with slabs exposed, v. N.



Figure 31. Quiver with preserved birch-bark at left and arrowheads to right. Figure 32. (right)



Peat Valley 3 (Biluut 3.5. GPS N48° 38.771', E88° 21.131') At the lower end of Peat Valley we identified two square structures lying side-by-side, Structure 1 one meter north of the north wall of Structure 2 (Figure 33). Both were identical in form, made by perimeter stones set into the earth 'end-on', deep into the ground, each with an oval feature inside the north wall, made with inclined slabs filled with cobblestones and smaller slabs. We excavated S-1 and found nothing on the house floors or in the oval feature, but outside the oval we found a 15cm deep oval hearth cut into the earth, filled with charcoal and burned small mammal and bird bone (Figure 34). We believe the oval slab and cobble feature may have been a sacrificial area and the hearth for offering remains to the spirits, functioning as a kind of ovoo festival. We presume S2 would produce a similar result.



Figure 33. Peat Valley 3 (Biluut 3.5), Structure 1, to N. Figure 34. PV3, S1 hearth and oval, to N.



Figure 35. PV-3 (Biluut 3.5), restored.

Cranium Mound (Biluut 1D; GPS N48° 39.120'; E88° 22.134') We excavated a small 4m diameter mound on the south side of Biluut 1 near a giant cracked glacial boulder (Figure 36).

Beneath surface rocks we found a rectangular arrangement of slabs with an open center, with a smooth oval stream cobble standing upright in the empty space in the middle. Below this stone we found a poorly-preserved cranium of a young person. Two pieces of the cranium, concave side up, were found, and the left side of the mandible and some teeth from the maxilla (Figure 37). No post-cranial materials had been included in the grave, only the skull.



Figure 36. Cranium Mound (Biluut 1D) view to NW. Figure 37. Cranium Mound, skull and teeth



Figure 38. Cranium Mound (Biluut 1D), restored.
Figure 39. (deleted)

Peat Valley North (Biluut 3.6; GPS N48°) In the plateau north of Peat Valley we excavated a Turkic stone box containing two large upright slabs of slate, both of which had been broken and its parts were lying across the 3-meter square slab enclosure (Figure 40). Excavation produced a horse tooth outside the box, and a box hearth (Figure 41, 42) with charcoal and burned bone outside the western part of the south enclosure wall. This hearth aligns with the larger, western standing stone and with a bal-bal line extending to the south (Figure 43).



Figure 40. Broken standing stones in box, v. W. Figure 41. Hearth on south side of enclosure



Figure 42. Excavated box hearth, v. N.
the south excavated, v. N.

Figure 43. Turkic enclosure and cobble hearth to the south excavated, v. N.



Figure 44. Peat Valley North, restored, view to south, showing hearth circle and bal-bals in distance.

Part V
Mongolia National Museum Report to Tsengel Governor
J. Bagarsaikhan

Баян-Өлгий аймгийн Цэнгэл сумын Цагаан ус багийн нутаг Хотон нуурын савд хийсэн археологийн хээрийн судалгааны ажлын тайлан

Түрэгийн тахилын онгон:

Баян-Өлгий аймгийн Цэнгэл сумын Цагаан ус сумын Хүйтэн голын зүүн эрэг, Арцат уулын баруун хормой доор, газар зүйн байршил тогтоогч багажны N 48°39'51.5 E088°20'30.7, ДТД 2100 м өндөр цэг дээр гадуураа намхандуу дугуй шороон далантай нэлээд том байгууламж буй (Зураг).



Уг дурсгалын ерөнхий хүрээ 29.5x29.5 м, гадна талаараа овгор шороон далантай, шороон далангийн дотор талаар хотгор усан шуудуутай, шуудууны дотор талд 17x 16.5 м хэмжээтэй, шуудуунаас өндөр тэгш дэвсэг буюу талбайтай. Шороон далангийн өргөн 2.5 -3м өргөн, түүний дотор талын шуудууны 2.5-3.5м өргөн.

Дурсгалын төв талбайн голд зэрэгцээ хоёр өөр төрлийн чулуун байгууламж буй. Нэг нь буюу ертөнцийн зүгээр урд талын байгууламж нь хүрээгээр нь хавтгай нимгэн чулууг хавиргалан босгож үйлдсэн дөрвөлжин хашлага байгууламж бөгөөд монгол орны төв болон баруун зүгийн нутагт өргөн тархсан Түрэгийн үеийн дөрвөлжин хашлагатай тахилын байгууламж болох нь илт мэдэгдэнэ. Энэ хашлага 2x1.8м хэмжээтэй. Хөрсөн дээр харагдаж буй хашлага чулуудыг харахад урд болон хойд талын босоо чулууд гадна тал руу налж унасан, баруун талын хашлага босоо хэвээр, зүүн талын хашлага гэж мэдэгдэх зүйлгүй. Дөрвөлжин хашлаганы голын зайг голын мөлгөр чулуугаар дарсан бололтой байв (зураг).



Харин нөгөө нь буюу хойд талын байгууламж нь 3.4x2.9 м дөрвөлжиндүү хэлбэртэй боловч анхны хэлбэр нь алдагдаж дугуй болсон бололтой. Уг байгууламжийг голын мөлгөр чулуугаар дарж үйлджээ (Зураг).



Бид 5-р сарын 31 нээс эхлэн уг дурсгалыг малтан судлах ажлаа эхлэв. Юуны түрүүнд төв хэсэгт буй хоёр чулуун байгууламжийн хүрээнд уртгагийн дагуу 8м, өргөрөгийн дагуу 5м урт талбайд малтлага судалгаа эхлэж, хөрсийг хуулав. Малтлагын талбайн гол утас хойд зүгт азимутын 346 хэмд, зүүн тийш азимутын 76 хэмд чиглэж байв.

1-р чулуун байгууламжийн малтлага: Урд талын байгууламжийн өнгөн хөрсийг хуулах явцад зүүн талын хашлага чулуу байхгүй болсон нь тодорхой болсон бөгөөд харин хоёр байгууламжийн хоорондох зайд том нимгэн хавтгай чулуу байгаа нь гадны шалтгаанаар хөдөлж, зөөгдсөн байж болох юм. Энэ байгууламжийн өнгөн хөрсийг хуулах явцад зүүн урд өнцөг дэх чулуун дараасны завсраас хэсэг шатсан хар хөрснөөс модны нүүрсний жижиг хэсгүүд, зүүн хойд хэсгээс адууны шүдний хугархай хэсэг гарав. Эдгээр олдворууд өнгөн хөрснөөс доош 4-5 см гүнд байв. Мөн дөрвөлжин байгууламжийн зүүн урд хэсэгт 20x15 см орчим шатсан хар хөрс доош үргэлжилж байв. Дөрвөлжин хашлаганы дотор талыг малтах явцад баруун хойд хэсэгт өнгөн хөрснөөс доош 15 см гүнээс гонзгой төмөр эдлэл гарав (Зураг). Энэ эдлэл нь хоёр гонзгой нимгэн төмөрт ямар нэгэн эдийг хавчуулж холбон хадсан эд бололтой. Магадгүй бүс юмуу шир суран эдлэлийн тоног бололтой. Малтлагын энэ төвшинд дөрвөлжин чулуун хашлаганы төв болон гадна талын эргэн тойронд шатсан хар толбонууд илэрч байлаа. Зүүн талын хар толбоноос модны нүүрсний жижиг хэсгүүд, 2 ширхэг шатсан ясны жижиг хэсэг илрүүлэв. Мөн өмнө нь төмөр эдлэл олдсон хэсгээс өнгөнө хөрснөөс доош 20 см гүнд дахин дөрвөн ширхэг төмөр эдлэлийн хугархай хэсгүүд гарав(Зураг). Дөрвөлжин хашлаганы баруун талын хашлаганы дотор талд налж унасан тэгш өнцөгт хэлбэрийн хавтгай чулууны хэмжээг харахад энэ чулуу магадгүй зүүн талын хашлага байсан байж болох юм. Энэ чулууг авч доош малтахад түүний дороос ойролцоо зайд 5 ширхэг ваарны хагархайнууд, хойд талын налж унасан хашлага чулууны хагархай завсраас 1 ширхэг шатсан ясны жижиг хэсэг тус тус гарсан. Тэрчлэн дөрвөлжин хашлаганы зүүн захд буй шатсан хар толбо доош үргэлжилж эндээс шатсан яс, нүүрсний жижиг хэсгүүд илрүүлэн олов. Энэ байгууламж өнгөн хөрснөөс доош 40 см малтахад байгалийн ул хөрс гарч малтлагыг зогсоов.

2-р чулуун байгууламжийн малтлага: Өнгөн хөрсийг цэвэрлэх явцад энэ байгууламжийн хойд хэсгийн болон зүүн урд талын чулуун дараасны завсраас бод малын (адуу?) шүдний хугархай хэсэг, мөн баруун хойд талын дараасны завсраас жижиг үхрийн үүдэн шүд нэг гарснаас гадна баруун хэсгийн дараасны завсар энд тэндээс шатсан модны нүүрсний жижиг хэсгүүд гарч байснаас гадна, үл танигдах жижиг ясны хугархай хэсэг, галд халж хагарсан чулуун хагархайнууд (FCR) гарав. Эдгээр олдвор нь өнгөн хөрснөөс доош 4-9 см гүнд байв. Малтлагын гүн өнгөн хөрснөөс доош 15-20 см болоход бог баруун захд дараас чулууны завсраас малын дунд чөмөгний ясны хугархай, хойд болон зүүн хойд захаас өгөршиж муудсан модны үлдэгдэл гарч байлаа. Уг байгууламжийн чулуун дараасуудыг бүгдийг зөөвөрлөж, малтлагын талбайг тэгшилж, цэвэрлэхэд чулуун байгууламжийн төв хэсэгт 170x160 см хэмжээтэй нүхний толбо илрэв.

Энэхүү толбыг даган доош малтахад толбоны төв хэсгээс ясны хугархай хэсэг, модны хэсэг гарч байв (№34-35).



Мод илэрсэн энэхүү хэсгийг толбоны дагуу доош малтахад энэхүү модны үлдэгдэл нь уг нүхний гол босгосон босоо шонгийн үлдэгдэл болох нь малтлагын явцад тодорхой болсон юм. Энэ шонгийн голч нь ойролцоогоор 20-30 см болох нь малтлагын харилцан адилгүй гүнд хийсэн хэмжилтээс мэдэгдсэн болно. Энэ модон шон өнгөн хөрснөөс доош 156 см гүн хүртэл үргэлжилж ёроол нь гарсан бөгөөд уг шонг том чулуу хайргаар чигжиж тогтоожээ. Энэ гүнд байгалийн хайрган ул хөрсөн дороос ус шүүрч эхэлсэн юм. Энэ нүхнээс өөр ямар нэгэн олдвор илрээгүй. Харин хоёр чулуун байгууламжийн хоорондох зайд үлдсэн хэсэг хөрсийг доош малтаж үзэхэд өнгөн хөрснөөс доош 7 см гүнээс жижиг бод малын шийрний ясны хугархай (№39), 10 см гүнээс ваарны жижиг хагархай (№56) гарав гарсан билээ. Дурдан буй яс уг дурсгалтай ямар нэгэн түүхэн холбоотой эсэхийг хэлэхэд хэцүү магадгүй сүүл үеийн бололтой.



Хойд болон урд талын зүсэлт малтлага:

Бид дурсгалын төв хэсэгт байсан хоёр чулуун байгууламжийг малтаж дууссаны дараа малтлагын талбайгаас хойш болон урагш буюу уртрагийн дагуу дотоод шуудуу болон гадаад ханыг дайруулан 1м өргөнтэй зүсэлт малтлага эхлэв. Хойд талын зүсэлтийн урт 12 м, урд талын зүсэлтийн урт 10.5 м.

Хойд талын зүсэлт: Зүсэлтийн талбайн өнгөн хөрсийг хуулах явцад хонхойж орсон шуудууны хэсэгт сүүлд бүрэлдэн тогтсон болов уу гэмээр хар өнгөтэй хурдац хөрснөөс шатсан ясны маш жижиг хэсгүүд олноор гарч байв. Мөн зүсэлтийн өмнөд хэсэгт өнгөн хөрснөөс доош 10 см гүнээс бод малын (адууны) шилбэний ясны хугархай (№44), мөн хойд шороон хананы гадна тал буюу зүсэлтийн хойд төгсгөл хэсэгт 12 см гүнээс ваар савны 2ш хагархай (№45) олдсоны нэг нь амсрын хагархай байв(Зураг). Зүсэлтийн гүн шуудууны хэсэгт 30 см орчим гүн болоход бод малын чөмөгний ясны хэсэг болов уу гэмээр нэг том нэг жижиг хугархай яс (№46), 50 см гүн болоход зүүн хананы ёроолоос жижиг үхрийн өрөөсөн эрүүний яс (№47) тус тус гарав. Зүсэлтийн энэ хэсэгт бөөн чулуун өрлөг юмуу эсвэл байгалийн тогтоц эсэх нь тодорхойгүй хэсэг чулуу гарсан тул зүсэлтийн урд цэгээс хойш 650-770 см-ийн хооронд шуудуу хэсэгт зүүн тийш 50 см өргөтгөж малтсан. Энэ малтлагын явцад өнгөн хөрснөөс доош 40 см гүнээс, бор шаргал өнгийн шороон хөрснөөс ваар савны жижиг хагархай 1ш (№50), мөн бод малын (адууны) 2 шүд (№52) тус тус гарав.

Урд талын зүсэлт: Зүсэлтийн талбайд малтлага хийх явцад ямар нэгэн олдвор илрээгүй.

Зүсэлтийн тодорхойлолт:

Хойд хананы зүсэлтээс харахад хананы хамгийн өндөрт өргөгөдсөн хэсэгт 15-17 см зузаан чулуурхаг хар хүрэн тогтоц бүрэлдэн тогтсон бол эндээс дотор талын шуудууны хамгийн хотгор хэсэгтээ 26 см (анхны байдлаараа бол 76-80 см) хотойж, голын тэгш дэвсэг түүнээс 15 см дээш өргөгдсөн байна. Голын тэгш хэсэг болон шуудууны хэсэгт өнгөн хөрсний хар хурдац маш нимгэн 3-5 см, түүнээс доош цагаан шаргал өнгийн, чулуугүй шаварлаг шороон хөрс үргэлжилж байв. Энэ хөрсний зузаан 25-30 см зузаан. Түүнээс доош хайрган давхарга эхэлж байв.

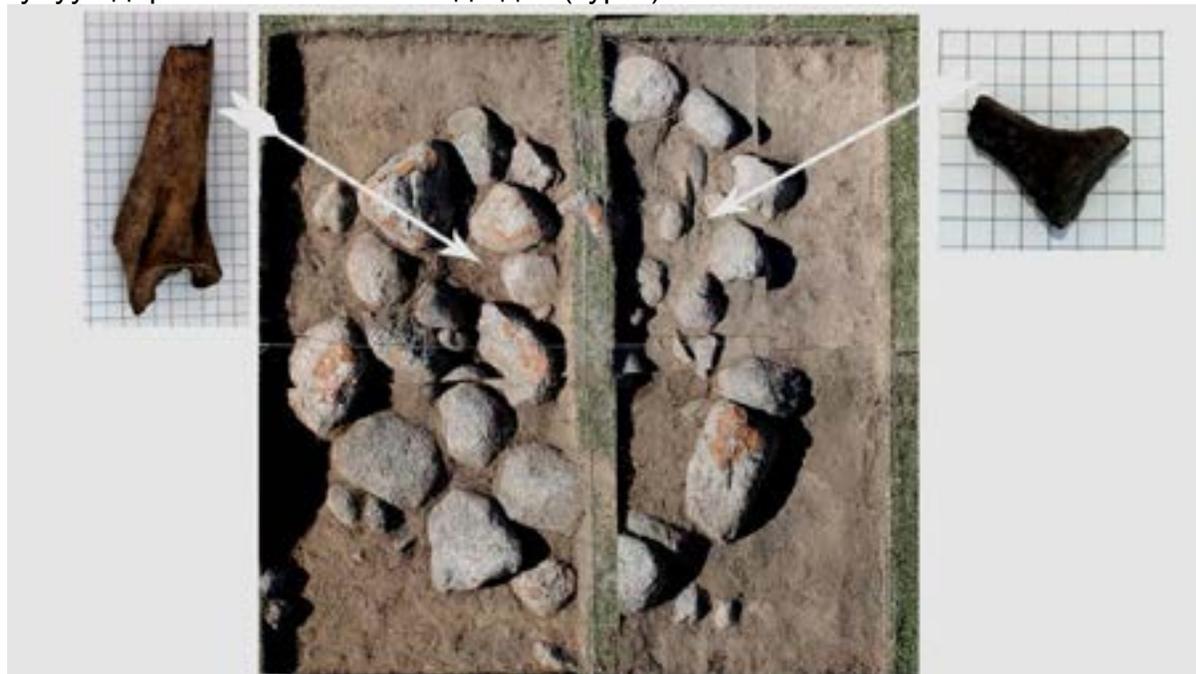
Урд хананы зүсэлтээс харахад хананы хамгийн өндөрт өргөгөдсөн хэсэгт 15-17 см зузаан чулуурхаг хар хүрэн тогтоц бүрэлдэн тогтсон бол эндээс дотор талын шуудууны хамгийн хотгор хэсэгтээ 20 см (анхны байдлаараа бол 35-45 см) хотойж, голын тэгш дэвсэг түүнээс 15 см дээш өргөгдсөн байна. Голын тэгш хэсэг болон шуудууны хэсэгт өнгөн хөрсний хар хурдац маш нимгэн 3-5 см, түүнээс доош цагаан шаргал өнгийн, чулуугүй шаварлаг шороон хөрс үргэлжилж байв. Энэ хөрсний зузаан 25-30 см зузаан.

Хүйтэн гол дурсгал -2

Бидний малтсан Түрэгийн тахилын байгууламжийн төвөөс зүүн хойш азимутын 60 хэмд 40 м-ийн зайд, багаахан дэвсэг дээр 2 м голчтой жижиг дугуй байгууламж буй. Энэ байгууламж голдоо овгор чулуун дараасгүй боловч газрын өнгөн хөрсөн дээр цөөн хэдэн чулуун дараас ажиглагдаж байв. Газар зүйн байршил нь N 48°39'52.2 E088°20'32.6, ДТД 2110 м.



Өнгөн хөрсийг хуулах явцад дараас чулууны завсраас 3 ширхэг жижиг яс гарав. Эдгээрийн нэг нь бог малын сүүжний ясны хугархай болох нь илэрхий байв. Мөн өнгөн хөрсийг хуулсны дараа уг дугуй байгууламж голоороо том чулуун дараастай болох нь мэдэгдэв (зураг).



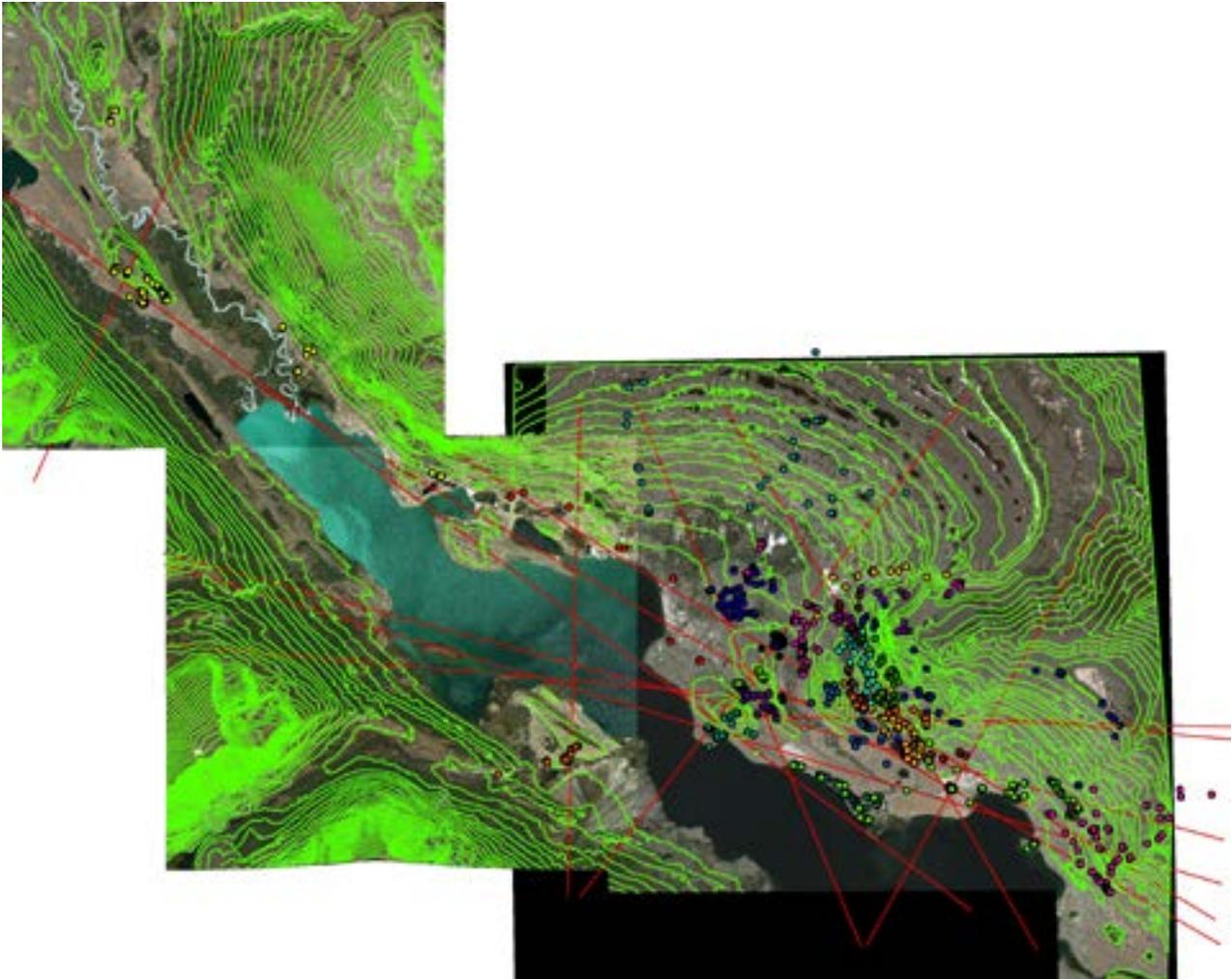
Талбайн зүүн хойд хэсэгт өнгөн хөрснөөс доош 1, см орчим гүнд шатсан хар хүрэн хөрснөөс жижиг амьтны шатсан ясны хугархайнууд гарч байсны зарим нь жижиг амьтны чөмөгт яс болох мэдэгдэж байв (зураг).

Мөн баруун хойд хэсэгт өнгөн хөрснөөс 17 см гүнээс ваарны жижиг хагархай хэсэг (KG-2, № 10),

Part VI
Cartographic Report to Tsengel Governor
Daniel Cole

During the field season of 2012, I have hiked extensively around the Biluut study area collecting GPS locations on archaeological digs and known rock art positions, as well as on newly found rock art and archaeological sites in the Biluut hills area, plus visits to the south side of Lake Khoton, Aral Tolgoi and Tsagan Asgat areas. Overall, site positions have been recorded in over 2000 locations and integrated with the over 1800 GPS positions collected during the 2011 field season. These data will be analyzed and correlated in relation to one another, in addition to their relationship with the local landscapes. Regarding the latter, the use of satellite imagery with geographic information systems software allows me to detect how the petro glyphs and archaeological features are laid out across the hills and valleys in the area. Not only are the coordinate locations recorded, but also the elevations and relations to slope and aspect can be determined. Once this project is complete, I plan to statistically analyze the density, areal extent, clustering, and linearity of the features in relation to each other and the regional landscape. I have attached a copy of the contour map that I created from the satellite imagery showing the locations of my GPS data locations in this area in 2012.

GIS Map Mongolia West 2012



Part VII

Western Kentucky Report to Tsengel Governor

Jean-Luc Houle

Орон нутгийн захиргаанд зориулсан товч тайлан —Хотон нуур 2012—

Судлаачид: Jean-Luc Houle¹, Oula Seitsonen², Lee Broderick³, Peter Woodley⁴,
Ж.Баярсайхан⁵

[¹Western Kentucky University (USA), ²University of Helsinki (FIN), ³University of York (UK),
⁴University of Sydney (AU) Монголын Үндэсний Музей⁵.]

Туршилтын малтлага хайгуул:

1) Хайгуулын талбайн зарим хэсэгт хийгдсэн туршилтын малтлагын зорилго нь нэн эртний түүхийн соёлын ул мөрийг илрүүлэх зорилготой байсан бөгөөд бид судалгааны явцад нийт 70 туршилт малтлага хийв. Туршилтын малтлагын талбай нь газар зүйн байршилын хувьд N 48°40'17" / E 088°21'09" and N 48°40'08" / E 088°21'15" цэгийн хүрээнд багтаж байв.

Туршилтын малтлагын талбай нэг бүр 45 x 45 см хэмжээтэй (Зураг 1). Уг малтлагын гүн нь 20-50 см байсан болно. Өөрөөр хэлбэл уг малтлагын хэмжээ нь маш бага хэмжээтэй бөгөөд зорилго нь эртний бууц сурин илрүүлэх зорилготой эрүүл газарт хийгддэг судалгааны нэг арга зүй юм. Туршилтын малтлагын нүх бүрийг буцаан булж, өнгөн хөрсийг нөхөн сэргээж тавьсан болно.(Зураг 2).



Зураг 1: Туршилтын малтлага хийсэн талбайн ерөнхий байдал



Зураг 2: Туршилтын талбайг буцаан нөхөн сэргээсэн байдал.

2) 09/06/2012. Газар зүйн байршилаар N48°40'13" E88°20'21" цэг дээр газрын өнгөн хөрсөн дээрээс ваар савны хагархай, төмрийн баас олдсон тул энэ хэсэгт магадгүй илүү их эртний олдвор олох боломжтой хэмээн үзэж, өөр хоорондоо 8-10 м зайтай 14 туршилтын малтлага хийв. Туршилтын малтлагын хэмжээ нь 50 х 50 см хэмжээтэй байсан бөгөөд ойролцоогоор 10- 20 см гүн малтахад эх газрын эрүүл хөрс гарч байсан болно. Эдгээр малтлагын үр дүнд ямар нэгэн олдвор хэрэглэгдэхүүн гараагүй бөгөөд нөхөн сэргээлтийг тухай бүрт хийсэн.

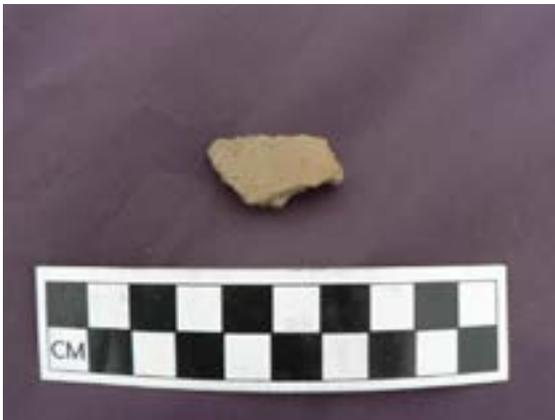


*Туршилтын малтлага хийж байгаа нь
(Photo: J-L. Houle).*



Нөхөн сэргээлт хийсэн байдал

3) 10/06/2012. Газар зүйн байршилын N48°38'01" E88°38'47" болон N48°38'09" E88°38'49":цэгийн хоорондоос газрын өнгөн хөрсөн дээрээс ваарны хагархай, чулуун зэвсгийн түүхий эд, хагархай олдсон төдийгүй орчин үеийн зуслангийн талбай багтаж байсан тул эртний хүмүүсийн дэ өлгийн зүйл илрүүлэх зорилгоор 25 ширхэг туршилтын малтлага хийв. Туршилтын малтлагын хоорондох зай нь байршил тогтоогч багажын өргөрөг уртрагийн нэг секундын зайтай байрлаж байв. Туршилтын малтлагын талбай бүр 50 x 50 см хэмжээтэй басйн бөгөөд өнгөн хөрснөөс доош 20-30 см гүн малтахад байгалийн эх хөрс гарч байв. Эдгээр малтлагын үр дүнд N48°38'04" E 88°21'47" газар зүйн байршилд хийсэн малтлагаас 1ш ваарны хагархай 10 см гүнээс гарсан. Туршилтын малтлагын нүх бүрийг журмын дагуу нөхөн сэргээсэн болно.



Туршилтын малталгын үйл явц, нөхөн сэргээсэн байдал, малтлагаас гарсан ваарны хагархай. (Photo: J-L. Houle).

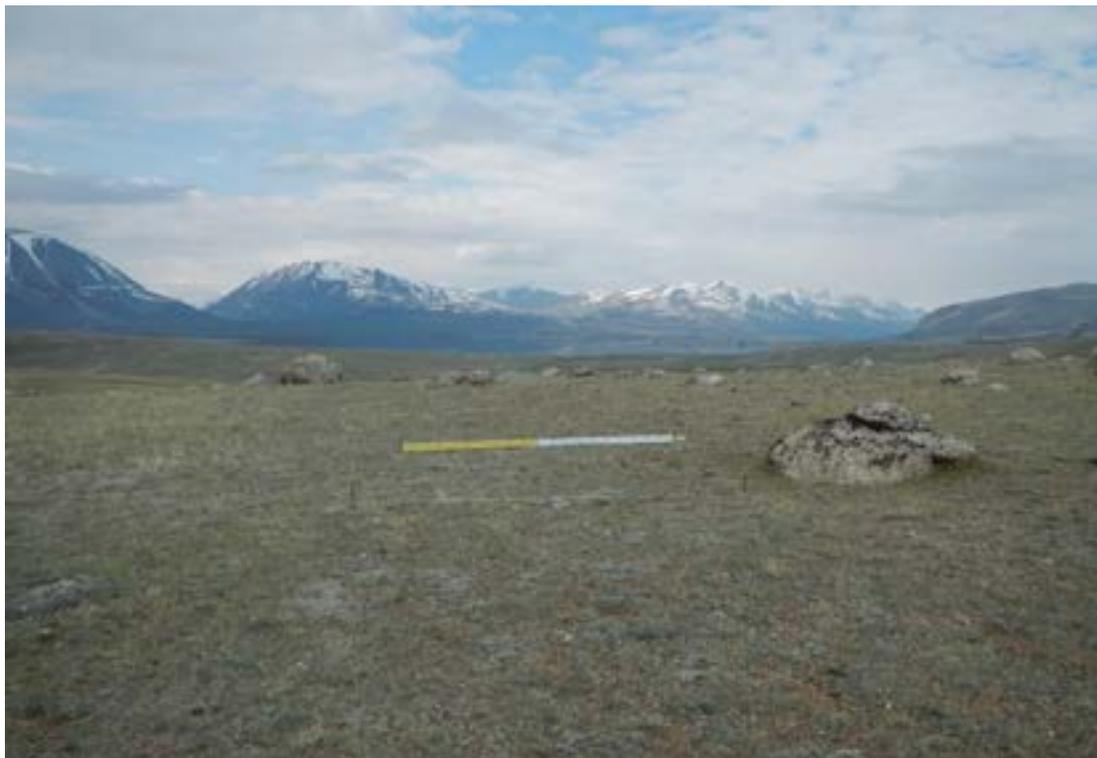
4) KLS-2. 2012 оны 06-р сарын 04 нд Билүүт толгой- 3-ын оройн хэсэгт газар зүйн байршил тогтоогч багажийн UTM 45 599497 / 5391494, ДТД. 2195 цэг дээр 2x2 м хэмжээтэй туршилтын малтлага хийв. Туршилтын малтлагын талбай нь өнгөн хөрсөн дээрээс илрүүлэн олсон олон тооны чулуун зэвсгийн үлдэгдэл болон шатсан ясны хэсгүүдийн төв хэсэгт байрлаж байв. Малтлагын зорилго нь энэ хэсгээс илүү эрт үеийн нүүдэлчидэд холбогдох олдвор хэрэглэгдэхүүн оолох зорилготой байлаа. Малтлагыг археологийн судалгааны үндсэн багаж савокоор 1 см хэмжээтэйгээр доош малтаж малтлагаас гарсан шороог дахин шигшүүрээр шалгаж байв. Олдворуудын ихэнх нь 0-3 см гүнээс гарсан бөгөөд цөөн тооны шатсан ясны хэсэг 1-2 см гүнээс гарсан. Гурван чулуун зэвсэг гарсны нэг хусуур зэвсэг байсан бөгөөд олон тооны шатсан ясны үлдэгдэл олдсон (эдгээр ясыг Йоркийн их сургуулийн судлаач Broderick судлана), түүнчлэн галд шатаж хагарсан чулуу 4 байв. Малтлага 5-7 см гүнд хүртэл үргэлжилж эх газрын эрүүл хөрс гарсан билээ. Үүний дараа малтлагын талбайд нөхөн сэргээлт хийв



KLS-2 хайгуулын талбайн баруун хэсгийн ерөнхий байдал зүүн хойноос(photo: O. Seitsonen).



Малтлагын талбайн гадна талын гадаргуун эдээрээс олдсон хоёр талт чулуун зэвсэг (photo: O. Seitsonen).



KLS-2 туршилтын малтлагын талбай малтахын өмнө (цагаан утсаар хүрээлсэн нь; 2 метрийн хэмжээстэй), (photo: O. Seitsonen).



Маллагын явц (photo: O. Seitsonen).



KLS-2 туршилтын талбайг нөхөн сэргээсний дараа (photo: O. Seitsonen)

Чулуун цагираг байгууламж: 2012 оны 6-р сарын 10 нд N 48°38'10.7" E 88°23'9.6", байршил зүйн цэг дээр буй хиригсүүрийн хажууд буй жижиг цагираг байгууламжийг 5 см гүнд хүртэл малтан судлав. Малтлагын шороог 3мм хэмжээтэй шигшүүрээр шигшэж шалгасан. 5-10 см гүнд талбайн зүүнй урд хэсэгт илэрсэн хар толботой хэсгээс үнс, модны нүүрс гарав. Түүнчлэн 364 ширхэг шатсан ясны жижиг хэсэг олов. Үүний 198 ширхэг нь хар хүрэн толботой хэсгээс гарсан бөгөөд харамсалтай нь уг яснуудыг “дунд зэргийн сүүн тэжээлтний яс” гэхээс өөр ямар нэгэн дүгнэлт хийх боломжгүй байв. 10 см гүн болоход байгалийн ул хөрс гарч, талбайг буцаан булж нөхөн сэргээлт хийв.



Чулуун цагирагийг малтахын өмнө, малтах явцын, нөхөн сэргээлт хийсний дараа. Малтлагаас гарсан ясны хэсгүүд. (Photo: Lee Broderick).

KLS1 Малтлагын талбай 1

Н 48°40'11.8" / Е 088°21'11.3" цэгийн газар зүйн байршил дээр буй дөрвөлжин хэлбэрийн чулуун байгууламж нь эртний хүмүүсийн бууц суурин байж болох магадлал ажиглагдсан тул уг дурсгалын хүрээнд 6 х 6м хэмжээтэй малтлага хийв. (Зураг 3). Уг талбайд 10-40 см гүн хүрэл малтлага хийв. Малтлагаас ямар нэгэн олдвор гараагүй болно. Малтлагын төгсгөлд талбайг нөхөн сэргээв. (Зураг 4).



Зураг 3: Малтлага дууссаны дараа



Зураг 4: Нөхөн сэргээсний дараа

Малтлагын талбай KLS 315

Хоёр дахь бууц суурины малтлагыг N 48°40'02.7" / E 088°21'26.6" цэгийн байршил дээр хийв. Энэ нь өмнө малтан судалсан дөрвөлжин хэлбэрийн чулуун байгууламж бүхий дурсгалтай ижил бөгөөд уг дурсгалын хүрээнд 10 х 10м талбайд малтлага хийсэн. (Зураг 5). Малтлагын нүн 10-40 см гүнд хүртэл үргэлжлэв. Цөөн тооны шатсан яс, модны нүүрснээс өөр эд өлгийн зүйл гараагүй. Малтлагын дараа буцаан булж, нөхөн сэргээлт хийв. (Зураг 6).



Зураг 5: KLS 315 талбай малтаж дууссаны дараа



Зураг 6: KLS 315 талбайг нөхөн сэргээсэн байдал

Part VIII

Rock Art Report to Tsengel Governor

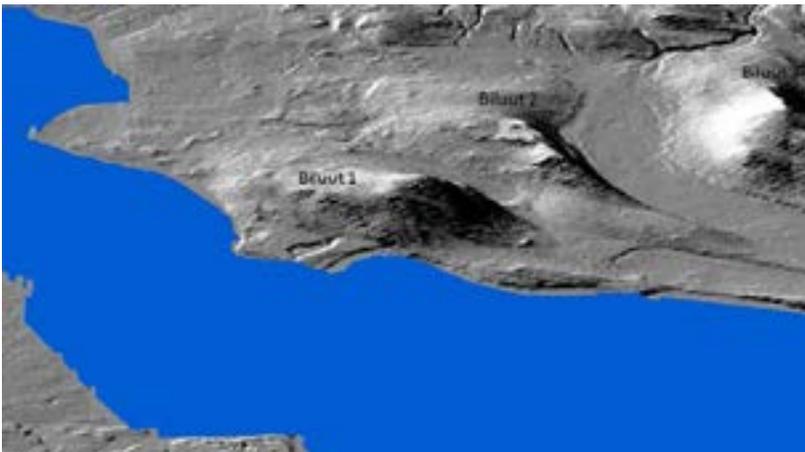
Richard Kortum



Biluut 1 from the southwest.

Elevation: 2,170 meters (7,120 feet).

This season's rock art team focused on the middle and lower slopes and terraces of Biluut 1, designated Biluut 1-C and Biluut 1-D, respectively. The summit (B1-A) and the highest slope (B1-B) were documented in Summer 2011. The plan this year was to finish documenting the entire mountain. We came close to accomplishing this task, but because of weather and other unforeseen contingencies did not quite achieve it. Biluut 1-E, a long shoulder above a gully on the southern end of the mountain, was surveyed and roughly counted in 2005, but remains to be fully recorded. With approximately 1,200 petroglyphs, it is the densest concentration of rock art at Biluut. Pending new funding, and with favorable weather, this will require five to seven days next summer. Though we did not live up to my original plan, we nevertheless made some new and exciting discoveries this season.



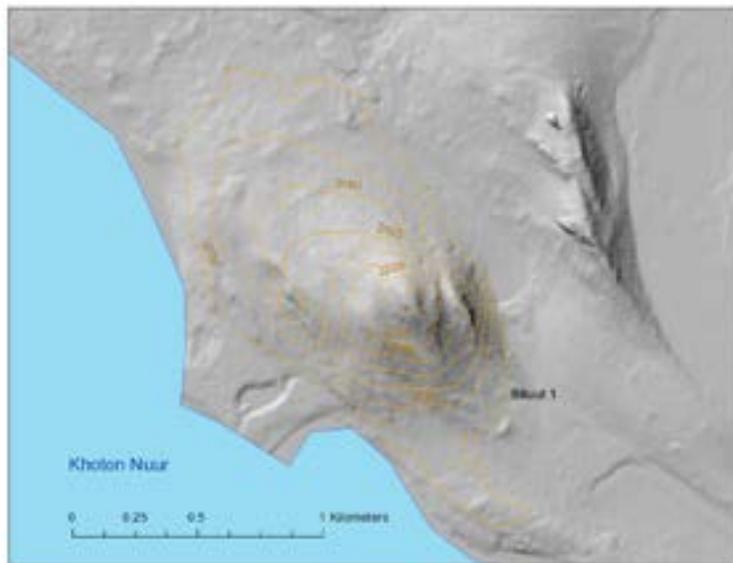
Biluut 1 and 2, aerial view from the south

About 90 percent of my time was spent on Biluut 1-C and 1-D. But when it became clear to me that we would not finish recording the petroglyphs on Biluut 1, I made a brief revisit on two occasions to the two Khuiten Gol Delta sites, first recorded in Summer 2011, to take photographs and make life-size transparent plastic tracings of selected rock

art. I also spent one days earching for petroglyphs on a hilltop at Tsagaan Asgat, about 50km east of Biluut, and at a location above the southern shoreline of Khurgan Nuur, approximately 30km southeast of Khoton Nuur.

This summer's team was small, consisting principally of myself and Jargalsaikhan Baatar, who I've trained over the course of four previous visits to Biluut. Jagaa has the eyes of an eagle when it comes to detecting even the most obscure of pecked or scratched images. To my dismay, my longstanding colleague and friend, Dr. Yadmaa Tserendagva, Scientific Secretary to the Mongolian Academy of Sciences' Institute of Archaeology, informed me in late spring that he would be

unable to join us this summer as planned. He had rather suddenly and expectedly been charged with overseeing the assignment of Mongolian archaeologists to foreign geological explorations that were negotiated to take place in Mongolia during the first half of summer. I felt Tsedo's absence keenly, and it slowed progress significantly. Jagaa is a tremendous help when it comes to locating and tracing rock art figures; but he is not yet expert in assigning dates or cultural periods. This also made for more tentative or uncertain ascriptions of chronology on my part. It often requires two or three sets of discerning eyes—as well as a lot of background information—to come to a reliable cultural identification. Even in favorable circumstances there can be disagreements. But, together, Tsedo and I have always managed to reach consensus. In the rare cases in which we become stuck, we record the cultural period as “Uncertain”. Without him, there were more of these assignments than usual.



Biluut 1-C terrace looking southeast

Jagaa and I were accompanied on our morning and afternoon excursions up on the mountainside by one or another of the ETSU students who participated in field activities this summer. Five of the six came as part of a summer study abroad course that I designed especially so that they could take advantage of our university's study abroad travel funds. Lindsey Farris, a recent graduate of ETSU who came on her own money and was not enrolled in the course, went back and forth between our rock

art team and Bill's excavation crew, but served mostly as Jagaa's and my field data recorder. After hours or during spells of inclement weather, Lindsey entered the newly collected data into digital format on my laptop computer. Taylor Malone, another ETSU undergrad, worked mostly as field assistant (and beast of burden) to our project photographer, Dave Edwards. But he also spent a few mornings or afternoons with Bill's crew, and with Jagaa and me, in Lindsey's place. ETSU biology grad student, Jim Phillips, whose main task was to take core samples from the peat bog for pollen analysis, also took a turn at recording data with us.

So, most of the time there were three of us working together on the mountain; but on several occasions Jagaa and I recorded without assistance. And when Jagaa was called to drive Lindsey to Olgii when she became ill, I found myself working alone. That took only two days, and so did not set me back far; but soon after Director Saruulbuyan arrived from the National Museum in UB, he requested that Jagaa accompany him on a trip to visit distant Uriankhi families with whom he wished to conduct interviews. Alas, but then I lost Jagaa for the last four days of the field season, and any hope of completing the documentation on Biluut 1 was dashed. Along with the rock art at Biluut 1-E, a group of 60-odd petroglyphs were discovered up on Biluut 4, a steep foothill of Broken Mountain that rises precipitously above the eastern edge of the peat bog, and 150 or so petroglyphs, mostly unremarkable, are found scattered on a bluff above a herder's spring house ("Spring House Bluffs"), approximately two kilometers east of Biluut 3. I hope to finish documentation of these, too, in a 10 or 11 day return to Khoton Lake in July 2013.

On Biluut 1 we recorded a total of 4,580 individual figures or markings: 1,955 on B1-C and 2,625 on B1-D. Highlights include 23 images of wheeled vehicles and 31 depictions of Mongolian deer motifs or close variations. For each image 22 distinct data points were recorded, and photographs or tracings were made of selected figures. Other descriptive qualifications were added to our field notebook pages as seemed useful.



Jagaa and Lindsey on Biluut 1-C overlooking Khoton Lake

The number of petroglyphs we counted was surprising, especially those on B1-D. In 2005 Tsedo and I led separate teams of two hastily-trained field assistants each in a brief survey of these same sections. At that time we tallied 1,749 figures on B1-C, which represents 89.5% of our 2012 total from that section, and 1,387 on B1-D, which comes to less than 53% of the number we counted in 2012. This year we were more systematic in our approach, and considerably more thorough. As I said, Jagaa is extremely adept at spotting petroglyphs. But to find on B1-D nearly double the number of petroglyphs partially recorded in 2004 and 2005 came as a big surprise to me. For one thing, it now makes me wonder how many we might have missed on Biluut 1-E. Only time will tell.

Biluut 1-C

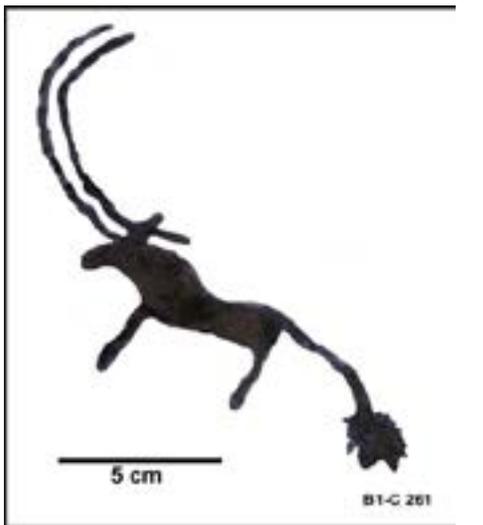
A number of panels and individual figures on B1-C stand out for their size, style, manner of execution, formal appeal, or simply for their beauty and charm, as well as for their specific cultural content. Especially intriguing is an image of a bovid surrounded by what look to be signs or symbols of some kind. They have the feel of letters, or words, almost. This 'scene' was rediscovered toward the upper, western edge of a large panel of deep-grey metagreywacke on the near-horizontal terrace that forms the top of B1-C. I have never seen anything like it, whether in the field or in publications. Neither have Tserendagva or Esther Jacobson-Tepfer, our project consultant on rock art. The figure of the animal appears to be older than the surrounding symbols, and by style, coloration, groove profile and pecking technique, looks to date from the Iron Age or later. Esther has suggested to me (in recent correspondence) that the symbols might be Turkic runes. But they do not look like any of those I've seen at various sites in Bayan Olgii. And none of them appear on any of the charts or lists of Turkic runes that have been published in books or papers, many of which are available online. A serious investigation into these markings will have to be undertaken this coming year. I do believe, like Esther, that they are most likely Turkic. Though few in number as compared with imagery from the Bronze- and Iron Ages, there is a significant amount of Turkic rock art on Biluut 1. And, of this, a much greater proportion is found on the terrace of B1-C, the same shelf that contains this particular set of figures, than we've found on the other slopes of this mountain.



Bovid surrounded by unusual symbols on the B1-C terrace (digitally enhanced). Period uncertain.



Indistinguishable figure accompanied by two rows of spots (antlers?). Bronze Age.



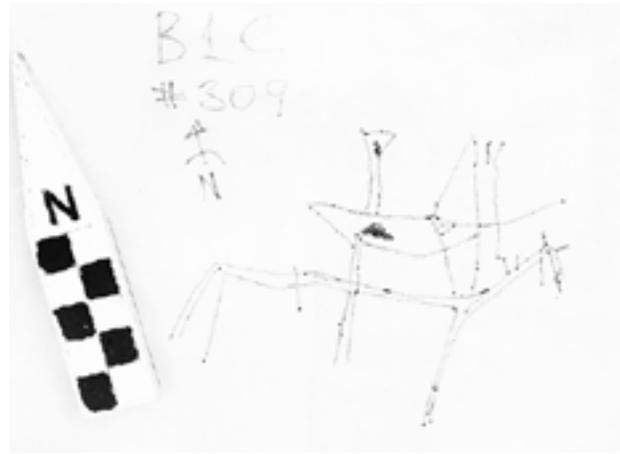
Two horned horses (at left with a yak tail). Period uncertain, possibly archaic or early Bronze Age.



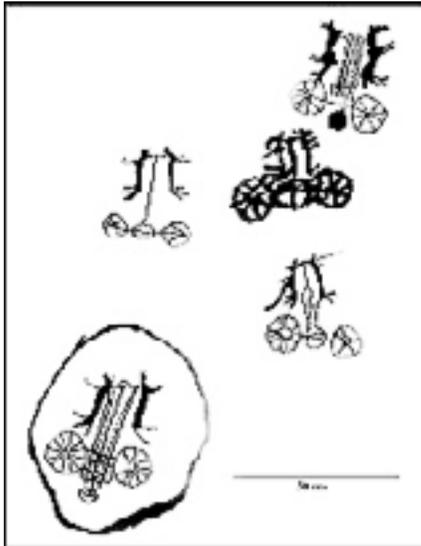
Recumbent, bent legged figures in the Early Nomadic style, left and third from top at right. Early Iron Age.



Bird (crane?). Bronze Age.



Archer on horseback. Ethnographic period.



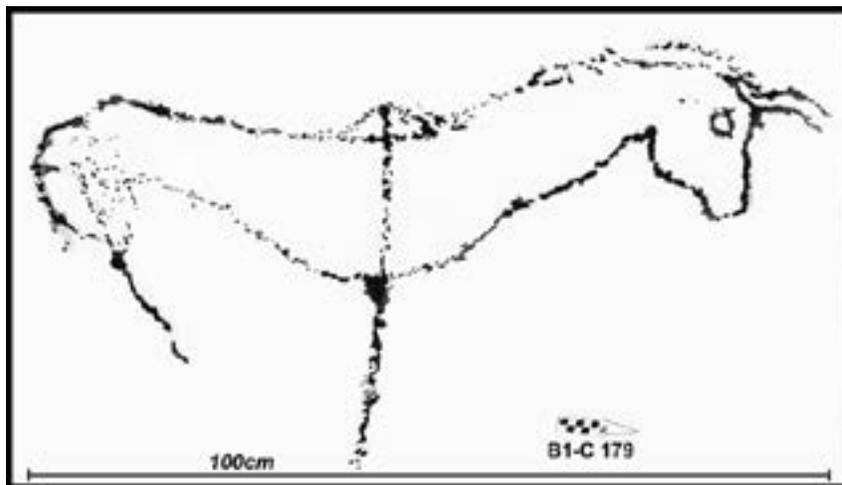
Two horned horses (at left with a yak tail).



Bear (upper left) with zig-zags, possibly snakes. Bronze Age.



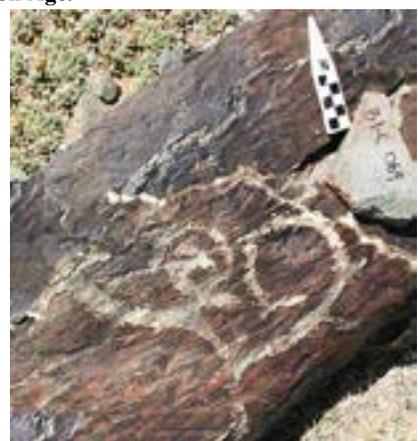
Man with axe, probably Bronze Age.



Large horned horse. Late Bronze-early Iron Age.



Group of small antelopes. Bronze and Iron (top middle figure) Ages.



Two large argali. Probably Bronze Age.



Two Saka-Scythian style deer. Early Iron Age.



Bear. Bronze Age.



Ibex with forked horns. Probably Bronze Age.



Stag with tall, branch-like antlers. Bronze Age.



Tamga? Iron Age?



Human figure. Bronze Age.



Mongolian deer (a late variation). Late Bronze-early Iron Age.



Stylized stag. Late Bronze-early Iron Age.

Biluut 1-D

B1-D, the largest and lowest slope, likewise proved to be far richer in imagery than my previous surveys led me to expect. Petroglyphs on this slope are clustered more widely among more and larger panels. Indeed, two giant sections of varnished bedrock, much of it of a high quality, dominate this slope. Mostly, the slope is not difficult to negotiate, but in some places the terrain is steep. At the bottom there are vertical end-grains of poorer quality rock. Easily accessible, these are full of figurative motifs. Some are of a high standard, but many have deteriorated badly.

Curiously, while B1-C has 20 images of wheeled vehicles, B1-D has only three. Given the larger total area of suitable surfaces on this slope, this striking variance calls for explanation. On the other hand, B1-D contains many more very large figures—figures in excess of a meter in length—mostly of horses and deer. Three wonderful images of “hybrid” deer-camel, transformative or mythological creatures that appear to relate to stylized deer forms found, e.g., on Sayan Altai deer stones, date from the early Iron Age, ca. 800-500 BCE, are found on the giant northwestern panel group on B1-D. With their more bulbous snouts and long, thin, tapering legs, these are identified with Saka-Scythian groups. In addition, I discovered for the first time on Biluut 1 evidence of animals rendered in the Early Nomadic Style. Three instances were recorded of animals in recumbent positions with folded forelegs, rear legs, or both. One of these occurs in the context of an equally rare group of four tandem horse riders, arranged in an unusual vertical composition. Such depictions of recumbent, bent-legged animals as the middle ibex figure (below, at right) are rarely encountered at this site or in this northwest region of Mongolia, even; they are particularly noteworthy because of the connection to Scythian art that they suggest.



Near the midpoint of B1-D I chanced to spot a small strip of metal lying half-buried in the grainy soil next to a small panel with a particularly elegant doe with a smaller animal figure inside its belly. Tugging it loose, I was surprised to find a nicely preserved iron arrowhead with a slightly bent shaft and angular flange. It looked as though it had struck the large granite boulder close by. Bill and Bayaraa attribute it to the medieval

period. Except for the shape of the flanged point, it closely resembles the one that our project cartographer Dan Cole, on one of his tireless foot-surveys of our study site, had found a few days earlier on a ridge of Biluut 4, beneath Broken Mountain.



Hybrid argali-horse figure. Bronze Age. Length: 6.5cm.



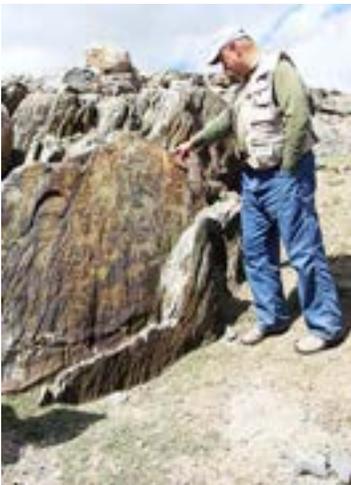
Two archaic does (facing left and up). Length: 33cm.



Turkic warrior battling small foe. Length: 1.3m.



Head of giant horse. Early Iron Age. Horse: 2.5m.



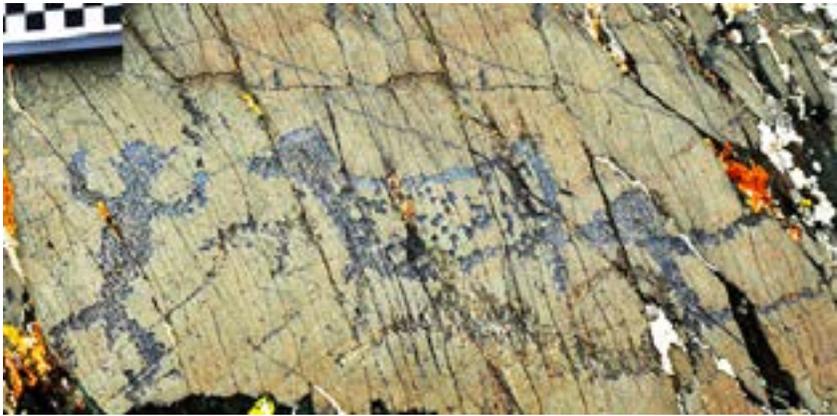
Vertical end-grain panel.



'Bird's feet tamga'? Early Iron Age?



Tall archer. Bronze Age.



Human and argalis. Archaic.



Camel rider. Probably Bronze Age.



Camel rider. Bronze Age.



Transport yak with caprids. Bronze Age.



Giant collared deer. Late Bronze-early Iron Age. Length: 1.9m.



A curious visitor.



Flowers at the base of B1-D.



Vertical at base of B1-D.



Stag with internal animals. Bronze Age.



Hybrid deer-camel in Saka-Sayan Altai style. Early Iron Age.



The end of the (double) rainbow across Khoton Lake.



Evening light, looking west over Khoton Lake.

Khuiten Gol Delta

As I mentioned, in addition to our work on Biluut 1, Jagaa and I were able to carry out some much-needed visual documentation of the nicely varnished rocky outcrops situated above the outlet of the Khuiten Gol where it empties into the lake approximately 4km southeast of Biluut 1. Nearly 150 figures were recorded here at the close of last field season by Tserendagva and myself, many of them of exceptional quality. But we didn't have time on the final day to shoot photographs or execute tracings.



Khuiten Gol Delta 1 rock art site, looking SE.

This summer Jagaa and I spent two days here, re-examining the rock art and searching for new figures. I took photos of several panels while Jagaa completed one large tracing. This site is particularly important as it contains a number of large archaic figures. Especially noteworthy are groups of Neolithic argali in the presence of human figures that are possibly of earlier date. These crude, deeply pecked male figures bear a striking resemblance to those found in significant numbers in the narrow canyon high above the Kholtsootiin Gol, just northwest of Buyant, about 75 km northeast of Biluut as the crow flies. A direct connection between these two sites is hard to deny. Jagaa and I, accompanied by Julia Clark, a Ph.D. student at Pittsburgh, spent a couple of hours above the Kholtsootiin Gol hastily recording imagery in frigid, windy conditions in June of 2009. Jacobson-Tepfer has pegged those male figures there as Paleolithic.



Archaic figures: doe, men, spotted deer (far left) and argali at Khuiten Gol Delta 2.

But even such expert assessments are not uncontroversial; many rock art researchers (including me) are skeptical of such an ancient pedigree. I myself almost always use the appellation 'archaic' for anything older than the Bronze Age. Even so, in close proximity to these panels at KGD 2 I found what might be supporting evidence. One day, just before lunch, Jagaa and I were rained off of Biluut 1. Since the storm had not yet made its way down the lake, we hopped into his jeep and drove along the long tail-like moraine of the mountain to see what

progress Bill and his crew were making on a small khirigsuur constructed right above a major outcrop of rock art. We arrived at the same as the rain. The students were packing up tools and heading uphill to their van. We parked just above a small water run-off, now run dry. As I hopped out of the front seat, it occurred to me that this eroded water-course might be a good place to look for pot sherds or stone flakes. Making my way down along it as the diggers made their way up it, I immediately spotted a small piece of bluish chert sticking out of the ground. It looked to be the right kind of rock. I tugged at the thing, but it was stuck fast, buried deeper than I had anticipated. Prodding it with my boot, I was finally able to work it loose and extract it from its hardened bed. What came out was much larger and heavier than expected: a nicely flaked bifacial tool with a long sharp edge all along one side, possibly used for cutting like a knife. Coated with a smooth, waxy varnish, it has, as Bill notes on page 31, a distinctive “Paleo feel”. In any case, it seems to fit nicely with the archaic imagery located on the nearby bedrock panels. “Is this a kind of thing you might be looking for?” I asked Bill and his crew, with feigned innocence. “They’re lying all about the place, don’t you know?” Coming away empty-handed and exhausted from hours of hard digging, I’m not sure that anybody appreciated my attempt at humor. I mean, I found that stone within 20 seconds of getting out of the jeep. But, what’s that saying about luck favoring the prepared?



Bifacial core tool found at Khuiten Gol Delta 2

Back in camp, I promptly took it to Oula Seitsonen, a lithics specialist from Finland who was working with us for the first three weeks of the season as part of Jean-Luc Houle’s settlement survey team. Oula immediately pronounced this nicely worked implement to date from the Paleolithic period. And later in summer, after I had returned home, I sent photos to Tserendagva, Mongolia’s leading expert on Stone Age lithics. Without any prompting on my part, wholly independently of Oula, Tsedo made the same assessment. As Bill notes earlier, however, the lack of clear diagnostics for Mongolian Stone Age lithics makes their chronologies and cultural identities uncertain. Nevertheless, Tsedo and I feel that this specimen, together with the two smaller, beautiful leaf-shaped bifaces found on B3 (one by me in 2011, the other by Oula earlier this season), lends support to our belief that examples of Paleo-rock art are found at Biluut. In addition to this piece, Jagga and I retrieved from the surface several flaked pieces of

the same stone type. A handful of these were found close by—in two instances, lying right on the edge of a major rock art panel.

Broken Mountain

Another batch of about 60 petroglyphs was discovered this summer by Dan Cole high on the western flanks of Broken Mountain. The sheer cliff faces of this massive landform rise immediately to the east of Biluut 3. In the folds near its western base towards the north, two of our archaeology teams excavated the remains of Neolithic dwellings. Jagaa and I discovered some stone alignments here that had escaped the notice of everybody else, and these were duly charted by Dan. One transecting line points directly to the peak of Broken Mountain above. Such lines of half-buried stones are important for our grasp of spatial orientations and how they figure in ancient beliefs and ritual practices centered on the landscape.

The rock art high on the southwestern slope of B4 includes a small number of fine images of prototypical bulls, possibly iconic religious or cult forms. Jagaa and I hiked up to this location on two occasions just to get an idea of the number, kinds, and quality of images, and to search for more rock art on other of the scattered patches of exposed bedrock nearby. This more remote area had not been explored in any of my previous field seasons. As it happens, we found only a tiny handful of other petroglyphs in this area. Nevertheless, this is an important development that opens up new possibilities with respect to the specific orientations, aspects, and viewsheds of rock art and archaeological sites within this ritual landscape. The connections between Broken Mountain's rock art and archaeological features and those of Biluut 3, especially, are intriguing and need to be investigated thoroughly. All of these newly discovered petroglyphs on Broken Mountain await full documentation in Summer 2013.

Khurgan Nuur

I also took an opportunity to venture further afield from Biluut this summer, chiefly to explore possible cultural ties between Biluut and other rock art and/or archaeological sites to the south and east. The rough terrain on the south side of Khurgan Lake, between the lake and the ridgeline of the snowcapped Altai Nuruu, has been little visited before. I passed through this harsh, forlorn area once before, during my initial surface reconnaissance of this region in 2004, but was able to spend only a couple of daylight hours while in transit. This summer I took Jagaa, Dan, and visiting archaeologist Dr. Frank Hole, Emeritus Professor at Yale University, and a store of provisions to this rugged wilderness to search for unknown rock art and stone monuments. We traveled as far as Tsagaan Asgat to the east, where a large assortment of tall Mongolian deer stones is found in close association with giant khirigsuurs (> 100m diameter). On our return, we spent an entire afternoon and evening exploring the deserted southern shoreline of Khurgan Nuur and the rocky moraines that rise in waves southward to the high ridgeline that looms beyond.

Near a prominent finger-like peninsula at the south end of the lake we came unexpectedly upon a Bronze Age khirigsuur in an isolated depression, and scattered rocks with Bronze- and Iron Age petroglyphs, mostly of unexceptional ibex. But in one place, right above the water, I found the remains of dwellings, probably Neolithic. This is the first instance I can think of, of a possible fishing settlement that we've located. Bill, especially, has been hoping to find evidence of such settlements for the past two years. At this site I discovered two dwellings, one slightly

elevated above the other, within 30 meters of each other.

Even more fascinating, just another 30 meters to the south of the upper dwelling I found an oblong boulder approximately two meters long, decorated with dozens of pecked animal images. Almost certainly associated with these two archaic sites, this stone is conspicuously “spotted”, like a leopard almost, with a few dozen deeply bored round gouges, or “cups”. Some of these measure as many as 7.5cm in diameter. These likely indicate the work of a Neolithic hand. I have found a very small number of small ($\leq 2.5\text{cm}$) round gouges at



Biluut. But as far as I have been able to determine, nothing like this grouping of sizeable cups on a single rock or rock face has been found anywhere in this Bayan Olgii watershed. The meaning, or purpose, of these cups is a mystery; but such features have been found in widespread places, like the British Isles. The cultural significance of this rare boulder is also uncertain. It must once have been special—totemic or magical, perhaps. Among several possibilities that come to mind, I’ve begun to wonder about celestial ties: sun, moon, and even star patterns or ancient constellations. These cups do not appear to be randomly situated. Along with the spotted bovid and strange symbols on Biluut 1-C, this is one of the most exciting discoveries we’ve yet made in Bayan Olgii.



‘Leopard rock’.

Tsagaan Asgat

Tsagaan Asgat, located about 80km east and slightly south of Biluut, is an important locus of prehistoric ritual activity. Across the Khovd River that flows out of Khurgan Nuur’s eastern end, the broad flood plain contains dozens of khirigsuurs, several of which are unusually large, on the order of 100-150 meters in diameter. In close association with these Late Bronze Age burials are numerous dwelling foundations and complex stone alignments. Many of these directional lines are surprisingly long, running for more than a kilometer; in several instances they run straight up steep hillsides, sometimes to a summit. An aligned group of more than a

dozen tall, but somewhat irregular deer stones of the Classical, or “Mongolian-Transbaikhal” type are found amidst the largest khirigsuurs, some standing, some fallen, some broken into pieces. There are also three or four stones or fragments that appear to be of the Sayan-Altai type, and another two or three that look to be much smaller and simpler Eurasian stones. In June 2009, Bill, Bayaraa, and I briefly explored this site together. While I documented the deer stone decorations, those two executed some test pits and excavated datable material in the form of charcoal and animal bone from hearth rings encircling one or two of the largest khirigsuurs. There is a strong suggestion of a close connection between Tsagaan Asgat and Biluut. Unfortunately, on that occasion I did not have time to look for petroglyphs on the mountainsides nearby. This was one of the chief motivations for taking a day this summer to revisit this place.

Because of the difficult terrain and awful state of the track on the southern side of Khurgan Nuur, this surveillance expedition required an entire day. Besides hunting for previously unrecorded petroglyphs with Jagaa, I wanted Dan to chart some of the many stone alignments that Bill, Bayaraa, and I had observed in 2009. Dozens of these, of varying lengths and directions, criss-cross the plain at Tsagaan Asgat. Since Biluut also contains a small number of these features, these could provide us with another means of connecting the two sites and some of the peoples who inhabited them at specific times.

While Dan recorded designated alignments and ritual mounds, Jagaa and I scoured the nearby rocky slopes for petroglyphs. Unfortunately, although several patches of the right kind of geological type—metagreywacke—were found, all were in poor condition, corroded, broken up, roughly surfaced, and/or covered with lichens. We managed to locate a handful of small, crudely pecked images near the top of one hill; but these were hardly worth writing home about, or documenting. I made some field notes, recorded a few locations with my Ashtec Mobile Mapper GPS unit, and took one or two photographs. The testimony of local individuals whom I briefly interrogated was unpromising. It is possible, still, that petroglyphs are located in this vicinity. Clearly, it will require greater and more sustained surveillance.

A note on vandalism

One final issue that needs to be reported on involves the accelerated increase in desecration, looting, and vandalism (e.g., by graffiti) of archaeological and cultural sites in western Mongolia, especially in the vicinity of Khoton Lake. This has become a serious problem for archaeologists, anthropologists, rock art researchers, and many others working in this country. The defacing of prehistoric petroglyphs, especially, by scratching or carving names, dates, figures and/or signs and symbols into rock faces, is cause for concern. The damage is permanent. It simply cannot be undone. This can make recording difficult, and in some cases impossible.

One of the things that Jagaa and I began to do this summer was to record with digital photography and field notes particularly pernicious examples of vandalism. Our idea is to compile a booklet of these that gives locations and describes the nature and extent of damage. We plan to present our findings at a suitable conference or workshop in-country; we’d like to publish this information and explore means of conservation and preservation more widely in Mongolia, among national and local groups consisting of government ministries and agencies, NGOs, museums, schools and universities, and tour operators. These images provide a rare

opportunity to study Mongolia's ancient past. Often they are our only source of information on peoples and events in preliterate ages. Being fragile and vulnerable, they must be protected. If this alarming trend continues, the entire world will lose a great treasure forever.



Permanent graffiti: at Khuiten Gol Delta (left) and on Biluut 1-D (right).

Final remarks

One of the least expected but most pleasant outcomes of this summer's fieldwork was making new connections with other researchers in the field. In our remote location we rarely encounter anybody else working out here. I have only once, back in 2005, run into another researcher while I was out in the field. And that was when Esther Jacobson-Tepfer and her photographer-husband, Gary Tepfer, made a surprise visit to Biluut on a day I chanced to arrive there myself. Besides the members of Jean-Luc's survey team whom I met for the first time, this summer, as luck would have it, I made some new personal and professional acquaintances. En route to Tsagaan Asgat, my companions and I came upon the field camp of H.-P. Giscard, a French archaeologist who has been working in Mongolia for 20 years. With him was a large contingent of summer field assistants, a French documentary film crew, and his chief collaborator, Ts. Turbat, probably the top young Mongolian archaeologist today. Giscard and Turbat were leading a joint study of Pazyryk burials. They happened to be working very near to us at Biluut, across the bridge at Cirgal, only a half-hour drive away. Biluut 1, 2, and 3 are clearly visible from their camp.

This was a welcome chance circumstance. Both groups visited each other's campsites at least twice. We shared food and drink and good company, along with a good deal of information and ideas. It's good to learn directly what others are up to in this neck of the woods. I was able to share my latest discoveries—not only from laptop photos, but first-hand on-site at Biluut—with Giscard and Turbat, and with other members of their team. These informal get-togethers provided unexpected benefits to our research in far-western Bayan Olgii. Bill and I hope to have Turbat join with us as we look to expand our site locations over the next few years.

Part IX

Reflections on Mongolia

By Frank Hole

Reflections on Mongolia

By: Frank Hole, April 2013

Through the generous offer of Richard Kortum, Bill Fitzhugh and Bill Honeychurch, I was able to visit two archaeological projects in Mongolia in June-July 2012. As my particular specialty in the Near East has been the study of nomadic people and their archaeological remains, I was especially interested in how northern herders used their landscapes and managed their livestock. Two weeks in each camp provided only an impressionistic glimpse of the different adaptive strategies in the two disparate regions, but I hope my observations will be useful.

My impressions of the landscape while in the field have been sharpened by referring to the large number of photos that I took. The two regions, north-central Mongolia near the Russian border and the town of Teshig; and Lake Khoton in the Ulgi province at the base of the Altai Mountains, have contrasting environments. The landscape of the North is forest-steppe, with hillsides forested with larch, while the vast intervening plains are grass-covered. Even in an unusually dry year, the entire region was green, masking the obvious degradation resulting from over grazing. Survey probing showed that there is a shallow soil over the entire region overlying either bedrock or a loessic deposit. In contrast, the Lake Khotan region is glaciated terrain with substantial patches of permafrost, moraines, kames, kettleholes and permafrost. Snow was still visible on the ground in places although ice on the lake had melted. Much of the terrain consists of rocks and boulders with shallow soil, and degraded vegetation. Only in high and relatively inaccessible locations are there larch trees, although the Altai Mountain slopes across the lake are forested. While some commercial farming was seen in the North, it is likely not possible in the lake region owing to a very short growing season. The Project camp area in Biluut hills next to Lake Khoton is rugged, with relatively small open plains, although the plains to the east, at Tsagaanagat and elsewhere are vast. In both regions there are flowing streams with riparian vegetation, both apparently sourced by snow melt. After leaving the immediate environs of Lake Khoton the topography becomes more like that in the North, except it is much drier and is not forested.

While my cursory views of these landscapes cannot be considered a thorough sample, it was augmented by our drives between Ulaanbatar and the Yale camp in the

north, which traversed generally hilly, arid country similar to the drive between Ulgi and the lake. My impression is that it is generally more arid in the west; rather than grassy plains and much of the vegetation is steppe shrubs, and on some plains there is considerable drifting sand.

My impression is that northern and western Mongolia have little in common with the Near East. Despite it being an abnormally dry year, in both regions of Mongolia the landscape was green (but very seriously degraded from overgrazing), with larch forests covering the hills in the north, unlike the Near East where precipitation occurs in the winter and by summer all palatable vegetation is brown. In some ways the land in the North is familiar, as I recognized the same complex of plants (but different species) as on my land at 3000m in Colorado!

The Yale camp is in Buddhist territory, while the Smithsonian camp is in Kazakh/Islamic territory. In the former there are abundant aboes, both elaborate and minimal, indicating sacred places where “offerings” of various sorts are deposited in and around piles of rocks. I saw no overt symbols of Islam in the western region other than mosques in the towns.

While I had expected to see ger camps, the portable dome-shaped structures that are home to the pastoralists, I had not expected to see log cabins, corrals, and animal sheds, indicating permanent emplacements. None of these was occupied while I was there, but I was told that they were used seasonally. The style of the log cabins differed in the two regions, as did the gers. The relatively isolated cabins, with outbuildings, especially in the Mongol area are like those one once found across the American West. Further solidifying this illusion are the Mongols riders and herds of horses. In fact, the horse is the preferred means of travel as “roads” in these remote stretches of Mongolia have little to recommend them.

It occurred to me within a few days that rather conceive of the modern pastoralists as nomadic, recognize that they are semi-sedentary herders with rather circumscribed territories. This may well be an artifact of the Soviet era or of individual property rights, but since it is apparently workable, it may have some reasonable antiquity. What we apparently see then, is a settlement system where ger camps of several households move together seasonally and individual households repair to their cabins at other times. The

cabins in the north, with sheds for livestock are on open, exposed plains, while those near Lake Khoton are in sheltered locations. The latter are winter houses, but I was told that those in the North are used in summer, despite the fact that none was occupied when I was there. There is ample opportunity to study the modern ger camps and I observed some places where ger camps had been in the recent past and whose study might inform archaeology.

It would seem worthwhile to conduct ethnographic inquiry of the local herders to understand the settlement system, while further research into local history and government policies would illuminate their effects on modern herding practices. While the Soviet system limited herd sizes, they have now ballooned to an unsustainable point, with resultant degradation of the pastures. This increase in herds must also contribute to changes in settlement pattern. Nevertheless, there must be clear environment determinants of where and when people use different parts of the landscape.

Despite the different ethnic and religious backgrounds, as well as environment in the two regions, some aspects of settlement patterns seem similar, implying a deep-seated set of customs and traditions that prevails across vast regions and across wide political gaps. This notion is reinforced by archaeology, which reveals similar physical remains in the two regions. The Khirigsuurs, burial mounds and other ritual sites are common to both regions, but they are seemingly larger and more varied in the West.

While the Smithsonian project centered on excavating ritual structures, the Yale team focused primarily on survey to locate possible settlements. This consisted primarily of systematically sampling the entire landscape with the use of post-hole augers. This strategy assumes no prior knowledge of where sites might be and that the sampling interval ~ 30 m, will detect remains of gers (based on one ethnographic study). Since most of the surveyed landscape is nearly flat and distant from water one is hard pressed to imagine *a priori* where a ger would be placed. Rather than gers, today it is the log cabin complexes that are on the plains. The few traces of pottery turned up in the auger holes on the plains are tantalizing evidence of what we do not fully understand. In casual observation I noticed that gers are likely to be found on somewhat elevated land near water and possibly with access to wood, although the ubiquitous, carefully stacked, cone-

shaped dung piles by the cabins in the north belie the need to use wood for fuel there. Why similar dung piles are not found in the West where trees are scarcer is a question.

There were some 10,000 years following the retreat of ice from the two regions during which some occupation might be expected. This probably spans late hunter-gatherers, Neolithic pastoralists and their later derivatives in the Bronze, Iron and Mongol periods. The latter groups are much in evidence, but the earlier are sparse. A question that cannot be answered as yet is how life differed during these periods. The stone-built monuments are evidence of ritual, but tell nothing about where and how the people who built them lived. Perhaps the large stone circles are ger rings (*a la* tepe rings). However, as I understand it, they have yielded little or no evidence of domestic activities. In the North I examined some sub-recent ger campsites to see what I could find. Apart from some burned wood and trampled surfaces, and an occasional broken vodka bottle they were pretty clean. Not a good sign for attempting to find ancient ger camps, except that their location on the landscape tells where people liked to live. Could people have built log cabins before the advent of iron axes? In Europe they did, but no sign of polished stone axes has turned up, implying that wooden structures are probably a recent phenomenon.

While survey and its strategy have focused on Neolithic/Bronze/Iron Age remains, what strategy should be employed to find the first (Neolithic) pastoralists, or hunter-gatherers? Based on my general understanding of hunter-gatherer life I would expect sites might be found along vegetated streams rather than in the open. They might also be found near or at sources of lithics, and where game could be hunted. Following this is the beginning of some kind of pastoral life with herds. Was this carried out by pedestrian herders? The florescence of nomadic life must, however, date to the Bronze Age Early Nomadic period 8th-3rd centuries BC when dependency on the horse enabled semi-nomadism. Presumably, then, the nature of settlements must have undergone some changes when it became possible to move gers either by horse, camel or yak.

I tried to take in as much of Mongolia as I was able, constantly asking myself “why.” What created the present landscape? How may it have been different in the past? Why did the people build the hundreds of stone monuments and who among them, did they commemorate? What is the relation between the log cabins and the gers? What is

the best strategy for discovering evidence of past cultures? Is there a model that will serve across the millennia and the varied landscape?

Geologic processes have formed much of the landscape, ranging from glacial terraces, kames and potholes in the West to vast plains and low mountains in the North. In the North there is a great deal of loess, presumably of glacial origin, but when was it deposited? In one site we visited, being dug by a Belgian team, at least a meter and a half of loess covers a Paleolithic site, probably dating 30-40,000 years ago, whose laminations imply a different deposition process. Clearly it is rarely possible to find such a site by examining the surface alone. At another site tested by the Yale team, loess seems to incorporate Neolithic artifacts, whereas above it is a Bronze Age layer. Is this a case of true stratification or merely movement of artifacts through bioturbation? How did the Last Glacial Maximum affect the two regions?

The rock art studies in the West are particularly interesting and contrast with findings in the North where there may not be suitable smooth rock surfaces to peck or engrave. It appears that whenever there is a smooth rock face (other than lying flat), it was potential canvas for imaging animals. Thousands of these adorn surfaces in the Khoton project area and they largely consist of horses and antlered animals; rarely are humans depicted. Unfortunately there is no easy way to date any of these other than by style and superposition. Their location above grazing grounds suggests that herders whiled away their time watching their herds below. To my eye at least there is nothing to suggest that the depictions have ritual or religious significance, and it is clear from the styles that both experts and novices created them.

Excavation of the khirigsuurs and other monuments reveal a systematic approach to construction, but within the different styles, there is some variability, largely in embellishments. Do these differences reflect changes in fashion over time, or differences in the person(s) who built or were buried in them? Unfortunately little cultural material has emerged from the excavations, but bits of bone and an occasional iron artifact may provide dates. Why, in the land of the famous and elaborate Pazyryk tombs, is so little found in most khirigsuurs? Considering the hundreds of stone monuments, most on relatively open land, is there any underlying system to their location and conformation?

That is, how do monuments of different type occur on the land? Is one monument related to another or others? Since many can be seen on satellite images, it should be a relatively easy to discern any system although the palimpsest effect of millennia of construction may obscure any patterns. Obviously it is of great importance to be able to secure relative dates for the monuments.

While open expanses lend themselves to visual appreciation of pattern, many of the stone structures and tombs in the West were in visually concealed locations, suggesting that they were not always meant to be viewed from afar. Neither marking of territory nor display of power and prestige would seem to have been motivations for such sitings. Whatever the motivations may have been, at some time in history, they ceased to be constructed. Why did a tradition that lasted for more than 2000 years end? Was there a functional replacement? Apparently not, at least among the modern Mongol/Kazakh pastoralists.

Mongol/Kazakh diet is notoriously oriented toward meat. Today this is usually served with potatoes or noodles, which provide starchy carbohydrates. Both of these are “imported”. Potatoes, a New World crop has a relatively recent history, while grain could have been imported much earlier from southern Mongolia or China. The question is, what did people eat before they had access to these products? We may compare the Mongols with Plains Indians in America, whose principal staple foods were meat from wild game. As with the Mongols, they ate the entire animal, including the organs, blood and bone marrow. They did, however, supplement this through collecting tubers of native plants (such as Indian breadroot, *Pediomelum esculenta*), as well as wild greens and berries. In historic times, they traded with corn-raising Indians. The Indian breadroot could be dried and mixed with meat to make pemmican (a stored, highly nutritious food, similar to jerky). As we were digging we uncovered a native tuber, which some of the Mongol workers consumed with relish. Perhaps this was a staple in the old days, a question that might be answered through ethnographic inquiry, and it would also be interesting to learn traditional practices of gathering wild plant foods and how they were used. Whatever the case, the need for dietary supplements to meat must have played a role in when and where herders and hunter-gatherers camped. Even some cultivation of the tubers might have been possible.

Effective archaeological survey starts with a thought process, using ethnographic and historical knowledge, and an appreciation for what it takes to survive in a particular landscape. How do you (and any livestock) get the necessary food, water and shelter? Level of available technology, size and density of human and animal populations, seasonal and interannual changes in weather and availability of resources all have to be factored in. This ignores social factors, which I deem secondary to survival, but ethnic/tribal/religious factors may also play important roles.

I left Mongolia with a keen, but superficial, sense of the vast differences between nomadic pastoralism in the Near East, and the semi-sedentary pastoralism of Mongolia. Nevertheless, I returned home with many more questions than answers about this fascinating land. Having never lived in or visited landscapes like those of Mongolia, I learned something new each day. Only long-term experience on the land will reveal answers to the host of questions that can be raised.

I am grateful for having had the opportunity to visit two fascinating field projects, which continue to occupy my thoughts back in New Haven.

Arctic Studies Center

Appendix I

Site Reports

Site Reports

SITE NAME: Aral Tolgoi-1		Date: 6/12/2012	Province: Bayan Ulgii	Suum: Tsengel				
Surveyed By	Method	Site/Feature Type	Culture Period/Age	GPS	Elev.	Location	Disturbances	Vegetation
WF, Meg Tracy, Dan Cole	Survey/Te st Pit/Excava tion	Ovoo Chain	Medieval/Re cent?	N48° 44.340 E88° 08.975		Midway along the crest of Aral Tolgoi, with south end cairn located a few meters NW of a prominent piece of rock art I call "the big bull".		

SITE NAME: Aral Tolgoi-2		Date: 6/12/2012	Province: Bayan Ulgii	Suum: Tsengel				
Surveyed By	Method	Site/Feature Type	Culture Period/Age	GPS	Elev.	Location	Disturbances	Vegetation
WF, Dan Cole, Meg Tracy	Survey/Te st Pit	Ovoo Chain	Medieval/Re cent?	N48° 44.346 E88° 08.931	2197	Northern end of Aral Tolgoi ridge crest, spanning the entire width of the crest.		

SITE NAME: Aral Tolgoi-3		Date: 6/12/2012	Province: Bayan Ulgii	Suum: Tsengel				
Surveyed By	Method	Site/Feature Type	Culture Period/Age	GPS	Elev.	Location	Disturbances	Vegetation
				N48° 44.513' E88° 08.965				

Site Name: Aral Tolgoi-1					

Description	Size	Samples Collected	Artifacts Collected	Research Potential	Remarks
24 stone cairns of varying construction and size running in a slightly curving line, generally northward. The line appears to have been built sequentially from the south to north, and some cairns appear to have been recycled to build the later northern cairns. We tested the center of #15 and found charcoal and a bit of burnt bone.		Charcoal	Charcoal	Moderate - ethnographic info could make an important contribution to the understanding of these features	A short report and sketch of AT-1 was made in 2011.

Site Name: Aral Tolgoi-2					
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Description	Size	Samples Collected	Artifacts Collected	Research Potential	Remarks
12 stone features, round in shape and ranging from flush to the ground to piled up mounds, mostly made of slabs of slate/greywacke. The larger mounds were on the southern end of the chain and were 3-4 m in diameter. The northern ones were 1.5-3 m. Mound 11 (next to northernmost) had been opened and we found charcoal, burned mammal bone, and burned bird bone - one piece of unburned bone too. Mound 9 Meg Tracy excavated and found charcoal and burned bone. No human remains, very shallow deposit, on surface, and covered with a slab. Often the cairn/ovoo was built around a circle of boulders, then covered over with slate slabs.	Cairns 3-4 m diameter	Charcoal, Bone		Interesting features. Aligned generally to north, but curving to NW at northern end.	Possibly a spring ovoo celebration like the current "Altai 12" Ceremony held every early summer to bring good fortune to animals and people. Maybe a new ovoo with offerings every year for 12 years?

Site Name: Aral Tolgoi-3					
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Description	Size	Samples Collected	Artifacts Collected	Research Potential	Remarks

Khoton Project: Field Report 2012

WF, Meg Tracy	Survey	Ovoo Cairn Chain	Medieval/Re cent?	N48° 44.513 E88° 08.965	We called this the "watchtower" ovoo system because it is next to a log cabin overlooking the Aral Tolgoi military base. It is found at the highest point on Aral Tolgoi hill and overlooks all of the country at the head of Khoton Nuur and the western part of the lake.
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SITE NAME: Aral Tolgoi-4		Date: 6/12/2012	Province: Bayan Ulgii		Suum: Tsengel		
Surveyed By	Method	Site/Feature Type	Culture Period/Age	GPS	Elev. Location	Disturbances	Vegetation
WF, Meg Tracy, Dan Cole	Survey	Lithic	Medieval/Re cent?	N48 38.096 E88 21.253	A few meters NW of a low slate mound on the northern crest of Aral Tolgoi		Mostly gravel

SITE NAME: Biluut 1D-Cranium Site		Date: 7/1/2012	Province: Bayan Ulgii		Suum: Tsengel		
Surveyed By	Method	Site/Feature Type	Culture Period/Age	GPS	Elev. Location	Disturbances	Vegetation
WF Team	Excavation	Boulder Mound	Unknown	N48 39.120 E88 22.134	2106 SE end of Biluut 1 near the last of the rock art finds, a few meters north of a very large glacial boulder (cracked through the middle)		Small amount of grass, herbs

SITE NAME: Biluut 3.4A/Peat Valley-2A		Date: 6/2/2012	Province: Bayan Ulgii		Suum: Tsengel		
Surveyed By	Method	Site/Feature Type	Culture Period/Age	GPS	Elev. Location	Disturbances	Vegetation
WF Team	Test Pit/Excavation	Burial	Unknown	N48 39.247 E88 21.618	2128 Adjacent and to south of the E/W baseline of Peat Valley-2		Fine brown sand/silt beneath 2nd level slabs, similar to soil below cultural level in test pits

The unusual feature of this ovoid system is its cross-shaped arrangement of mounds and cairns, some of which seem old and lichen-covered, while others are relatively recent. At the junction of the two lines, one running parallel to the ridge crest and the other across it, is a large stone mound. Just north of it is a rectangular (modern) pit, looking like a garbage pit. Some of the alignment features are pavements, others are small cairns. The ridge-top line aligns 350 degrees toward a distant peak to the NW. This line is 38 m long; the transverse line is much shorter and aligns to 45 degrees.

No

No testing of features

See Remarks

Could be quite interesting. Ethnographic interviews might reveal something about this site.

Site Name: Aral Tolgoi-4

Description	Size	Samples Collected	Artifacts Collected	Research Potential	Remarks
Semi-lunar flake-knife of beige chert lying on the surface. No other material present		Flake-knife	Flake-knife	No	

Site Name: Biluut 1D-Cranium Site

Description	Size	Samples Collected	Artifacts Collected	Research Potential	Remarks
Boulder mound only 4x4 m and 50 cm high. Two granite slabs at the east side of mound, but otherwise, it seems intact - unlike the larger (khirigsuur?) mound downslope and to the SE some 100 m. Southern end of the mound has been built up with large boulders in an attempt to level up the burial surface	4x4 m, 50 cm high	Skull fragments, teeth		Yes, possible human burial	No charcoal found. Beneath a rectangular arrangement of slabs and directly under a vertically placed glacial rock was a fragmented skull and part of a mandible, and several teeth. No post-cranial bones. Skull appears to have been crushed or fragmented before burial

Site Name: Biluut 3.4A/Peat Valley-2A

Description	Size	Samples Collected	Artifacts Collected	Research Potential	Remarks
2.5x3 m circular pavement of thin schist/metagraywacke slabs neatly laid in a pavement flush with the ground surface. There appeared to be careful attention to making the pavement margins circular. Beneath 2 layers of rocks, we found an infant (or prenatal) burial, poorly preserved, but small bits were recovered.	2.5x3 m mound	Charcoal beneath 2nd rock pavement in northern part of square	2 cobble tools, both under 2nd level slabs, one in brown soil west of burial, the other (B) alongside the skeletal remains.	Excavation Completed	

Khoton Project: Field Report 2012

SITE NAME:	Biluut 5.1; Arrowhead Mound	Date: 6/27/2012	Province: Bayan Ulgii	Suum: Tsengel
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Surveyed By	Method	Site/Feature Type	Culture Period/Age	GPS	Elev.	Location	Disturbances	Vegetation
WF, Dan Cole, Frank Hole	Excavation	Ritual Site	Medieval?	N48 39.722 E88 21.959	2231	On the very crest of the hogback we call Biluut 5, next to Broken Mountain	Marmot burrow	

SITE NAME:	Biluut 5.2 Hut Circle	Date: 6/29/2012	Province: Bayan Ulgii	Suum: Tsengel
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Surveyed By	Method	Site/Feature Type	Culture Period/Age	GPS	Elev.	Location	Disturbances	Vegetation
WF Team	Survey	Tent Ring	Unknown - Lithic?			Enroute to Biluut 5 Hill Crest mound lies a small 1.5 m diameter stone circle		

SITE NAME:	East Bay-4	Date: 6/23/2012	Province: Bayan Ulgii	Suum: Tsengel
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Surveyed By	Method	Site/Feature Type	Culture Period/Age	GPS	Elev.	Location	Disturbances	Vegetation
WF Team, Dan Cole	Excavation	Cemetery	Medieval?	N48 38.170 E88 23.715	2095	On a small terrace at the point at which the road descends to the lowland area of East Bay. Located only a few meters south of the main dirt road between Sirgal and Aral Tolgoi. A very prominent lakeside location.		Sparse grass and herbs

SITE NAME:	Khuiten Gol Delta-1	Date: 6/6/2012	Province: Bayan Ulgii	Suum: Tsengel
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WF, Meg Tracy	Survey	Ovoo Cairn Chain	Medieval/Re cent?	N48° 44.513 E88° 08.965	We called this the "watchtower" ovoo system because it is next to a log cabin overlooking the Aral Tolgoi military base. It is found at the highest point on Aral Tolgoi hill and overlooks all of the country at the head of Khoton Naur and the western part of the lake.
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SITE NAME:		Aral Tolgoi-4		Date:	6/12/2012		Province:	Bayan Ulgi		Suum:	Tsengel	
Surveyed By	Method	Site/Feature Type	Culture Period/Age	GPS	Elev.	Location		Disturbances	Vegetation			
WF, Meg Tracy, Dan Cole	Survey	Lithic	Medieval/Re cent?	N48 38.096 E88 21.253		A few meters NW of a low slate mound on the northern crest of Aral Tolgoi			Mostly gravel			

SITE NAME:		Bilunt 1D-Cranium Site		Date:	7/1/2012		Province:	Bayan Ulgi		Suum:	Tsengel	
Surveyed By	Method	Site/Feature Type	Culture Period/Age	GPS	Elev.	Location		Disturbances	Vegetation			
WF Team	Excavation	Boulder Mound	Unknown	N48 39.120 E88 22.134	2106	SE end of Bilunt 1 near the last of the rock art finds, a few meters north of a very large glacial boulder (cracked through the middle)			Small amount of grass, herbs			

SITE NAME:		Bilunt 3.4A/Peat Valley- 2A		Date:	6/2/2012		Province:	Bayan Ulgi		Suum:	Tsengel	
Surveyed By	Method	Site/Feature Type	Culture Period/Age	GPS	Elev.	Location		Disturbances	Vegetation			
WF Team	Test Pit/Excava tion	Burial	Unknown	N48 39.247 E88 21.618	2128	Adjacent and to south of the E/W baseline of Peat Valley-2			Fine brown sand/silt beneath 2nd level slabs, similar to soil below cultural level in test pits			

Khoton Project: Field Report 2012

Surveyed By	Method	Site/Feature Type	Culture Period/Age	GPS	Elev.	Location	Disturbances	Vegetation
WF Team	Excavation	Pavement Mound	Early Bronze Age?	N48 39.581 E88 22.105	2083	On the southwest side of the Khaiten Gol River as it enters the delta, across from the high bank on east side of river. About 50-100 m above (elevation) a Kazakh ethnographic camp just SE of the mound		Grass and herbs

SITE NAME: Khuiten Gol Delta-2 Date: 6/6/2012 Province: Bayan Ulgii Suum: Tsengel

Surveyed By	Method	Site/Feature Type	Culture Period/Age	GPS	Elev.	Location	Disturbances	Vegetation
WF Team	Excavation	Deer Stone Khirigsuur Complex	Late Bronze Age	N48 37.874 E88 21.506	2116	A few meters NW of a conspicuous boulder at the point west of the Khuiten Gol Delta. Excellent rock art near this huge cracked boulder		A bit of grass and herbs

SITE NAME: Khuiten Gol Delta-3 Date: 6/19/2012 Province: Bayan Ulgii Suum: Tsengel

Surveyed By	Method	Site/Feature Type	Culture Period/Age	GPS	Elev.	Location	Disturbances	Vegetation
WF Team	Excavation	Stone Mound	Unknown	N48 37.842 E88 21.514	2092	About 50 m SE of the big boulder at the first point west of the Khuiten Gol Delta. About 95 m from KGD-2 khirigsuur. Mound edge is only a few meters from the Khoton Nuur shore.		Brown upper soil, tan lower soil

SITE NAME: Milk River-1 Date: 6/19/2012 Province: Bayan Ulgii Suum: Tsengel

Surveyed By	Method	Site/Feature Type	Culture Period/Age	GPS	Elev.	Location	Disturbances	Vegetation
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Description	Size	Samples Collected	Artifacts Collected	Research Potential	Remarks
A low pavement mound only one rock high throughout - 9 m in diameter. No marked surface features except frequent finds of quartzite flakes with signs of use.	9 m diameter	Quartzite Flakes, Pottery, Charcoal, Felt-like Material	Quartzite Flakes, Pottery, Charcoal, Felt-like Material	Excavation Completed	

Site Name: Khuiten Gol Delta-2

Description	Size	Samples Collected	Artifacts Collected	Research Potential	Remarks
Round khirigsuur with 2 slightly disturbed hearth rings to the west of the khirigsuur. Circle fence is about 10 m in diameter and the mound is about 7.5 m in diameter, with no particular architectural features except 4 rather asymmetric radials which do not match cardinal directions	Mound 7.5 m diameter; Circle fence 10 m diameter	A small human was found buried with head to north, face upright and looking east. Age estimate 8-12 years, by skull sutures and vertebrae process fusion. Height only ~80 cm		Excavation Completed	

Site Name: Khuiten Gol Delta-3

Description	Size	Samples Collected	Artifacts Collected	Research Potential	Remarks
A small, low circular mound made of slatey slabs, about 3-4 m in diameter. The edge of the mound is bordered by granite boulders. In the center of the mound, there is a small stone box made of vertical slabs. Three large slabs with broken bases lay on top of the mound, perhaps having covered the box. If they had been standing in the mound, we would have found the broken basal stubs.	3-4 m diameter	Bone	A few small bones from 81-85 cm depth. BD - Some maybe burned. Possibly some of these are rodent related	*See Remarks*	This was a very disappointing site in that its interesting architecture and absence of looting suggested at least a good human skeleton. But nothing except architecture could be found. Perhaps something was once in the stone box on top of the mound, but we found nothing except bits of bone well below the standing vertical slab down in the center of the mound.

Site Name: Milk River-1

Description	Size	Samples Collected	Artifacts Collected	Research Potential	Remarks
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Khoton Project: Field Report 2012

WF, Dan Cole, Richard Kortum	Test Pit	Old/Recent Lithic Scatter, Rebuilt Mound	Late Neolithic/Early Bronze Age	N48 43.291 E88 11.500	2095	On an isolated terrace south of the Aran Tolgoi road near the mouth of the Milk River. Terrace is surrounded by marshy land - good horse pasture - and during early occupation may have been a peninsula or island in a higher stand of Khoton Nuur.
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SITE NAME: Peat Valley North		Date: 6/4/2012		Province: Bayan Ulgii		Suum: Tsengel	
Surveyed By	Method	Site/Feature Type	Culture Period/Age	GPS	Elev. Location	Disturbances	Vegetation
WF Team	Excavation	Standing Stones in Enclosure	Turkic?	N48 39.949 E88 21.561	North end of Peat Valley, in a small N-S plateau between Biluut 3 and 4		

SITE NAME: Peat Valley-1A,1B		Date: 5/29/2012		Province: Bayan Ulgii		Suum: Tsengel	
Surveyed By	Method	Site/Feature Type	Culture Period/Age	GPS	Elev. Location	Disturbances	Vegetation
WF Team	Excavation	Dwelling/Ritual Site	Late Neolithic/Early Bronze Age	N48 39.165 E88 21.588	Peat Valley, just below the gorge as valley opens onto the plain		

SITE NAME: Peat Valley-2 (Biluut 3.4)		Date: 6/1/2012		Province: Bayan Ulgii		Suum: Tsengel	
Surveyed By	Method	Site/Feature Type	Culture Period/Age	GPS	Elev. Location	Disturbances	Vegetation
WF	Test Pit/Excavation	Boulder Enclosures, Slab Pavement	Unknown	N48 39.247 E88 21.618	2128 East side of Peat Bog brook 200 m upstream from Peat Valley-1. Site area is in a small enclosure between the last outcrop constricting the brook before it enters the open valley below PV-1.	No	Grass and herbs, a fair amount of silt on surface from this spring's flood from the brook. Everything is in situ.

Mound seemed to have a base with old lichen-covered rocks, covered by a newer building phase of recent origin. North side had multi-tiered boulder "wall" 4 stones high. At base of north side were two probably recent circular features, maybe modern burials. A third small feature lay east of the mound about 6-8 m away. Lithic component was noticed on the eroding bank south of the mound and along this terrace front for 50-100 meters, with scattered lithics and fire-cracked rock showing

Lithics, coming from upper 10 cm of brown silty soil

Flakes, utilized Flakes, Pencil Microblade Core, Rotated Microblade Core, Core Blanks

Yes, maybe not a major concentration, but scattered and dispersed use

Four test pits excavated. Pencil microblade core found in Test Pit 1. See Sketch Map

Site Name: Peat Valley North

Description	Size	Samples Collected	Artifacts Collected	Research Potential	Remarks
2 standing stones of slate, both broken off just above their bases, with parts lying in the enclosure. Standing stones inside a rectangular box made of slate slabs that incline outward. The largest standing stone was at west side of the box and the smaller to the east. Flat sides faced north and south. A circular boulder hearth (Fea.3)		None		Yes	

Site Name: Peat Valley-1A,1B

Description	Size	Samples Collected	Artifacts Collected	Research Potential	Remarks
Rectangular structure excavated in 2011. This year, we expanded the excavation 1 m beyond the outside of the wall around three sides of the structure		Lithics	A few lithic artifacts	Excavation Completed	

Site Name: Peat Valley-2 (Biluut 3.4)

Description	Size	Samples Collected	Artifacts Collected	Research Potential	Remarks
Site consists of several partial boulder enclosures and alignments that are not natural. However, there are also many in situ boulders that are too large to move and are deeply buried. The structure (cultural) rocks are resting on or near the surface.		Charcoal, Soil samples (2) from TP-1			1x1 m test pits in enclosures 2 (WF; TP-1), 3 (Katie; TP-2), 4 (Meg; TP-3). Are the three enclosures dwellings? Animal pens? Something else? A circular pavement of metagreywacke slabs lies adjacent to the southern boulder alignment and may be a burial feature (Fea.1)

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SITE NAME: Peat Valley-3 (Bilaut 3.5) Date: 6/28/2012 Province: Bayan Ulgii Saum: Tsengel							
Surveyed By	Method	Site/Feature Type	Culture Period/Age	GPS	Elev.	Location	Disturbances Vegetation
WF Team	Excavation	Ritual Structure	Unknown	N48 38.771 E88 21.898	2062	On a small terrace spur on SW side of Peat Valley stream opposite spring house herder cottage on NE side of the stream	Very sparse herbs and grasses

SITE NAME: Quiver Site (Bilaut 5.3) Date: 6/28/2012 Province: Bayan Ulgii Saum: Tsengel							
Surveyed By	Method	Site/Feature Type	Culture Period/Age	GPS	Elev.	Location	Disturbances Vegetation
WF Team	Survey	Standing Stone in Enclosure	Turkic?	N48 39.120 E88 22.131		On way up to Bilaut 5 Hill Crest site lies a slate standing stone	

Site Name: Peat Valley-3 (Bilut 3.5)					
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Description	Size	Samples Collected	Artifacts Collected	Research Potential	Remarks
Two rectangular boulder-ringed structures about 5 m on each 4 sides, with an oval interior feature positioned at the north end of each structure. Border rocks are placed about 1 m apart and buried end-on	~ 5x5 m for both structures	Charcoal, Bone		Yes	Excavation of the northernmost structure, S1, revealed the oval feature (Fea.1) containing slabs and cobbles, but no bone or artifacts. A 12-cm deep charcoal and burned bone hearth (Fea.2) was found a few centimeters south of the oval rock feature and large samples were obtained. Function may have been a ritual sacrifice site with burnt offerings, somewhat like a modern ovoo

Site Name: Quiver Site (Bilut 5.3)					
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Description	Size	Samples Collected	Artifacts Collected	Research Potential	Remarks
A slate standing stone inside a box of vertical slabs, with a second smaller slab standing outside the east vertical box element. This stone has a rounded top and sloping shoulders, vaguely resembling a human head and shoulders. No marks on the stones		Pottery, Quiver, Iron Points	Pottery, Iron Points, Quiver, Iron Fittings	Excellent find - Quiver and arrowpoint s a possible way to date the stone	Several pieces of red pottery were found outside the south side of the box.

15 Appendix II

Site List and C14 Dates

Site List ~ Khoton Project 2012

Site Name	Site #	Latitude/Longitude	Type	Age/Culture	Collections	C-14 Samples
Peat Valley-1	Biluut 3.3	N48° 39.165' E88° 21.588'	Rectangular Structure	Neolithic/Early Bronze Age	Lithics	
Peat Valley-1A	Biluut 3.3a	N48° 39.166' E88° 21.594'	Ring Structure	Unknown	None	
Peat Valley-2	Biluut 3.4	N48° 39.247' E88° 21.618'	Enclosures	Unknown	Charcoal, Soil	Charcoal (Sample 2) 4690 +/- 40 BP
Peat Valley-2A	Biluut 3.4A	N48° 39.247' E88° 21.618'	Burial	Unknown	Skeleton, Charcoal	Charcoal 6480 +/- 40BP
Aral Tolgoi-1	Aral Tolgoi 1	N48° 44.340' E88° 08.975'	Ovoo Chain	Medieval-Recent	Charcoal, Bone, Mound 15	Charcoal
Aral Tolgoi-2	Aral Tolgoi 2	N48° 44.346' E88° 08.931'	Ovoo Chain	Medieval-Recent	Charcoal, Bone, Mounds 9, 11	Charcoal 900 +/- 30 BP
Aral Tolgoi-3	Aral Tolgoi 3	N48° 44.513' E88° 08.965'	Ovoo Chain	Medieval-Recent	None	-
Aral Tolgoi-4	Aral Tolgoi 4	N48° 38.096 E88° 21.753	Lithic	Unknown	Lithic Find	-
Milk River-1	R1-1	N48° 43.291' E88° 11.500'	Surface	Late Neolithic/Early Bronze Age	Lithics/FCR	-
Khuiten Gol Delta-1	KGD-1	N48° 39.581' E88° 22.105'	Mound	Early Bronze Age?	Lithics, Ceramic, Charcoal, Felt?	Charcoal (Sample 2) 1910 +/- 30 BP
Khuiten Gol Delta-2	KGD-2	N48° 37.874' E88° 21.506'	Khirigsuur	Deer Stone Khirigsuur Complex	Skeleton, Charcoal	Tooth 2800 +/- 30 BP
Khuiten Gol Delta-3	KGD-3	N48° 37.842' E88° 21.514'	Mound	Unknown	Bone Fragments	Burned Bone Fragment 3090 +/- 30BP
East Bay-4	EB-4	N48° 38.170' E88° 23.715'	Cemetery/Burial	Early Bronze Age/Mongun Taiga	Skeleton, Charcoal, Organics-Felt?	Charcoal, Bone, Fur/Textile? 3080 +/- 30 BP

Arrowhead Mound	Bilut 5.1	N48° 39.722' E88° 21.960'	Mound/Ovoo	Medieval	Iron Arrow, Bone	Charcoal 180 +/- 30 BP
Hillside Hut	Bilut 5.2	N48° 39.221' E88° 22.167'	Tent Ring	Unknown	Lithics?	-
Quiver Site	Bilut 5.3	N48° 39.120' E88° 22.131'	Standing Stone	Turkic	Quiver, Points, Pottery	Birch Bark, Ceramic Encrustation 1340 +/- 30 BP
Peat Valley-3	Bilut 3.5	N48° 38.771' E88° 21.898'	Rectangular Structure	Unknown	Charcoal, Bone	Charcoal 3470 +/- 30 BP
Cranium Site	Bilut 1D	N48° 38.877' E88° 19.157'	Burial	Unknown	Cranium, Teeth	One Incisor 2910 +/- 30 BP
Peat Valley North	Bilut 3.6	N48° 39.949' E88° 21.561'	Standing Stone (Enclosure)	Turkic?		Fea.1 - Charcoal 1270 +/- 30 BP