The Hovsgol Deer Stone Project 2003 Field Report

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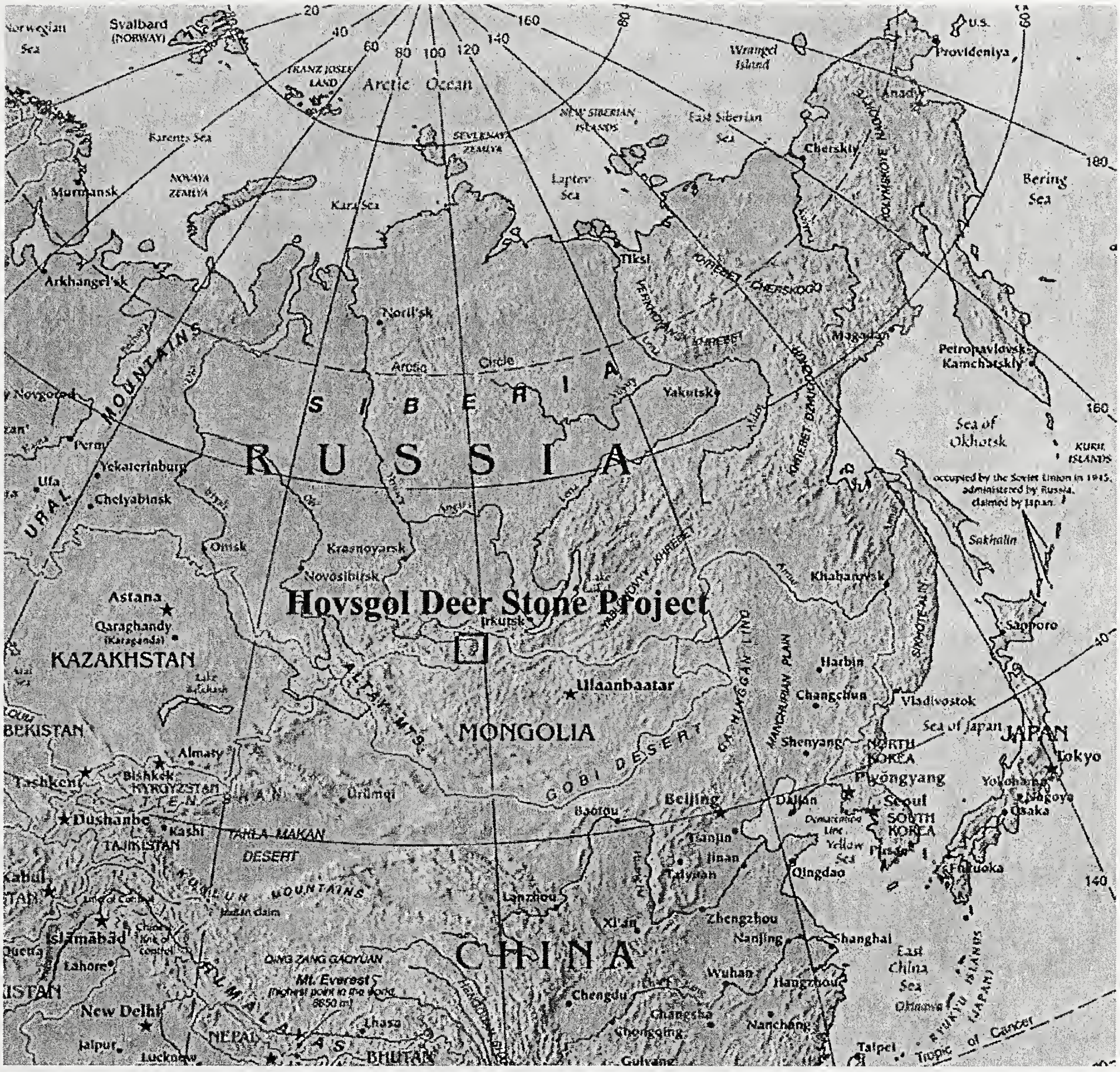

Northern Eurasia

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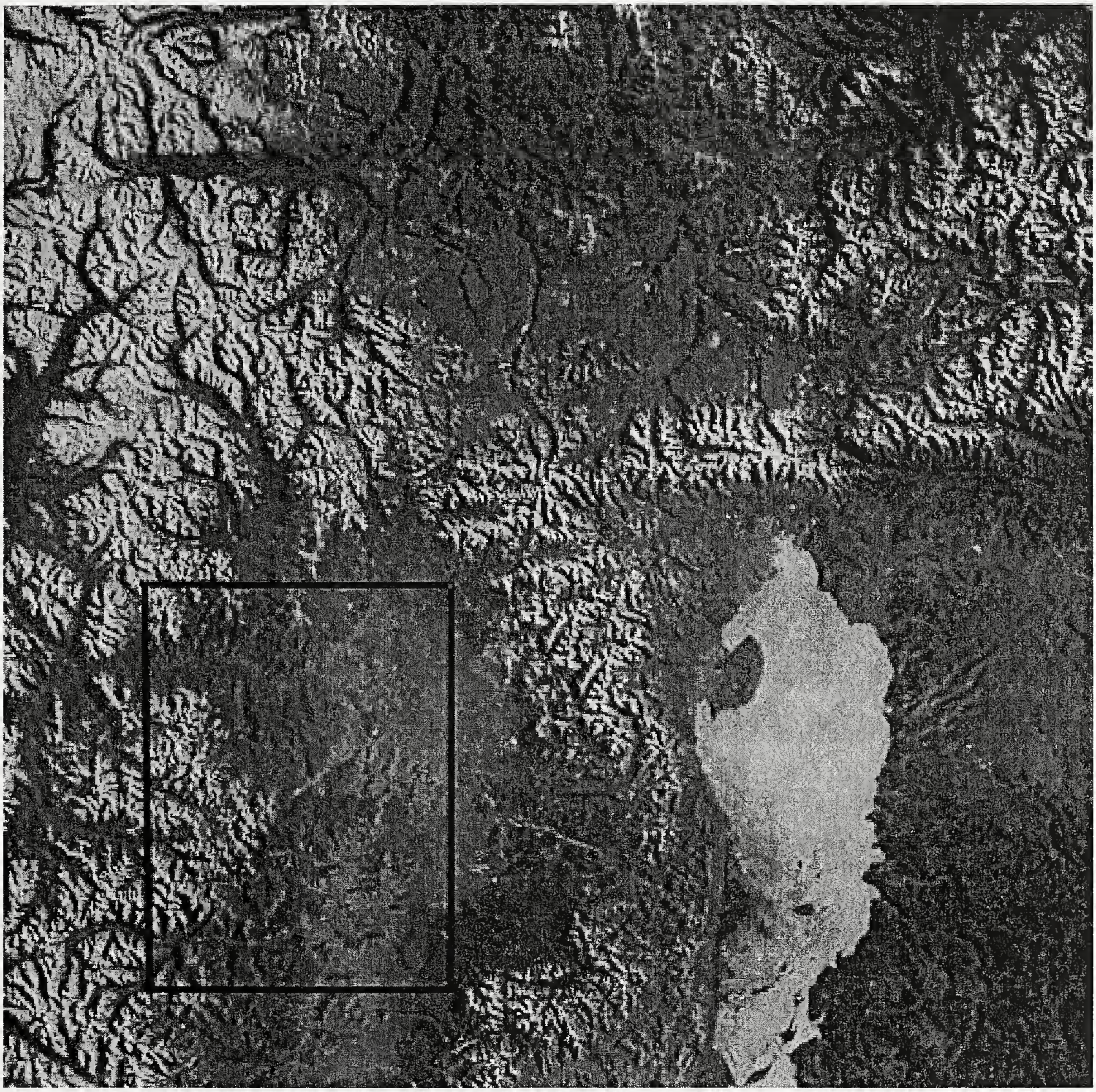

Satellite Image of 2003 Expedition Area. Darkhat Valley (left) and Lake Hovsgol

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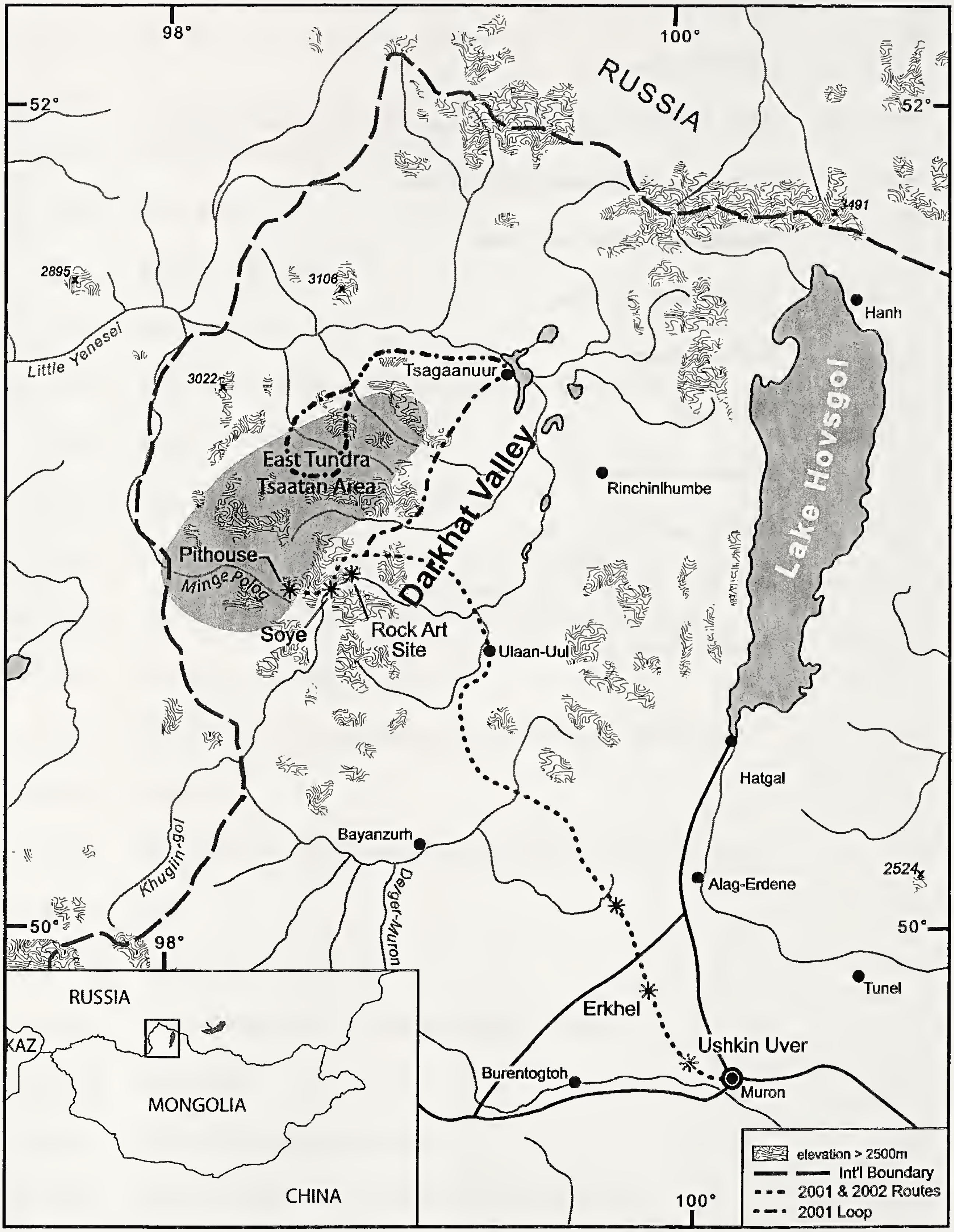

Sites and Routes of the 2003 Expedition

Part I

Project Goals and 2003 Fieldwork[1]

William W. Fitzhugh- Arctic Studies Center, Smithsonian Institution

Geographically remote and without a pre-Soviet scientific tradition(Fig. ii,iv,ix), Mongolia is one of the least-known regions of Central Asia. However, during the past decade Mongolia has emerged from political isolation to become a locus of growing scholarly interest and strong international collaboration. Unlike its better-known relations with China and its silk route connections to West-Central Asia, Mongolia's role in cultural developments, population movements, and regional interactions with southern Siberia, the Far East, and Northeast Asia is largely unknown. While Mongolian, Soviet, Korean, and Chinese research sheds light on these subjects, much remains to be learned. A multidisciplinary research program being coordinated by the Smithsonian's National Museum of Natural History in collaboration with National Museum of Mongolian History and the Mongolian Academy of Sciences has begun to explore northern Mongolia's cultural and environmental history in relation to Siberian, circumpolar, and North Pacific traditions. This paper outlines the research questions being investigated by the Deer Stone Project and presents preliminary results of field studies in Hovsgol Aimag, northern Mongolia in 2003.

Project History and Geographic Setting[2]

During June of 2001 and 2002 the Smithsonian's Arctic Studies Center conducted brief reconnaissance projects in Hovsgol Aimag of northern Mongolia between Moron and the Darkhat Valley and in the mountains between the West Darkhat and the Russian (Tuva) border, and in 2003 returned for several weeks of archaeological reconnaissance and excavation (Fig. ix). The project began initially through collaboration with a humanitarian effort organized by Ed Nef to provide educational, medical, and financial assistance to a small ethnically-distinct group of reindeer-herders living in the West Darkhat taiga between Lake Hovsgol and the Tuva border, a

1. An earlier version of this paper was presented at the Central Asia Studies Society at Harvard University, Cambridge, Massachusetts, October 3-5, 2003.

2. Parts of this section were included in the 2002 field report

people known in Mongolia as 'Tsaatan' and to anthropological circles as 'Dukha' (Vainstein 1980; Plumley and Battulag 2000). Our scientific goal was to explore the potential for archaeological, anthropological, and environmental studies, including threats to Tsaatan survival resulting from global warming, environmental change, and growing political and geographic isolation from other Tuva-speaking peoples that had resulted from the closure of the Mongolia-Russian border after 1991 (*Cultural Survival* 24(2); Milnius 2003).

The geographic setting of the Hovsgol-Darkhat region is central to the scientific goals of the Deer Stone Project. Lying north of the 50° parallel that roughly defines the northern boundary of present-day Mongolia, Hovsgol Aimag – dominated by Lake Hovsgol, the Darkhat Valley, and the eastern extension of the Sayan mountains – is geographically transitional between the Mongolian steppe and the Siberian taiga (Fig. iv). Its basin-and-range topography, its higher elevations, colder climate, greater rainfall and forest cover, and its Yenesei-bound drainage all give the Hovsgol-Darkhat region a more 'Siberian' cast than the lower, more open steppe that dominates central Mongolia south of the Selinge River. Separated from the Moron steppe by a barrier of high hills and plateaus rising to 7500 feet (Toomin Davaa and Oliin Davaa), the Darkhat has retained an ecological, cultural, and historical character that is different from the Mongolian steppe and where Mongolian herders and Siberian hunters and reindeer-herders have coexisted, and to some extent blended for hundreds if not thousands of years. This cultural divide was evident historically as far back as the 13th century when Chinggis Khan's forces entered the Darkhat Valley to begin their campaign to subjugate the northern tribes.

Today the Darkhat lowlands (Fig. iv, ca. 1500 m elevation) are occupied by Mongol herders of sheep, goats, cattle, camels, and horses, who supplement their diets with fish and wild game. In the taiga and tundra regions (ca. 2000-3000 m) in the mountains north and west of this grassy plain, a former late Pleistocene and early Holocene lake bed with numerous lakes and meandering rivers, live the Dukha reindeer-herders. Their population consists of a West Tundra group (west of Lake Hovsgol) and an East Tundra group (east of Lake Hovsgol), each numbering about 500 people and a slightly larger number of reindeer. To the north, mountain elevations in southern Siberia fall, making reindeer habitat less suitable and more susceptible to deterioration under warmer climatic regimes, like those of today. However, as recently as a century ago Dukha reindeer-herders occupied a much larger region, including the highlands between Moron and Darkhat (O. Sukhbaatar and Ts. Ayush, June 2003 field interviews).

Before reporting on project results, it may be useful to outline why Mongolia – a land-locked nation nearly 2000 km south of the Arctic Circle – is relevant to circumpolar archeology and to one of its most elusive problems: Eskimo origins and the influences that shaped their artistic traditions.

Mongolia and the Circumpolar World

Eskimo Origins

Since the 1930s, archaeologists investigating the origins of Eskimo cultures that developed about 2000 years ago in the North Pacific and Bering Sea region have suspected that key features of this complex – including shamanistic ritual, art, and religious concepts – probably originated in Asia (Jenness 1933; Collins 1937, 1951). In particular, bone and ivory implements of the Okvik and Old Bering Sea cultures (OBS), dating ca. A.D. 0-500, carried elaborate decoration illustrating hunting magic and animal-human transformation art. While Okvik and early OBS engravings were carved with stone tools, OBS II and III styles, as well as Punuk (A.D. 700-1000), utilized metal engraving tools of Asian origin. While the sources of the art styles and motifs have not yet been traced outside the Bering Sea region, some artifacts found in OBS burials, including ivory chains and open-work carvings, were certainly inspired by Asian bronze castings (Arutiunov and Sergeev 1975; Arutiunov and Fitzhugh 1988). Asian contacts are even more explicit in the finds from Ipiutak, Point Hope, Alaska, where Larsen and Rainey (1948) found ivory composite death masks that compare closely to Chinese Chou masks of jade and nephrite (Collins 1971; Childs-Johnson 2002), and ivory and bone ornaments that were identical to metal ornaments used by Siberian shamans to decorate and empower their ritual costumes. Larsen and Rainey attributed many of the exotic forms to the introduction of a Siberian shamanistic complex to Alaska and linked specific artifact types to the Permian Bronze and Iron Age of West Siberia. A few years later, Carl Schuster noted that these and other forms of early Eskimo art were probably related to the Eurasiatic animal-style art complex (Schuster 1951). Lacking a broader base of archaeological materials, dated finds, and contextual information from Siberia and the Far East, these theories were impossible to test and remained on the intellectual fringe of circumpolar culture theory (Fitzhugh 1998; 2002).

Iron Age 'Eskimos' in Yamal?

The opening of Russia to Western scientists produced an opportunity for the author to collaborate with Russian archaeologists investigating Neolithic, Bronze, and Iron Age sites in the lower Ob River and Yamal Peninsula of Western Siberia during 1995-96. I had previously concluded that convergent development rather than trans-Atlantic contact was responsible for similarities between Scandinavia Younger Stone Age cultures and 4000-year old Maritime Archaic cultures of Northeastern North America, and that neither had anything to do with Eskimo origins (Fitzhugh 1974, 1975). But Chernetsov's discovery of an early 'Eskimo-like' arctic maritime culture on the shores of the Kara Sea (Chernetsov 1935; Chernetsov 1974; Moshinskaya 1974) – the same find that prompted Larsen and Rainey to propose West Siberian connections at Ipiutak in the 1940s – needed re-evaluation. The claim was less suspicious in 1948 that today because it was then still believed that Eskimo culture probably developed from European Paleolithic cultures that moved into the Arctic via Scandinavia at the end of the Ice Age. This idea has now been discredited, and despite the fact that no Eskimo-like remains have been found in the intervening 3000 miles from Chuktoka to Yamal (Chard 1958: Fitzhugh 2002), the field studies to confirm the absence of Eskimos from the central Russian arctic coast had not been done. Four years of field and museum studies with Russian Arctic colleagues Andrei Golovnev, Natalia Federova, and Vladimir Pitul'ko convinced me that Chernetsov's 'early arctic maritime culture' of Yamal was neither maritime nor 'Eskimo' (Fitzhugh 1997; Federova, Kosintsev, and Fitzhugh 1998), and that Permian similarities to early Eskimo art were untenable based on stylistics, chronology, geography, and ritual. Subsequent research in Taimyr, along the the Laptev Sea coast, and at an 8000-year old Mesolithic site on Zhokhov Island in the northeastern Laptev Sea (Pitul'ko 1993, 2001), have so far indicated negative results with regard to origins of Eskimo culture and Old Bering Sea art.

Primor'e to Bering Strait: Ritual, Art, and Transformation

In the meantime, research in the Bering Sea and North Pacific (Powers and Jordan 1990; Dumond and Bland 1996) had identified Asian prototypes for a number of the archaeological complexes and culture elements known from Alaska, including the likely origins of 4000 B.P. Arctic Small Tool tradition ceramics and lithic assemblages. However work on such cultures as Tar'insk (Lebedintsev 1990), Lakhtina (Orekhov 1999), and Old Koryak (Dikov 1979), which are still relatively little known, has not yet revealed much that can be closely related to Old Bering Sea art and religion. Neither, so far, have studies further south, around the mouth of the Amur, in Sakhalin, northern Japan, or Korea revealed prototype material related to Early Bering Sea art. Many of these East and Northeast Asian complexes do not have preserved organic remains, and without this crucial material, evaluating similarities remains extremely difficult. What can be said is that rock art, especially faces and masks, thought to date ca. 3000-1000 B.P., is common in the Lower Amur region and northern China (Okladnikov 1981; Song 1992), indicating a long tradition of body decoration and labret use; and these practices, known also from Old Bering Sea and later Beringian cultures, are perhaps the most likely medium for links between Eastern Asia and the North Pacific-Bering Sea region. Another possible Asian-stimulated technology may lie in the introduction of ground slate, which appears in Old Bering Sea, Northeast Asian and Korean cultures about 2000 years ago coincident with the introduction of metals from Central Asian and Siberian sources. This introduction seems to have been independent of the earlier Ocean Bay slate-grinding tradition of Kodiak Island and may have originated as a substitute for prestige metal goods, as was the case in Old Bering Sea ivory chains, and manufacture of ceramic vessels styled after metal prototypes by Siberian cultures lacking these prestige goods.

A Scythian-Eskimo Connection?

The fine decoration of ethnographic clothing from such groups as the Ainu, Nanai, Nivk, and other Lower Amur River peoples, as well as those possibly of Alaska and the Northwest Coast, may eventually be shown to be a legacy of the earlier traditions of highly ornate clothing and body decoration of early East Asian and Pacific peoples. Given the widespread evidence of body painting and tattooing, I believe that these artistic traditions of the northeast Asian maritime region are probably related to the decorative arts of Central Asia especially as seen in the Scythian tombs of the Altai. Mongolia's deer stone monuments, which are believed to be an early form of animal-style art applied to a monumental human form, attracted my interest because they occur geographically along a natural path of communication between Central Asia and the North Pacific coast; because they date to the same chronological period – Bronze and Iron Age times – as Okvik and Old Bering Sea Eskimo; and because both have similar religious, spiritual, and artistic traditions.

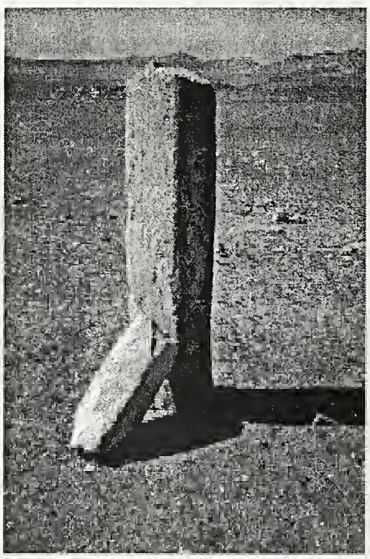
Fig.1.1: deer stone 3 Ushkin Uver, damaged by lightning

I am not prepared at this time to propose a specific historical connection between Mongolia and the North Pacific peoples, but it seems useful to investigate the possibility that elements of Asian art, culture, and religion may have infiltrated the indigenous cultures of the North Pacific. The specific artistic forms – whether they be Scythian, proto-Scythian, early Korean, Jomon, or others – as well as their dating, need investigation, as do the cultural

Fig. 1.2: deer stone 4 Ushkin Uver damaged by erosion and animal rubbing

complexes and functional categories in which they occur: death ritual, hunting magic, representations of deities and animal spirits, shamanism, etc. What strikes me as most similar in comparing deer stone art with early Eskimo art is the transformational nature of the images, which combine features of the Asian elk – the most magnificent and powerful cervid of Eurasia – with bills of water birds, much in the way that Alaskan Eskimo have long represented transformation figures of wolf and killer whale, or seal and water bird, whose spirits were believe to change physical forms while crossing barriers between land and water, water and air, or land and air. It is quite possible that ultimately these features may have roots in the Paleolithic cultures of Asia. The hypothesis I wish to test is more specific and relates to relationships and forms of the late Neolithic, Bronze, and early Iron Age. We clearly have a long way to go in terms of understanding the meaning and connections in images and iconography in both Eskimo and Sibero-Mongolian contexts, and Esther Jacobson and her Russian colleagues have already brought us a considerable distance down the latter path (Jacobson 1993, 2002; Jacobson et al. 2001). But it seems likely that the deer stone carvings served as protective devices to ensure safe passage of an honored leader's spiritual passage into the upper world, just as the body art of Altai warriors and Old Bering Sea Eskimos served to protect people from spiritual dangers in the world of the living in much of eastern Asia and the Pacific for the past 3-4000 years. Is it possible that we might be able to trace a connection archaeologically between Mongolia and the North Pacific?

Deer Stone Project Research Themes

Deer Stone as Object and Icon

Deer stones represent both a subject of study and a symbolic focus that lies at the core of our Mongolian archaeological, ethno-ecological, and paleoecological studies. The monuments date to a period when steppe societies had recently been transformed by major social and religious change resulting from domestication and new military technologies. Geographically they are found along the northern fringe of the steppe near the taiga border, a transitional environment rich in animals (including taiga species like reindeer and elk), plant, and fish resources that would have attracted both herding and hunting peoples. The legacy of this cultural geography continues today in the relationship between the minority Dukha reindeer-herders and the politically dominant Mongols. Exploring the complex history of Hovsgol-Darkhat cultures, peoples, and changing environments for the past 4-6000 years is also a scientific challenge with practical benefits in tourism, sustainable development, cultural survival, and international recognition.

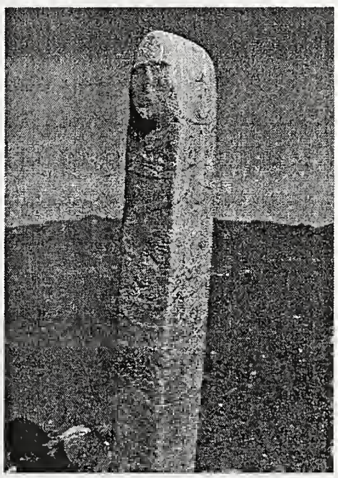

Fig. 1.3: The 'face' deer stone from Ushkin Uver

Investigating dating, meaning, and context of deer stone art and its associated archaeological and landscape ritual features is only one of several factors motivating the Deer Stone Project. Other research questions include the origins and history of reindeer domestication; the cultural and ecological context of modern Dukha reindeer husbandry in relation to contemporary economic, social, and political changes in Mongolia, and impacts of global warming and changing environment; and broader questions of Mongolia's cultural and historical relationships to peoples of Siberia and Northeast Asia. Research in other areas of Mongolia are exploring Mongolia's Paleolithic past, its rock art, and its role in the development of 'nomadic' states and empires and the silk route trade, and to its relationship with developing civilizations in China. The Deer Stone Project emphasizes Mongolia's roles in cultural development, population dispersal, and culture contacts to the north and east.

Mongolia's Northern Connections

Although recent history has emphasized Mongolia's strategic position as a buffer state or exploitation zone between China and Russia (Lattimore 1940, 1962; Ewing 1980; Sandorj 1980; Bawden 1989; Ishjamts 1994; Christian 1998; Baabar 1999; Barfield 2001; DiCosmo 2002), history and archaeological research demonstrate that Mongolia had been an important in situ center of cultural development long before its empire period in the 13-15th centuries. In Pleistocene and Early Holocene times, the Gobi – then well-watered – was a Central Asian 'Serengetti' with large animal and human populations which may have been the source of the mongoloid physical type that expanded throughout much of Asia and into the New World. There is no reason to doubt Mongolia's continued role in later cultural developments and transmissions within the steppe zone and across the steppe-taiga boundary. Our archaeological work will explore Mongolia's environmental and cultural connections with southern Siberia, Northeast Asia, and the North Pacific during the past 6000 years.

Mongolia's temperate latitude and the dominance of the Silk Road, Chinese history, and recent Soviet domination has obscured Mongolia's geographic and cultural ties to Siberia, and its potential links with the circumpolar region and the North Pacific. Climatologically, northern Mongolia is as 'arctic' as Nome, Alaska, and landforms that include such classic arctic forms as permafrost and conical ice-cored pingos which can take decades if not hundreds of years to form. Mongolia's arctic characteristics are not limited to contemporary conditions. During our 2001 survey Steven Young noted striking similarities between Mongolia's tundra and alpine plant communities and the ancient vegetation of the Beringian Land Bridge, similarities that suggested a former phytogeographic connection with arctic ecosystems. These connections and post-glacial environmental history of the Darkhat region will be explored by botanical and paleoecological studies of modern Darkhat and Beringian landscapes. Reconstruction of the post-glacial history of the Darkhat basin (drained before 6000 BP) and of regional climate history based on lake sediment samples will provide important context for interpreting cultural and archaeological data.

South Siberian Reindeer Herders

A special feature of our project is its focus on the Dukha 'Reindeer People' (Fitzhugh 2002). Numbering about 700 people and 1000 reindeer, the Dukha are the southernmost reindeer-herders in the world (Vainstein 1980). One of four Tuva-speaking groups having homelands between Lakes Baikal and Hovsgol, only the Dukha still live as reindeer-herders. Located near the Russian/Tuva border, their 5000-7000 feet high forest and tundra pastures west and north of the Darkhat and Lake Hovsgol provide lichen forage for reindeer at the extreme southern limit this species in Asia. The existence of this habitat outlier results from a special geographic feature that preserves a southern outlier of Siberian tundra and lichen forage in the elevated Hovsgul and nearby Sayan Mountain ranges. To the north in Siberia, elevations drop and reindeer habitat becomes even more marginal than it is in the Darkhat region. Today, in these neighboring regions of Russia, Tuva-speaking relatives of the Dukha have already largely given up reindeer herding, leaving the Mongolia Dukha as the only group still that still maintaining herds as their principal means of subsistence. However, their survival is in danger as a result of stress resulting from climatic warming (lichen tundra range reduction), reduced reindeer fitness, human population loss, and post-Soviet social, political, and economic change. Our work complements on-going ethnographic studies (Wheeler 19991, 2000) and humanitarian projects such as the Totem (Plumley and Battulag 2000) and Santis Education Projects by documenting Dukha ecological knowledge, herding practices, and ritual (including shamanism), in order to better understand, publicize, and hopefully improve the chances of Dukha survival.

Herders, Lichen, and Reindeer

Studies of Dukha reindeer-herding practices have begun to reveal important information that will supplement earlier ethnographic studies of Vainstein and others. Paula DePriest, a lichen specialist from the Smithsonian, has collected botanical samples for classification and research from a variety of reindeer seasonal pastures. In working with Dukha reindeer herding experts, she has obtained ethnographic data about reindeer feeding behavior, seasonal movements, and herding strategies relating to weather, local forage conditions, predation, disease and other factors influencing the way in which reindeer are managed by the Dukha. One of the outcomes of her work is the discovery that the Dukha lichen taxonomy is nearly identical to that of western science, and that far more local knowledge about lichens and reindeer husbandry is available than has been recorded in previous ethnographic and botanical studies (DePriest 2003). The Dukha also have a living shamanism tradition that includes extensive knowledge about medicinal and ritual practices used to maintain the health of their reindeer stock. Project biologists and anthropologists are documenting Dukha traditional knowledge concerning reindeer grazing impacts with the goal of providing information useful for Dukha reindeer management. We will also document vegetation changes that can be attributed to global warming which, if it continues to convert Dukha summer pastures to taiga, may pose a severe threat to Dukha survival (Plumley and Battulag 2000; Milnius 2003). The invasion of shrub birch that is currently spreading into the tundra pastures is an ominous signal of environmental response to climatic warming.

Fig. 1.4: Reindeer stripping birch

Reindeer Domestication

To date, anthropological theories of reindeer domestication origin have been based exclusively on ethnographic and historical models (Vainstein 1980; Ingold 1980; Snirelman 1980; Krupnik 1993) rather than from archaeological or zooarchaeological evidence, with the result that the date and place where this important transformation in the relationship between humans and reindeer occurred still remains completely unknown. Despite the popularity of theories of arctic Siberian and Fennoscandian origin among northern Siberians and Fennoscandians, the Tuva and north Mongolian steppe/taiga border is a more likely location for reindeer domestication due to the proximity of excellent reindeer habitat to a primary center of domestication on the steppes of Central Asia. Here forest hunters familiar with techniques being used by sheep, goat, horse, yak, and camel-breeders on the steppe may have been inspired to apply these methods to reindeer in a region where seasonal reindeer movements between winter ranges in the forest and summer ranges on the tundra are short and do not require long distance migration as in the case of arctic style herding. The Russian ethnologist, SevianVainstein (1980, 1981), a specialist on Tuva cultures and ethnohistory, has hypothesized that Tuva-style mountain reindeer husbandry (for milk and transport) was the first stage in the domestication process, which later went through a series of developmental stages as this technology was introduced and diversified in more northern regions, culminating in the intensive migratory herding practices utilized by Eurasian arctic peoples for the past 500-1000 years.

We are testing this concept by gathering information on Tsaatan ethnoecology, herding practices, species composition and abundance, and reindeer foraging behavior. Archaeological sites, including the Soye River Neolithic site (5-6000 B.P.), and others, will be tested to collect archaeofauna for use in the definition of reindeer exploitation strategies for different periods in the past. We will also seek reindeer fauna evidence from existing archaeological collections in museums and research centers in Mongolia and Russia, and will work closely with Russian experts with knowledge of reindeer herding practices to see if the South Siberian domestication hypothesis can be verified. At present the domestication history of reindeer has never been explored. Given the importance of reindeer herding in the transformation of almost all peoples of northern Eurasia from hunting and fishing to herding, this research will be of great importance in understanding cultural developments in a vast, little-known portion of the world. The appearance of reindeer herding may also mark the historical turning point among northern peoples in which the ancient relationship between hunter and prey were replaced by new religions and world views associated with human dominance and control over the natural world (Fitzhugh 1988, 1993)..

Mongolia's Bronze Age Archaeological Landscape

Traveling between Moron and Darkhat, one is quickly impressed by the large number of Bronze and Early Iron Age sites that are found throughout the northern steppe region. A small subset are complex sites containing deer stones like those at Ushkin Uver and Erkhel's Ulaan Tolgoi, but such sites are relatively rare compared to stone mounds and kherigsuur. The latter are found everywhere where Mongol-style pastoralism is possible, whether on the steppe or steppe-forest zone. Habitation sites, workshops, rock art sites, and others, by contrast, are extremely rare, as are sites of all other cultural periods other than modern times. In part this relates to the absence of surface exposures in the grass-covered steppe; but since one cannot imagine that the landscape was ever abandoned, it would appear that settlement patterns of the last few thousand years may have been very similar to those of the modern day, employing light felt tents, few durable remains, and a migratory lifestyle.

Investigation of Bronze Age ritual landscapes presents an exciting object for archaeological study. While much is known from nearly a century of research by Mongolian, Soviet, and other research groups working in Mongolia and Siberia (Jacobson 1993; 2002;

Jacobson et al. 2001; Khazanov 1994; Sementsov et al. 1998; Tsybiktarov 1998; Hayashi 2000; Honeychurch and Amartuvshiin 2002; Honeychurch 2004; Allard et al. 2002; Allard and Erdenebaatar n.d.), modern problem- and environmentally-oriented research is just beginning. Few sites have been accurately dated; little is known about the development history of complex sites like Ushkin Uver and Erkhel; little excavation has been done outside of central mound burial crypts, etc. Use of new mapping, dating, and recovery techniques; settlement pattern and 'whole-site studies', studies of human remains, regional and environmental analysis, and use of modern theory offer promise for gaining an abundance of new information about this exciting period in Central Asian history.

Continuities and Connections: Mongolia and Beyond

The final objective of our work is to assemble a late Holocene history of the Darkhat region that can be used to explore changes observed in its cultures and environments through time, including external factors like climate change and internal ones like fire, grazing, and forest clearance. Vainstein has proposed that the pastoralist economic systems of Tuva and Darkhat/ Mongolia have been remarkably stable for centuries and even millennia. Is this view from ethnography and history compatible with archaeological evidence? What are the major turning points in its history? And how has the region interacted with respect to Mongolian, Siberian, and perhaps even circumpolar regions? Have the Darkhat primarily had a local role in regional history, or one of some broader scope. Obviously such questions require archaeological evidence that is not likely to be available in the near future; but progress in at least some of these areas can be expected, and in the process of such studies pieces of the wider picture are likely to become available from other areas of Mongolia, Siberia, and the northern Far East that may provide clues to more distant goals.

Archaeological Research

In 2001 and 2002 we met our Tsaatan guides at Soye where the Khugiin Gol ('Melody River'), a tributary of the Little Yenesei, leaves the mountains and emerges onto the Darkhat Plain. Soye, meaning 'fang' or 'canine' in Mongolian, takes its name from a prominent conical hill that rises abruptly from the valley floor on the south bank of the river. In addition to being an important river ford, fishing location, and staging area for hunting trips into the mountains, Soye functions as a seasonal market and meeting place for the West Darkhat herders and Tsaatan reindeer-herders. Not far downstream on the north bank is one of the few Bronze/Iron Age rock art sites known in the Darkhat Valley. When we visited it in June 2002 most of the images had been destroyed by looters attempting to secure images painted onto the soft shale for sale to the art market and tourists. This was not a random incident; in 2003 we encountered a well-financed band of looters equipped with vehicles, shovels, and pry bars systematically pillaging burials and mounds. Before we revealed our identity we learned that they were financed by Chinese-connected antiquities dealers in UB and had precise knowledge of

Fig. 1.5: Soye-1 eroding bank showing old buried ground surface

burial mound locations and knew where to search for finds. We reported this activity to the police in Ulan Uul, Moron, and to archaeological authorities in Ulaanbaatar.

The Soye Sites: Neolithic and Early Medieval Settlements

In 2002, while camped at the base of Soye hill, we found archaeological materials eroding from a buried soil horizon containing hearth deposits with bone, ceramics, charcoal, and fire-cracked river cobbles (right). Among the bones were remains of large herbivores (deer or elk), small mammals, and sheep or goat. On the eroding terrace front below the buried soil we also found a conical prismatic blade core and tiny flint microblades diagnostic of the Neolithic period. The cultural level extended along the terrace front for about 100 m, buried under 1-3 m of windblown sand and appeared in the profile of an open garbage pit 10 m in from the terrace edge.

The Soye site immediately established the potential for a Darkhat Valley archaeological and paleoecological program. The discovery of a large, well-preserved Neolithic site would anchor the early end of our study period and permit reconstruction of environment and subsistence patterns during the period when herding was beginning to replace hunting as the dominant way of life. Finds of both forest game and domestic sheep or goat in a taiga setting suggested that reindeer would also be found to establish baseline samples prior to the introduction of domestication. A bed of waterlogged timber, subsequently dated to 6090+/-70 BP, which we found eroding from the river bank below the site, would provide information about forest composition, and if cut marks were present might be linked directly to human agency. At least, the wood deposit would document a period in the paleoecological history of the Darkhat basin post-dating pro-glacial Lake Darkhat, whose receding water levels were visible in elevated strandlines etched into the nearby hills.

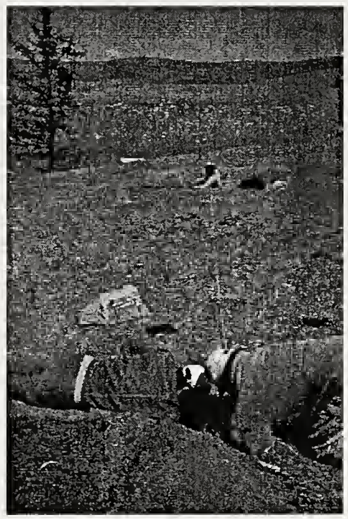

Fig. 1.6: Excavating test pits along an East-West line on the Soye-1 terrace. View East

These ruminations were thrown into question in May 2003 when we received dating results from our charcoal samples from Feature 1 and 3 at the Soye-1 site: instead of a Neolithic date ca. 5000-6000 BP, Feature 1 dated 1170 +/- 50 BP., and Feature 2 dated 1020 +/- 50 BP. This was not entirely unexpected, as some of the samples contained fresh-looking, uncarbonized wood. So instead of simply planning to increase our samples we had to resolve a major discrepancy between the Neolithic cultural materials and an anomalously late radiocarbon date. The 2003 excavation plan took four directions:

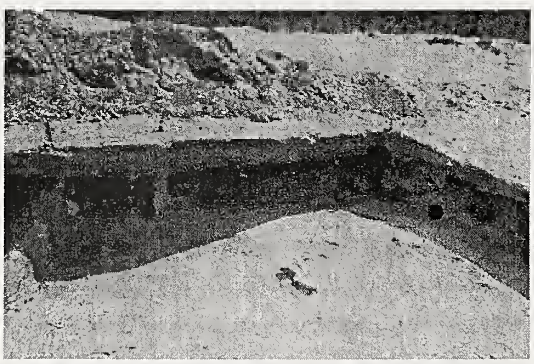

Fig. 1.7: Soye-1 Feature 3, West end of excavation, view SW

(1) **Survey and Testing** To determine the extent and nature of the Soye site we ran a series of 50 cm test pits 10 m apart on an east-west transect 15-20 m in from the terrace front (right). The upper horizons of these pits contained unburned bone, wood, and well-preserved charcoal. Chert flakes and microblades were not present in the upper soil levels but began 30-40 cm

below the surface in heavily soluflucted silty soil which never contained unburned bone or chunks of charcoal but had abundant charcoal stains.

(2) **Stratigraphy** The eroding terrace front was cleared and profiled to determine its stratigraphy and identify potential excavation loci, revealing a buried soil horizon extending nearly 100 m (left). Toward its west end, this buried horizon was 30-50 cm below the surface and had little windblown sand overburden, whereas toward its east end, where the terrace front was eroding extensively, sand redeposited from the exposed face had buried the original terrace surface under 1-3 m of sand. Heavy charcoal and fire-cracked rock concentrations were found in three locations (F1,2,3) and these hearths contained large lumps of fresh charcoal, unburned wood, large fragments of unburned bone, and thick-walled ceramics with red surface wash. A second, discontinuous, less prominent band of charcoal-stained soil occurred 5-20 cm below the upper level, and this horizon produced flint flakes, microblades, calcined bone fragments, and small fragments of thin, friable, cord-marked ceramics.

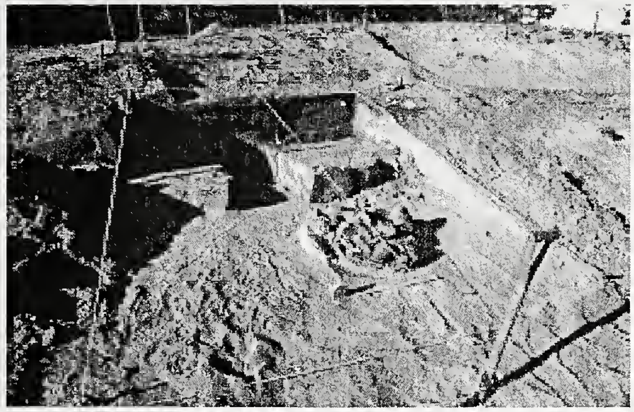
Fig. 1.8: Soye-1, Feature 1, to Southwest

(3) **Excavation** Two features, F1 and F3, were excavated. Feature 1 (left), which had produced one of the 2002 dating samples, was found to consist of a dense, round cluster of fire-cracked cobbles about 75 cm in diameter embedded in a thick layer of charcoal. This hearth produced a few pieces of thick-walled ceramic and bone, but no chert material and no calcined bone fragments. In addition to fire-cracked river cobbles, the hearth rock included many fire-cracked slabs ca. 2-3 cm thick that when re-assembled into their original shape were found to be flat discs whose rounded edges had been pecked and ground into flat facets. The function of these faceted discs is uncertain but may have involved use as roasting or boiling stones. We found a complete disc of this type in blowouts east of the site, not far from the shattered remains of a large ceramic vessel that appeared similar to the ceramics from F1. Although a few flakes and chert tools were recovered from F1, these finds were found in charcoal-free yellow-tan silty soil that lay just beneath the hearth. What had appeared as a single occupation level in last year's preliminary investigation could now be recognized as two different cultural levels.


Fig 1.9: Soye-1, Feature 3, Calcined bone deposits at SE corner of excavation.

This distinction became even clearer upon excavation of Feature 3, located at the eastern end of the eroding bank. As in the case of F1, this feature appeared as a thin scatter of burned cobbles and slabs eroding from a charcoal-stained buried soil horizon spread over a distance of 4 m. Although lacking the dense concentration of shattered hearth cobbles noted in Feature 1, the upper cultural horizon contained thick-walled ceramics, poorly-preserved, unburned bone, and large chunks of charcoal that resembled material found in the F1 hearth deposit, from which the 2002 season radiocarbon dating sample had been recovered (right). Solufluction had disturbed the natural stratigraphy in this area of the site, with the result that the upper level contained small amounts of highly-fragmented calcined bone and chert debitage and tool fragments. A few centimeters below this level (ca. 90-120 cm below datum), in shallow frost-heaved pockets of fire-reddened soil, we found discrete concentrations of calcined bone, chert artifacts, small pieces of thin, cord-marked ceramics, and a large quantity of calcined bone, none of which were identifiable to species but which included large and small mammal and a small amount of bird bone. A small charcoal sample was collected from one of the hearth areas, but since it might have resulted from forest fire root burns (which we noted throughout the site) we chose not to date this sample. A sample of lower level calcined bone recovered here produced an age of 5450 +/- 130 BP., an appropriate date for a ceramic Neolithic occupation. This lower cultural level never contained thick, well-fired ceramics or unburned wood or bone.

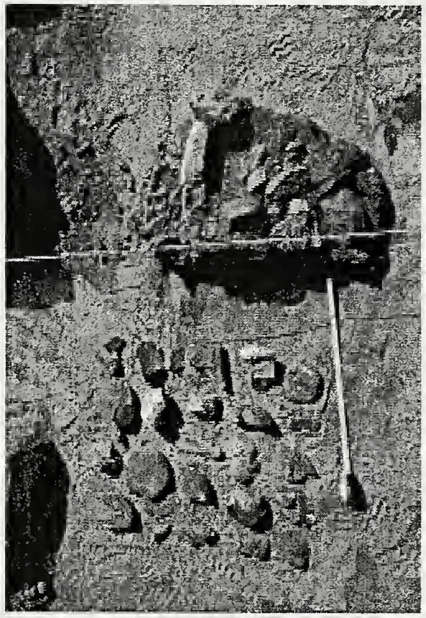

Fig 1.10: Soye-1, Feature 1 with eastern hearth rock laid out after excavation

Among the tools found in this level were burins, cores and microblades, side-scrapers, end-scrapers, plain and cord-impressed ceramics, a triangular point or knife with unifacial flaking only, and a ground stone tubular bead of black, jet-like rock with a drilled hole (see Part for Soye profiles and maps). No true biface technology was noted. The distribution of finds – a dense concentration of calcined bone, two small hearths with fire-cracked rock and burned soil associated with flint tools, and a separate cluster of ceramics – imply activities of a small group that camped here for a very brief period. Features 1 and 2 conformed to this transient pattern as well.

(4) **Surveys** Local herdsmen pointed us to a nearby location several hundred meters east of our camp where they used to collect flint for fire-starting kits and matchlock rifles, and where we found flint tools and ceramics. Two concentrations of finds found here were designated Soye 2 and 3 respectively. Soye-2 contained flint flakes and tools eroding from two loci at the southern edge of a large blowout. While charcoal was also eroding together with flint material from the blowout edge, we could not with confidence determine if these finds were directly associated or from the overlying zone. Tools collected from the blowout floor were similar to those from Soyeo 1: microblade cores and blades, scrapers, and a tiny, beautiful, bifacial, concave-base arrow point. Two pieces of soapstone from the wall of a large vessel were also recovered. The lithic assembled closely conforms to that found at Soye-1 with the exception of the soapstone sherd, which likely belongs to the same period as its upper component dated to ca. A.D. 1000.

In the eastern edge of the same blowout we found a concentration of thick-walled sand-tempered sherds with an everted rim and body perforations. These ceramics all appeared to have been from a single shattered pot. We designated this site Soye-3 to distinguish it from the surrounding Neolithic site. These ceramics, and a faceted stone disc found in the same blowout, were similar to those excavated from F1 at Soye-1.

Baran Gol 1: A Mesolithic Pithouse in the Tundra?

Crossing to the north side of the Khugiin Gol at the Soye ford, we followed a narrowing flood plain of the Darkhat Valley and soon found ourselves ascending into the Siberian larch forest. As we left the last vestiges of open grassland, we noted a cluster of three or four small khirigsuur features and the remains of a later Iron Age settlement. From here until emerging into the tundra above 6000 feet, the only signs of human activity noted were horse trails, ovo cairns, and occasional remains of hunting camps or the winter settlement of Dukha herders who use the forest zone for winter reindeer pasture. During summer the forest is too hot and fly-infested for reindeer to survive, and herders take their herds into the high valleys where forage is plentiful and flies less bothersome. It is here that we joined the West Tundra Tsaatan for a few days in June 2001 and 2002 to observe their reindeer husbandry practices and search for archaeological sites in a very different environment than the steppe and taiga zones below. It seemed likely that prior to the domestication of reindeer, this territory would have been ideal for summer or fall hunting of reindeer, elk, sheep and goat.

In 2001, while visiting one of the Dukha tundra camps on the Baran Gol about 20 km east of the Russian border, I found a few flakes of black chert associated with an 8 m wide depression that resembled a pit-house. In discussing whether we should test the site, our Mongolian colleagues were cautious, noting that the Dukha believed that people should not disturb the ground as this was the abode of ancestors and that excavation was a task reserved solely for reindeer and burrowing animals. Fortunately, when we returned in 2002 and inquired with village leaders, we immediately received permission. However, for good measure, and with approving nods from our hosts, Sanjmiatav made the first cut into the earth with a fragment of reindeer antler rather than with a steel trowel.

To our disappointment the three small trenches we excavated across the pit (see Fitzhugh 2003:38-42 for a detailed report) did not reveal buried walls, a floor, or a hearth, or any major concentration of artifacts. Rather it appeared that a small conical pit had been excavated into the terrace front and was subsequently filled by three stratigraphic units that followed the contours of the pit outline, each level being about 25 cm thick in the center and lensing out near the margin of the pit: Level 1, cobble-free homogeneous brown soil; Level II, mottled brown sandy loam with cobbles and scattered charcoal (1300+/-70 BP); and Level III, a mixed sandy gravel with clay pockets. Most of the cultural material recovered [quartz and quartzite flakes, several quartz esquillées (scaled bi-polar cores)], and a small quartz core came from L. II, while a possible coarse grindstone or axe blank was found in L. III, and in the upper strata just beneath the turf, a single black chert flake. The larger feature had been disturbed after its initial construction by a smaller intrusive pit near the center of the depression, 25 cm below the sod and

Fig. 1.11: Erkhel Deer Stone 2, at 3.8 m - the tallest Mongolian deer stone

about the same distance above the base of the cultural deposit, which produced a well-preserved horse tooth; and just beneath the sod, we encountered a modern ash lens with burned bones and wood. According to the Duhka, these remains may have been left by a Soviet-style reindeer brigade that used this site in the mid-20th century. These results do not allow us to say much about the age and use of the larger structure, which may possibly date as late as the 1st millennium AD, although the meager quartz technology would seem to indicate a Neolithic or earlier occupation. To date, our work suggests that the black chert flakes found in the upper few cms of soil are not related to the quartz industry found deeper in the pit fill.

In addition to work at Baran Gol 1, we surveyed both sides of the river several kilometers downstream from the Dukha settlement, but the only other archaeological sites noted were late-20th century Dukha summer herding camps. Given the ecology and current attraction to the Dukha, it seems likely that the Baran-gol valley must have been an important seasonal hunting territory long before it became a summer pasture for reindeer herders. If so one might expect the presence of rock art sites such as those known from western Mongolia and the Altai. To date, however, such finds are not known from this mountainous tundra region.


Fig. 1.12: Erkhel Deer Stone 5, View N

Ulaan Tolgoi and the Erkhel Lake Site Complex

Eight kilometers west of Erkhel Lake, in a salty lake remnant with no outflow about 30 km north of Moron, is a large ceremonial complex containing scores of boulder mounds and khirigsuur. On the southeast side of a prominent hill located in the center of the valley floor is a group of mounds and ornamented monuments which include several of the finest deer stones in Hovsgol Aimag, including a stone that may be the largest and most beautifully-carved of any in Mongolia (see photo on previous page). This slab of granite stands almost 3.8 m above ground, at the south end of a north-south alignment of five other slabs of different shapes and degrees of decoration. Esther Jacobson has visited the site and many of its deer stones have been professionally photographed by her husband, Gary Tepfer. Drawings and other data on this site have been assembled over the years by Sasha Sanjmiatav, who worked here in the past with Soviet teams. We visited the site for a few hours in 2001 and returned in 2002 to map one of the smaller deer stone settings and its associated small boulder mounds and small 'ring' features. During this visit I had a chance to explore the surrounding land, finding the valley floor filled with mounds and khirigsuur complexes, many of which extended up into the rocky outcrops above, virtually to the crest of the hill. Clearly, not only Ulaan Tolgoi but the region surrounding the hill and this end of the Erkhel valley had been a very significant ceremonial region during the Bronze Age. With only one day to spend Ulaan Tolgoi we decided to map one of the deer stones and test for stratigraphy and dating samples associated with its erection.

Sanjmiatav, recalled that they had erected and re-set some of the fallen and leaning deer stones, including the largest stone, DS2. In the case of DS1 that activity was quite obvious by its cemented foundation, while the weathering patterns on the large stone (DS2) indicated that it had


Fig. 1.13: Deer Stone 4

lain partially buried for many years. However, Deer Stones 4 and 5 (see pics B.12, B.13, B.15) appeared to be in original position, and we selected DS5, the northernmost in the north-south alignment of stones, for our first test in 2002. We laid out a 1 x 2 m trench in E-W orientation with the center of its north wall 75 cm south of the deer stone to avoid undermining its foundation. Our excavation (Fitzhugh 2003: 43-48), which proceeded to a depth of 40 cm below ground surface, showed no sign of a pit associated with the erection of the stone and revealed four stratigraphic levels beneath a thinly grassed turf: Level I being a 4 cm thick layer of loosely-packed gravelly sand that appeared to have accreted as wind-blown deposits and contained no cultural material; Level II, a 5 cm thick buried old ground surface containing organic stains but no cultural material; Level III, a 20 cm thick layer of light brown silt-sand, gravel-free deposit; and Level IV, a dark-stained zone reminiscent of an old ground surface which contained fragments of charcoal. Two small samples suitable for AMS dating were collected in this zone directly beneath a 25 cm diameter cobble, in undisturbed context and yielded a date of 2090+/-40 BP (cal. 100 BC). Immediately adjacent to the deer stone and clearly defined in the north wall of the trench was the remains of a rodent burrow (probably marmot) that terminated at the top of a flat slab 35 cm below the ground surface, 50 cm north of the rock and charcoal find. We recovered a few mouse bones from the center of this disturbance. Beneath this level was sterile undisturbed gravelly sand with small rocks whose undersides were encrusted with white mineral salts, indicating that this level was in situ and undisturbed by humans or rodents. The rock and 5 cm thick slab, lying flat and in the middle of the L-IV horizon were clearly culturally-placed and we presumed were associated with the erection of DS5. However since we were unable to note any stratigraphic evidence of a pit cut associated with the monument, it appears that the erection of the stone involved excavating a very narrow pit, just large enough for the stone's base, that had not extended into our excavation area. Given the cemented nature of the subsoil, this would provide the most solid foundation for the setting. No artifacts, bones, or other cultural materials were found in the excavation.

We also tested one of the small ring features (F3), an oval rock ring whose long axis was oriented N-S and had internal dimensions of 1 x 0.75 m, located 47.5 m and 100 degrees (mag.) from DS5 and approximately 18 m east of DS4 (Fig 9.6; Fitzhugh 2003: fig. 6.6). The feature's border rocks had been chosen for their large blocky size to make an obvious enclosure whose center was clear of rocks. We excavated a 1 x 50 m trench oriented with the open center of the feature, finding two soil levels: Level I being unconsolidated wind-blown sand, and Level II, being a tan sandy soil level 20-30 cm thick containing charcoal stains and calcined bone fragments. These fragments were of robust size, probably from a single large animal, most likely a horse, although a positive species determination was not possible. More work needs to be done here as the cultural deposit extended beyond our trench under the east wall rocks. A small AMS sized charcoal sample was obtained but has not yet been dated. Future work will include dating a number of these features to determine their chronological and functional relationship to deer stone and khirigsuur constructions. Among the questions to be answered are: do the rings represent contemporary sacrifices made at the time of the deer stone or khirigsuur construction?

Are they 'accretional' sacrifices that took place over a longer period of time to 'renew' social bonds with the deceased or honored spirits? Do the ring feature's calcined bones have a specific or mixed species composition? Since many of the central mounds in the Ulaan Tolgoi khirigsuur complexes are huge, investigation of the outlying features may prove to be a useful way to study the construction and history of such complex constructions. Similar approaches are being pursued by Francis Allard's research team working in the Khanui Valley south of the Darkhat Valley (Allard 2002, Allard et al. n.d.), and by Josh Wright at Egiin Gol.


Fig. 1.14: Deer Stone 4 Excavation

In 2003 we returned to expand our preliminary survey from the previous season and laid out a 22-square meter grid south and west of Deer Stone 4 (see fig. 9.8, photo 3.23). A number of large rocks protruded from the ground surface here and elsewhere around the stone, but without any clear pattern. To check the stratigraphy and depth of the deposits, we began excavation with two 4 x 0.5 m trenches (above) running due south and west from a datum a few centimeters from the south side of the deer stone, and then expanded these trenches to cover most of the stone's southwestern quadrant (see photo 3.18); we also opened up two 2 x 2 m areas north of the west trench and east of the south trench, which contained Features 2 and 3.

As we began excavating the southwest quadrant region, except when disturbed by construction activity, the stratigraphy was similar to that noted in the DS5 test. Level I was a 5-10 cm layer of loose sand with bits of gravel overlain by a thin grassy turf. We found a single sherd of brown earthenware of probable Khunnu affiliation in this soil level, which otherwise was sterile. Level II is a variable deposit of light-colored sand; Level III is a light-brown wind blown silt; and Level IV is sterile gravely sand (fig 9; photo 3.15). As the surface levels were cleared, more rocks emerged, and soon the upper level of an oval construction (Feature 1; fig. 1.15, 9.9) took shape. This feature was an oval ring of large blocky rocks whose vertical inside faces formed a chamber with a 1.75 m north-south axis and a 1.2 m east-west axis. Near one of the inclined slabs outside of the southeastern wall we recovered a rim fragment of a large-diameter soapstone vessel, in the brown loam level (Level I). In the center of the feature on the floor we found a horse skull lying head to the east on sterile subsoil at -143 cm BT (below triangle datum plane), with six cervical vertebrae and four hooves. There were no artifacts, charcoal, evidence of fire, or other bones present (see photos B.2, B.4, B.6, B.14, B.17).

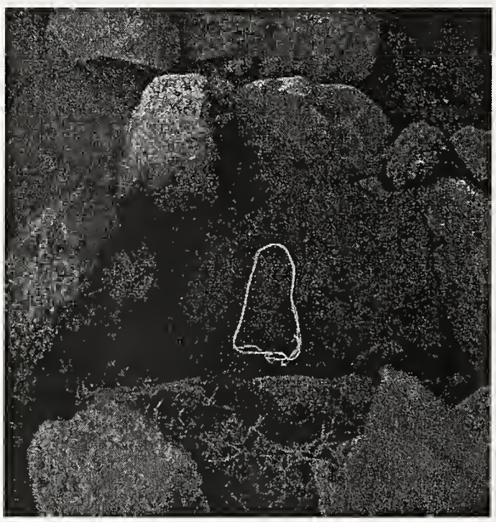
Fig. 1.15: String Outline of Horse Head in F1 View East

Excavation of the 50 cm wide west trench produced a small burned fragment of ceramic in the brown siltly loam, and small fragments of calcined mammal bone and a round 10 cm diameter granite pecking stone at the junction between the loam and the gravelly sand at -112 cm BT (below the triangle datum plane). A small charcoal sample from this level dated to 2900 +/- 40 BP (B-182959).

Excavation of a cluster of rocks just north of the west trench soon revealed the presence of another horse head burial feature (F2; fig 1.16, 9.10, 9.11; photos B.7, B.8, B.9, B.11, and below). A ring of large rocks formed the walls of the feature which was filled with smaller rocks. The horse skull faced east and had the neck vertebrae nested against the skull on its north side and a hoof along the south side. The skull was placed right-side up on the sub-soil with its top at -132 cm BT and base of the mandible at -151 cm BT. Concentrations of charcoal stains and small chunks of charcoal were found in the southwestern and southeastern areas of the ring feature at -120 cm BT. A small hammerstone was recovered just outside the north wall of F2 in the tan gravelly sand level. A charcoal sample from this feature dated to 2150 +/- 40 BP (B-182958).

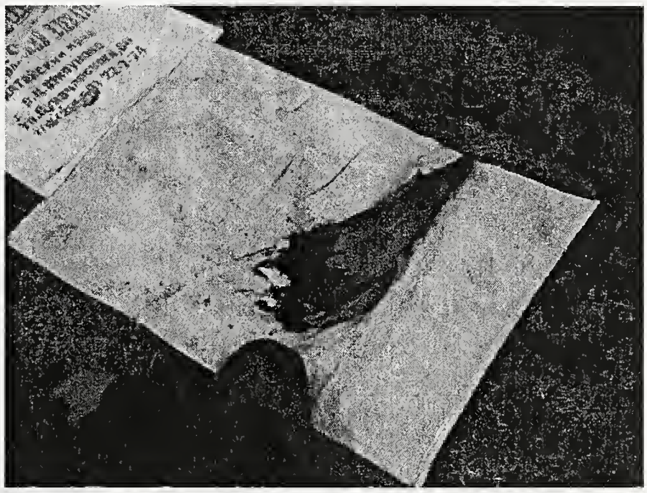

Fig. 1.16: Horse Skull from Feature 2

Another concentration of surface rocks prompted excavation of a third area east of F1 (fig 9.12,9.13; photo B.6, B.23). Once again we found an oval ring of large rocks whose center had been filled with smaller rocks and slabs. At the base of the fill an east-facing horse skull was found flanked by cervical vertebrae and four hoof cores lying on sterile gravel at - 150 cm BT. Excavation of the area between F1 and F3 revealed a one-meter wide cobble pavement that appeared to connect the two features, and on this pavement we found several hammerstones with heavily pecked edges that conformed to the width of the grooves pecked into the deer images on DS4. These finds, outside the horse head burials lead us to conclude: (1) that the deer stone images had been carved with these pecking stones; (2) that the carvings were done at the same time the horse heads were buried; and (3) that at least the F1 and F3 features — and probably F3 and others — had been open at the time, suggesting that all of these activities took place as part of a single ritual ceremony. Further excavation of the surroundings of DS4 will help verify these conclusions, especially if other horse head burial features should be found arranged symmetrically around the deer stone. These data suggest that horse sacrifices and burials can now be directly linked as contemporaneous events, rather than as ceremonies that could have taken place long after the erection of a deer stone. Although excavations at the base of DS4 failed to produce charcoal or other dating samples we feel confident that the associated horse head burials, which can be dated, are contemporary with the erection and carving of this deer stone, and this pattern may also us to establish absolute dates for other deer stones associated with horse head burials. Of course, this still leaves the question of the contemporaneity of khirigsuur and their horse head burials and satellite oval rings, but it begins to create a plausible scenario for a unified theory of Mongolian Bronze Age ritual landscape construction.

GPS Khirigsuur and Mound Mapping

In connection with the Bronze Age deer stone excavations, Bruno Frohlich and Matt Gallon, assisted by Julie Singer, conducted a detailed mapping survey in the Erhkel Lake and West Darkhat region, using satellite mapping instruments producing centimeter-scale accuracy (see their report in this volume). These surveys produced detailed maps of hundreds of Bronze Age mound sites, which we found ranged from the flat lands and river-side locations to the tops of prominent hills that seem to have served as a focus for Bronze Age burial sites and associated rituals. By combining the results of selective excavations with these detailed settlement pattern studies, which include architectural plans of khirigsuur complexes, we hope to achieve a better understanding of North Mongolian Bronze and Iron Age ritual landscapes, patterns of regional variation, and information of burial rituals, demographics, and artifact associations.

In 2002, while surveying on the southwest flank of the hill one km west of the Ulaan Tolgoi deer stone site west of Lake Erkhel, we found a khirigsuur with a central boulder mound and circular boulder ring perimeter that had been excavated by looters only a few days before our arrival. The looter's lunch fire and food packaging was still lying by their hearth. They had dug 1.75 m into the center of the ca. 10 m diameter, 2 m high mound, reaching a burial about 1 m below the ground surface. When we visited the site a human skull still was lying in the bottom of the pit, attesting to the presence of a central sub-mound burial. We collected the skull and sifted through the soil in the open pit, gathering a small bag of bones, the majority of which were marmot and mouse, but some appeared to be goat or sheep. These materials have not yet been analyzed, but we did not note any horse-sized materials. We reported this damage to the authorities, who acknowledged a dramatic recent rise in archaeological site vandalism.

Fig. 1.17: Overview of DS 4 Excavation

The source of the granite used for manufacturing deer stone monuments was a question of interest because it might provide information about the organization of the society that produced the monuments. Were such sources local or far away? If quarries could be located, what types of extraction methods had been used? Were the stones roughed out and transported to the Ulaan Tolgoi site or were the deer stone engravings also produced at the quarry? Where the images created by a single hand or by a range of artisans? And finally, what might be the determining factors in producing the great variety of sizes and shapes and images depicted?

We had some success in identifying the probable location of the stone used for most of the Ulaan Tolgoi monuments. Rising from the south shore of Erkhel Lake, about 10 km southeast of the deer stone site, we found granite outcrops that have been quarried in recent decades for architectural building stone. Modern extraction utilizes the plug-and-feather technique, and in one instance a single rectangular block of granite 15 m long and 3 m high had been cleanly split out. We also noted that many eroding blocks had natural parallel cleavages of similar widths as the deer stones, and that some of these cleavages were stained with the same type of iron deposits and discoloration noted on deer stones. Although further geological tests will be required for to confirm our observations, it seems likely that the Erkhel quarries are the source of the Ulaan Tolgoi deer stones.

At this point it is too early to offer sweeping generalizations from our limited studies at Ulaan Tolgoi. At present I cannot argue with assurance that the charcoal dates of 2090 and 2150 BP from the base of DS5 and Feature 3 of DS4 are any more believable than the date of 2900 BP from near the west trench floor at DS5 setting. However, in the near future we will have several new dates on horse remains from the DS4 horse hear burials, and these should provide important new information regarding our suggestion of the association between these sacrificial features and the erection and carving of the deer stones. At least this should begin the process of providing chronometric dating for monuments that have heretofore been dated largely by stylistic means. Hopefully future work will provide more data for studying the Ulaan Tolgoi site in terms of its ritual landscapes, functional and stylistic differences in stone constructions, construction histories of discrete khirigsuur and mound features, studies of ring features and their relationship to central constructions, feature and stone setting dates, and other aspects of this fascinating site.

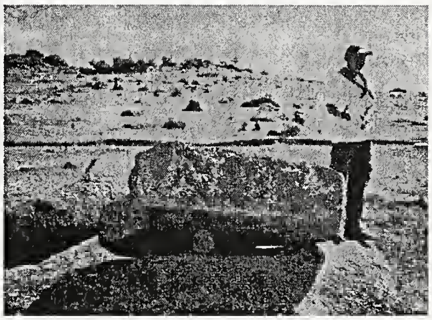

Fig. 1.18: Granite quarry at S side of Erkhel Lake.

Climate History Studies

As part of our interest in developing a paleoenvironmental record for the Darkhat region, the 2003 project included a lake sediment coring program in the mountains west of Tsaaganoor directed by Kevin Robinson (see Part V in this report). The project began with Robinson's attempts to sample lake sediments at Erkhel Lake and locations in the West Darkhat Valley near Soye. Erkhel Lake sediments proved to be too hard to sample with our hand-driven equipment, and the small lakes in the Soye region were too young to contain sediments; many were found to have formed in the past few decades as thermokarst features resulting from melting. However, excellent samples were obtained from a chain of lakes in the taiga region west of Tsaganuur, where the project spent a week with the Dukha. Robinson's results were being compiled as this report was being prepared, his field report is included in this volume. Kevin was assisted in his work by Scott Stark and the Dukha/Tsaatan herder, Sanjin. Later in the summer of 2003 Sanjin worked closely with Smithsonian lichen specialist, Paula DePriest and her environmental studies team, who spent several weeks in August with the West Tundra Dukha gathering information on reindeer feeding, forage types, and seasonal adaptations.

Forensic Studies at Gandan Monastery

In mid-September, Smithsonian forensic anthropologists Bruno Frohlich and David Hunt traveled to Ulaanbaatar to assist the Institute of Archaeology recover information from the huge mass grave recently discovered at Hambiin Ovoo within the Buddhist Gandan Monastery in UB. It is believed that this site may contain the remains of as many as 3000 monks. To date nearly 1200 remains have been removed, and during the past month plans have been approved by the Monastery to undertake detailed forensic work in order to learn more about the tragic fate of the victims, thought to have been executed in 1937. Further information on this work has been published in the *Arctic Studies Center Newsletter* 11 and is contained in a separate report in Part VII of this volume. These projects were conducted with the assistance the Institute of Archaeology's physical anthropologist, Naraan Bazarsad.

Conclusion

Although it will take several years for the studies reported above to be fully analyzed, our goal is to begin developing a regional chronology that identifies dates and describes cultures, settlement patterns, and adaptations for comparison with better-known regions like Egyin Gol (Crubezy et al. 1996; Honeychurch 2004) east of Hovsgol, the Khanoy region to the southwest (Allard et al. n.d.), and the Tuva taiga to the north, for the past 5-6000 years. A primary goal will be to determine how the steppe-taiga boundary influenced cultural development and animal domestication in their respective zones and how cultural and ecological boundaries have shifted in response to changing climate.

A second archaeological goal is to begin a study of Mongolian Bronze and Iron Age cultural and ritual landscapes (Askarov et al. 1992; Bokovenko 1994; Sementsov et al. 1998; Mon-Sol Project 1999/2000; Jacobson 1993; Jacobson et al. 2001, 2002; National Museum of Korea 2002) by mapping and excavating at the Erkhel Ulaan Tolgoi site. Our research will apply GPS mapping, modern recovery techniques, and anthropological perspectives to determine feature function, site history, and construction sequences. Major questions to be resolved include the precise radiocarbon dating of deer stone art styles, the function and relationships between burial mounds, khirigsuur, deer stones, horse head mounds, and cremation rings, most of which contain cremated (datable) animal remains. These studies will help determine Bronze and Early Iron Age world-view and ritual landscape patterns, as well as social and religious function of these monuments.

A third goal of this research will be to begin to contribute toward understanding Mongolia's role in the origins of Scythian art and the hypothesis advanced by Jacobson (1993) and some of her Russian colleagues that the elaborate 'Mongolian style' deer stone art is an early form of Scytho-Siberian animal art. I would also like to test the possibility that Mongolian Bronze and Iron Age art spread eastward from the Mongolia-Sayan region into northeast Asia and the Bering Sea (Schuster 1951). Hopefully this work and related studies in East Asia will confirm why northern Siberia has so far failed to produce prototypes for ancient Eskimo art, whose death masks, ivory ornaments, shamanistic elements, and animal motifs seem more closely related to Mongolian and East Asian art.

As demonstrated above, the Deer Stone Project has a rather complex research program ranging across geology and climatology to archaeology, ethnology, and natural history. Although it will be difficult to make rapid progress on all fronts, useful results have been achieved by research conducted during the past two years, with the assistance from Mongolian colleagues, the Dukha, and American scientists.

Acknowledgments

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Part II
Research Report of the Mongolian Team

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Introduction

The Mongolian National Museum of History (MNMH) and the Smithsonian Institution National Museum of Natural History, Arctic Studies Center jointly conducted anthropological and ecological studies in the Darkhat valley of Khovsgol aimag in June 2003 . In the first two years of the survey, research was carried out jointly with the SANTIS Language Center and the Mongolian Reindeer Foundation in order to give all research teams a familiarity with the geography and lifestyle of the Tsaatan people. We concluded that the Darkhat Valley requires a greater research investment in terms of archaeology, geology, and flora (2002 report). As a result, the administrations of both MNMH and the Smithsonian agreed to implement a joint project on archaeology and ethnology.

The archaeologists from the MNMH organized the archaeological survey and excavation work according to the provisions of the Mongolian law on the Preservation of Culture Heritage (sections 11.2, 11.4, 12.1) on how to conduct survey, excavation, and the study of historical and cultural monuments.

Purpose of Study

The Deer Stone Project research activity consists of the following sub-sectors which each have their own objectives: archaeological research, ethnographic research, cartographic research, and biological flora research. The archaeological research has the following objectives: to determine more specifically the questions of the culture of the Bronze and Early Iron Age (BEIA) of the area in question and to study in more concrete terms the economic and cultural heritage of the people who lived at that time and compare their culture to the cultures of other areas.

A major question is to what extent is there a connection between archaeological materials and monuments of the Mongolian northern forest zone and those of Northeast Asia, the Bering Strait (Schuster 1951), the North Pacific Ocean, southern and eastern European cultures, and the well-known Scythian culture (Jacobson 1993)? And further, if there are relationships between these cultural areas, can the cultural influence be traced to the Sayan Altai region from where diffusion might have begun? One of the objectives of this study, therefore, is to study if such relationships exist based on the archaeological materials and monuments of the Mongolian Bronze Age, e.g., animal style art and the deer stone monuments associated with such artwork.

Generally, the project seeks to answer questions and provide more specific answers as regards the origins and development of cultures in the steppe region and on neighboring territories, such as the taiga forest zone, to determine the specific characteristics of steppe culture, and to study the process of the domestication of wild animals, especially reindeer.

Additional goals are to determine the chronology of the archaeological periods of the region that stretches from the western part of Khovsgol lake, northward until the border of Tuva and to determine in greater specificity the culture and patterns of dispersal for the people who settled and inhabited this region.

Based on our previous study, we have established the presence in the area of Erkhel lake approximately 50 features of the Bronze Age including burials, khirigsuur, ceremonial constructions, and deer stone monuments. Our intention in this report is to compile information on the archaeological monuments surrounding Erkhel Lake and to include information on the archaeological excavations carried out in the vicinity of a deerstone complex in this area. Furthermore, we record the results of excavations of a Neolithic camp at the site of Soye Tolgoi discovered by earlier surveys of the area. We intend to determine the chronology of this site and to do a detailed study of questions connected to the economic development of pastoralism and in addition the role of reindeer herding in this area.

Prior Research

For publications on related research, see Askarov et al 1992; Bokovenko 1994; Sementsov et al 1998; Mon-Sol Project 1999/2000; Jacobson et al 2001, 2002; and National Museum of Korea 2002.

Methodology

For this study we used standardized methods which are accepted and commonly used for archaeological research. For locating and recording khirigsuur features on a map we used GPS units. We used contemporary excavation methodology and organic samples recovered from excavation contexts were analyzed using radiocarbon dating for chronology. GPS units were the main tool used for recording site locations and for creating plans of stone features.

Research Staff

1. Mongolian Side

Ts. Ochirkhuiag (archaeologist) MNMH
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2. **American Side**

William W. Fitzhugh (archaeologist): Arctic Studies Center, SI Project leader
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Kevin Robinson (geology student): Department of Geology, University of Pittsburgh
Bruno Frohlich (anthropologist): Department of Anthropology, SI
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3. **Assistants**

Ad'iaabold SANTIS project director
Niambaiar (driver)
Tsogtgerel (driver)
Naran gerel (driver)
Khadaa (driver)
Amaraa (cook)

Research Itinerary

Khovsgol aimag:
— Uushgiin Ovor, Moron city
— Erkhel Nuur, Alag-Erdene sum
— Soye Tolgoi, Uulan Uul sum
— Shagmag, Tsagaan Nuur sum

Schedule

From May 27, 2003 to June 18, 2003; 21 days in the field

Study of the Deerstone of Uushgiin Ovor

Uushgiin Ovor is a valley located in the northern part of the Delger basin approximately 15 km west of Moron, the central town of Khovsgol aimag. The western and northern part of this valley are enclosed by rocky granite outcrops and due to their reddish color this valley has the name, "Uushgiin Ovor"(Red Lung). In this location there are several artfully made deer stones created in the past by several generations of local inhabitants. There are also several Bronze Age khirigsuur/burial features. These monuments add much great beauty to the natural surroundings of the valley. Initially, these monuments were scientifically studied by Volkov (1981). Volkov divided the deerstones of this site into three rows starting from the eastern side and numbered each feature 1-15. He made drawings of the engraved surfaces and produced detailed descriptions of each deerstone characteristics. Following that, these monuments are mentioned in the Mongolian atlas of cultural and historical monuments (1999), though information in that text is only provided for 14 deerstones. At present, there are 14 monuments at Uushgiin Ovor and therefore, the deerstone Volkov counted as number 15 is missing. Who moved the monument, when, and to where it was moved is uncertain at this time. The 15th monument, which was considered to be the best preserved, has disappeared without any trace.

From 1999, the Academy of Sciences Institute of History, Department of Archaeology, sent research expeditions to Uushgiin Ovor to study these deerstones under the direction of Dr. D. Erdenebaatar. In 2002, within the framework of research activities between MNMH and SI, there was held in Washington DC an exhibit, entitled “Modern Mongolia” in which a facsimile of an Uushgiin Ovor deer stone was put on display. Specifically for this exhibit, a field copy was made of UO deerstone number 14 which has a unique human face carved into its upper section. Permission for this work was granted by the appropriate Mongolian authorities and field copies were sent to the United States (2002 report).

According to the agreement the SI laboratories have produced 2 exact replicas of the monument and one is on display at SI and the other is at the MNMH. This year we worked for a short period at UO and we have produced detailed measurements of the complexes containing deer stones and khirigsuur/burial features located in the valley using the GPS unit. Data on the number of feature locations and exact measurements made during the survey study will be published in the joint report with the SI.

Study of the Ulaan Tolgoi Monument Site

The research team of the joint MNMH and SI Deer Stone Project set out on May 30th from Moron, Khovsgol aimag, drove for 45 km and came to the Ulaan Tolgoi monument site located 8 km west of Erkhel Lake in Alag-Erdene sum. This site contains the tallest deerstone in all of Mongolia (3.8 m) and together with it there are three monuments with deer depictions and one without carvings, and there are also accompanying ritual constructions and khirigsuur/burial features. Our work started on the 31st of May and according to the work schedule we divided into four teams. The first group, Kevin and Scott, went to Erkhel Lake to begin sampling lake sediments. The second group, Bruno and Matt, went to locate and map monument sites of khirigsuur/burial features and deer stones. The third group of Aiuush and Sukhbaatar visited local families for ethnographic studies and the fourth group including Ochirkhuiag, Bill, Baiarsaikhan, and Sanjmiatav began the archaeological study including a visit to the deer stones sites to familiarize themselves with the prior excavations and to closely observe each stone monument. The archaeological group planned to do an excavation at the fourth deer stone from the north, having dimensions 138 x 80 x 30 cm and having 10 surrounding deer features or depictions on the front and back of the monument. After discussing methods, it was decided to excavated two 4 x 0.5 m trenches extending south, and west.

The excavation was conducted in an efficient manner to expose the construction and ceremonial arrangement of the monuments. Within the unit to the south, we removed organic topsoil, and at a distance of 2.4 meters south of the monument at 7 cm depth we discovered a dark brown rim sherd. With further excavation, at 2.07 meters from the monument at 12 cm depth there was found several small fragments of charcoal. After the removal and cleaning of the southern part of the southern unit 10-15 cm depth, we began removing soil from the western area and after screening the soil from this area three small fragments of pottery were found. Compared to the previous finds of ceramics, these were thinner and the clay was different. Following this we decided to expand the excavated southern trench to the west by 2 meters based on an observed difference in soils which might indicate a feature related to the construction of the monument. From this point on this excavation is referred to as Unit 1.

On the second day of the work we continued excavation and in the process of digging uncovered a circular shaped stone feature. In the southeastern part of the feature there was an upright stone and on the outer edge of this was found a grooved rim sherd of a stone container. The middle section of this stone construction there was found horse teeth and badly preserved bone. Further excavation revealed a horse skull positioned to the east, missing some cranial sections. In addition, from this area two objects were found that we called "hammer stones". These had evidence for modification by human hands and could have been used as an implement for the making of some other object. These artifacts were found 30-40 cm below the surface and when we excavated 10 cm deeper, sterile soils were encountered. On that day we tried to determine how deep the deerstone was set in the soil and dug down to 40-50 cm depth at the southern base of the monument. We found fragments of stone and horse bones and fragments of marmot vertebrae and we determined that the monument was set approximately 90 cm into the soil.

On the third day of the excavations (June 2), from the previously excavated section we expanded the unit by excavating an additional 2 meters on the western side and in the center of the expanded area we constructed (or left) a 0.5 m balk (khamar) and this we called Unit 2. During the excavation of this section we discovered pieces of charcoal, bone fragments, sherds, and one more hammer stone and from what we have observed form the exposed stone and the composition of the soil, it became clear that there was another circular shaped feature. Therefore, we expanded this unit 2 m to the north (Unit 3). In addition, along the trench to the south of the monument at between 1 and 1.3 m we began to excavate another unit (Unit 4), 2 m to the east and again leaving a 0.5 m balk in the center. Another stone feature construction was discovered in this unit. On the fourth day of our work (June 3) we continued the excavations in the 3rd and 4th units. During excavation of Unit 3, in the inner part of the small circular enclosure, we found small fragments of charcoal. From the edge of the eastern side of the unit 35 cm to the west and from that point, 90 cm north, there was found horse teeth and small bone fragments. From the edge of the western side of the unit, 50 cm to the east and from that point, 80 cm north, there were found the shaft bone fragments (marrow bones) belonging to some kind of animal and 10 cm to the north there was located another horse head facing east. North of the horse skull there was accompanying vertebrae and also there was placed in front of the nasal area of the horse skull, four accompanying hooves. From the stones near the southern side of the excavation unit another hammer stone was found. All of this was found recorded at 30-40 cm depth and sterile soils were encountered 5 cm below that.

While excavating the 4th unit, from its NW section 80 cm to the east and from that point 80 cm to south and at 40 cm depth, there was found a horse skull positioned to the east with accompanying vertebrae to the south. Since the head was set in the sterile soil there was no need to excavate further.

That was the last day of the Ulaan Tolgoi project. We completed all excavations and back-filled the units and the next morning planned to depart for the Soye Tolgoi site.

Research at the Soye Tolgoi Site

We left Ulaan Tolgoi on June 4 for the Soye Tolgoi Neolithic site in Ulaan Uul sum. During our trip, we passed through Iamaan Khavtsal, Dund Gialaant. We passed over the river Beltes and made a brief stop and observed some khirigsuur/burial features in the surrounding area. We made use of the GPS unit to locate some of these features. We then moved further along and crossed the rivers Guna and Bagtakhyn Gol and then over Toomoin Davaa and Oliin Davaa and we arrived at Ulaan Uul sum center and met with the local government officials and acquainted them with our projects. We continued with our trip by cutting through Khurgana Ekh and then up Khuurchiin Khondii and Khugiin Gol and then we camped that evening at Soye Tolgoi near the channel of the Khugiin Gol river. This site was discovered in 2002 by SI archaeologist William Fitzhugh and the site has not been scientifically studied formerly, but is associated with many interesting local stories. Upon arriving that evening our team familiarized itself with the location. We made short survey trips to surrounding areas and on a few sand banks and in sandy blowouts numerous stone tools were found. The first day of the project Soye Tolgoi was June 5 and we spent a total of 5 days working at this site. Starting from the first day at this site near the upper most part of the Khugiin Gol river (approximately 20 meters), an eroded sand bank was examined having evidence for cultural layers containing stone tools. We chose an area situated 100 m south and approximately 70 meters from the embankment and 50 meters distance east to west, and every 10 meters we excavated a 0.5 x 0.5 m test pit(see fig. pp.).

Test Pit 1: Beginning from the west in test pit 1, we removed 4 cm of topsoil and in clayey brown soils charcoal fragments were found. 6 cm below we found mixed together charcoal fragments and a flint microblade. 10 cm below that, our excavation produced large quantities of charcoal in clay black soil and at a slightly lower depth there appeared burnt marks in the soil. The black soils continued and 30 cm lower, unburned plant roots and sterile soils were found with permafrost below.

Test Pit 2: The second excavation (TP 2) initially went down 10 cm depth where there appeared charcoal and a layer of black soil. In the upper part of this layer we found three animal bone fragments. Excavating further to a depth of 20-40 cm in black and brown soils we found three small blade tools made of black and white flint. We then expanded this pit to one meter in size and continued excavation finding more than 10 stone tools and animal bone fragments.

Test Pit 3: While removing the soil from the third test pit to the west, at approximately 8 cm depth there were found in the clayey black soil the bone fragments of what was likely a contemporary animal. Further excavation continued down to 20-30 cm encountering mixed black and brown soils in which were found small fragments of bone and charcoal and a blade tool of early date. Further down to 30 cm depth, layers of brown sandy soils were encountered.

Test Pit 4: In the fourth excavation (TP 4), 10 cm below the topsoil we recovered 2 large bones from black clayey soils but nothing else was found.

Test Pit 5: In test pit 5, 15 cm underneath the topsoil in the central part of the pit we found an early [stone] tool in mottled black soils. At a depth of 30 cm, we recovered bone fragments likely belonging to an early period. This pit was excavated to a depth of 42 cm.

Following this work we examined the area having the eroded sandbank along the river. We laid out a grid along a section of the river from east to west and excavated three 2 meter units, one to the west, one to the east, and one in the center along an east - west axis. On the surface of the sand a large number of stone tools were found, due to processes of erosion that have exposed the cultural layer.

This three-part excavation was numbered Features 1, 2, 3 from the west and each unit contained a variety of stone tools in large numbers. Most interesting was the excavations of units 1 and 3. At a shallow depth of approximately 10-20 cm, we found possible evidence for hearths (see picture). This evidence could be the result of more recent activity but further analysis at the Smithsonian Institution will be used to determine better understand this problem.

The overall area of excavation we designated as "Soye 1"; however several hundred meters to the southeast there were a few circular sand blowouts in which we found additional stone tools (Soye-2). Nearby at Soye-3, we found ceramic fragments in large numbers and collected them from the surface.

We left Soye Tolgoi on June 10 in order to go to Tsagaan Nuur sum to a place known as "Shagmag" where the Tsataan had their spring/summer camp.

Survey and Research at the Site of Shamag at Tsagaan Nuur

On the 10th at 7:00 am, we departed Soye Tolgoi for Tsagaan Nuur sum. Once in Tsagaan Nuur we proceeded in a northwestern direction up Kharmaan river and we were met as agreed by the Tsaatan people who came with horses for transport. Together we crossed Nariin Ovor pass and by sundown we stopped at the camps of the nearest two Tsaatan families. According to our respective research specialization, we divided into three groups and went in different directions.

* Kevin and Scott went to study the lakes and traveled deep into the taiga with the translator Ad'iaa and the Tsaatan Sanjim who is over 60 and who assisted as a guide. They were gone several days with equipment and horses.

* The ethnographer Aiuush went into the taiga to meet the Tsaatan families who were dispersed in the forest zone in order to study their customs, religious beliefs, and other topics. He set out with the young Tsaatan, Zorigoo, as a guide.

* At this time the archaeological group, in addition to having Ochirkhuiag, Bill, Baiarsaikhan, Sanjmiatav, acquired Bruno, Matt, and Julie. This group went to the north to do survey. Our intention was to detect in the taiga area some evidence for remains of earlier periods but after much wandering in the forest we returned to camp a little disappointed at not having found any promising evidence. The other two teams, however, had better success in their projects.

On the next day, June 12, the archaeologists continued their survey to the west and went along the same road as the lake research team in order to familiarize ourselves with the lake research and to conduct a simultaneous archaeological survey in those regions.

On that day also, though we were introduced to the work at the lake, our survey turned up little besides enjoying the natural beauty of the area. After some discussion we agreed to send Matt, Bruno, and Ochirkhuiag and Baiarsaikhan went back to Soye Tolgoi in order to complete unfinished work at that site.

Study of Burials and Khirigsuurs

During the whole study, Bruno and Matt were engaged with the task of locating and mapping khirigsuur and deer stone complexes. In this study the following areas were visited in Khovsgol aimag: Erkhel lake of Alag-Erdene sum, south side of the Khugiin Gol river in Ulaan Uul sum, and additional nearby regions. During the process of this work, the team found and marked the location of many khirigsuur/burial which had evidence of recent pillaging. During the course of this project the researchers even encountered people in the process of disrupting these features and informed the authorities of their activity.

We returned to Soye Tolgoi along the road by which we had come and reached the site by evening. Our main work included locating burials and khirigsuurs by GPS unit that had not been located and to discover and to locate more features in the vicinity.

The SI will publish in a joint report the work done by Bruno and Matt including the location, description, and plans of the features studied in this area. On the next day after our arrival, we started this work and worked the entire day. During the data recording by GPS we came across two places with several burials which were robbed and the Mongolian side explained to the foreign researchers that these unfortunate activities are due to the socio-economic conditions in Mongolia and the lack of education among local people.

We worked here for one day and in the next morning we set out to Ulaan Uul sum center to meet with project participants coming from the north. In the afternoon we reached Ulaan Uul sum center and we waited for the other project members but in the end we decided to head to Ulaan Tolgoi, a place we had worked previously, and wait for our group there. We spent the entire day in transit and set up camp where we had camped before, built a campfire and erected camp tents and our colleagues arrived late that night.

On the next morning Ochirkhuiag and Baiarsaikhan went to make drawings of the most distinct and well persevered deer stones and this concluded the work of the expedition for this field season.

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Part III

Notes on the Meaning of Deer Stone Monuments

J. Baiarsaikhan - National Museum of Mongolian History
Translation by William Honeychurch

While traveling across the vast territories of Mongolia's steppes, valleys, high mountains, and lowland terraces one comes across the image of deer engraved on stone monuments of various sizes.

These monuments with deer images have come to be called "deer stone monuments" in the archaeological literature. They were spread across the steppe zone during the Bronze and Early Iron Ages (end of the 2nd millennium B.C. to VII-III century B.C.) and represent a unique historical and cultural heritage. The deer stone monuments have been studied for over 100 years and during the span of this time more than 700 deer stones have been discovered. Of those documented, there are approximately 550 in Mongolia, 20 in the lower Baikal region, 20 in the Saian Altai, 60 in Altai Mountains, 20 in Kazakhstan and Central Asia,[1] 10 further to the west extending to Orenburg, Caucauses, Ukraine and reaching to the river Elba.[2]

In regard to the origin of the deer stone monuments other researchers have expressed a variety of opinions. For example, N.L. Chlenova thinks that the deer depictions originated from the area of the Saka or related regions.[3] Volkov believes that some methods of crafting deer stones came from the Scythians.[4] However, Tseveendorj holds the opinion that the origins are to be found in Mongolia during the Bronze Age and that deer stone monuments spread from Mongolia into Tuva and the vicinity of Baikal.[5]

However, we would like to present in this article our opinions regarding the images of the deer stone monuments.

Deer stone monuments are the result of specialized craft production and take the form of oblong standing stones with four sides often divided into three horizontal bounded areas. Usually in the uppermost section on one side of the stone there appear either one large circular object or a

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[1] Samashev, Z.S. 1992. Naskal'nye izobrazheniia Verkhnego Priirtysh'ia [Rock drawings of the upper Irtysh river basin]. Alma-Ata, page 156.
[2] Mongol Ulsyn Tuukh [Mongolian State History]. 2003. Ulaanbaatar, Vol. 1.
[3] Chlenova, N.L. 1962. Ob olennykh kamniakh Mongolii i Sibiri [On the deer stones of Mongolia and Siberia]. MAS.M., page 34.
[4] Volkov, V.V. 1967. Bronzovyi i rannyi zheleznyi veka Severnoi Mongolii [The Bronze and Early Iron Age of Northern Mongolia]. Ulaanbaatar, page 71-80.
[5] Tseveendorj, D. 1979. Mongol nutgaas oldson zarim bugan chuluu khoshoo [Some Deerstone monuments discovered on the territory of Mongolia]. Arkheologiin sudlal VII:13:67.

large and a small circular image and below these appear numerous small pecks or round pits in the stone. Below that, in the main section, there are not only artful depictions of deer but sometimes images of horses, snow leopards, wild goats, human beings, fish, and boar. From the border of the section below this (sometimes interpreted as a belt or waist) are suspended a variety of weapons, nearby a bow, and a five-sided image that resembles the ridges of the hard palate [a pentagonal shaped image with a series of chevrons inside]. There are also monuments with no animals at all but only images of deer, belts, and weapons.

Considering the distribution of deer stone monuments, their geographical location, and their depictions, these monuments are undoubtedly of nomadic heritage. However, it would be interesting to study the kind of belief system that inspired their making.

Researchers have provided different explanations for the occurrence of deer and other items on these monuments. For example, in the series on Mongol History published in five volumes (2003), volume 1, page 120, reads: "…the deer is an animal that was widely distributed across Central Asian territories and was an important source of skin, meat, and antlers, and presented no danger to human beings, and thus it came to be worshipped from an early period. In addition, S. Dulam writes: "…ancient peoples often considered themselves as having originated from the totemic entities they worshipped, and therefore the people who crafted the deer stone monuments may have viewed the deer as totemic figures from which they themselves originated."[6]

The American researcher, William Fitzhugh, has noted with regard to the images on deer stones that a tradition of body and face painting existed among the ancient ethnic groups of Asia and Europe. This idea is supported by the evidence for ornate body tattoos found at Pazyryk sites in the Altai as well as on ceramics and stone figurines. This line of thought provides one possible interpretation of the deer stone monuments as depicting body art upon an anthropomorphic figure. In this case, the deer stones would be considered to represent figures of human beings, as suggested by William Fitzhugh.[7]

In order to explain deer worship we need to consider the beliefs and the religious systems of the people of that time. The people of that early period perceived certain natural phenomena and occurrences of strange flora and fauna in light of relatively unsophisticated beliefs. It appears that early peoples were in awe of such things and worshipped some of these natural phenomena. As researchers have established, the makers of the deer stone monuments lived during the period of the development of early shamanistic religions (i.e., the period of early matriarchal tribes to the 7th century A.D.).[8] It would then be logical to ascertain the mentality and belief structures of these early people through knowledge of shamanism.

Let us briefly examine here what deer cult issues are known from shamanism. First of all, the shaman's main tool is the spirit-transporting "carriage" [also known as the shaman's drum] that is made of deerskin[9], and to make it come alive the shaman calls out the following chant:

[6] Dulam, S. 1989. Mongol domog zuin dur [A Study of Mongolian Folktales]. Ulaanbaatar, page 31-32.
[7] Fitzhugh, W. 2002. Mongolia's Arctic Connections: The Hovsgol Deer Stone Project, 2001-2002 Field report. Washington. page 7-9.
[8] Purev, O. 1999. Mongol boogiin shashin [Mongolian shamanism]. Ulaanbaatar. page 19.

> "...the newly traveling deer has become my navigator leading me onto the path of life and happiness".

After having performed specific rituals the shaman removes his cloak (del) and puts on a ceremonial cloak and he then induces vomiting. Through these actions, the shaman's deer and his transport become alive and he then recites the following:

> "My soul double, guard yourself against danger and enemies. The image has doubled to pursue the deeds of a manly hero. I am suspended in the air by the might of those who grasp destiny. My herd double, go onto making great deeds."

By concluding this chant the shaman calls upon his ancestral spirits.[10] There exist quite a few examples of similar recitals recorded by researchers. In addition, shamanism also includes the worship of deer[11], moose/elk[12], gazelle[13], and shamans have used the skins of each of these animals to make their tools. Many legends have also come down to us and exist among different peoples concerning the important connections between shamans and deer.

The researcher O. Purev writes, "...from an early time, the forest tribes of Mongolia have considered deer as the transporters of ancestral spirits, while the steppe tribes considered the 8-legged horse as transport for the spirits of their ancestors". Purev's conclusion seems to be a plausible explanation for the occurrence of both deer and horse on the deer stone monuments. Therefore, we suggest that the people who crafted deer stone monuments considered deer to be the selected deliverers of the dead to the spirit world. This concept is given clear expression in the arrangement of images upon some deer stone monuments. One example is the site of Temeen khuzuu in Baiankhongor province, Gurvan bulag sum, where one deer stone monument clearly expresses this concept through the arrangement of its images. In the upper part of the depiction of the deer register on this particular stone there appears a seated figure with its head above the upper border. This configuration depicts the deer as transporting the figure into the sky or the spirit world (Fig. 3.1).

Some researchers connect the division of these monuments into three horizontal sections with the concept of the "three continents" or "three worlds". Furthermore, several researchers view the big and small circular objects and other images and pits often located at the top of these monuments as representing the sun, moon, stars, and sky. Other researchers argue that these images might be depictions of earrings and neck decorations. We would like to note here that both interpretations are possible, and our understanding of them may depend on the particular image context of specific monuments.

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[9] Zham'iaan, L. 1998. Daian-deerkhiin boo morgol [Shamanism of Daian-deerkh]. Ulaanbaatar, page 31.
[10] Zham'iaan 1998, cited above, page 33-34.
[11] Purev, O. 1999. Mongol boogiin shashin [Mongolian shamanism]. Ulaanbaatar. page 246.
[12] Purev 1999, cited above, page 244.
[13] Purev 1999, cited above, page 176-182.

In further considering the relationship of wild boar and fish images on deer stones in relation to the three worlds concept, we suggest that these images may be related to earth and water respectively.[14] In other words, these animal images are representatives of the lower world. Even among contemporary peoples, there is a tradition that fish are animals of great longevity and there is a tendency to protect them. As for the boar, "…there are many customs or beliefs connected to the boar, one of which is that they do good for the soil of the earth by compressing it."[15] Such recorded customs and beliefs of traditional nomadic psychology are important to consider with regard to the present issue of deer stones. An example illustrating this idea is to be found at the site of Baianzurkh, Most sum in Khovd province. At this site, one deer stone monument bears a realistically depicted horse, and beneath the horse there appear four wild boar grouped together with their heads directed downward (Fig. 3.2). Other deer stone sites provide similar evidence including Dorvolzhin am, Shine-Ider sum, Khovsgol province (Fig.3.3); Urd Khuurai, Tariat sum, Arkhangai province (Fig. 3.4); Shurgakhyn am in Telmen sum, Zavkhan province (Fig. 3.5); and the site of Mandal, Orkhon sum of Bulgan aimag (Fig. 3.6). Deer stone monuments discovered at each of these sites depict wild boar consistently appearing in the lowest register beneath any other animal figures. Based on these observations, the evidence supports the above proposition that such animal depictions as wild boar are related to the lower regions connected with the earth.

Other animals that have been depicted on deer stone monuments, including wild goat, snow leopards, birds, and gazelle, seem also to be connected to the historical period in which tribal beliefs were important. For example Volkov has noted the resembles of the carved wild goat image in the upper part of the deer stone at the Zhargalant Uul site, Battsengel sum, Arkhangai province to the wild goat "tamga" symbol of the Turkic period (Fig. 3.7).[16] The wild goat depiction as a "tamga" symbol was widespread during the 6th to 8th centuries A.D. as an emblem of the Turks, for which monuments of that period provide a great deal of evidence. Based on the observation that inter-tribal relationships were very extensive at that time, the use of the wild goat emblem we may surmise the importance of this emblem for distinguishing the Turkic tribes from the many Mongol ethnicities that were also present.

Finally, Volkov,[17] Tseveendorj,[18] and Erdenebaatar[19] each have explained the "five-sided decorative shape with chevron patterning" found on deer stones as a shield. Other researchers view this image as representing either the upper front section of a shaman's cloak, an image of a human scapula bone, or a kind of dwelling structure. As for the shield hypothesis, there is little evidence to suggest the shield interpretation is viable, especially if we exclude the image of a shield having a multi-angle shape depicted on a bronze mirror in a private collection. The image of the "five-sided decorative shape with chevron patterning" has been a source of many

[14] Purev 1999, cited above.
[15] BNMAU-yn ugsaatny zui [Ethnography of the Mongolian People's Republic]. 1987. Vol. 1, page 387.
[16] Sanzhmiatav, T. 1993. Ancient historical and cultural monuments on the territory of Arkhangai province. Ulaanbaatar. page 26.
[17] Volkov, V.V. 2002. Olennye Kamni Mongolii [Deer stones of Mongolia]. Moscow, page 17.
[18] Tseveendorj, D. 1976. Tov Aziin ertnii nuudelchdiin bambai [Shields of the early nomads of cental Asia]. Information Bulletin of the Academy of Sciences, 4:53-56.
[19] Erdenebaatar, D. 2002. Mongol nutgiin dorvoljin bulsh, khirigsuuriin soel [Slab burial and khirigsuur culture on the territory of Mongolia]. Ulaanbaatar, page 20.

arguments over the years, however based on our comparative analysis using ethnographic data it becomes possible to offer some additional interpretations. The "five-sided decorative shape with chevron patterning" corresponds quite closely to the chevron pattern found on examples of the shaman's spirit-transporting vehicle [shaman's drum] (Fig. 3.8, 3.9). The similarity in shape and possibly in meaning attracted our attention. According to shamanistic beliefs, animals were created and human beings are connected to them through bodily realms of significance. These are the main vertebrae, the four main organs, the 10 joints, and the 80 veins and these four realms are represented by images on the shaman's spirit-transport carriage [drum].[20] According to this tradition, in order to make spirit-transport effective, the handle of the drum is inscribed with a chevron pattern representing the backbone and ribs of an animal. While some argue that the chevrons represent the mane of a horse,[21] on the handle of one spiritual carriage [drum] there is a depiction of an animal's back, carved in great detail, that supports the connection of chevron patterning with the backbone and ribs of an animal (Fig. 3.8). In addition, another handle of a shaman's spiritual-transport drum in the Baian Ulgii provincial museum has such a chevron pattern and further supports this interpretation[22] (Fig. 3.10). Therefore, evidence suggests that one interpretation of the "five-sided decorative shape with chevron patterning" found on deer stones is that the image depicts the vertebrae and ribs of a deer or another animal. Furthermore, in the collections of the Mongolian National Museum of History as well as in other museums and in private collections, there are bronze decorative objects commonly described a "pendants" that are very similar in form to the "five-sided decorative shape with chevron patterning". These artifacts are found in archaeological contexts belonging to the chronological period related to that of the deer stones and may have some similarity in function.

We would like to conclude by stating that the deer stone monuments are one of the unique and amazing monuments left behind by the ancient Central Asian nomads. Some of the meanings and symbolism of the images found on the deer stone monuments have come down to us through the ancestral Mongolian religion of shamanism. However, in this regard, we believe that further research along these lines will be needed based upon more concrete studies.

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[20] Purev 1999, cited above, page 250-251.
[21] Purev 1999, cited above, page 250-251.
[22] Arkheologiin sudlal [Archaeological Research]. 2000. XX:1-11, page 94-99.

Fig. 3.1

Fig. 3.2

Fig. 3.3

Fig. 3.4

Fig. 3.5

Fig. 3.6

Fig. 3.7

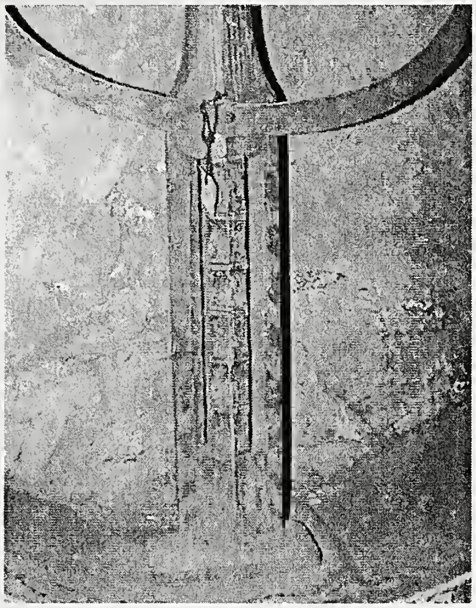
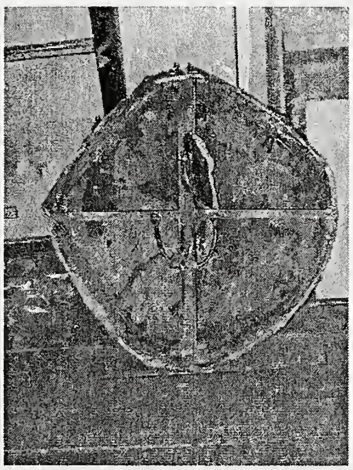
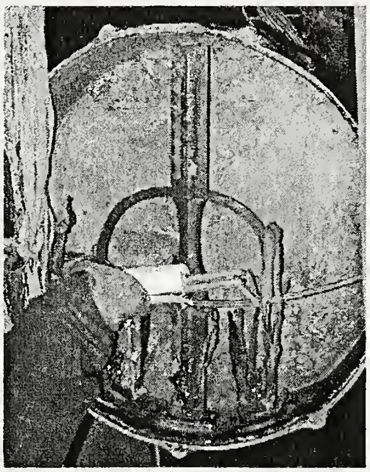


Fig. 3.8: The handle of a shaman's "spiritual transport carriage" [drum] in the collection of the Mongolian National Museum of History

Fig. 3.9: The handle of a carriage [drum] in the collection of the MNMH



Full view of the carriage in Fig. 3.8 (back side)



Full view of the carriage in Fig. 3.9 (back side)

Five sided decorative shapes with chevron patterning on deer stones.

Fig. 3.10: By L. Erdenebold and L. Altanzaia- The handle of a Shaman's carriage [drum] from Baian Ulgii Provencial Museum.

Part IV

The Khirigsuur Tombs in the Hovsgol aimag, Northern Mongolia Mapping, and Analysis

Bruno Frohlich, Matthew Gallon, and Naran Bazarsad

Introduction

This year resulted in two visits to Mongolia, both in association with the Arctic Study Center at the Smithsonian Institution. The first visit in May - June focused on our survey of Bronze Age burial mounds in the Hovsgol aimag in northern Mongolia. The second visit, in September – October by Bruno Frohlich, and David Hunt, was by invitation from the Mongolian Academy of Sciences to assist Naran Bazarsad and Enkhtur Altangerel of the Institute of Archaeology in surveying, evaluating and excavating newly identified mass burials at Hambiin Ovoo near the Mongolian capital Ulaanbaatar.

The burial mound survey was administratively supported by 'The Deer Stone Project' directed by William Fitzhugh. Monetary support was derived from our museum's CT Laboratory (travel, equipment, supplies, and logistics), the Smithsonian's Department of Anthropology (travel support for Bruno Frohlich and David Hunt), The Deer Stone Project (travel expenses covering Matt Gallon and 'within Mongolia' logistics during the May - June burial mound survey), the Mongolian Academy of Sciences (salaries, logistics and supplies during the mass burial excavations), and private funds (supplies, travel, equipment and logistics). We enjoyed the company of many new friends both in the field and in Ulaanbaatar including T. Galbaatar (President of the Mongolian Academy of Sciences), D. Tseveendorj (Director of the Institute of Archaeology), B. Enkhtuvshin (Vice-President of the Mongolian Academy of Sciences), the late S. Idshinnorov (Director of the National Museum of Mongolian History), and J. Batsuuri (Director of the Mongol Tolbo Association). Our visit made us appreciate the hard work, great enthusiasm and support of researchers, academics, and students, including Ochirhuyag Tseveendorj, Ts. Ayush, and Jamsranjav Bayarsaikhan, of the National Museum of Mongolian History. Kevin Robinson and Scott Stark of the University of Pittsburgh added a fresh and friendly component to our research by sharing their experience with sediment core sampling for the study of late Holocene climatical

variations. Julie Singer who collected insects, mostly beetles, for our museum's Department of Entomology, assisted us during some of the mound surveys with data recording and photography.

At the Smithsonian Institution we enjoyed productive and positive discussions with William Fitzhugh, William Honeychurch and Daniel Rogers, who have conducted previous research in Mongolia. More recently and during a three day Mongolian seminar at Sterling College in northern Vermont, we shared ideas and data with Steven Young (Center for Northern Studies), Clyde Goulden (Institute for Mongolian Biodiversity and Ecological Studies) and Edward Nef (Inlingua Language Service Center, and Sterling College).

Bronze Age Burial Mounds

Introduction

Mongolia is covered with burial mounds. Some are huge and extensive and impossible to miss, and others are barely identifiable recognized only by the trained archaeologist's eager eye. It is unknown how many mounds are scattered across the Mongolian landscape, and it is also unknown which time periods are represented by mound structures. Mounds, also known as 'khirigsuur' or 'kurgan', have been reported extensively by Russian, Mongolian and more recently Asian, European and American researchers. Many excavations have been completed and we now are beginning to see the results in a variety of publications documenting years of fieldwork and making data available to other scientists as well as to the general public.

Previous Research

The Mongolian Bronze Age lasted from the mid 2nd millennium BC to the 4th century BC (Erdenebaatar 2003; Allard 2002 a, b, Tseevendorj 1978, 2000). At the beginning of the Bronze Age the people inhabiting Mongolia and surrounding areas had initiated the transformation from a sedentary or partly sedentary agricultural society to a nomadic pastoralist society. It is believed

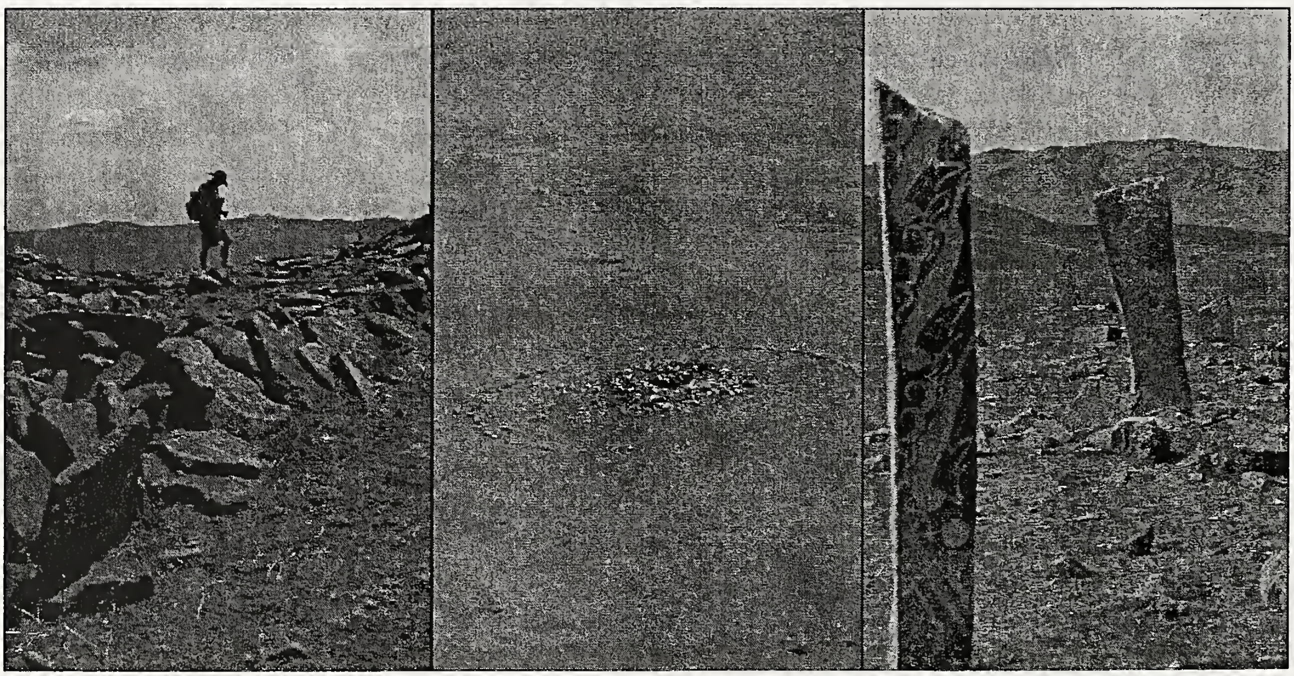
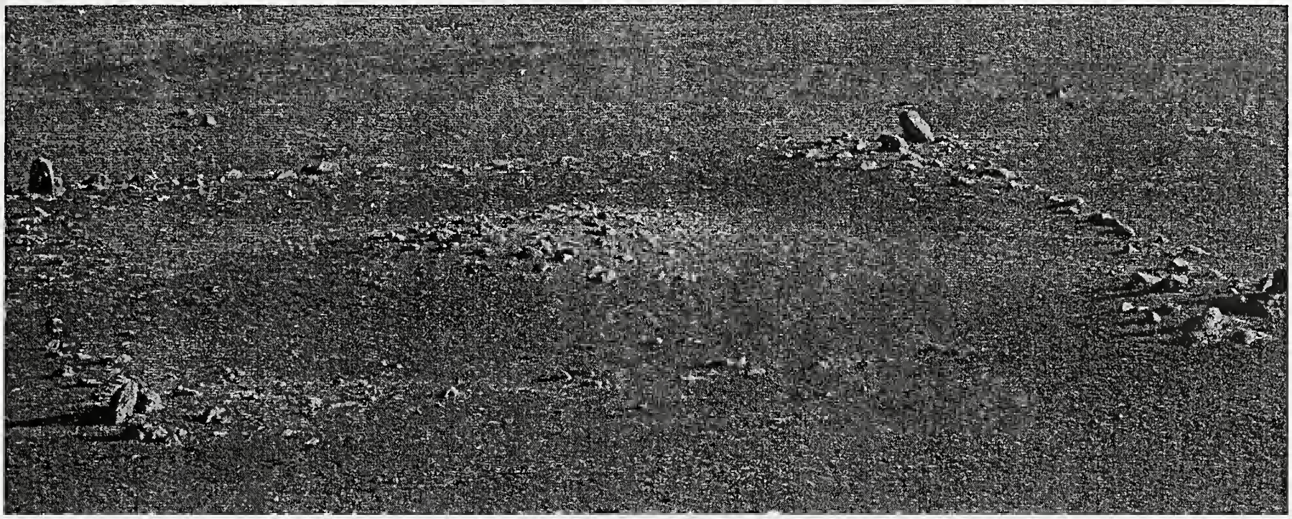


Fig. 4.1. Three categories of monuments are defined as (1) slab burials (left), (2) khirigsuurs (center) and (3) deer stones (right).



Fig, 4.2. Mound No. 1 located at the west end of the Ulaan Tolgo site complex, in the Lake Erkhel area represent a typical squared mound. The maximum and minimum lengths of the surrounding walls are respectively 23 meters and 18 meters. The diameter of the central mound, covering the burial chamber is 10 meters.

that by 900 BC this transformation was complete. The reason for this drastic switch is not known, however several researchers have suggested that changes in climate and possibly an increasing demand for products favored by nomadic pastoralists were major causes (Allard 2002 a,b; Erdenebaatar 2003). No temporary or permanent settlements have been identified for this period. However, Bronze Age people left amazing and lasting monuments, all requiring a large input of manpower and possibly related to a strong and successful economy.

The known monuments have been classified into three major categories (1) slab burials, (2) khirigsuur, and (3) deer stones (Fig. 4.1).

(1) Slab burials are centralized burial pits covered with stones and surrounded by a squared wall consisting of upright slabs of flat stones creating a protective wall-like fence. The distribution of slab burials ranges from the Khangai mountains west of Mongolia to Inner Mongolia in China, and from the Gobi region in the south to the Lake Baikal area in the north (Erdenebaatar, 2003 in press).

(2) Khirigsuur is the Mongolian name for Bronze Age burial mounds. The word for burial mounds used on the Russian side of the border is 'kurgans'. The typical khirigsuur consists of a centralized burial chamber covered with unworked stones (central mound). This mound of stone is surrounded by a wall (fence) which can be either circular or square (Fig. 4.2, 4.3 & 4.4). During our survey of 282 khirigsuur, a few slab burials and four deer stone sites were recorded. We found that sizes of the khirigsuur range from a few meters (4 meters) in length/diameter to more than 100 meters. Also, we found that some of the larger khirigsuur were surrounded by from one to almost a hundred external structures including smaller mounds with diameters between three and five meters, and circular stone rings with diameters between two and four meters. Francis Allard (2002 a, b) reports several huge khirigsuur in the Khanuy Valley some of which exceed 400 meters in maximum length/diameter and are surrounded by almost 3,000 external structures including smaller mounds and stone rings (Allard and Erdenebaatar 2004).

The distribution of khirigsuur ranges from the Khentii mountains in eastern Mongolia to the Bayan Olgii province in western Mongolia, and from central-southern Mongolia to Lake Baikal in the north (Erdenebaatar 2003). Some khirigsuur have also been reported in the Chineese Xinjiang province (Erdenebaatar 2003; Nels Nelson, 1925 [in: Fairservis 1993] and Alonzo Pond [in: Andrews 1932]).

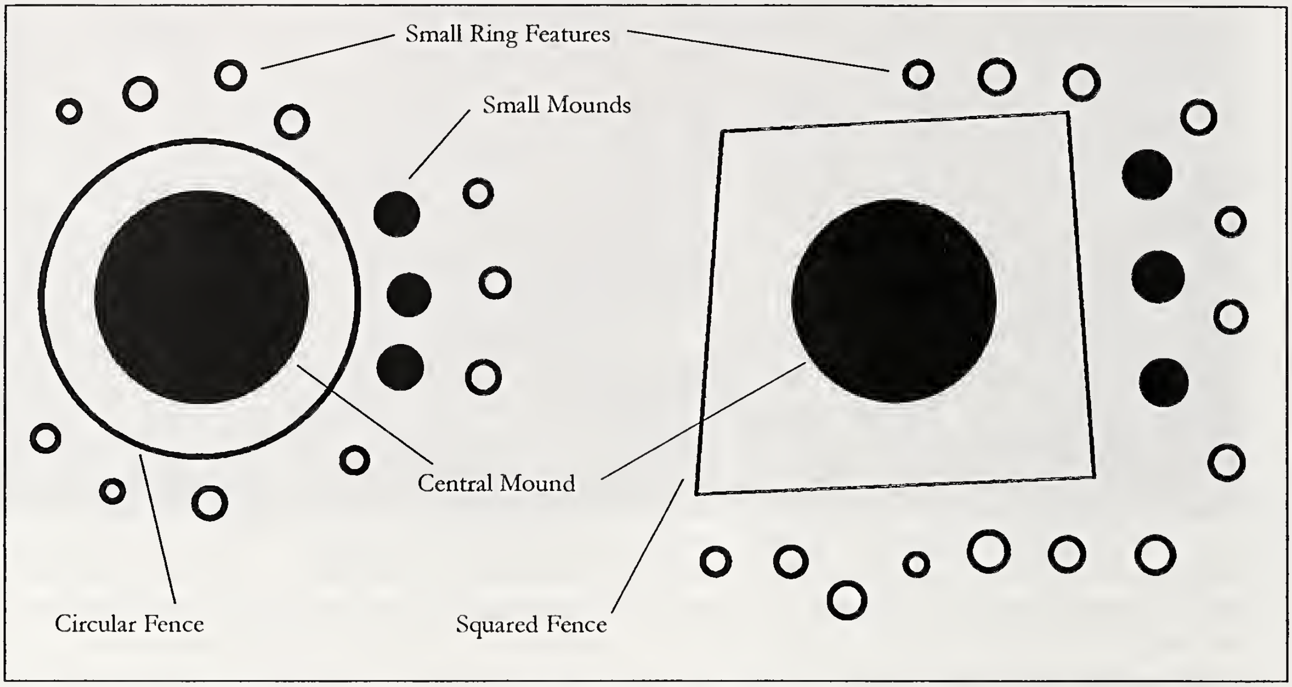


Fig. 4.3. The two most common expressions of khirigsuur: Mounds with circular fences and mounds with squared fences. The following nomenclature are used: The centrally located pile of stone including possible burial chamber(s): ***central mound****. The surrounding wall of adjacent stones, either circular or squared:* ***circular fence or squared fence****. Externally located smaller mounds:* ***small mounds****. Externally concentrations of stones forming rings:* ***small ring-features****.*

Very few khirigsuur have been completely excavated. Erdenebaatar (2003 in press) reports that only 16 khirigsuur have been completely or partially excavated and published, all located in southern Siberia and in northern Mongolia. Some of the most extensive research on khirigsuur is probably the surveys and excavations by Francis Allard of the University of Pittsburgh in the Mongolian Khanuy Valley where huge khirigsuur structures have been identified.

(3) The third group of Bronze Age structures is the deer stone monuments. The deer stone monuments consist of upright stone slabs bearing beautiful anthropomorphic carvings and images of animals. On rare occasions they may depict human faces. The maximum height of the slabs have been reported at about 2.5 meters (Erdenebaatar, 2002a, 2003 in press), and a minimum height of about one meter (sizes are difficult to determine because of the destruction of many slabs leaving less than one meter of stone left). The function of the deer stones have been discussed extensively by several researchers (Erdenebaatar, 2002a; 2003 in press; Volkov, 1981; and Jacobson, 1993). Jacobson's 1993 publication *The Deer Goddess of Ancient Siberia* offers a detailed and authoritative description and analysis of the deer stone images depicted by Eurasian nomads during the Bronze Age. The distribution of deer stones far exceed the ranges of the first two categories (slab burials and khirigsuur). Deer stones have been reported from Inner Mongolia in the south to the Buriatiia area around Lake Baikal in the north, and from the Khentii province in eastern Mongolia to the farthest end of western Mongolia. However, similar monuments have also been reported as far west as Ukraine and other countries in eastern Europe (Erdenebaatar 2003; Jacobson 1993). The temporal relationship between the three observed classes of monuments is not fully known or understood. Fitzhugh (2003) completed test excavations around deer stones at Lake Erkhel in northern Mongolia and has suggested a temporal connection between deer stones and khirigsuur. This is supported by our surveys of khirigsuur around the deer stone complex located a few kilometers west of Lake Erkhel. However, the distribution and size of mounds sur-

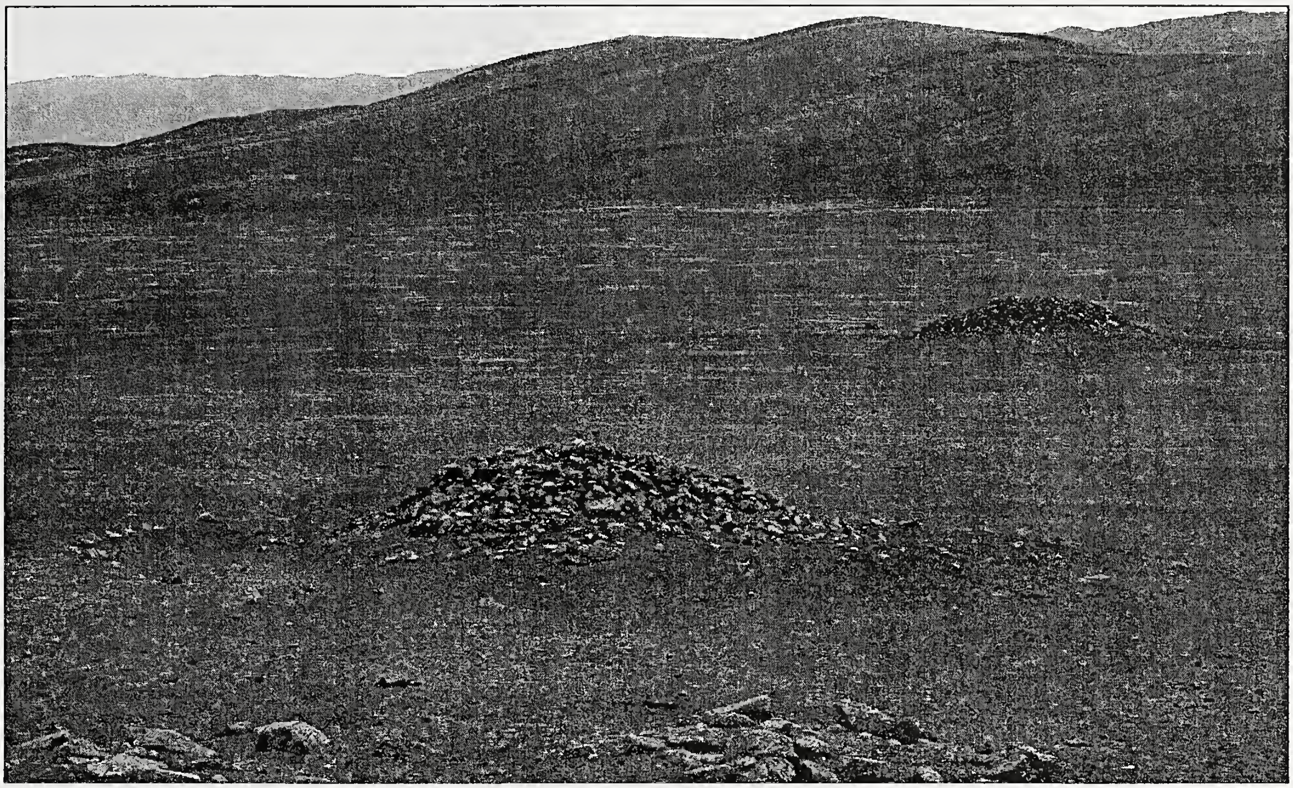


Fig 4.4. Khirigsuurs located on the valley floor west of Lake Erkhel. The mounds include a centrally-located pile of stones (central mound) surrounded by a circular ring enclosure or 'fence'. In both cases the circular fences are barely distinguishable consisting of a single row of adjacent stones. The average diameter of the central mounds is 8 meters. The average diameter of the circular fence is 15 meters

rounding the deer stones follow a different pattern when compared to the distribution and size of mounds in the surrounding steppe and southern hill sides. There is still a lot of research to be completed before this interaction is fully understood.

Nomadic people are not usually associated with large monumental structures. It is a fascinating and mesmerizing problem to reconstruct the lifetime of these magnificent nomads who succeeded in developing a social structure and economic system which lasted for at least one thousand years and achieved far ranging cultural homogeneity through rapid mobility despite a very low population density.

Present Research

During the summer of 2003 we initiated a major survey of khirigsuur in the Hovsgol Province in northern Mongolia (Fig. 4.5). We recorded 282 mound structures located on the valley floors and the southern, southwestern and southeastern facing hill sides. Rarely did we find any mounds on the hills' northern side although a few were identified on the flat steppe adjacent to the northern side. This phenomena may be related to the coverage of north facing hills with extensive tree coverage, a feature which appears to be missing on the southern hill slopes (Fig. 4.6) (Kozlov 1925).

In general the average khirigsuur consists of a centrally-located concentration of stones (central burial chamber) surrounded by either a circular ring-fence or four connected fences comprising a square (Fig. 4.2, 4.3 & 4.4). Each corner of the square may include one or more standing stones or small mounds some of which may contain human burials (Fig. 4.2). It is unclear if such

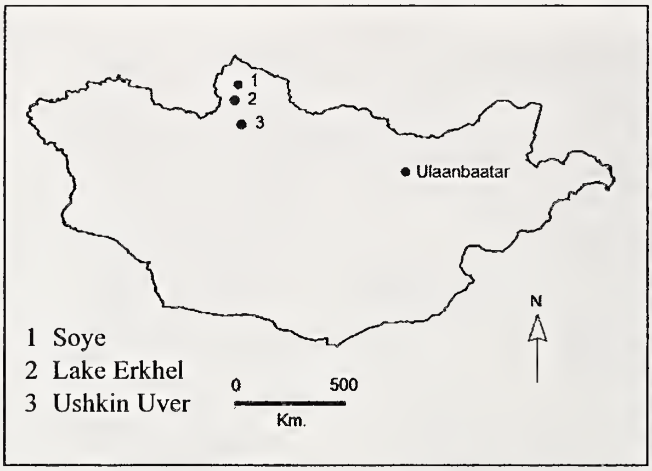


Fig. 4.5. Areas of 2003 research. May - June (Soye, Lake Erkhel and Ushken Uver). September - October (Ulaanbaatar)

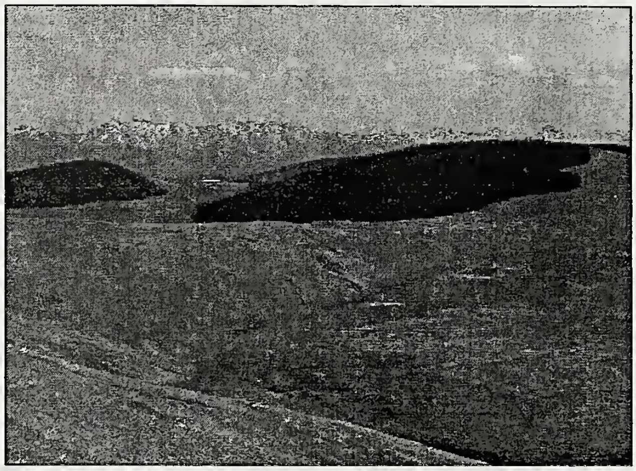


Fig. 4.6. Hill with only northern half covered with trees. A majority of khirigsuurs are found on the southern sides of hillslopes.

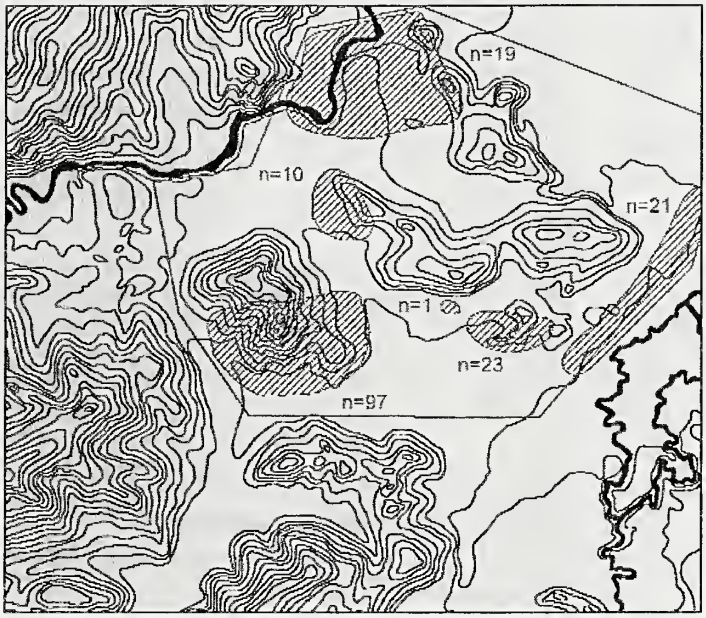
corner burials are contemporary with the central mound. A few mounds having burials in the surrounding fences clearly demonstrate that some of these structures were added at a later time.

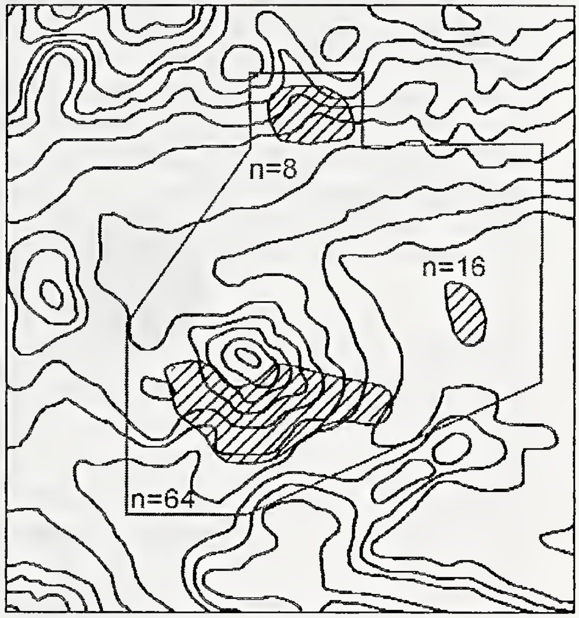
Many khirigsuur are surrounded by smaller mounds located east or west of the circular or squared fence. In addition, small stone rings may be found in circular patterns external to the smaller mounds.

Our objective was to record all visible mound structures within a well-defined geographical area. Because of limited time, we applied fast and efficient data collection procedures, including GPS, total station, and digital photography (Fig. 4.7). We decided on a limited data collection focusing on geographical location and elevation, horizontal distribution, mound density, size and shape variation, and description of burial contents as observed in cases where tombs had been excavated by professionals or robbed. We limited our search to three geographic regions in central/northern Mongolia: (1) Soye, (2) Ushkin Uver, and (3) Lake Erkhel (Fig. 4.8 and 4.9). We used surveying equipment which in this case included high precision global positioning systems (GPS). All data was processed in the field using a combination of small computers, generators and battery power. We obtained ranges of precision from five meters (for hand-held GPS units) to better than two centimeters using a base-rover combination of Ashtech-Magellan Locus GPS receivers (Fig. 4.7).

Using advanced technological equipment in remote areas requires that we collect data that reflects 'real' data. This is accomplished in different ways. For example, we can record the same data more than once to ensure that our data can be verified

Fig. 4.7. Matt Gallon recording points on burial mound at Lake Erkhel using the Ashtech/Magellan GPS unit (Rover). A central Base Station including a similar unit is placed permanently within a radius of 20 km. The post-processing of collected data using both units allows a precision of better than one inch for horizontal and vertical distances.





Research areas at Soye (left, Fig. 4.8), and Lake Erkhel (Fig. 4.9). The Soye area includes five well defined clusters of mounds and the Lake Erkhel area three similar clusters. The research areas measure approximately 195 km^2 (Soye) and 16.8 km^2 (Lake Erkhel).

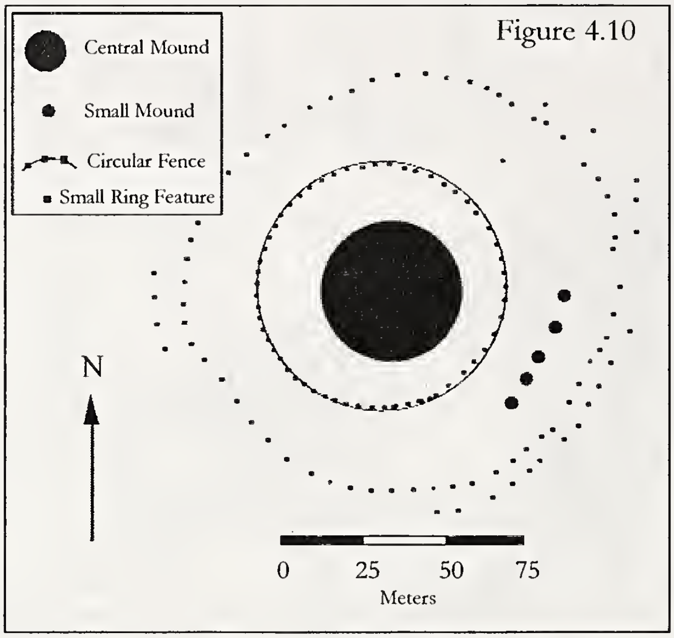
or repeated. We can also compare our data to known map records if such information is available. In Mongolia and other parts of the world this can be a problem since access to good and reliable map information may be limited.

With a precision better than two cm we must ensure that geometrical patterns are displayed as accurately as possible. For example, a known circle with a known diameter on a flat and horizontal surface must be displayed as such after the data is processed. This objective becomes a function of our ability to record points with high precision, and to use the right algorithms and map projections which will produce a 'real' circle when displayed or plotted. At first the circular ring fences of our mounds plotted out as beautiful elipsoids. In some cases this was partly correct and in others certainly wrong. After experimenting with known circles we quickly learned that selecting the right map projections and reference datums and adjusting for the recording of mounds located on hill-sides we could produce beautiful circles which in all instances proved to be extremely accurate. After such experimentation we selected the Universal Transverse Mercator projection (UTM, North, Zone 47 [96° E - 102° E]) based on the World Grid System 1984 (WGS84). The WGS84 corresponds to the North American Datum 1983 (NAD83). Our map references include Russian 1:200,000 series dated to 1972 and based on Russian surveys from 1942 to 1969. The series has proven to be amazingly accurate agreeing very well with our GPS-derived locations.

	Locus GPS	H-H GPS	Total
Ushken Uver	24	0	24
Soye	0	171	171
Lake Erkhel	79	8	87
Total	103	179	282

Table 4.1: Distribution of mound recording in the Hovsgol aimag, Northern Mongolia. Numbers do not include recordings at four deer stone sites, a Neolithic site at Soye, and one undeterminable structure at Lake Erkhel.

The Ashtec/Magellan Locus GPS system was used extensively at Ushkin Uver and at the Lake Erkhel area. Mounds in the Soye area were recorded by small hand-held GPS units only. Thus, in the following, general information reported from all three



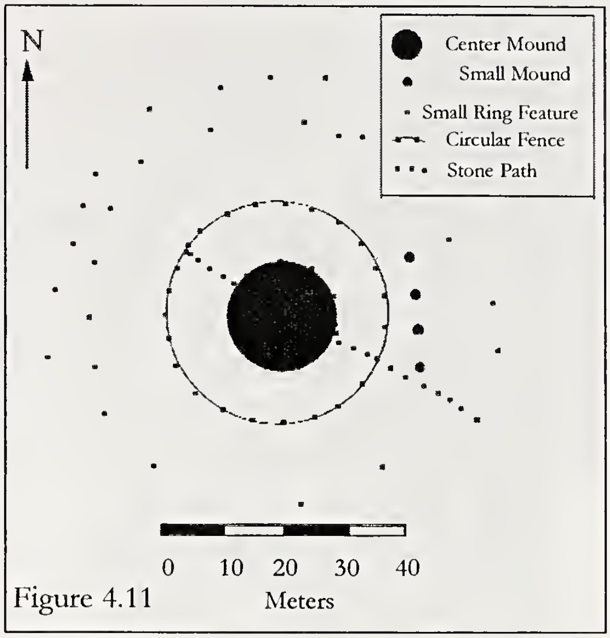


Fig. 4.10, 4,11. Mound no. 24 at Ushkin Uver. Circular fence depicts a perfect circle with a diameter of 78 meters. A total of 87+ structures (small mounds and ring features) surround the circular fence creating an irregular circular shape. Mound no. 20 at Lake Erkhel includes a perfect circular fence with a diamter of 34 meters. Center mound diameter is approximately 18 meters. The mound is surrounded by four small mounds to the east and 27 small rings features surrounding the mound structure in irregular shaped circular patterns. The maximum diameter of the complex is approximately 71 meters.
Each small squared point seen within the fences depicts a randon GPS recording point. Each small squared point defining the small ring feature depicts the exact center of such features but not its size. In general, small ring features measure one meter to three meters in diameter.

areas will be used to describe some basic statistics including all of the recorded burial mounds (n=282), while detailed analyses of metric and directional data will be presented only for the Lake Erkhel mounds (n=79) (Table 4.1).

It should be emphasized that the recording of mounds in the Ushkin Uver area was strictly for the purpose of calibrating our equipment, thus this survey did not include a comprehensive search for all the mounds surrounding the Ushkin Uver deer stone site. The survey of mounds in the Soye area included all of the mounds in the defined search area, but was limited to basic recording of general size and shape in addition to one recording of geographical location by using hand-held GPS units (Fig. 4.8). Only in the Lake Erkhel area did we succeed surveying all the mounds using detailed recording of multiple GPS points covering size and shape variation for each mound (Fig. 4.9). Such recordings range from four points to hundreds of points for each mound, depending on the complexity of the lay-out. In all areas, recordings were supported by extensive use of high density digital photography in addition to traditional photographic film recording (Kodachrome 25 and 64).

General Observation and Statistics Based on all Observed Areas (Lake Erkhel, Soye and Ushkin Uver):

We recorded 282 mounds using GPS equipment and observed more than 100 additional mounds in areas where we did not have the time to stop and make accurate recordings (Table 4.1). We found that most of the mounds were located on hills facing the south, southwest, and southeast. The larger mounds tended to be located on the flat land adjacent to the southern hills while medium-size and smaller mounds were located on the hillsides possibly getting smaller as you climb

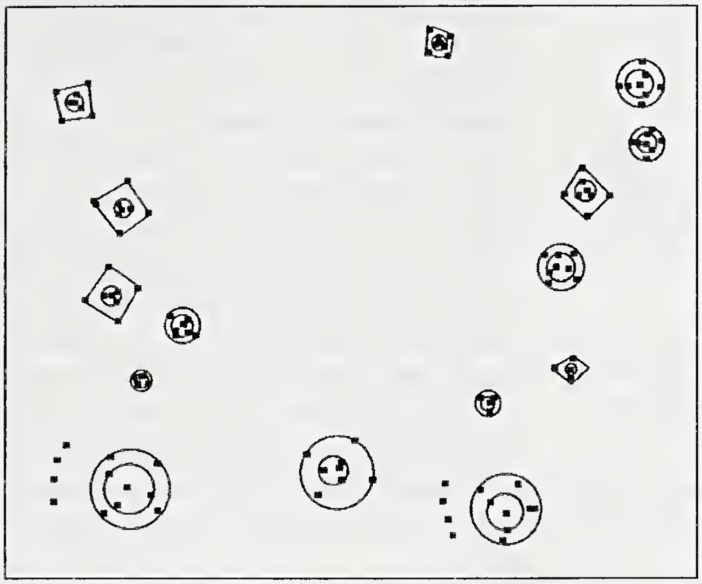


Fig. 4.12. Fifteen of the 16 recorded mounds recorded in the most eastern mound cluster at Lake Erkhel (Fig. 4.9). Mounds are located on the southern, eastern and western sides of a small hill. Three southern most (lower) circular mounds measure about 17 meters in diameter. Two have small mounds all facing toward the west. Squared points represent Locus-GPS recordings.

toward the top of the hills. We found a few larger mounds in 'saddles' between hills and some smaller mounds at lower elevations. In four instances we observed some spatial association between deer stones and burial mounds. This was clearly the case at Lake Erkhel where William Fitzhugh carried out test excavations, and at Ushkin Uver where teams from Japan and the Institute of Archaeology have been excavating. Two additional deer stone sites were found in the Soye area, though much smaller when compared to the sites at Lake Erkhel and Ushkin Uver. At the Soye sites we found clear evidence of clandestine excavations which may have resulted in the removal of some of the better-looking deer stones.

The burial mounds range in size from a few meters in diameter to more than a hundred meters. We divided the mounds into three classes based on location and elevation; Class I: on low elevations and flat land (25%), Class II: on lower slopes of hills (21%), and Class III: on medium to high slopes on hills (54%). More than 75% of the larger mounds are found on flat land (Class I) and a majority of the smaller mounds are found at higher elevations (Class III). Fifty eight percent of mounds include a circular fence and 42% include a squared fence surrounding the mound. Some of the medium and larger-size mounds include external features such as smaller mounds and rings of stones (small ring features) most often located in straight or curved lines to the east or west of the fences or, when the number of such external features is high they will surround most if not all of the basic mound architecture (Fig. 4.10, 4.11). We found that 30% of the mounds include smaller external mounds ranging from one single unit to as many as 94 (Fig. 4.10, 4.11, 4.12). We also found that only eight percent of the mounds include small ring features, always external to the fences and the small mounds. Only in one case did we find small ring features but no small mounds. Thus it may be concluded that presence of small ring features is highly correlated with the presence of small mounds. We found that the circular fence surrounding the central mound is always depicted as a perfect circle (Fig. 4.10, 4.11, 4.12). This is true for all slope distances, thus fences on hills depicting a significant difference between the highest and the lowest points may display as oblique or ellipsoid geometrical shapes when displayed onto a true horizontal surface. We also found that the additional structures such as small mounds and small ring features are not always depicted as perfect circles but are very irregular (Fig. 4.10, 4.11). In general, small burial mounds do not have such external structures, and it is obvious that the frequency of external structures increases with increasing size of the general mound structure.

Deer Stone - Burial Mound

The temporal relationship between the three categories of monuments is open for discussion. Although we have no data suggesting a temporal relationship between slab burials and khirigssurs, our data suggests a connection between deer stone monuments and khirigsuur. The

	Mounds	Area	Density
Soye	171	195 km^2	0.9 m/km^2
Lake Erkhel	87	16.8 km^2	5.2 m/km^2
Soye, adjusted	102	42 km^2	2.4 m/km^2

Table 4.2. Mound densities calculated from size estimates of research areas. 'Soye, adjusted' depicts a selection of areas within Soye reflecting a ratio between hills and steppe corresponding to the Lake Erkhel research area.

major deer stone complexes are mostly found on the flat steppe locations, as are our Class I mounds. Class I mounds include about 80 percent of the larger structures. Indeed, our spatial survey at Lake Erkhel significantly associate the six largest mound complexes in close proximity to the deer stone complex (Fig. 4.13).

The following discussion is pertinent to the Lake Erkhel data only. Of a total of 79 recorded mounds, nine are in the near vicinity of the deer stone complex. Of the nine mounds, six represent the largest recorded at Lake Erkhel. Indeed, the average size of the six mounds is more than three times the average maximum size of the remaining 70 mounds not closely associated with the deer stone complex.

A total of 305 external structures (small mounds and small ring features) are associated with 87 recorded mounds. Of the 305 structures, 266 or 87 % are associated with the nine mounds found close to the deer stone complex. If we accept that an increase in the complexity of mound constructions correlates with increased social, political and/or economical status, then this specific location may represent an area of higher 'importance' than the surrounding areas which have smaller mounds only. The deer stones are most likely of spiritual and symbolic importance, thus emphasizing the social and cultural importance of the location of the deer stone complexes.

Other observations support this hypothesis, although such data still needs to be quantified. Most external structures, especially the small mounds are often located either at the eastern or western side of the circular or squared fences. When comparing the mounds' relative horizontal location to the location of the deer stone complex we find that mounds located to the east of the deer stones have small mounds located west of the fences. When mounds are located to the west and northwest of the deer stones, we find that small mounds are often located to the east of the fences. There are some exceptions to this, especially within the group of the nine mounds located close to the deer stones. In such cases small mounds and small ring features appear to surround most of the circular and squared fences, although higher frequencies seem to be found in the direction of the deer stones. These observations are presently being analyzed and will be presented in detail at a later time.

On the issue of mound density, i.e. number of mounds per square kilometer (km^2), we find that the Soye research area covers 195 km^2 and the Lake Erkhel area covers 16.8 km^2 (Table 4.2). With the recording of 171 mounds and 87 mounds, respectively for the Soye and Lake Erkhel areas, we found that the mound density at Lake Erkhel (5.2 mounds/km^2) is almost 6 times higher than in the Soye area (0.9 mounds/km^2) (Table 4.2). Those numbers are somewhat misleading, however. The Soye area includes a much higher percentage of flat steppe when compared to the area at Lake Erkhel. This is important when considering that about 75 % of the mounds are Class II and Class III mounds, thus located in the hills and lower hills only. When adjusting for inconsistensies between Soye and Lake Erkhel, regarding ratios between hills and steppe we find that the 'adjusted' mound density at Soye is 2.4 mounds/km^2 (Table 4.2). This adjusted density is still about two times lower than the density at Lake Erkhel. We argue that this difference can be related to the presence of a substantial deer stone complex at Lake Erkhel.

The final results from the analysis on the location of external structures and mound densities need to be based on better data. We hope future excavations and surveys in the Hovsgol

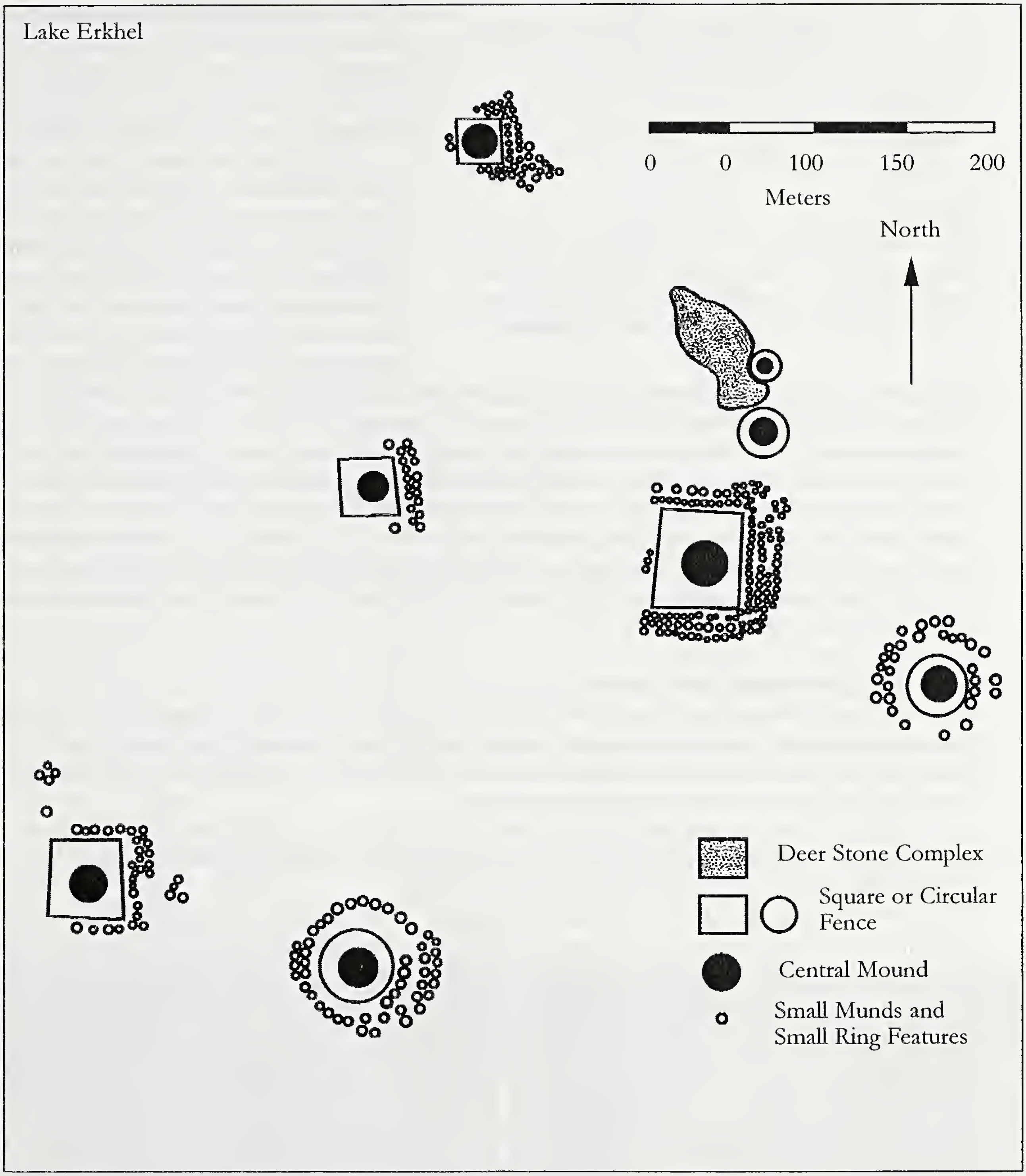


Fig. 4.13. Four squared and two circular mounds located adjacent to the deer stone monument at Lake Erkhel. Mounds represent the largest recorded at Lake Erkhel. The deer stone complex includes five deer stones, two medium size circular mounds and approximate 64 smaller concentrations of stones. Central mound and fence dimensions are accurate. Small mounds and small ring features are represented by schematic squared points depicting the center of the structure and not necessarily its real size.

	GPS-Locus	GPS hand-held	Total
Squared Mounds	36	5	41
Circular Mounds	38	3	41
No Data	5	0	5
Total	79	8	87

Table 4.3. Basic mound statistics. Lake Erkhel area.

Province can add to our data base thus improving support for some of our arguments.

Central Burial Mounds/Burial Chambers

We did not have time to carry out any test excavations. However, increased amount of robbery has resulted in many mounds being destroyed by clandestine excavations. The excavators are not very experienced, thus the destruction is tremendous (Fig. 4.14.A, 4.14.B). The thieves have not yet learned to use stratigraphy and changes in soil densities to evaluate and narrow down the clandestine excavations. During the short time we spent at Soye we saw a new generation of tomb robbers in action, and it is obvious that the clandestine excavations are becoming more and more sophisticated and especially much better organized. By observing the results from the thieves and from some 'professional' archaeologists we did verify that all exposed centrally-located mounds included remains which could be identified as human. Also we found that exposed external structures were either empty or included horse skeletons, most often crania, mandibles, and a few cervical vertebrae (Fig. 4.14.B). Such animal remains have also been shown to be associated with deer stone monuments (Fitzhugh 2003).

Analysis of Lake Erkhel Burial Mounds

A total of 87 mounds were identified within a 16.8 square kilometer area west, northwest, and northeast of the major deer stone monument located 6 km west of Lake Erkhel (Fig. 4.9 and Table 4.2). The study area was defined as related to topographical features. It is believed that all mounds within the search area have been recorded.

Each mound was recorded by the Ashtech/Magellan Locus GPS system (n=79). Eight additional mounds, identified the last day of surveying, were recorded by our hand-held units (n=8) (Table 4.3).

The distribution between the various classes (I, II & III) follow the pattern found at Soye. Thus the larger mounds are found at the lowest levels of the hills and on the flat steppe, while the smallest mounds are found at higher elevations. Two unusual mounds (Erkhel no. 29 and 30) were observed and may belong to different time periods. Mound no. 29 appears to be a typical slab burial with vertically placed flat stones making up the centrally-located burial chamber as well as the four walls creating the squared fence around the central mound/chamber (Fig. 4.1, left). Mound no. 30 included a squared fence, and several small mounds. However, instead of locating such small mounds east or west of the basic mound architecture, they were all placed within the four corners of the surrounding fence. One additional burial chamber was placed adjacent to the centrally-located mound to the northeast.

	n	min.	max.	mean	SD
Mound Diam. Squared	32	3 m	22 m	8.3 m	4.4
Mound Diam. Circular	37	3 m	24 m	8.0 m	4.4
Ring-Wall Diam.Circular	38	5 m	40 m	14.6 m	8.1

Table 4.4. Central mound diameters (interior stone heaps covering the burial chamber) for squared and circular mounds. Also, maximum fence diameter for circular mounds. Data from Lake Erkhel, only.

Apparently, this burial chamber was added at a later time as observed by the manner in which the stones were 'attached' to the central mound. The remaining mounds appear to follow the architectural pattern described earlier.

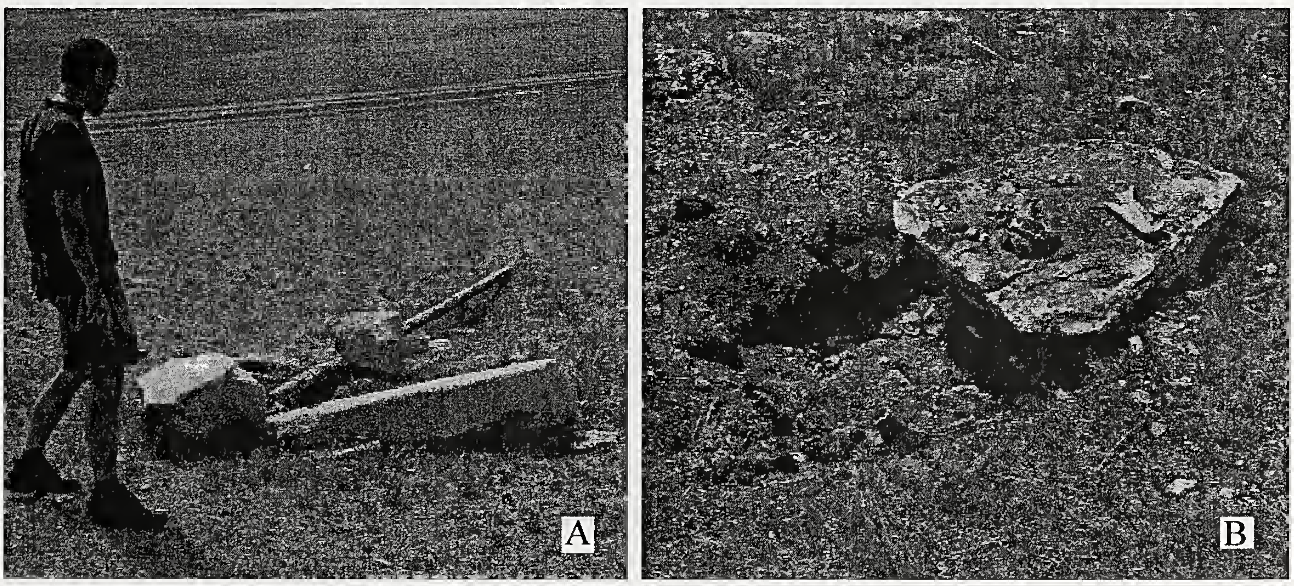
Erkhel: Squared Fences vs. Circular Fences

Eighty-two mounds out of 87 recorded could be identified either as including a circular or a squared fence surrounding the central mound. Of the 82, 50% (n=41) were recorded as squared and 50% (n=41) as circular (Table 4.3). Five mounds did not yield any information regarding surrounding walls because of erosion. At this time we do not have any indication as to why mound structures are either circular or squared. Also, we cannot compare the average sizes directly because of the different geometrical patterns. However, the following statistics may be helpful. The average maximum diameters of the central mounds are 8.0 meters for circular systems and 8.3 meters for squared systems. Both with the same sample size and standard deviation (Table 4.4), the correlation coefficient (r) between circular fence diameters and central mound diameters is very high (r=0.904, P=0.000). Correlations between the central mound diameter and any of the four linear walls making up the squared fences are similarly very high (0.742< r <0.799, P=0.000). These results allow us to use central mound diameters for both types (circular and squared) as reflections of maximum mound sizes. Student-t statistics, based on central mound data, show no group differences in maximum metric dimensions between squared systems and circular systems (t=0.346, DF=67 & P=0.730). Based on this analysis we conclude that there is no size difference between mounds with squared fences when compared to mounds with circular fences.

Direction	n	min	max	mean	SD
D1	35	331°	65°	11.8°	24.2
D2	36	59°	149°	99.1°	24.6
D3	35	332°	70°	11.5°	25.7
D4	35	64°	145°	103.7°	23.4

Table 4.5. Squared mound statistics. Lake Erkhel area, only. D1 to D4 represent directions of lines between corner points.

Fig. 4.14 A. Matt Gallon standing next to damaged deer stone (M-130) in the Soye area. Thieves had used a wooden pole as a lever to move larger rocks. Fig. 14 B. Robbed Small Ring Feature (M-146) in the Soye area. Thieves exacavated the center part of the structure and animal bones mainly consisting of damaged horse mandibles were found strewn around the robbed pit.



Length	n	min	max	mean	SD
L1	35	5	58	15.6	11.0
L2	36	5	47	14.3	9.2
L3	35	4.5	57	16.4	11.5
L4	35	5	50	14.9	10.2

Table 4.6. Squared mound statistics. Lake Erkhel area, only. L1 to L4 represent length of lines between corner points.

We hypothesize that the choice between either geometrical type is based on the presence of either a male or a female body within the burial chamber (central mound). This can only be verified by excavations of burial chambers and a subsequent analysis of the human skeletal remains. If our hypothesis is accepted we may be able to deduct further conclusions about the people building the mounds. For example, if the selection of type (circular or squared) is related to the sex of the person interred, and there is no significant variation between the systems in regard to size we may argue the presence of a more egalitarian society. This might be expected with nomadic or semi-nomadic behavior rather than sedentary behavior, for example.

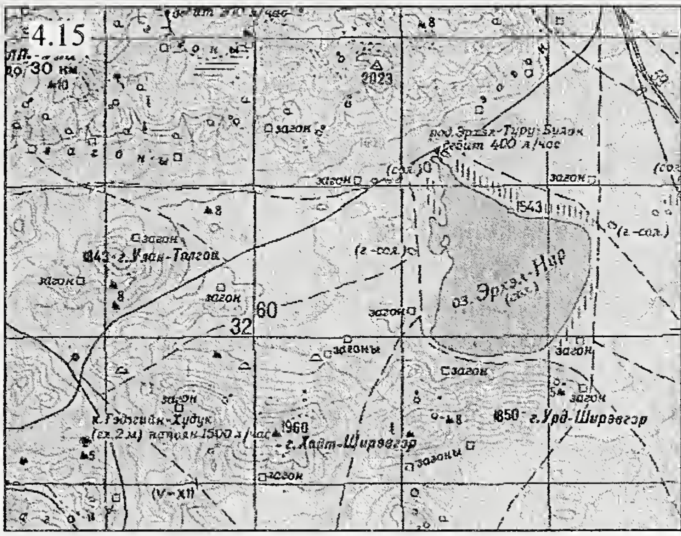
How did the builders decide what direction to orient the four walls in the squared fences? We do not know for sure. Francis Allard has suggested astronomical knowledge being part of this decision making. We have not yet analyzed our data regarding specific hypotheses suggesting a specific selection process. We recorded the direction of each wall (lines connecting the corners) by reading the direction of the projected corner points, derived from the GPS recordings, onto a horizontal plane as defined by the map projection (UTM, North, Zone 47, WGS84). In practice this means that we are independent of variation between the geographic meridian and the magnetic meridian.

Thus our directional readings are compatible with readings people may have been using thousands of years ago utilizing astronomical knowledge such as the position of the celestial north pole. In either case, we may still have to correct some of our data because variations between celestial directions and squared wall directions may vary depending on how the latter value was recorded, i.e. as a slope or horizantal distance. We have projected directions of lines without finding a specific pattern and suggest that the direction of lines is a functional choice related to surrounding topographical features, and in the case of larger mounds, a choice related to directions and placements of entrances and other architectural features. However, the answer is most likely much more complicated.

The average directions of each of the four walls creating the squared fence are given in Table 4.5. Standard deviations and sample sizes are similar and the averages of two almost parallel lines are almost similar (11.5° vs. 11.8° and 99.1° vs. 103.7°). This variation is significant enough to create variation between the lengths of parallel lines as well. Thus, the average lengths of parallel lines are respectively 15.6 m vs. 16.4 m and 14.3 m vs. 14.9 m (Table 4.6). Basically, the squared mounds are slightly longer in an approximately north - south direction than in the east - west direction.

We have not included the potential error caused by using data from a horizontal map projection rather than the more relevant use of slope distances. This may not be a significant problem for the large mounds situated on the flat steppe (Class I), and on the lower elevations (Class II). However, mounds defined as Class III mounds and located at higher elevation may produce significantly different results because of the large difference between slope distances and horizontal distances.

Therefore differences in the lengths between perpendicular pairs of lines may become more significant if using slope distances instead of horizontal distances, since the slope most often is in a north to south direction.



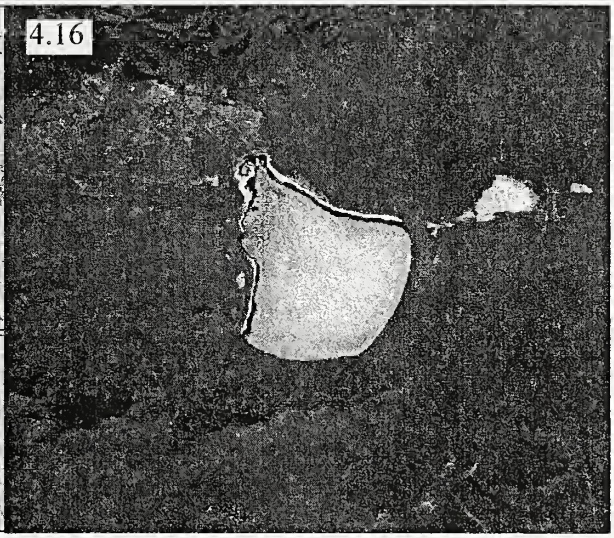


Fig. 4.15. Russian map 1:200,000 published in 1972 and based on surveys from 1942 to 1969. Fig. 4.16. Quickbird remote sensing image covering Lake Erkhel and the eastern part of our survey area. Resolution for the panchromatic band is 0.62 meter (approximately 25 inches).

The statistics here are tentative. We are working on the significance of using slope distances versus horizontal distances and will correct our numbers accordingly if it appears to be a significant factor. Also, although the number of 79 mounds is relatively high, better data may be presented when the sample size has increased.

Future Burial Mound Research

Remote Sensing and Mapping

Our future research will focus on verifying some of the data we have collected during the 2003 field season. We need to increase our sample size and record all the identified mounds in the Soye area using more accurate equipment such as the Ashtech/Magellan Locus system. At this time we know the presence of almost 200 mounds within a small and well defined geographical area (Soye). Most likely there will be many more mounds on the southern hill sides to the south and south-east of the survey area.

We have experimented with high resolution remote sensing images. At this time two major systems are available: digital images from the Ikonos and Quickbird space-based platforms (Fig. 4.15). Each system records multiple band color images and single band panchromatic images. The resolution for the panchromatic bands are respectively 1.00 meter and 0.62 meter. This means that the Quickbird images have about 2.5 times higher resolution than the Ikonos images. The Quickbird database has been searched for available images covering the Lake Erkhel and the Soye areas. Only one image is available from the Lake Erkhel area but covering less than ten percent of our survey area [our cluster of 16 mounds located at the most eastern end of our search area (Fig. 4.9)]. Discussing this with the distributor (Digital Globe) we have learned that the Quickbird satellite can be programmed to obtain images of specific areas on specific dates. We are presently making such arrangements in order to obtain the following coverages (ranked in the order of importance): (1) Soye area surveyed in 2003, (2) Soye area south of area surveyed in 2003, and (3) Lake Erkhel area west of Lake Erkhel covering our 2003 survey area (Fig. 4.15, 4.16).

Our goal is to identify as many as possible of already-known mounds by analyzing the remote sensing images. Whereas it is clear that the Class I mounds can be relatively easily identified, it is still unknown how many of the Class II and Class III mounds can be seen on the images. However, most likely there will be a ratio between 75% and 85% suggesting that more than three quarters of the known mounds can be observed using remote sensing images. When these correction factors have been calculated we should be able to estimate mound concentrations in areas which have not been visited, and thus be able to estimate mound concentrations, total number of mounds, and unique distribution patters.

We are also planning other research avenues. While understanding the larger distribution patterns is important in reconstructing, for example, mortuary practices and land-use patterns, we need to understand the within-mound variation. This is accomplished by excavating a representative number of mounds to explain external variations (i.e. circular vs. squared mounds) and internal variation, which at this time, still has to be identified and described. The recording of internal architectural variation of the mound structure, and a comprehensive analysis of the human remains and associated burial artifacts should allow us to better understand of the khirigsuur in northern Mongolia.

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Part V
Late Holocene Paleoenvironmental Analysis Using Lake Cores from the Hovsgol Aimag of Northern Mongolia: A Preliminary Report.

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Introduction

Considerable attention has been directed toward understanding the impacts of environmental changes on society. For example, it is widely recognized that climate phenomena such as El Niño can have dramatic impacts on agricultural harvests and national economies, and climate models indicate that the frequency of such events will likely increase as a result of projected global warming. Concern for the increased frequency of extreme climate events is highly relevant to contemporary Mongolian society. Adverse climate conditions between 1999 and 2001 (unusually dry summers and cold winter cycles, known locally as dzuds) resulted in the loss of over 2.4 million livestock. Nearly one-third of Mongolian society depends on livestock for food, transport, and heating materials and this loss cost the country an estimated $78.3 million U.S.D.

Reconstructing the past frequency of extreme events (e.g., droughts and harsh winters) enables modern society to anticipate and plan for future climate change. Because instrumental records of climate span only the last two centuries, paleoenvironmental methods are required to assess baseline conditions within terrestrial and aquatic ecosystems and to evaluate past climate and environmental changes. Lake sediment cores can be used to infer historical regional climatology and ecology because they accumulate in an ordered manner, deposit rapidly, and contain physical, chemical, and biological information about past conditions both within lakes and their surrounding watersheds. When long lake sediment sequences are dated reliably using radiocarbon and other methods the timing of past environmental changes can be estimated.

The spatial and temporal patterns of climate change remain poorly defined in northern Mongolia (Fig. 5.1) where paleoenvironmental data for the last ~5,000 years is limited. The few previous studies of late Holocene central Asian climate have provided varied results and interpretations. For example, lake sediment studies from Lake Hoton, western Mongolia, demonstrate the establishment of modern vegetation boundaries beginning ~4000 yr B.P. after a decrease in precipitation from high early Holocene values (Tarasov et al., 2000). In contrast, varved sedi-

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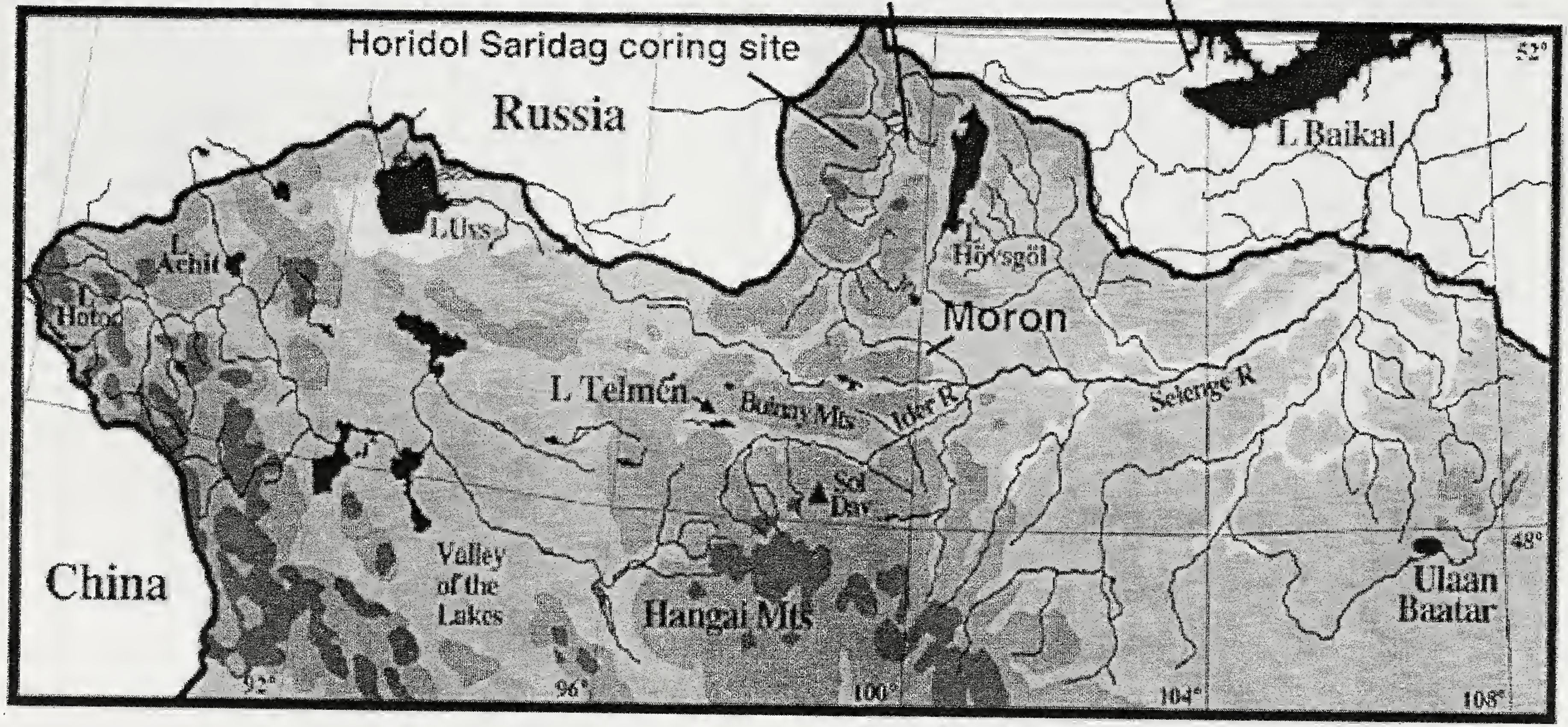


Adapted from Fowell et al 2003

Fig.5.1. Map of Northern Mongolia showing Horidol Saridag coring site as well as several other paleoenvironmental research sites.

ment deposition in Lake Telmen and inferred high lake-levels starting at ~4000 yr B.P. suggest a much wetter late Holocene (Peck et al., 2002). This evidence for greater moisture availability in the late Holocene is supported by the presence of pollen indicating wetter conditions from ~4500 to 1400 yr B.P. (Fowell et al., 2003).

Tree-ring inferred temperature records from Sol Dav, central Mongolia, extend back to 1700 yr B.P. Results indicate warmer conditions at ~1200 yr B.P., ~600 yr B.P., and ~300 yr B.P. with colder conditions at ~200 yr B.P. (D'Arrigo et al., 2001). The Mongolian tree-ring records show unusual warming beginning in the late 19th century (D'Arrigo et al., 2001; Jacoby et al., 1996; Pederson et al., 2001). This data suggests that Central Asia may be at least partly out of synch with North Atlantic climatic cycles.

In this study, lake sediment records from northern Mongolia provide preliminary data from a new area in an effort to resolve discrepancies between past climate investigations. Additional analytical techniques will be used to document changes in biological productivity within the lakes and draw climatic conclusions for the past 2000 years.

Study Site

Mongolia is located in an area characterized by the highest degree of seasonal contrast on Earth. The continental climate of Mongolia is largely controlled by the relative strength and position of the Siberian or Asiatic high. Further influences include the East Asian Monsoon (Jacoby et al., 1996), Indian Summer-Monsoon (Kripalani and Kulkarni, 1999), Pacific Decadal Oscillation, and El Nino/Southern Oscillation (Ye, 2001).

Annual rainfall across Mongolia is highly variable, ranging from over 400 mm yr^{-1} in the

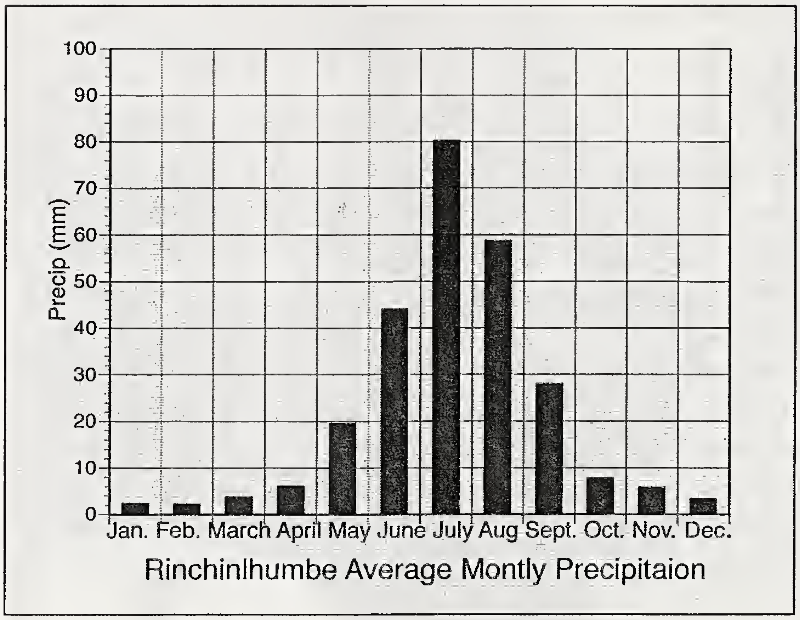
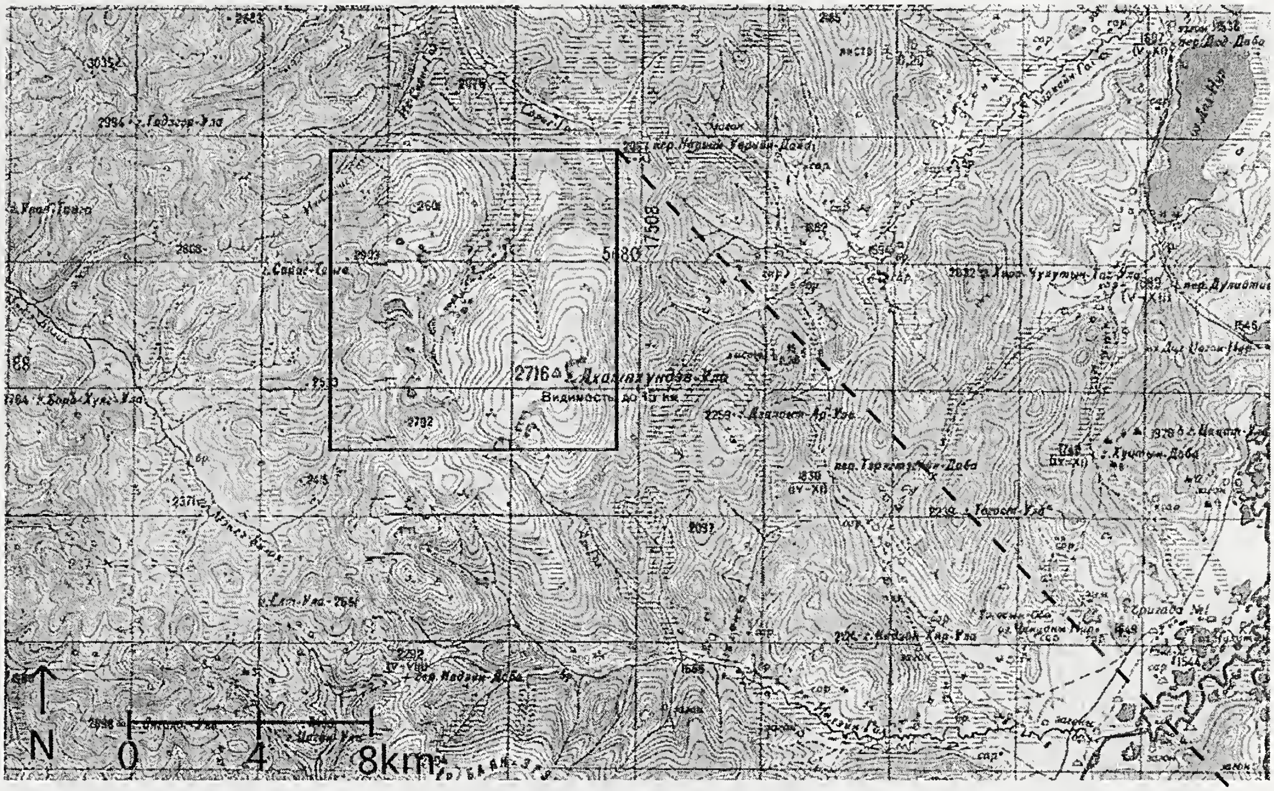


Fig. 5.2. Average monthly precipitation values for Rinchinlhumbe, northern Mongolia (location shown in Fig.1).



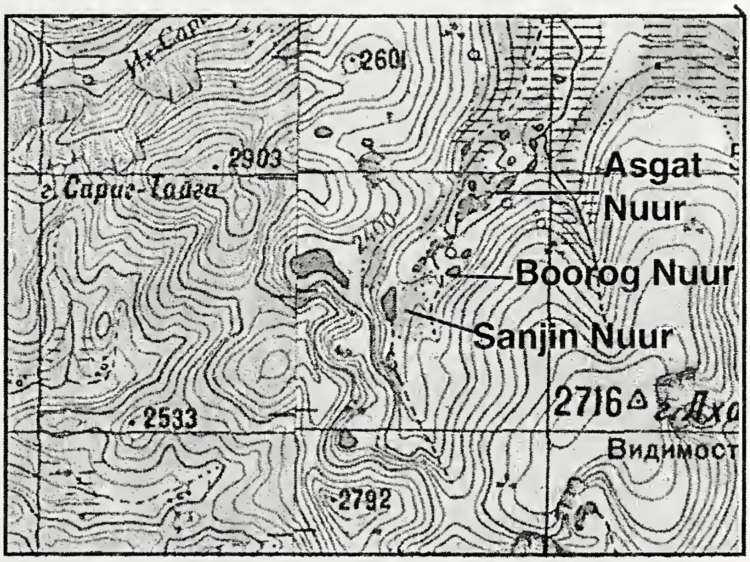


Fig. 5.3 Russian topographical map showing location of sampled lakes and surrounding glacial topography.

northern Hovsgol aimag to less than 100 mm yr^{-1} in the southern deserts of the Gobi. The majority of precipitation falls during the summer months (Fig. 5.2). The topography and ecology of the area vary from sub-arctic alpine tundra in northern mountainous areas to taiga and steppe environments as elevation decreases in the southern and central areas. Lakes near ecosystem boundaries are particularly sensitive to intra- and inter-annual climate fluctuations (Peck et al., 2002).

The sediment coring sites used for this study are located in a glacial valley in the Horidol Saridag Mountains, west of the Dakrhat region of the Hovsgol Aimag (Fig. 5.1, Fig. 5.3, Fig. 5.5a), and are situated within the taiga/ alpine tundra transition zone. The lakes

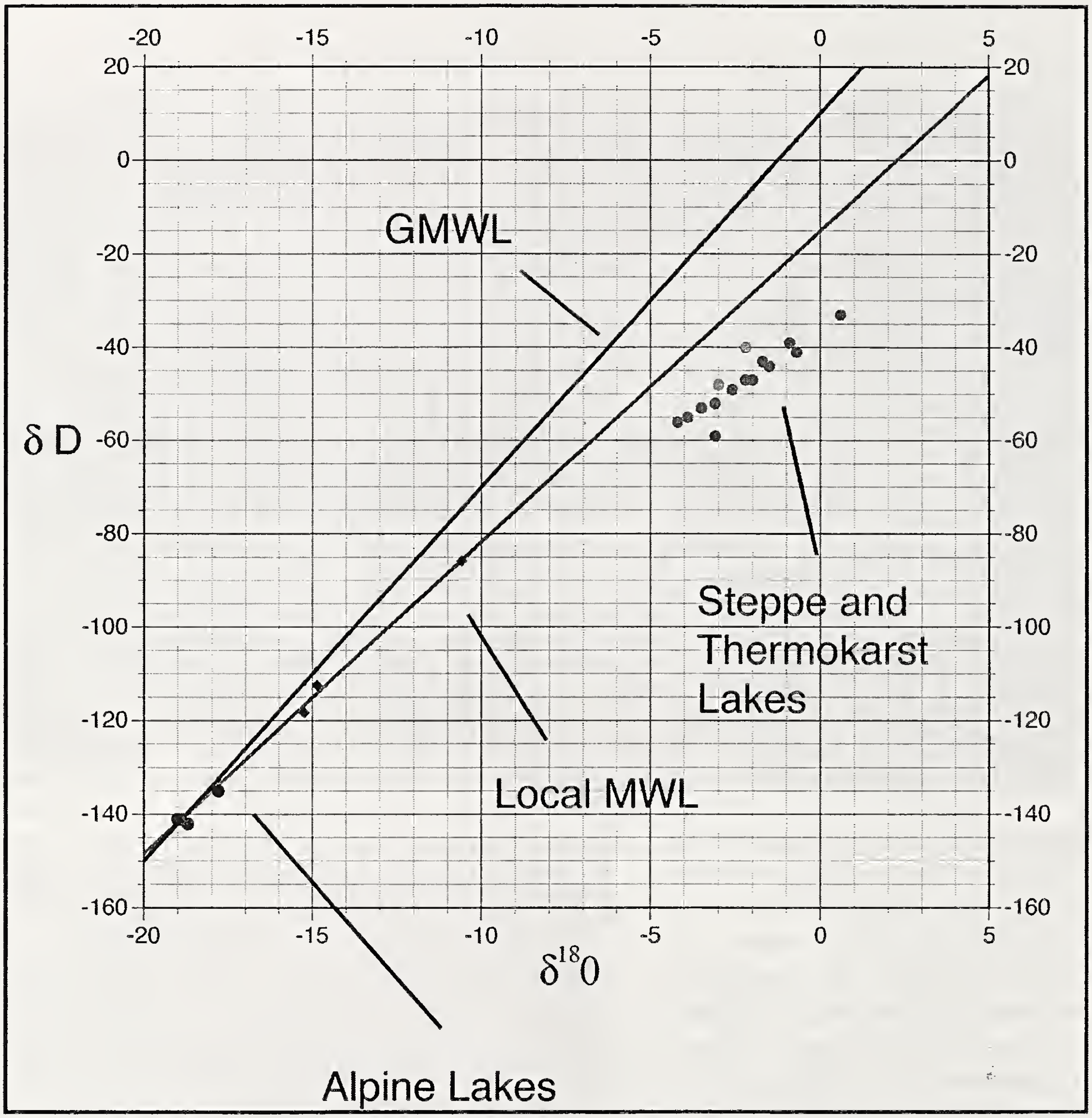


Fig. 5.4. Modern Isotope information. Sampled lakes (alpine) fall on both the global and local (average monthly precipitation measurements from Ulaanbaatar, Moron, and Irkutsk) meteoric water line inferring hydrologically open systems. Surrounding steppe and thermokarst lakes are closed isotopically reduced systems.

of the Horidol Saridag area are hydrologically open (Fig. 5.4) with the primary water source being summer precipitation and snow melt. Sanjin Nuur (Fig. 5.5d) is located at the headwall of the valley just above local tree-line. The outflow drains into Asgat Nuur (Fig. 5.5b) present at the bottom of the enclosed valley. Boorog Nuur (Fig. 5.5c) is located on the east side of the valley and has no visible inflow or outflow, although the results of the isotopic analyses suggest it is an open system. All of these lakes are all located within the permafrost zone.

Methods

In June 2003, seven sediment cores were collected from lakes Sanjin, Asgat, and Boorog Nuur at varied depths and locations (Table 5.1) with a modified percussion corer. The uppermost unconsolidated sediments of each core were sectioned in the field at a 0.5-cm interval by upward extrusion into a sampling tray fitted to the top of the core barrel. The deeper consolidated core sections were stored in PVC pipe and transported intact to the University of Pittsburgh Department of Geology and Planetary Science where they are being kept in a cold storage facility (4°C).

Lake	Sample	Location	Water Depth	Core Length
Asgat Nuur	A-03	N51°14.828, E99°02.293	4.9m	.86m
	B-03	N51°14.872, E99°02.244	2.99m	.86m
	C-03	N51°14.850, E99°02.324	4.2m	.89m
Sanjin Nuur	A-03	N51°14.038, E99°01.366	7.55m	.93m
	B-03	N51°13.917, E99°01.400	16.75m	.84m
	C-03	N51°14.104, E99°01.393	4.95m	.89m
Boorog Nuur	A-03	N51°14.263, E99°02.174	3.35m	.90m

Table. 5.1. Table illustrating location, water depth, and core length for each retrieved sample.

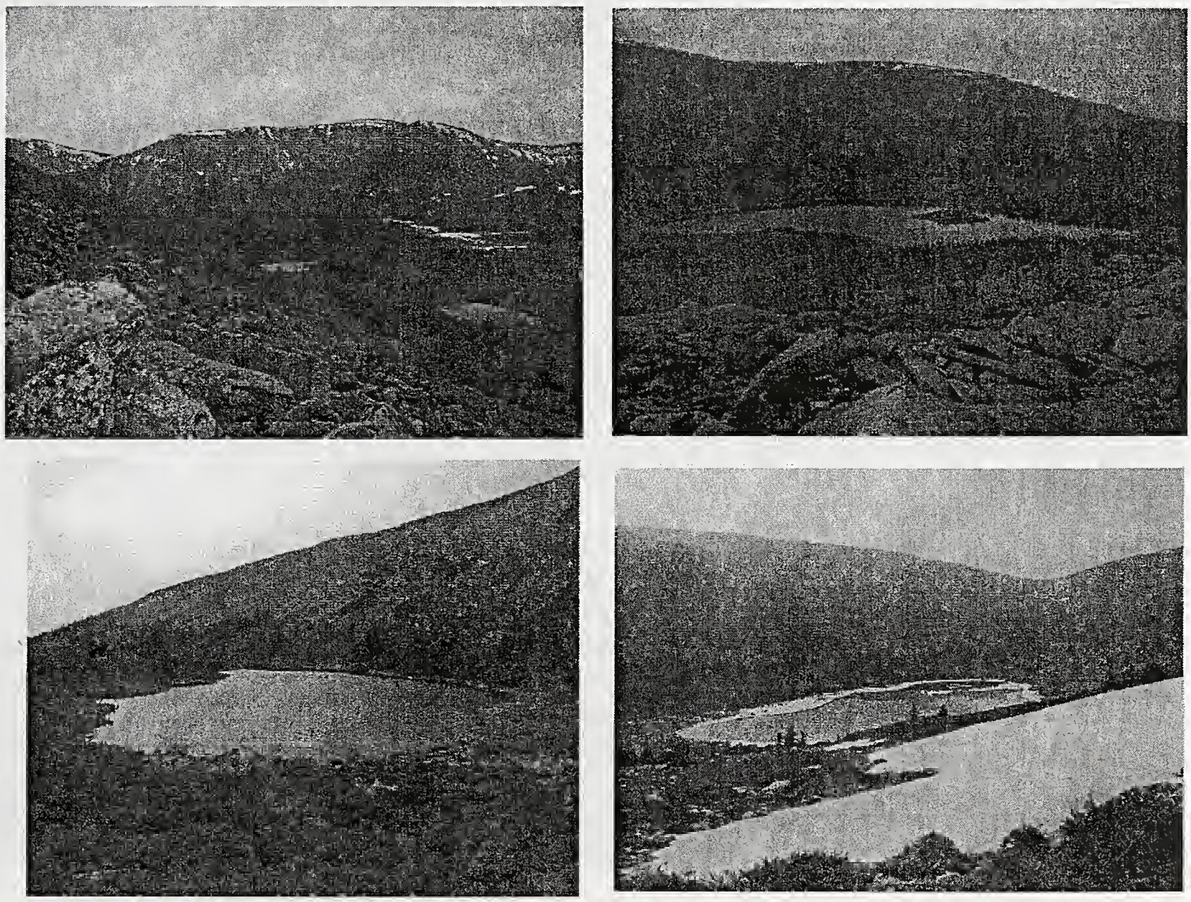


Fig. 5.5. A. (top left) Glacial valley in Horidol Saridag mountains. B. (top right) Asgat Nuur. C. (bottom left) Boorog Nuur. D. (bottom right) Sanjin Nuur.

All sediment cores were split and photographed, and Munsell color, texture, and sedimentary structures were described in order to determine general core lithology. Smear slides were produced using glass microscope slides and Permount mounting resin. Water content, porosity, dry density, and percent organic matter were determined by standard loss-on-ignition (LOI) techniques (Dean, 1974) at a 1.0-cm interval. Sediment magnetic susceptibility was measured at a 0.5-cm interval using a Bartington point sensor. Basal sediment ages were determined by AMS ^{14}C on macrofossils. All ^{14}C measurements were made at the Center for Accelerator Mass Spectrometry at Lawrence Livermore National Laboratory.

Results and Discussion

In this study, smear slide analyses indicate that diatom frustral concentration make up ~50-60% of the sediments. Organic matter concentrations throughout the cores display centennial to decadal-scale variations, fluctuating between 6-18%. Magnetic susceptibility measurements also exhibit down-core variations, often showing an inverse relationship to organic matter concentrations.

The very high diatom concentrations (Fig. 5.6) suggest that the vast majority of the organic

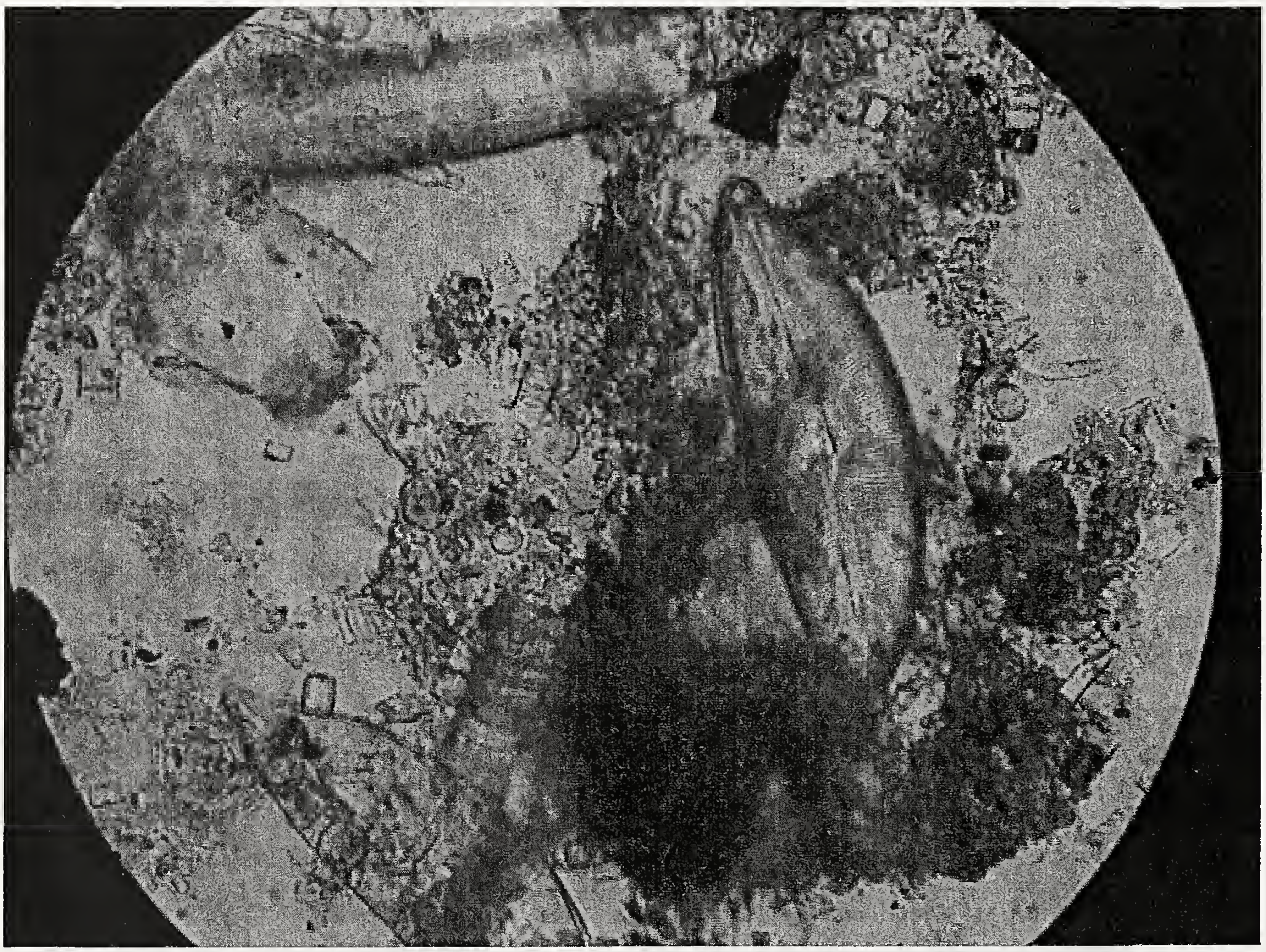


Fig. 5.6. Example of a diatom found within Boorog Nuur. Magnification 425X

matter in the lake sediment is produced within the lake system. This interpretation is supported by the location of the lakes at or near tree-line limiting the amount of organic matter transported to them. As a consequence, changes in concentration of organic matter are believed to represent length of growing season and thereby summer temperature. Magnetic susceptibility fluctuations are interpreted as a representative measurement of the influx of inorganic sediment from the surrounding catchment during times of increased precipitation. Through further analysis of BSi concentrations as a paleoproductivity indicator and application of more precise age models, we hope to produce more conclusive interpretations. Nonetheless, preliminary results have demonstrated the environmental sensitivity of the lakes in the Horidol Saridag Mountains and therefore support the need for further, more intensive lake sediment sampling in the area.

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Part VI
A Survey of Urban Centers in Central Mongolia

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Abstract

The long history of urban development in Mongolia is an important component in understanding the expansion of Inner Asian empires. While most histories of these empires have focused on disjuncture and replacement through warfare and imperial successions, there is substantial evidence for continuity of economic and social practices across wide stretches of time. While encompassing competing ethnic groups and ideologies, these empires participated in systems of value that transcended many political realignments. Some of these forms of continuity are evident in the managed construction of urban centers, including cities, trade centers, palaces, elite cemeteries, and military outposts.

During the summer of 2002, preliminary survey and mapping was conducted at 14 sites in major river valleys in central Mongolia. Sites included in the sample ranged from ruins of cities such as Khar Balgas to trade centers like Shaazan Khot. These sites establish a comparative baseline of architectural change across key periods of empire development, circa 200 B.C. to A.D. 1400. Within this period, significant continuities existed in geographical location, site organization, architectural form and function. Taken together, this evidence identifies a range of cultural constraints and choices that operated across political boundaries for more than 1,500 years.

Introduction

The history of the region of Eastern Inner Asia centered in modern-day Mongolia provides important comparative perspectives on the rise of large-scale expansionistic states, here described as empires. The Mongols created the most famous of these empires, lead by Chinggis Khan and his successors, Ögödei, Güyüg, Möngke, Khubilai. During the 13th and 14th centuries these khans established the largest contiguous land empire ever known. The rapid expansion of this empire was exceptionally dramatic; leaving the lasting impression that it had little in the way of antecedents. There is, however, a long history of state and empire development in Central and Inner Asia involving a complex array of ethnic, religious, and political forces. In spite of a significant tradition of historical research, major gaps in our knowledge remain. Some of these gaps may be alleviated by developing direct on-the-ground archaeological information as a means of moving beyond the primarily non-steppe documentary sources that currently provide the bulk of the interpretive foundation.

While each empire developed its own unique history, there were important continuities that help explain the organization of successor empires. The first objective of this article is to consider evidence for continuity and discontinuity through the organization of major settlements, as one measure of the factors associated with regional political and economic trends. Continuity and discontinuity, as discussed here, specifically considers the role of "formative" cultures as sources of constraints, and ultimately systems of value that defined the parameters of later empire formation and transformation. A secondary objective is to explore the role of these towns and cities in societies typically described as based on an economy of pastoral nomadism. It is likely that the significance of urban centers is undervalued in many interpretations of the empires that took shape in Mongolia and surrounding regions, termed here Eastern Inner Asia. The seeming contradiction of nomads who built cities, raises the question of whether we have understood the fundamental aspects of the economy. Much of the literature on the Mongol empires, for instance, emphasizes the extractive nature of the economy, in the sense of what Barfield (2001) terms shadow empires. This interpretation stresses the fundamental role of pastoralism, held largely as a counterpoint to the agrarian societies of China and South Asia. This relatively static contrast portrays the steppe empires as reflections of their more settled neighbors and de-emphasizes the dual role of pastoralism and agriculture within all of the polities under consideration (cf. Vainshtein 1980).

Empire Development in Eastern Inner Asia

In the expansion of complex hierarchical societies, various combinations of economic practices, technology, and systems of social and political control form the principal variables for comparative analyses. These variables are recast in multiple ways by different scholarly traditions, given differing sources of information and analytical goals. Historians who explore comparative issues in the "periodization" of world history have recently emphasized transregional and cross-cultural processes of interaction as a means of placing particular histories within broader frameworks (Bentley 1996; Di Cosmo 1999). Anthropologists have likewise considered interaction processes while recently turning to a range of more internally generated factors, such as order, legitimacy, and wealth (Alcock et al. 2001; Baines and Yoffee 1998; Richards and Van Buren 2000). Others have also emphasized the distinctive character of early states in China and the steppe regions, as a means of introducing new perspectives on ideology and general models of state and empire formation (Barfield 1989, 2001; Hsu 1988; Nelson 1996).

As early as 2000 B.C. economies based on pastoral nomadism became an important force in the steppe environments across Central and Inner Asia. The domestication of the horse has been reported as around 4000 B.C. (Anthony and Brown 1991), although the dating is far from settled, and information that is more recent may place the date closer to 3000 B.C. (e.g., Levine 1999). Horses, along with the availability of other herding animals, provided the key to utilization of the vast region. Although more geographically limited by environmental conditions, evidence for agriculture is present during the 3rd Millennium B.C. at Tamsagbulag and at several other sites in the Gobi desert (Novgorodova 1989:59-70). To some extent, the early significance of agriculture was eclipsed over time by the rise of pastoralism. This shift is often linked to drier and colder conditions between 4000 and 3300 B.C., although the ecological information is far from conclusive (Bold 2001:28; Jenkins 1974). Given the later predominance of pastoralism, it is generally assumed that agriculture played an insignificant role in later empire building. However, the presence of numerous permanent settlements from several regions, uniformly with substantial evidence for agriculture, raises the very real possibility that this resource base is undervalued. Amongst the sites described in the following section, there is strong evidence that irrigation agriculture played a significant, if poorly understood role.

The rise of regional polities, and eventually empires, is well known through the availability of Chinese documentary sources, beginning as early as the first millennium B. C. city-states along the border with China, tribal confederations, and regional alliances were among the forms of political organization recognized through historical sources and archaeological data. Some research suggests that the first large-scale state that could be termed an empire was the Xiongnu. Whether or not it was an empire, the Xiongnu polity is a useful starting point for a discussion of empires; however, it would be far too simplistic to conceive of the Xiongnu as the single cultural or political force in the region at this particular time. There were certainly other expansionistic states in surrounding regions relevant to the broader discussion of empire formation in Inner Asia.

Usually described as composed of pastoralists, the Xiongnu empire encompassed all of modern-day Mongolia and surrounding regions (Barfield 2001:24). Historical sources date the

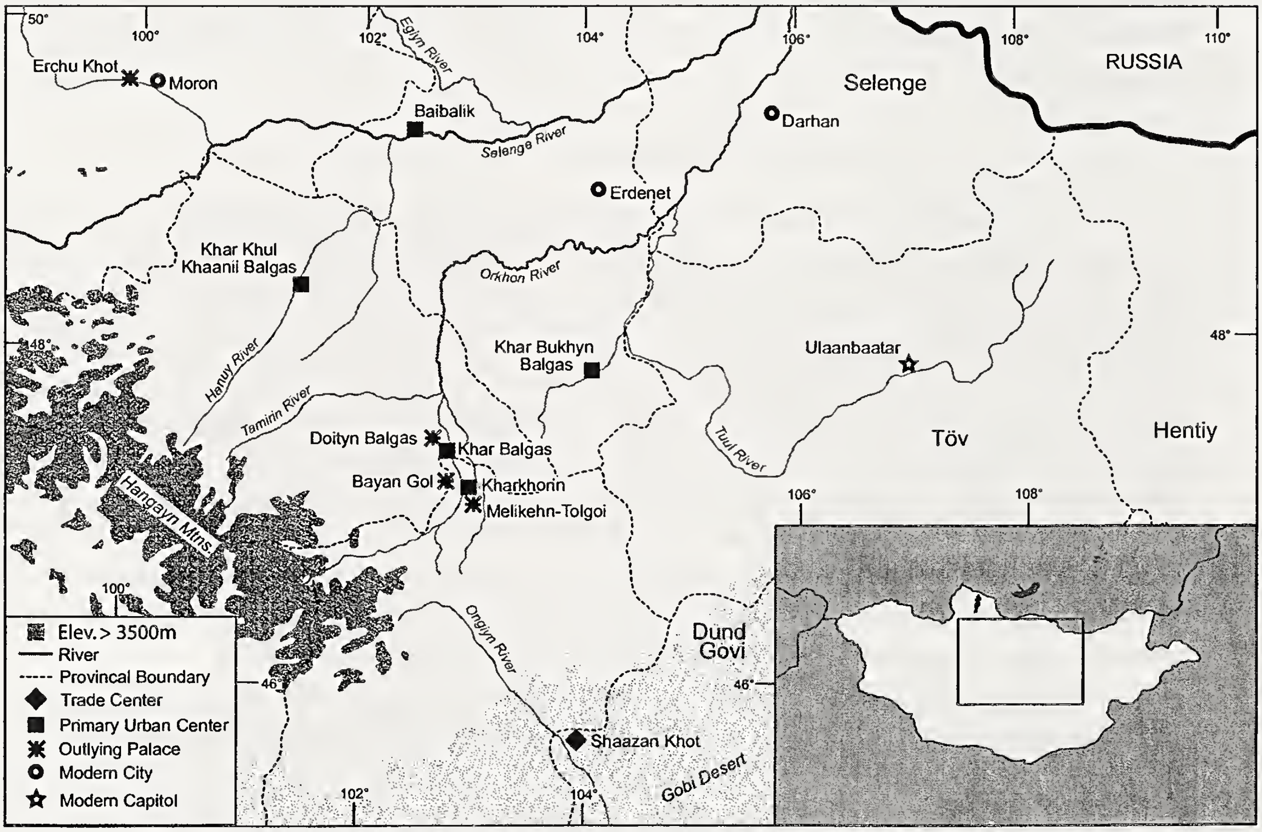


Figure 6.1. Mongolia, showing the location of sites and regions.

consolidation of the empire to circa 200 B. C. with its eventual break-up at A. D. 155 (Barfield 2001:23; Watson 1961; Christian 1998:183). Numerous settlements and tombs, throughout Mongolia and northern China are known from this empire. Although, much of what is known about the Xiongnu is derived from Chinese historical sources, there is substantial archaeological evidence for a society with both an agrarian and pastoral economy (Davydova 1995:43-46; Okladnikov 1962:427; Perlee 1961:17-39). Over the next two thousand years a series of other complex polities emerged across the vast region of steppe, mountains, and river valleys.

Following the Xiongnu, the largest centralized polities in Mongolia, in chronological order, were the Xianbei (A. D. 130-180), Toba-Wei (A. D. 200-400), Jujan A. D. (400-550), First Turk (A. D. 552-630), Second Turk (A. D. 683-734), Uighur (A. D. 745-840), Khitan (A. D. 907-1125), and Mongol (A. D. 1206-1368) (Barfield 2001:23; Jagchid and Symons 1989; Sabloff 2001; Idshinnorov et al. 2000). Although this list implies an orderly arrangement of polities, it is in fact constructed primarily from historical sources emphasizing the succession of elite lineages. A chronology constructed on this basis tends to mask ethnic and population continuities, in favor of what might appear to be almost total disjunctures in social and political organization. Following the demise of the Xiongnu empire a series of lesser short-lived states emerged, including the Xianbei, Toba-Wei, and Jujan. Like the Xiongnu, these states incorporated a range of settlement types and economic patterns that included nomadic and settled ways of life. Currently, there is little archaeological information specifically linked to these polities and most of what is known comes from Chinese texts (Perlee 1961).

By the middle of the 6^{th} century A. D. the early Turks emerge as a tribal confederation that rapidly incorporated imperial strategies for legitimation and incorporation of other ethnic groups (Golden 1982). Chinese historical sources describe the Turks at this time as composed of nomads, craftsmen, and agricultural workers (Perlee 1961:46-47). Several archaeological sites are linked to the Turkish empires, including the famous temple and inscription site at Khoshoo Tsaidam in the Orkhon River valley. The decipherment of these and other inscriptions has allowed a significant glimpse into the origins of the eastern Turkic peoples (Chavannes 1903-1904). A Turkic dominated empire continued until the mid-700s. At that time, inscriptions and documents provide evidence for the emergence of another empire, termed the Uighur.

As with earlier polities, Chinese documents portray the Uighur empire as originating with simple nomadic tribes who adopted Chinese customs and imported Chinese and Sogdian craftsmen to build cities (Mackerras 1972:10, 50). The Uighurs were a political faction within the Turk polity and their empire shared many continuities with the previous Turkic empires, including ethnicity and language, even extending to appeals to Turkic heritage as a form of elite legitimation (Sinor 1997: V, 4-5). In addition to the nomadic aspects of the Uighur empire there is extensive archaeological evidence for the practice of agriculture. Two of the principal Uighur cities, Khar Balgas (Ordu Balik) and Baibalik, are well known from documentary sources (Minorsky 1947) and are included among the site descriptions below.

By the beginning of the 10^{th} century another confederation of Siberian, Mongolian and Turkic tribes, called the Kirghiz, united to defeat the Uighur empire. The Kirghiz confederation, however, did not form an empire in Mongolia (Christian 1998:272). The absence of a centralized power in Mongolia allowed groups from Manchuria, called the Khitan, to colonize several regions of Mongolia and eventually formed the Khitan 'Liao' dynasty that controlled much of Northern China, Mongolia, and Manchuria. In Mongolia, most Khitan settlements are known from the northeastern, central, and southern portions of the country (Scott 1975).

In 1206, the Mongol tribes united under Temujin, later to be named Chinggis, or universal khan. The Mongol empire grew rapidly and continued its expansionistic momentum for decades after Chinggis Khan's death in 1227. In the 1260s the empire reached its greatest extent, ranging from eastern Europe to include much of the Middle East and all of China. Almost as quickly as the empire formed, it began to fragment, although continuing in several sub-divisions until the late 14^{th} century (Christian 1998:386). Throughout much of the empire's history the capital was centered at Kharkhorum on the Orkhon River in central Mongolia.

Fieldwork in Central Mongolia

The fieldwork designed and conducted by the joint Mongolian Institute of History/ Smithsonian Institution project in June and July 2002 developed an overview of key locales and recorded sites that fall into a series of functional categories. At each site preliminary GPS-based maps were prepared. Most of the major settlements studied were previously known, although thorough surveys and site descriptions remain in short supply. Much of the archaeological research necessary to address fully the objectives presented above is still under development, although important overviews of ancient and Medieval period Mongolian cities and settlements are provided by Perlee (1961) and the recent historical and cultural atlas of Mongolia by Dashnyam et al. (1999). On-going work by the Institute of Archaeology, other Mongolian researchers, and international teams from France, Germany, Russia, Turkey, and the United States, among others, is rapidly building an impressive archaeological database on Mongolian empires.

Selected Sites

The following is a brief description of selected urban centers in central Mongolia, ranging in date from A.D. 500 to 1400 (Fig. 6.1). The sites are presented in three general categories: Urban Centers, Trade Centers, and Palaces. These sites illustrate factors relevant to the objectives stated in the introduction, focusing on architectural continuity, variation, and overall site function. For each site a brief physical description is presented along with evidence linking a particular center to its particular setting, including adjacency to resources of water, arable land, pasture, trade corridors, and political or cultural boundaries. In a following section these and other sites will be discussed in terms of change over time, cultural factors known from documentary sources that played a role in location, and landscape traditions that placed particular relevance on certain locales.

Primary Urban Centers

Khar Balgas: The largest pre-modern urban center in Mongolia is the Uighur empire capital of Khar Balgas, known in early documents as Ordu Balik (Fig. 6.2). The city was built and occupied for less than 100 years, between A. D. 750 and 840. Documentary sources imply that the construction of Khar Balgas was planned, as part of the decision to relocate the Uighur capital from the Selenge River region to the north. In 1892 Radloff (cited in Minorsky 1947:295) described the exterior defensive wall as enclosing a rectangle 7 x 2.5 km in diameter, while Kiselev (1957:94) described the city as covering an area of 25 sq. km. A plan view of the site is illustrated in Figure 2. Khar Balgas is located in the broad valley of the Orkhon River, 24 km north of the future location of Kharkhorum, the capital of the Mongol empire. Recent intensive irrigation agriculture on the east and southern sides of the site has greatly obscured surface indications, although research in the 1890s, 1933-1934, and again in 1949 provide an overview of the city's organization, although none of this work was extensive (Kiselev 1957; Minorsky 1947; Perlee 1961:49-51).

In the northeast quadrant of the city is a large walled "citadel" with evidence of a palace, watchtower, gardens, temple, and administrative offices all surrounded by a moat. The heavily eroded rammed earth walls of the citadel were reported as 12 m tall in the mid-twentieth century (Ulambayar 1999:187), although they now stand at 7 m tall. The citadel is approximately 1 km

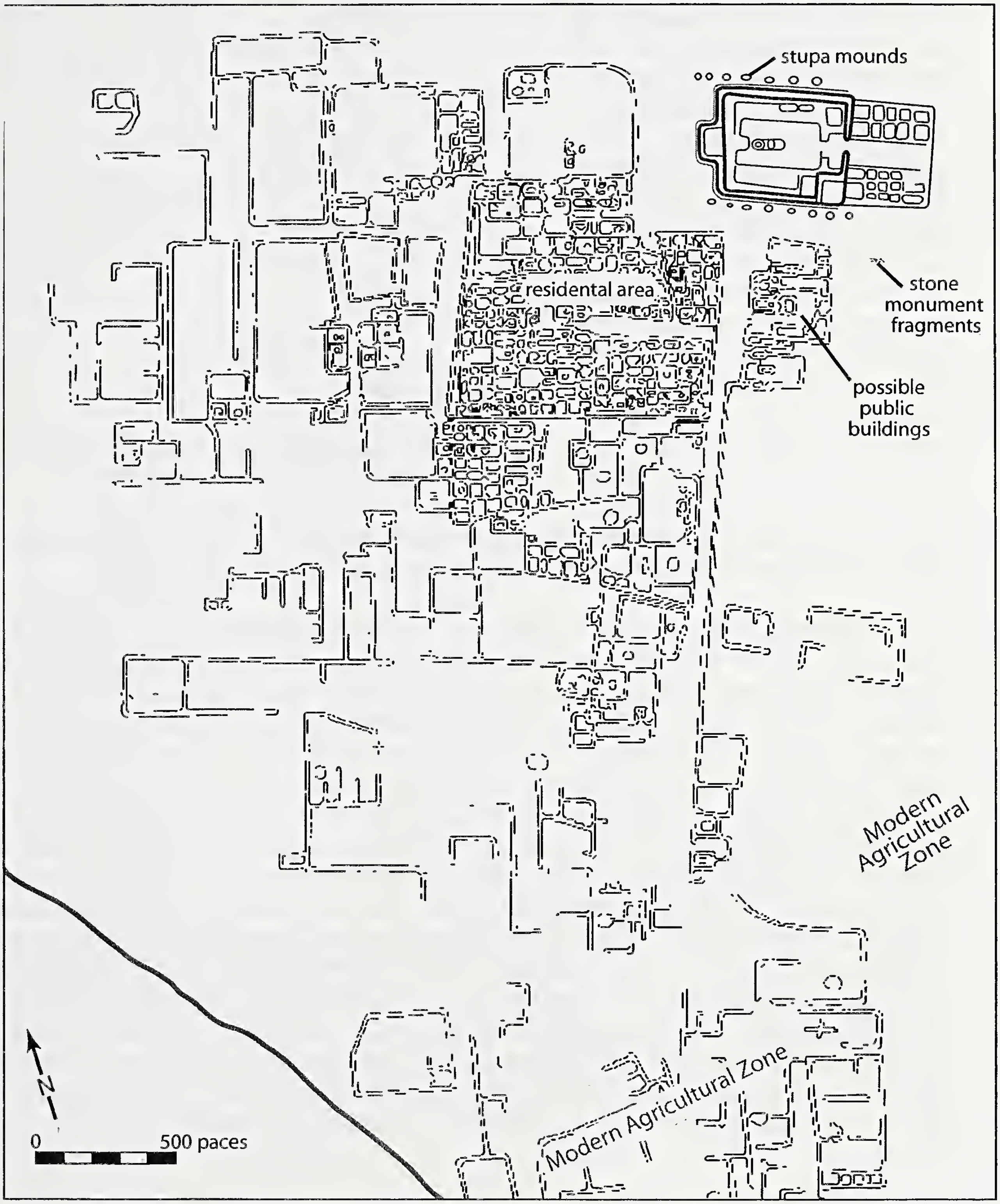


Figure 6.2. Central portion of the Khar Balgas site with the citadel and palace complex in northeast corner of map. Areas of the site to the south and east are heavily damaged by modern agricultural activities (adapted from Kiselev 1957:93).

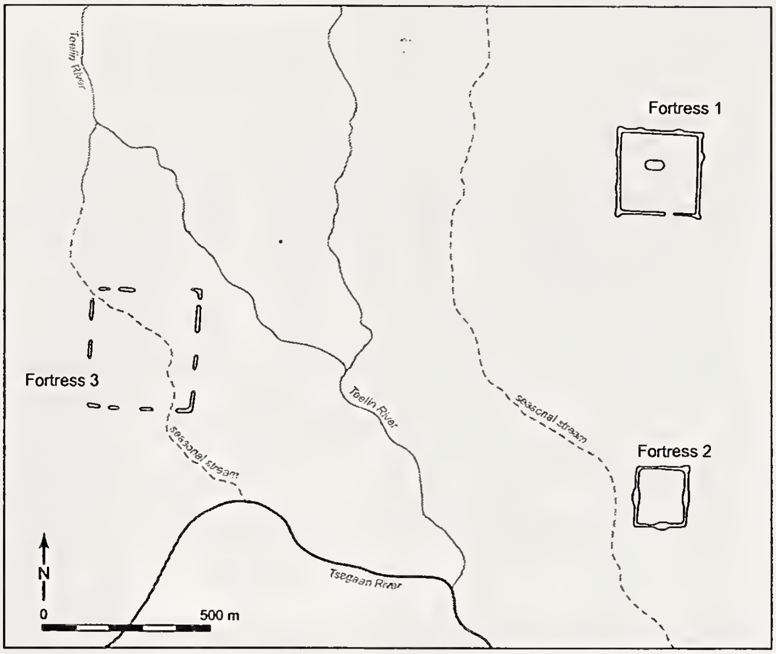


Figure 6.3: Location of Fortresses 1, 2, and 3 at the Baibalik site (adapted from Moriyasu and Ochir 1999:plate 12a).

west of the current channel of the Orkhon River. Running SSW from the citadel is a major street, approximately 10 m wide. To the east of this street there is substantial evidence for public buildings, including carved stone monuments with inscriptions, stone pillar bases, fired brick, and glazed roof tile fragments. West of the street are large areas of what appears to be residential architecture.

Sources have noted extensive evidence for agriculture, including irrigation canals and household grain processing equipment (Perlee 1961). An eyewitness account by Tamīn ibn Bahr around A.D. 821, notes that the city was rich in agriculture and there were many closely spaced outlying villages adjacent to cultivated lands (Minorsky 1947:283). Archaeological research has also noted the presence of irrigation systems although recent extensive mechanized farming has destroyed much of this evidence.

Baibalik: Another important urban center associated with the Uighur empire is Baibalik. After the destruction of Khar Balgas in A. D. 840 a Uighur polity continued to exist with Baibalik becoming the summer capital and Khocho (Turfan) the winter capital (Minorsky 1947:291). Baibalik is a much smaller site than Khar Balgas, consisting primarily of three square defensive enclosures along the Tsagaan River (Fig. 6.3). Fortress 1 consists of rammed earth walls approximately 7 m tall, similar in construction to those at the Khar Balgas Citadel. Additional sketches of Fortress 1 are available in Moriyasu and Ochir (1999). The interior is dominated by a rectangular earthen platform located in front of a gate near the southeastern corner of the exterior wall. In the 18th Century a Buddhist monastery was constructed on the platform. This monastery was destroyed in 1938, but recently rebuilt. Baibalik has not been excavated, except for two recently dug 1x1m test pits (William Honeychurch, personal communication 2003). Very little is known about the function of each of the enclosures or about how areas between or near the enclosures may have been used (Bayar 1999:176). Fortress 2 is smaller and has lower, more heavily eroded walls than Fortress 1. The style of the walls at Fortress 2 is also different. Rather than corner turrets, as at Fortress 1, turrets are placed at the mid-point along each wall. Fortress 3 is likewise different from the other two, with heavily eroded walls that are no longer visible along some sections. The walls at Fortress 3 were probably low, functioning primarily as an enclosure boundary.

Khar Bukhyn Balgas: Because of its cultural affiliation with the Khitan empire of the 10th and 11th centuries A. D. and its location on the Khar Bukhyn River, the site of Khar Bukhyn Balgas is often described as a military outpost along the northern border of the Khitan empire. The site consists of a large square defensive enclosure with walls currently 2-4 m tall, constructed

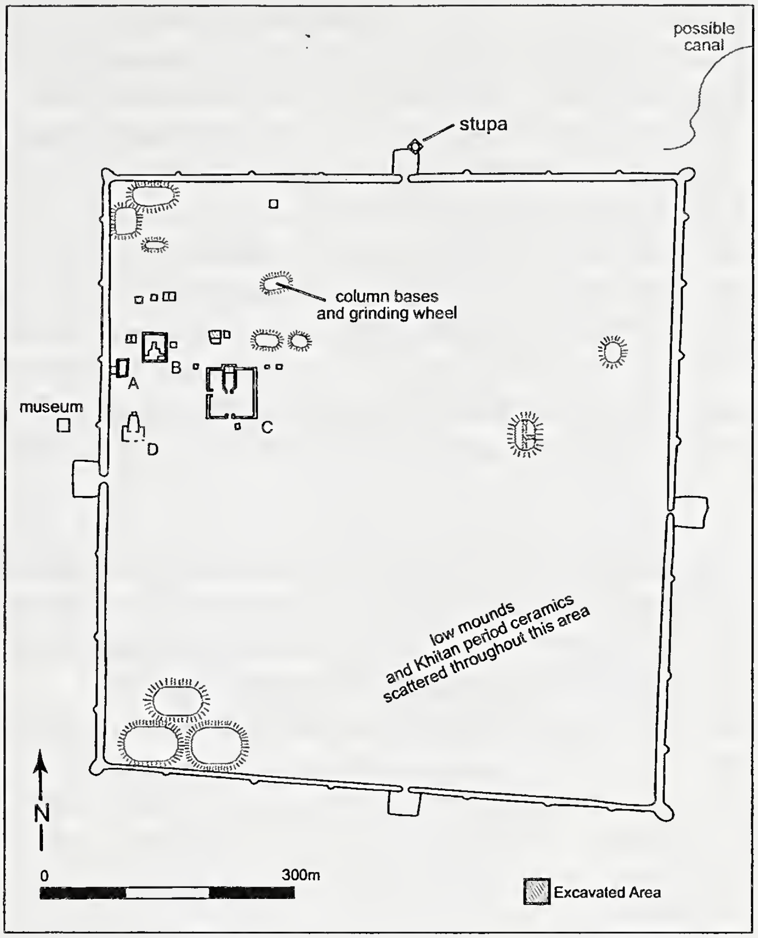
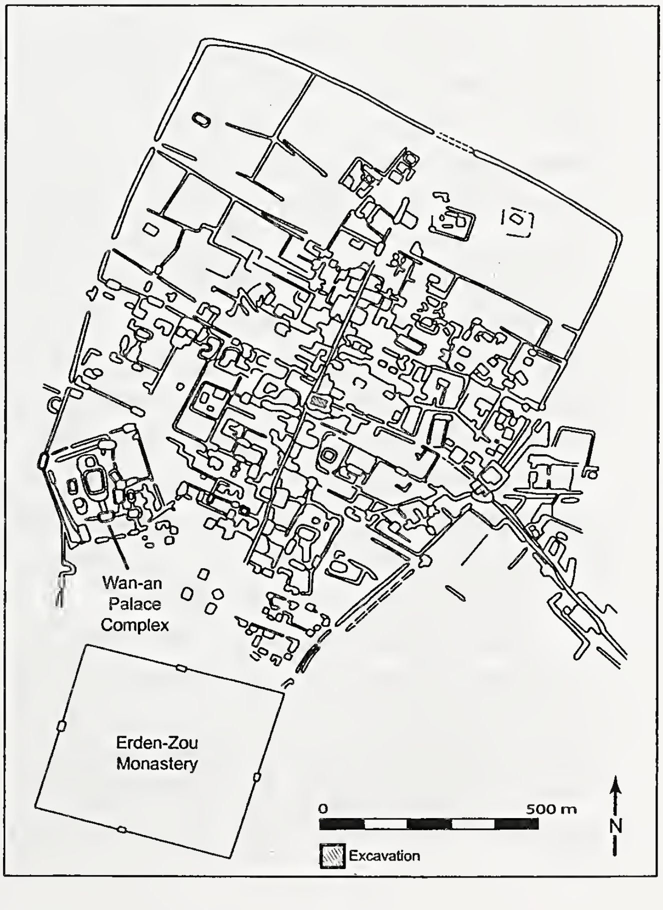


Figure 6.4. Plan of the Khar Bukhyn Balgas site showing recent excavations in the area of building complexes A, B, C, and D. The remnants of probable irrigation canals were identified north and east of the fortification wall.

Figure 6.5. Map of Kharkhorum showing the location of the palace complex built by Ögödei. At the southern edge of the city is the contemporary monastery of Erdene-Zuu (adapted from Kato 1997:18 and Kiselev 1957:98)



of rammed earth and surrounded by a ditch (Fig. 6.4). The four walls do not form a perfect square, instead ranging from 670 to 755 m in length. Midway along each wall is a fortified gate connected to North-South and East-West streets dividing the enclosed space into quadrants. The ruins of several stone buildings dominating the northwest quadrant of the fortress are associated with a later 17th century reutilization of the site. A large stone stupa along the North wall is the location of the discovery of an early birch bark book (Bayar 1999:188).

To the north and east of the fortress a series of irrigation canals stretch across the river floodplain. One of the canals ends very close to the northeast corner of the fortress and may have been the source of water for the needs of the city's inhabitants. Fragments of grinding stones for grain processing were noted on the surface. There is currently no information to date the construction and use of the irrigation system, however, it is likely to be associated with both phases of site construction and use, given the size of the enclosure and the likelihood of a relatively dense, settled population.

Kharkhorum: The best known and most extensively studied of the ancient and Medieval settlements of Mongolia is the capital city of Kharkhorum (Fig. 6.5). The general vicinity was a significant place in the history of the Mongol tribes as early as the 8th century, although it was not a major center until the empire was consolidated under Chinggis Khan in A. D. 1220 (Tseveendorj 1999:189-192). Chinggis' successors, Ögödei, Güyüg and Möngke, were responsible for actually establishing and using Kharkhorum as a capital (Cleaves 1952). Under Ögödei the Wan-an (Qarši) palace was built and the city was surrounded by a wall and moat (in 1235) enclosing a rectangular area of approximately 1 sq km (Kiselev 1965:138). Excavations revealed an exterior wall only about 1 m tall, but ranged from 15-18 m thick. Given these dimensions, it is unlikely the wall served a serious defensive function. The moat surrounding the wall may have been the primary defensive tool. Eyewitness accounts by William of Rubruck, John of Plano Carpini (Dawson 1955) and 'Ala-al-Dīn 'Ata-Malik Juvaynī (Boyle 1958:236-237) in the 13th century provide important information on the organization of the city and the Mongol empire more generally. A series of archaeological expeditions, including the current joint Mongol/German project, have added greatly to our knowledge of the city (Kiselev 1965; Tseveendorj 1999).

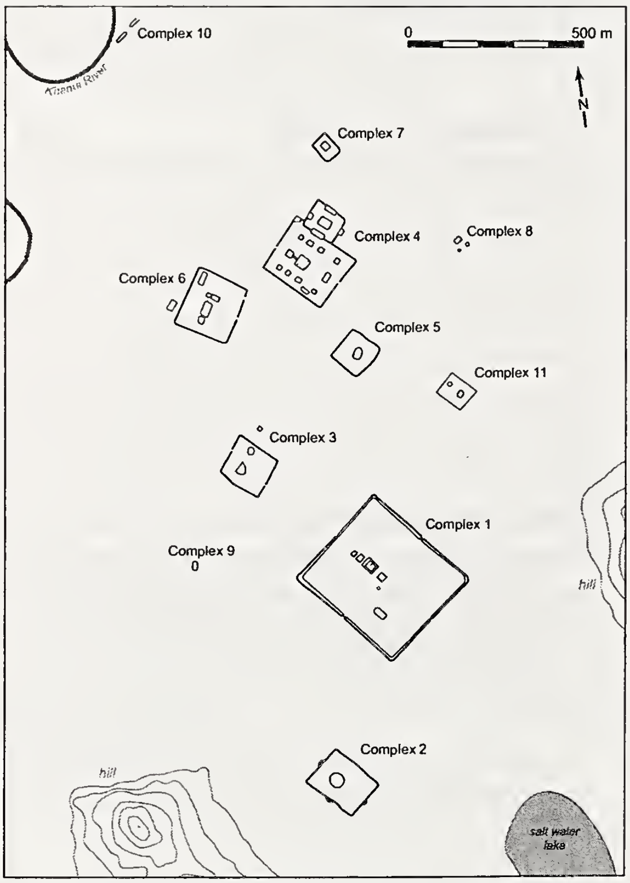


Figure 6.6. The Khar Khul Khaanii Balgas site showing the distribution of 10 building complexes. Complex 1 is the largest, with walls currently measuring 4-5 meters tall (adapted from Moriyasu and Ochir 1999:plate 19a).

The wall surrounding Kharkhorum had four gates, located at midpoints along each wall. From each gate, major streets bisected the interior layout. At the southwest corner of the city was the palace built by Ögödei and described by William of Rubruck and 'Ala-al-Dīn

'Ata-Malik Juvaynī in 1252 and 1253. Documentary sources and excavations include information on markets, manufacture of iron goods and ceramics, and the presence of temples and churches of several different religions. Water was brought to the city by a canal stretching 5 km north to the Orkhon River. Areas between the city and the river were cultivated using additional irrigation canals. In 1256, Khubilai ordered the construction of a new town that he named Xandu (Upper Capital), with the Mongol capital later moving to Dadu (Beijing) (Rossabi 1987:31). Although Kharkhorum remained as an international trade center for some time, it eventually lost its standing. On different occasions Chinese troops were garrisoned there and the city was eventually destroyed by Ming troops in 1380 (Shiraishi 1997:121).

Khar Khul Khaanii Balgas: Throughout the period of the Mongol empire (13th to 15th centuries), many permanent settlements were constructed along major rivers in Mongolia and elsewhere. Not unusual among these is Khar Khul Khaanii Balgas located on the Khanui River in Arkhangai province (Fig. 6.6). Recent excavations at the site have establish a sequence of occupation ranging from the 13th to the 17th century (Bayar 1999:192-193). In several instances there is clear evidence that new construction and remodeling made use of bricks and other architectural elements from earlier buildings.

The site consists of 7 enclosures scattered over an area of about 3 sq km. All 7 are oriented on a northeast-southwest axis. Between the enclosures, there is almost no surface evidence for habitations or other activities. Although the site is near a river on a broad plain, it is not known whether irrigation farming was practiced. The largest of the enclosures can be termed a citadel, with heavily eroded earthen walls currently standing 4-5 m high (Fig. 6.6). The Citadel is a rectangle measuring approximately 375 x 325 m (Moriyasu and Ochir 1999: Plate 19b). Near the Citadel's center are the remains of a series of buildings. The largest was partially excavated in the 1980s (Enkhbat, B. 1986). Mid-way along each of the Citadel walls is a gate opening, faced on either side with layered sandstone slabs. There is some evidence for raised streets running from each gate at right angles across the interior of the citadel to bisect the interior space, similar to the other urban centers described here.

Other than the Citadel, the enclosures were not designed for defensive purposes. In each case the exterior walls are low, probably originally not more than 1-2 m tall. Within each enclosure is the remains of what appears to be public buildings or elite residences,

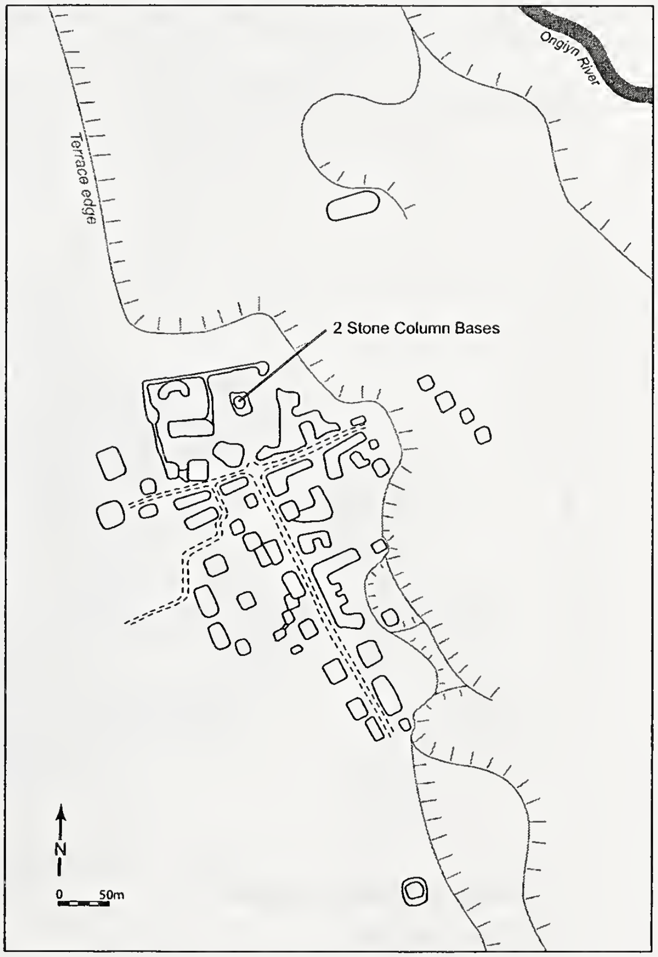


Figure 6.7. The Shaazan Khot site showing the location of principal platforms and compounds (adapted from Moriyasu and Ochir 1999:plate 20a).

given the presence of glazed roof tiles, fired bricks, and carved stone column bases. It is not known whether all of the enclosures were in use at the same time.

Trade Centers

Although all of the urban centers described above almost certainly played significant roles in far-flung trade networks, there are also major settlements that seem to have functioned primarily as nodes on a trade network. Because of the complexities of the trade systems, often involving tribute payments across international borders, trading centers also tended to be complex (e.g., Davydova 1968:241; 1985:99; Kyzlasov 1969:169-171). While trade may have been the economic foundation for the community, the resident population naturally also practiced a wide range of social and subsistence activities. Along with domestic architecture, these centers also contain evidence for public buildings, agriculture, and possible market spaces.

Shaazan Khot: A significant example from the period of the Mongol empire is Shaazan Khot, located on the Ongi River in Dundgovi Province (Fig. 6.7). This is the only site in our sample that does not have an exterior wall, although specific building complexes were enclosed by low walls. Abundant porcelain fragments, coins, green glazed roof tiles, and other artifacts recovered from the surface link the site with the period from the late 11th century to the time of the Yuan dynasty (A. D. 1270-1368). The site is located along what may have been a major route

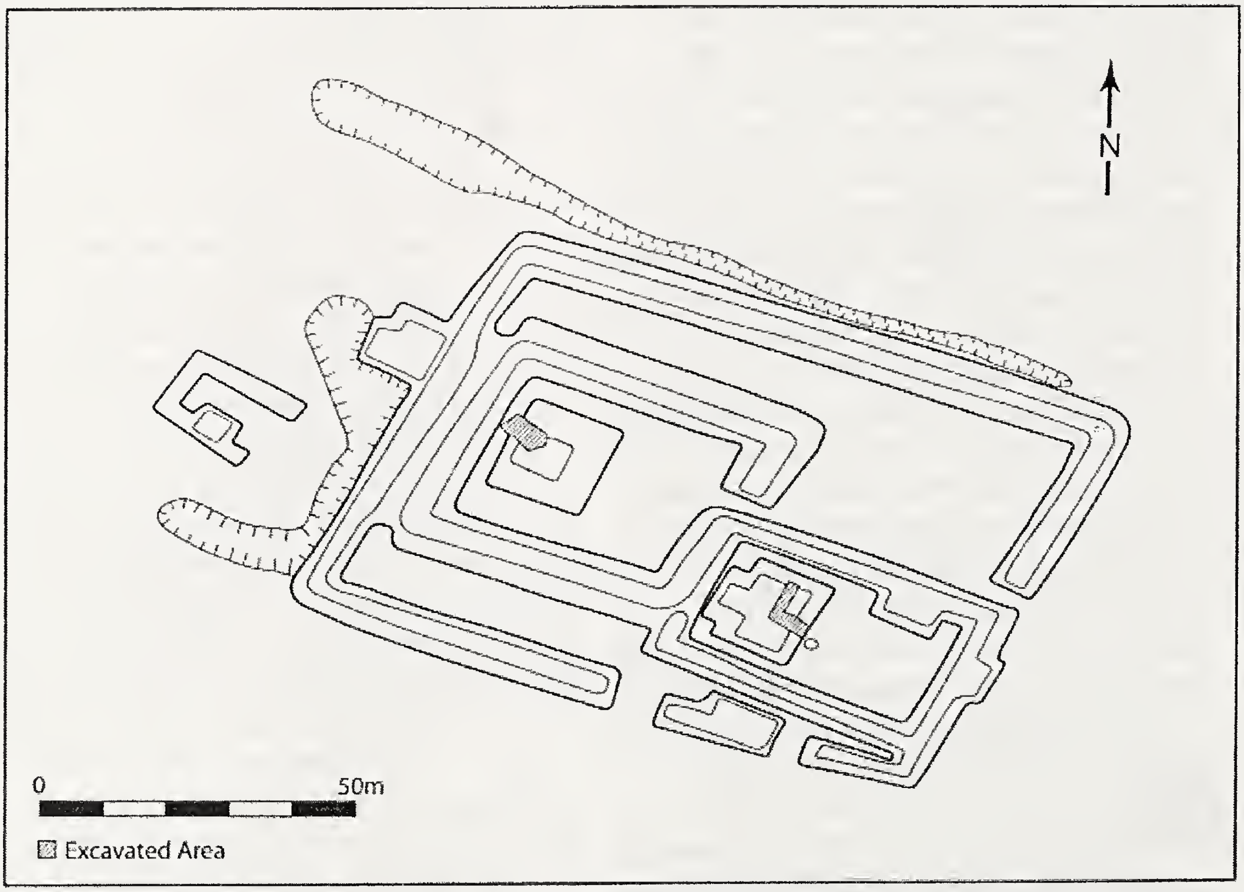


Figure 6.8. The Melkhiin-Tolgoi Palace site ruins, located on a hill overlooking the ancient Mongol capitol at Kharkhorum (adapted from Kato 1997:25)

between China and the Mongol capital at Kharkhorum.

Outlying Palaces

The outlying palaces included here are reflective of a pattern of seasonal movements by the royal entourage. Written sources, for instance, describe the pattern of shifting residence used by the Mongol khan, Ögödei in the 13th century and other important leaders (Boyle 1972). These palaces are by definition very specialized settlements and are included here because their function is known from documentary sources, their significance in the administration of the Mongol empire, and because they extend the range of known settlement types.

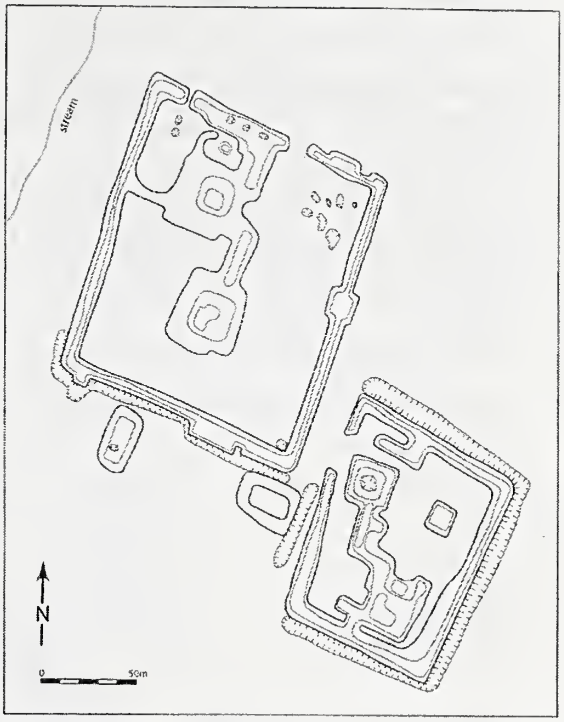


Figure 6.9. Bayan Gol Palace site located on a small tributary of the Orkhon River approximately 14 km north of Kharkhorum (adapted from Kato 1997:24).

Melkhiin-Tolgoi: This palace sits on a high hill overlooking the Orkhon River valley and the Mongol empire capital at Kharkhorum, 3 km northeast (Fig. 6.8). Apparently built in 1238 it was Ögödei's residence each year during June and part of July (Boyle 1972:127). The ruins consist of a relatively small rectangular earthen enclosure

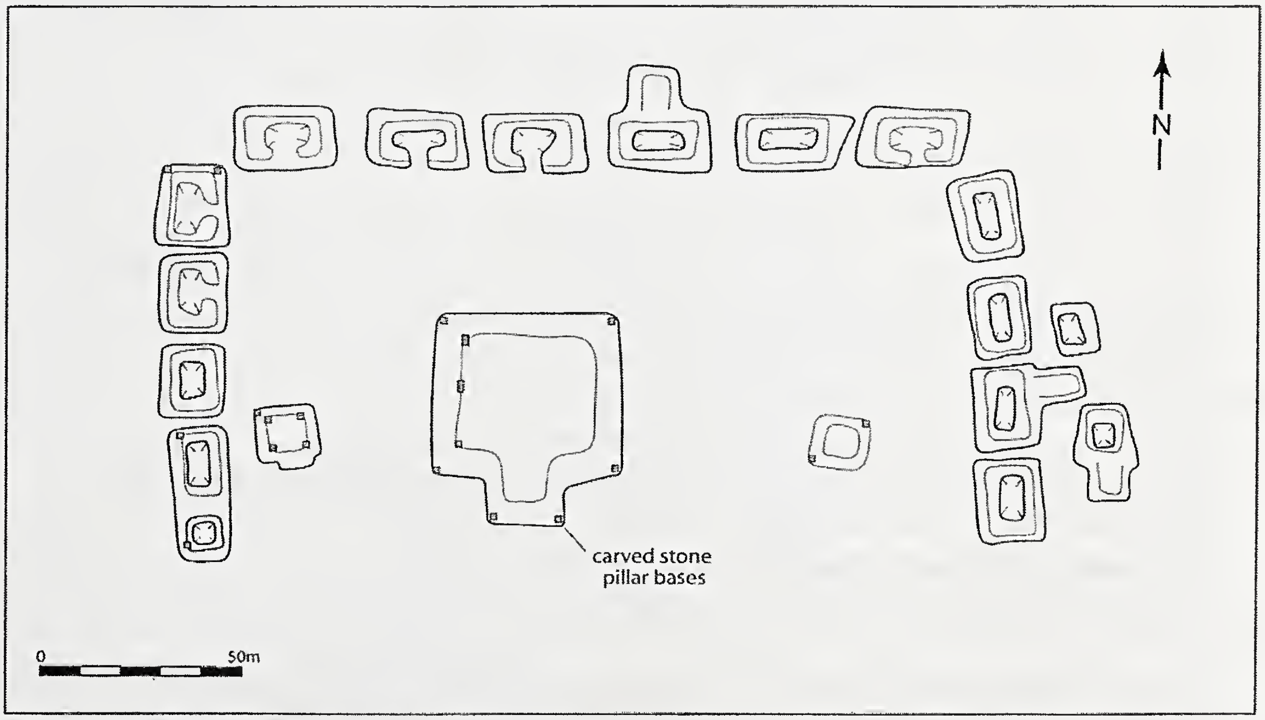


Figure 6.10. The Doityn Balgas site is the location of the Giegen-Chagan palace built by Ögödei Khan (adapted from Kato 1997:20).

(approx. 90 x 45 m) with evidence for adjacent buildings. The relatively low walls probably functioned more for privacy than defense. Within the enclosure are additional earthen partitions and platforms. Based on information from earlier test excavations, the largest of the platforms, opposite the entrance gate, was probably the palace.

Bayan Gol: The ruins identified as Ögödei's Yellow Palace (Kato 1997) are located on the Bayan River, a small tributary of the Orkhon River, about 14 km north of Kharkhorum. The site consists of two relatively small enclosures, one measuring 165 x 135 m, and the other 125 x 85 m (Fig. 6.9). Inside each enclosure is a complex arrangement of partitions and platforms. Outside of the enclosures is scattered evidence for other buildings. No excavations have been conducted

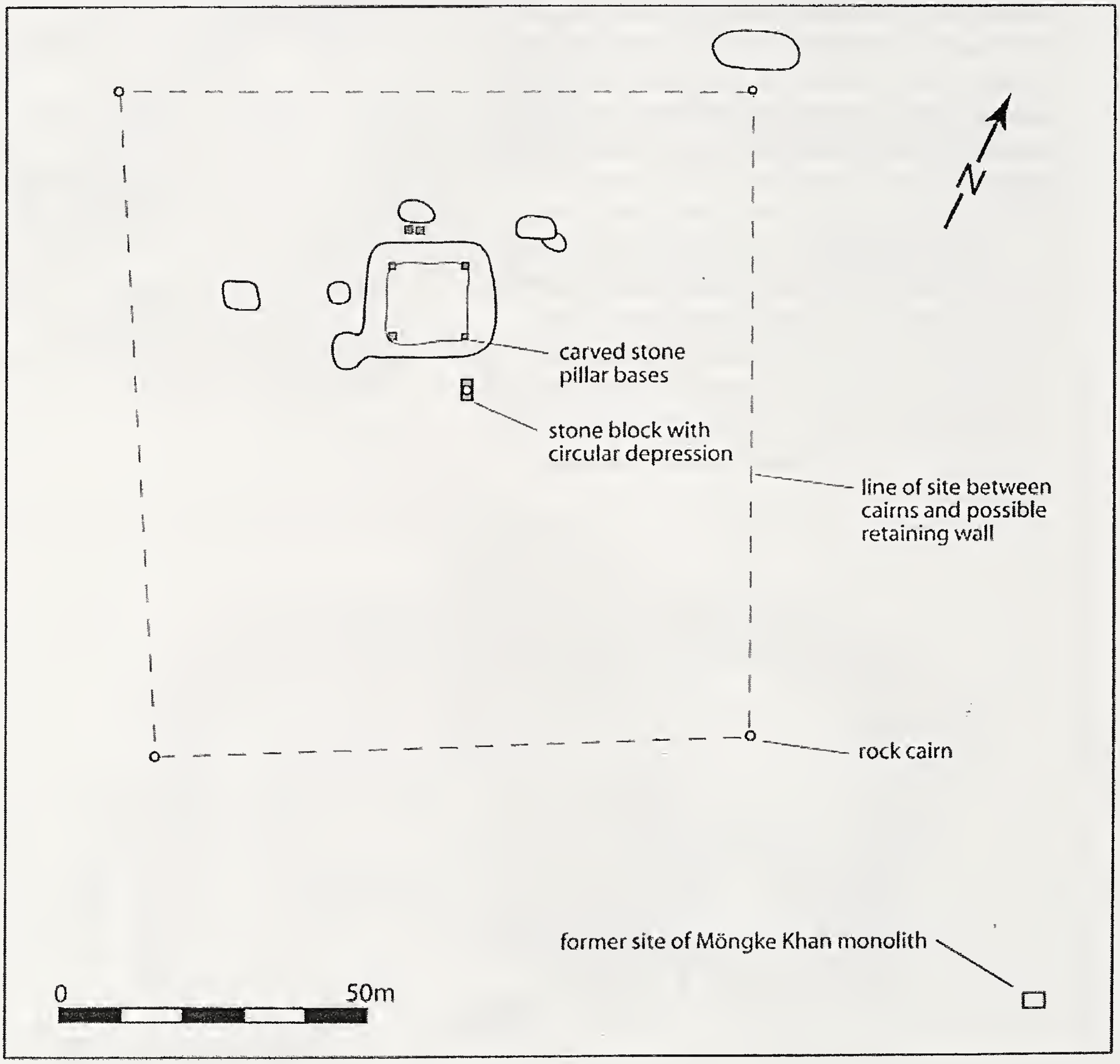


Figure 6.11. The Erchu Knot Palace built by Möngke Khan is located on the Delger Muren River north of the Orkhon River.

at this site.

<u>Doityn Balgas:</u> The site of the Giegen-Chagan palace built by Ögödei around A. D. 1237 as his spring falconry hunting lodge (Fig. 6.10). The site is 44 km north of Kharkhorum and was located and mapped in 1996 by a joint Mongolian/Japanese team sponsored by UNESCO (Kato 1997:20). The palace is on a high hill overlooking two shallow salt lakes. Possibly built by an Islamic architect, the palace departs from the standard rectangular enclosure, instead consisting of a central earthen platform, surrounded on three sides by rooms, each of which measures approximately 10 x 20 meters.

<u>Erchu Knot:</u> The final palace to be mentioned is linked by inscriptions to the Mongol empire leader, Möngke and is dated to the decade of his rein, A.D. 1251-1259 (Namnandorj 1956). The palace is located adjacent to the Delger Muren River far to the north of the other palaces, which are all located in the Orkhon River valley. The visible ruins of the palace consist of an almost completely eroded square retaining wall, measuring approximately 100 m on each side (Fig. 6.11). The interior of the square is dominated by an earthen platform associated with carved stone pillar bases and other carved stone slabs. Approximately 200 m west of the enclosure is a small mound, but no other cultural features are evident in the area.

Discussion and Analysis

With the beginnings of the Xiongnu empire (200 B.C.-A.D. 155), the great majority of permanent settlements consisted of fortified rectilinear enclosures. In most cases the walls clearly served a defensive purpose, such as at Khar Bukhyn Balgas, while in other instances, such as at Kharkhorum, they functioned more to define the parameters of the city, thereby defining the location of a variety of activities. Of the 23 settlements illustrated in Perlee's (1961) book, *Cities and Other Settlements in Ancient and Medieval Mongolia*, 22 are rectilinear enclosures. The one illustrated site not enclosed by a wall was Shaazan Khot, although a few sites mentioned in the text may not have been enclosed (see also Kiselev 1965). If the architectural review is extended beyond Mongolia to include surrounding regions of China and Russia the pattern is the same—unless the settlement served a special function, such as a palace or trade center, it was almost always enclosed by a wall.

Within the square ground plan of the urban centers large areas contain ruins of public and domestic buildings, streets, and areas probably used as "tent neighborhoods", not unlike walled tent communities known from recent times (Hodges 1972:525). In some cases, sites are composed of multiple squares, associated with buildings used for different functions. All of the urban centers are located in major river valleys adjacent to arable land and permanent water sources.

The widespread pattern of rectilinear enclosures, by itself, says little about the forms of continuity that operated in the development of empires in Eastern Inner Asia. If, however, the sites are examined from a series of more detailed perspectives key patterns can be identified. Specifically, there are three sets of significant factors: 1) Spatial order in settlement planning and construction; 2) Landscape context; 3) Social history of a settlement. The first two factors reflect action-based choices, but are also bound by convention and the ideology of authority associated with state formation and maintenance. The third factor, by contrast, reflects the accumulated history of population dynamics, political expediencies, the shifting role of a particular settlement in trade networks, and other responses to the specifics of time and place.

Studies of spatial order expressed through architecture have noted the many ways in which meaning is encoded in the landscape and built environment (Ashmore and Knapp 1999; Ucko and Layton 1999). The planning and construction of settlements is a cultural expression of spatial order and a representation of ideals reified through the built environment. Almost all of the sites discussed above give strong indication of having been planned and constructed over a relatively short period, given what is known about other urban sites in the region, it would be fair to extend this observation to a much greater number of settlements (cf. Perlee 1961).

Within the context of the steppe empires, the widespread occurrence of planned constructions has several implications. First, the planned buildings and fortifications imply the rapid emergence of a purpose-driven set of objectives, often associated with the relocation of an urban center from one area to another. For instance, the growth of complex administrative systems associated with the collection of tribute, conduct of international relations, the provisioning of large military operations, and other needs required planning and record keeping. These administrative tasks were typically centralized in a capital that was also a population center. Such was the case at all of the Primary Urban Centers described above.

A further implication of the prevalence of planned constructions is the availability of resources necessary to undertake the often-monumental construction efforts. This makes sense when considering that the steppe empires typically did not emerge from a city-state predecessor or from the accretion of a permanent series of settlements associated with an agricultural base, but instead from the consolidation of a tribal confederation (Barfield 1981, 2001:13; Franke 1978; Moses 1974). Certainly, the existence of an architectural tradition that defined the parameters of "appropriate" construction was also part of the equation. It should also be noted that some documentary sources refer to the importation of foreign workers and architects to complete the actual construction, such as the city of Da-lee during the first Turkic empire (Perlee 1961:47) and later at Kharkhorum (Boyle 1958:236-237). The presence of foreign workers alone could account for many of the similarities with Chinese styles and principles of construction, although the steppe empires were clearly choosing to import material symbols of the complex civilization to the south, including such things as the Uighur adoption of the Chinese calendar (Sinor 1997:7). Steinhardt (1988:71-72), in particular, makes a compelling case for Chinese influence on imperial Mongol urban planning.

In parallel with the tradition of urban centers was the arguably even more important pastoral-nomad ideal that was indeed the foundation for a wide range of cultural practices, even by the city dwellers. Although kings lived in cities they also embodied the pastoral ideal through seasonal relocations of the royal residence (e.g. Boyle 1972). In addition to permanent palace constructions, like those described above, there is also the well-known practice of using royal tents, even in urban centers, such as the golden tent described by Tam+n ibn Bahr on his visit to the Uighur capital at Khar Balgas (Minorsky 1947:295). Certainly, the differences between settled and nomadic traditions were not lost on the leadership of the steppe empires. Tonyukuk, counselor to the Turkic khans is quoted as saying, "if we build castles and give up our old customs, we shall be vanquished" (Tkachev 1987:114). Tonyukuk may have been giving good strategic advice, but he spoke in the face of what was already a many centuries old tradition of fortified urban centers.

From the perspective of the formation of empires, the principles that guide the planned construction of urban centers and palaces are about defining parameters of inclusion and exclusion, both as practical function and as legitimation of authority. As practical function, urban construction serves to define activity spaces and serve the complex needs of concentrated populations. In the formation and maintenance of empires, inclusion and exclusion are techniques that allow legitimation of authority to be played out on the landscape. Certainly, authority issues were played out in the internal organization of urban centers, but in keeping with the objectives of this article the focus is directed at the broader landscape. The second factor mentioned above relates to the importance of certain geographical locales, both strategically and symbolically. Primary urban centers are nearly always located in major river valleys that provide access to water, arable lands, and grazing. There are, however, certain locales that over centuries transcend political boundaries and continue to play a central role in the succession of empires.

In Mongolia, the Orkhon River Valley (Fig. 6.1) served perhaps as the most important focal area for the emergence and consolidation of several different empires. It was the location of important urban centers, perhaps as early as the Xiongnu polity, but clearly during the Turkic, Uighur, and Mongol empires (Allsen 1996; Kiselev 1965; Tkachev 1987). Each successive empire tended not to build on the urban centers of its predecessors, but they did build on the cosmological power and historical significance of this particular valley. Over time, the imperial traditions associated with the valley became an important point of legitimation used by successive khans. This form of locational continuity, over hundreds of years, has much to do with continuity in systems of belief and political culture. The Turks and the Mongols, and probably others before them, adapted to the diversity of cultural and religious practices encountered across the regions they conquered, notably incorporating a tolerance for multiple religions. The legitimation of empire in Eastern Inner Asia did not depend on the transmission of a single state religion as an ideology of expansion. Although, in some notable cases, such as the Uighur empire, a state religion was adopted (Manichaeism), but even in this case it was not a significant factor motivating attempts to expand the empire (Mackerras 1972).

The practice of religious tolerance did not mean, however, that there was no continuity in beliefs. In fact, many of the steppe tribes held in common a set of shamanistic beliefs including the principle deities Tengri the Sky God and Etügen (Ötüken) the Earth Mother (Golden 1982:42; Lot-Falck 1956). These shared beliefs clearly formed part of the motivation for continuity in the significance placed on particular locales. For example, in the case of the Mongol empire establishing the capital at Kharkhorum was a carefully arrived at decision, allowing the newly emerged state to solidify a connection with the Orkhon Valley (Allsen 1996:126-127). This move then served to connect historical traditions, patterns of imperial legitimation, and religious beliefs, thereby strengthening the authority base of the ruling elite.

The third factor mentioned above—the social history of a settlement—acknowledges the significance of events as they impacted what might be termed the "planning ideal", in other words, the disjuncture between order and action or expectation and implementation. Essentially, even for settlements that were clearly established on a master plan, the history of site utilization often adds layers of complexity to what might have otherwise been an easily interpreted organization. In the development of urban centers throughout the world it is very common for original organizing principles to be overwhelmed by the expediencies of successive periods of growth or decline. Eventually, urban centers take on a much more organic pattern of growth as seen in many modern-day capitals, as well as in the ruins of ancient cities (e.g., Ashmore and Sabloff 2002). In contrast to this more common pattern of organic growth, the great majority of known urban centers, palaces, and other settlements from central Mongolia were constructed on the basis of a master plan that was maintained relatively intact over the life history of the site.

The one partial exception to the master plan pattern is the Mongol capital of Kharkhorum. Although there is substantial evidence that the decision to base the capital at Kharkhorum was carefully considered (Allsen 1996:126-127), it is also apparent that a settlement already existed at that location for possibly as much as three hundred years (Kiselev 1965). Historical sources also make it clear that the royal palace and perimeter wall were added to an already existing settlement (Cleaves 1952; Rash+d al D+n1959, vol.2:684-685). In reviewing the site plan for Kharkhorum (Fig. 6.5) the perimeter wall approximates a rectangle, but is far less regular in orientation than most of the other known urban centers. It gives the impression of being a wall added to enclose an existing community.

With the exception of Kharkhorum there are virtually no other examples of urban centers reflecting the expediencies of unplanned growth or change in site plans. Within the context of Eastern Inner Asian empires, several factors account for the clarity of site plans: 1) Sites were typically occupied for relatively short periods, although sometimes reoccupied at a later date; 2) Urban centers usually represented core activity areas while population fluctuations were typically expressed through the expansion and contraction of associated ger (tent) neighborhoods; 3) A pattern of abandoning old centers and establishing new ones, especially as associated with the successive replacement of empires.

The final component of the discussion specifically addresses issues of the relative significance of agriculture within the steppe empires and to what extent the available archaeological data contributes to a better understanding of the role of this economic pursuit. Di Cosmo (1994; see also T'ang Ch'i 1981) argues for reassessing the economic foundations of the pastoral nomad empires, as well as their general relationship to China. Through his review of both archaeological and documentary sources, it is clear that a long agricultural tradition existed along side the more dominant pastoral pursuits practiced throughout the region. Although his analysis concentrates on the Xiongnu, there is significant evidence that allows extension of the argument to include later empires.

The urban centers discussed in this study all incorporate evidence for the practice of extensive plow agriculture, implied first by their location in major river valleys, but also through the presence of grain processing equipment, agricultural tools, and irrigation canals. Historical sources also provide many important clues (e.g. Dawson 1955:100). Even with this general evidence there still remain many questions of scale and distribution of production, organization of agricultural activities, and the actual crops utilized within specific regions and time periods.

Although agriculture is discussed here primarily in the context of large urban centers, it did not necessarily need cities to prosper. Ethnographic research in the twentieth century (Róna-Tas 1959; Vreeland 1957; Vainshtein1980) provides important perspectives on the role of agriculture. Archaeological research in adjacent regions of Central Asia, including southeastern Kazakhstan (Chang and Tourtellote 1998:273; Rosen et al. 2000) and the Minusinsk Basin region of southern Siberia (Savinov 1989:814) likewise confirms the widespread presence of agro-pastoral economies. In Mongolia, recent archaeological and ethnographic work in the Egiin Gol valley (Fig. 6.1; Honeychurch and Amertuvshin 2002) provides the most detailed information for the region while also exploring the broader implications of crop cultivation as a routine part of subsistence practices. Their findings show that local systems of mixed subsistence practices, including pastoralism and agriculture, were common from the Bronze Age to the modern era. Over time local production became integrated with the larger political structures. During the Uighur period, in particular, there was evidence for local specialization in pastoral production, complementing evidence for the expansion of agricultural production around the urban centers at Khar Balgas and Baibalik.

Conclusions

When William of Rubruck visited the Mongol capital of Kharkhorum in the mid-1250s he was not particularly impressed, describing it as about the size of a large French village (Dawson 1955:183). The irony of this observation emerges when considering that Kharkhorum was at that time the imperial capital of the largest contiguous empire to have ever existed. Indeed, Kharkhorum was not like the capitals of Europe or South Asia or China, instead it was part of a pattern of steppe empire development that integrated nomadic ideals with the requirements of imperial administration and strategies of control.

Throughout the long history of shifting empires, the ideal of nomadic life was one of the continuities that shaped social agendas and living styles for all levels in the status hierarchy. Even when not on military expeditions, emperors spent a good deal of time living in gers, even if these tents were enclosed by fortifications. This information is known primarily through documentary sources (Boyle 1972), with relatively little deriving from archaeological research. New archaeological evidence has, however, begun to clarify the relationship of urban centers to their hinterlands (Honeychurch and Amertuvshin 2002).

The physical layout of urban centers, trade centers, and palaces also reflect long-standing regional traditions. The spatial organization of Mongolian centers are part of ideological and cultural systems used by elites to emulate perceived sources of political power and to solidify deep-rooted cultural values. Thus creating a unique landscape essential to new power formations and the expression of a civilization's self-identity. Architecture and the spatial organization of cities are often created as a purposeful representation of ideal order—especially in the construction of planned settlements. However, in practice this ideal order confronts a constantly changing array of uses and purposes. The physical solidity of place becomes both an anchor for continuity and evidence of the disjuncture between present action and ideal representations.

It is widely held that the empires of the steppe regions of Eastern Inner Asia came into existence through interaction with existing states (Barfield 2001:10; Irons 1979:362; Jagchid and Symons 1989). While the steppe empires certainly carried on significant interactions with sedentary states, the complexity of internal social organization, economic systems, and trade with other regions raises the likelihood of a far more dynamic cultural sphere. After all, there are very few "pristine" states anywhere in the world. It is not surprising then that significant interactions took place between China and the steppe empires and that the steppe empires were influenced by China's great power, relative stability, and long tradition of statecraft. Even so, this interaction should not be used to define the importance of the participants or pre-determine, through exclusion, the possible consideration of other influences.

After examining the sequence of steppe empires that dominated Mongolia, and in some cases most of Asia, to describe the economic basis for these empires as nomadic pastoralism is an oversimplification of the evidence. Although the archaeological data necessary to assess variations in subsistence practices across the region is only now beginning to emerge, some studies have revealed the complexities at issue. There is considerable room for further analysis on the role of urban centers in the development of the steppe empires. In only a very few instances is there significant archaeological data available on which to build a more comprehensive understanding of the social and political dynamics of the region. Additional excavations focusing on recovery of subsistence information will be necessary at a number of sites, coupled with the use of intensive survey techniques, to produce the information necessary to explore issues ranging from ethnic diversity to trade networks to the structure of empires.

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Part VII

Mass Burials at Hambiin Ovoo Ulaanbaatar Mongolia

Bruno Frohlich, Naran Bazarsad, David Hunt, and Enkhtur Altangerel

Introduction

Human mass burials are not an unknown entity. The fall of Communism and other totalitarian regimes, and the replacement of such regimes with more open and democratic forms of governments have exposed and made the world aware of the enormous number of state-sanctioned genocides justified in the name of development and state security. A recent article in the *Atlantic Monthly* (Nov. 2003) estimates that during the 20th century 170 million people were victims of government approved intentional killings by 'induced famines, forced labor, assassinations, extra-judicial executions, massacres and full-scale genocides'. This compared to 'only' 34 million recorded battle deaths resulting from civil and international wars fought during the same period. The Hitler, Stalin, and Mao regimes are responsible for more than 100 million of these 170 million murders. Even though these regimes developed the process of mass murder to a high level of efficiency, they never succeeded in annihilating more than five to ten percent of the total populations in their respective countries. Few, if any compare to Pol Pot's genocide of the Cambodian population from 1975 to 1979, which annihilated more than 30 percent of the population.

Unfortunately, government sponsored killing is not a 'past' event. Such genocides are taking place while this is being written, and will undoubtedly continue in the future. Most recently, mass burials found in Iraq may suggest that between 1979 and 2003 Saddam Hussein's regime was responsible for the murder of about 300,000 people for the simple reason that the victims' political, ethnic, and religious associations, or education and behavior, were not acceptable to them. The identification, exposure, and documentation of mass burials are important parts of the writing of contemporary history. Needless to say, as a result of our research we hope future generations will be more aware of factors responsible for the onset of such behavior and act accordingly to keep history from repeating itself.

From about 1922 to the fall of Communism in the early 1990s the Mongolian government was controlled by its northern neighbor, the Soviet Union. Mass burials now being identified in Mongolia parallel events that took place in the Soviet Union and Eastern European countries during the 1930s and possibly into the 1960s. The effects of collectivization, ethnic purges, communization and the killing of citizens with higher education, different religious beliefs, and undesirable ethnic affiliation resulted in an untold number of state sponsored killings. It is with this back-

Fig. 7.1. Ruins consisting of stone foundations and mud-brick walls at the monastery at Mandzeeshere, about 25 km outside Ulaanbaatar. The monastery was destroyed by the Stalinist government in 1937 and more than 350 Buddhist monks were executed. Although there is no proof, some of the bodies burried at Hambiin Ovoo may be those of the Mandzushere monks.

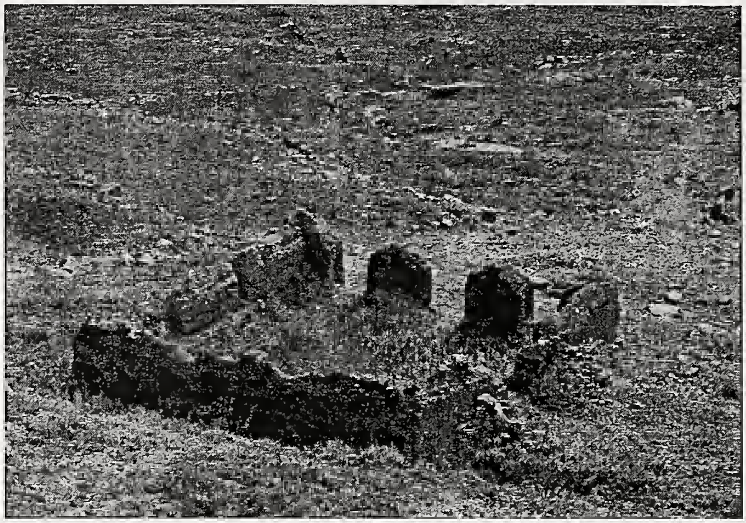
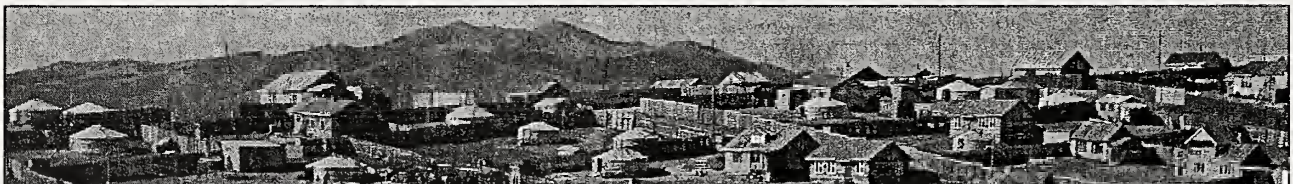


Fig. 7.2. The mass burials at Hambiin Ovoo were found during the removal of sand and gravel. Finds strongly suggested that Buddhist monks represented a majority of the victims. It became the task of the Gandan Monestary under the direction of Lama Purevbat to explore, remove and rebury the remains. Between 600 and 800 individuals were removed based on counts of crania and femora. The remains were later cremated at the site and a monument (padoga) was constructed on the adjacent hill to honor the individuals who were murdered. The three vertical depressions (two to the left of the center, and one to the right) identify the original location of the remains removed by Lama Purevbat. The small area between the depressions includes our excavations during a two week period in September, 2003.



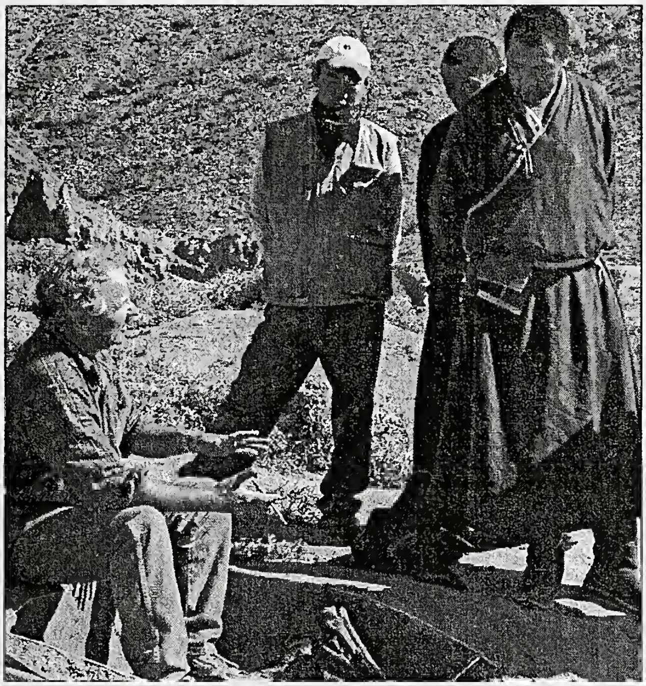


Fig. 7.3. The initial identification and excavation of human remains at Hambiin Ovoo was carried out by the Gandan Monestary directed by Lama Purevbat during the spring of 2003. Lama Purevbat visited our excavation several times and was introduced to our technique of forensic excavations and data recording. From left to right: Bruno Frohlich, Jamsranjav Bayarsaikhan, and Lama Purevbat.

ground that we view the finds of contemporary mass burials in Mongolia.

Information we have received from Mongolian sources suggests that more than 30,000 Mongolian citizen were murdered, probably between 1925 and 1940. Of these, a large number were Buddhist monks from all over Mongolia. For example, the historical record describes how the Soviet regime in 1937 executed more than 350 monks from the 200-year-old Buddhist monastery at Manzhir Mandzusheer, located 25 km outside Ulaanbaatar. After the executions the monastery was destroyed leaving little left except for stone foundations, and mud-brick walls (Fig. 7.1).

Present Research.

While surveying burial mounds for three weeks, Naran Bazarsad learned about a newly-discovered mass burial at Hambiin Ovoo outside Ulaanbaatar (Fig. 7.2). The mass burial had been explored and excavated by monks from the Buddhist Gandan monastery in Ulaanbaatar. Negotiations with Lama Purevbat and his associates resulted in the initial planning of a continuing excavation of the burial complex and the application of modern forensic techniques and evidence collection. In the process of visiting the Gandan Monastery, a wonderful and fascinating introduction to Buddhist mortuary practices, Buddhist anatomical learning, and the traditional treatment of human remains was given to me (Bruno Frohlich) by Lama Purevbat (Fig. 7.3). We also viewed about 80 bodies which had not been cremated after their recovery and found that all of them had

Fig. 7.4. The excavations at Hambiin Ovoo included personel from Mongolia and U.S.A. Tsend Amgalantugs, Erdene Batshatar, Enkhtur Altangerel, David Hunt, and Batsukh Dunburee are seen after the completion of the work. Naran Bazarsad, Nancy Tokola and Bruno Frohlich are not in the picture.

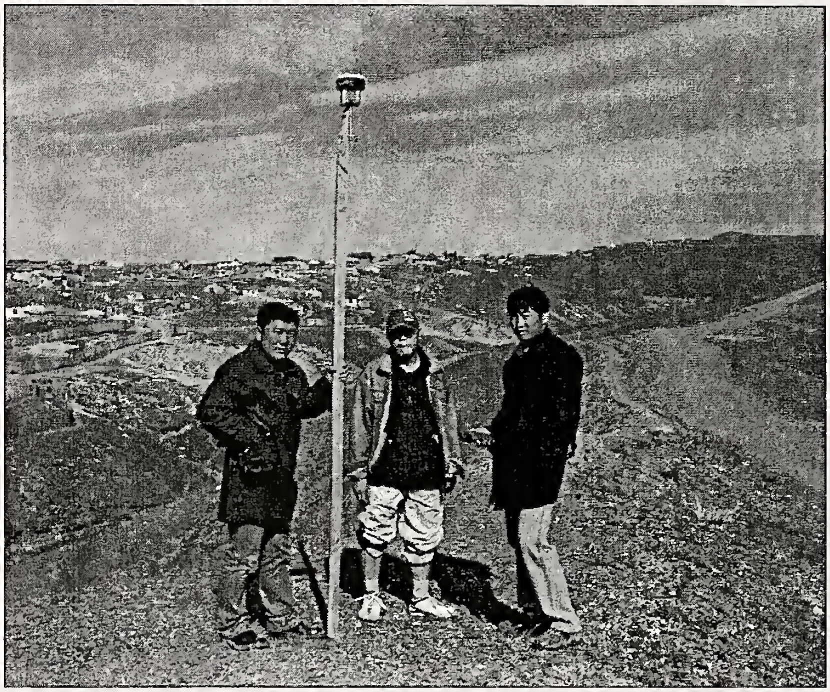
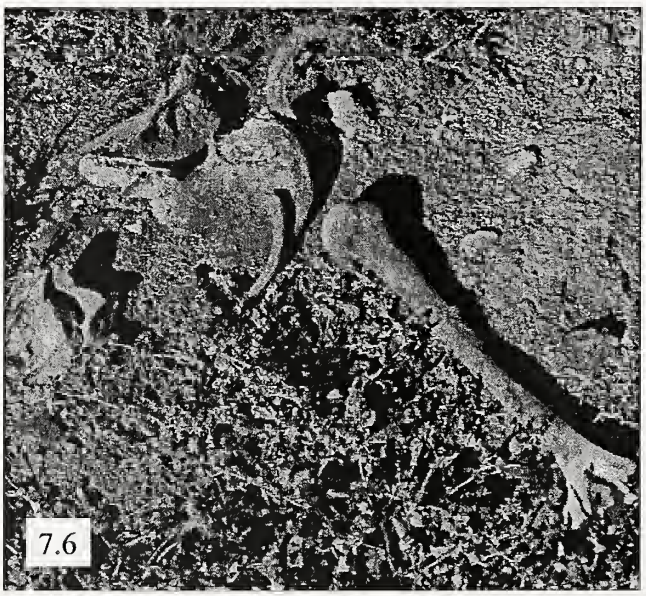


Fig. 7.5. Before any excavations took place the area of interest was cleared of surface vegetation and all surface finds were recorded, photographed and collected for study and storage. The area surrounding the Lama's excavations and our test excavations were surveyed using high precision GPS equipment. Erdene Batshatar, Tsend Amgalantugs, and Enkhtur Altangerel are using the Ashtec/Magellan Rover unit to record longitude, latitude and elevation of selected positions. Data is later downloaded to a small computer and the results can be observed and used shortly afterwards.

entry and exit openings in the crania strongly suggesting that they had been executed. It was decided that a new exploration and excavation of the mass burials should be completed at a later time and that the Mongolian Academy of Sciences would coordinate this with the Gandan Monastery and let the Smithsonian Institution know when they were ready to proceed. This occurred a few months later. The crew working at the Hambiin Ovoo site consisted of Naran Bazarsad and Bruno Frohlich assisted by David Hunt, Erdene Batshatar, Tsend Amgalantugs, Enkhtur Altangerel, Batsukh Dunburee, and Jamsranjav Bayarsaikhan (Fig. 7.4).

Fig. 7.6, 7.7. The finds of human bones on the surface were extensive. Between one and two cubic meters of human remains were collected from the areas previously investigated by the Gandan Monastery. Remains were collected and removed from the site.



7.6

7.7

Fig. 7.8. Several test excavations, each measuring 1 x 1 meter were completed before a 4 x 5.5 meter square was excavated. The upper layers displayed a high degree of disarticulation while remains at lower levels displayed well defined articulation between individual bones. Lower levels clearly suggest that individuals were executed at the site and unceremoniously thrown into the prepared burial pit. The reason for less articulation in the upper layers is attributed to the extended use of the Hambiin Ovoo area as a place of execution and burial. Thus, when burial pits were prepared, most likely by the use of construction equipment, older burial pits were disturbed creating a disarticulated scenario. At this time a careful inventory control of remains as it relates to location and depth is being completed and a better understanding of the various degrees of disarticulation should be forthcoming. Only a very small fraction of the potential areas covered by mass burials was excavated. Most likely, the Hambiin Ovoo area includes everything from single burials (single executions) to mass burials of a few individuals to possibly hundreds of individuals.

The mass burial was found at Hambiin Ovoo in early 2003 by construction workers. Because Buddhist monk clothing and religious objects were identified the lamas at the nearby Gandan Monastery were notified. It became Lama Purevbat's job to retrieve as many bodies as possible and render Buddhist ceremonies and burial practices. Lama Purevbat retrieved more than 600 bodies as counted by the number of crania and femora. His method included the removal of bodies with construction equipment and cremating the remains on the site (Fig. 7.2). Lama Purevbat kept about 80 skulls and some post-cranial material in a small building within the Gandan monastery as proof of the killings. We managed to get an introductory view of the bodies. About 70 out of the 80 crania had two suspicious holes most likely depicting projectile entry and exit holes caused by the use of firearms in the execution of the victims. The projectile caliber appeared to be 7.63 mm and in a few cases 9 mm. In the majority of the cases, the individual was executed by firing a gun directed at the lower left part of the head (occipital). The gunshot resulted in a projectile exit at the front of the head (upper frontal bone) and massive fractures of cranial bones especially around the exit. Some of the finds associated with the bodies strongly suggested that the executed individuals all were Buddhist monks, and some of the artifacts/objects could be dated to between 1930 and 1940. Most likely, the bodies were from mass executions carried out by the Mongolian Stalinist regime between 1937 and 1939.

Fig. 7.9. A single burial of a male about 30 years old was found 500 meters northwest of the mass burial presently being investigated. The burial was found because the lower extremities (leg bones) were protruding out of a vertical wall while we were observing the natural erosion at the site. This caused the leg bones to be exposed and removed from the burial site by natural forces. The body was placed in a shallow grave less than 100 cm deep. The body was placed on its back in a supine position with the arms tied up behind the back (Fig. 7.10). An entry hole was identified in the lower left occipital bone and an exit hole in the frontal bone suggesting that the individual had been executed. The position of the body initially suggested that the individual had been executed at another location and later brought to the place of burial. However, the find of a severily damaged iron projectile below the individual's back suggests that the person had been executed while kneeling in front of the prepared shallow grave. The reconstructed trajectory indicates that the projectile would be lodged into the ground at this specific location. It is assumed that the executioners turned the body around in order to allow enough soil to cover the evidence.

Research at Hambiin Ovoo

We visited the mass burial at Hambiin Ovoo the afternoon of September 18, 2003, a few hours after we arrived from South Korea. After identifying the initial extent of the burial site, we began to document the site by survey, photography, and making a detailed description. Because of limited time, we relied heavily on GPS surveying and digital photography (Fig. 7.5). We continued with the removal of surface vegetation and the careful collection of human remains found on the ground (Fig. 7.6, 7.7). David Hunt was in charge of surface collections. Despite strenuous effort it was impossible to collect everything. What appeared to be construction equipment had only removed part of the upper layers of possibly more than one mass burial, leaving thousands of human bones scattered over a large area. Therefore, the removal of one bone most often resulted in the appearance of two new ones. In terms of volume, the remains collected from the surface added up to between one and two cubic meters of bones (Fig. 7.7).

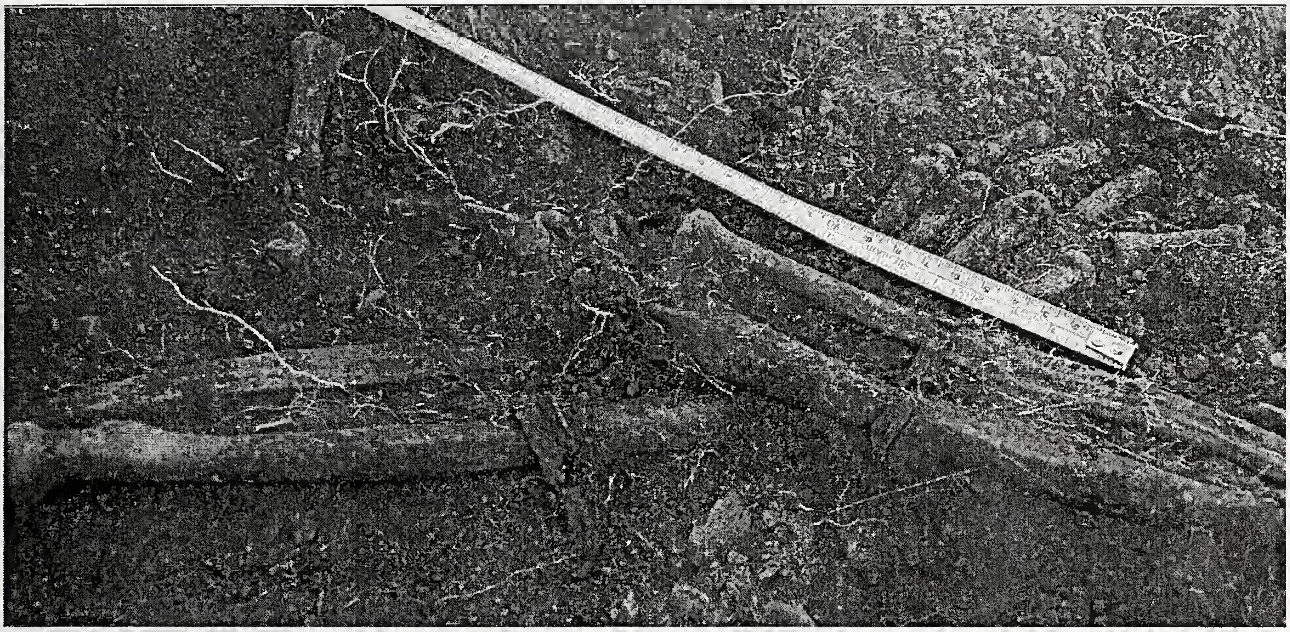


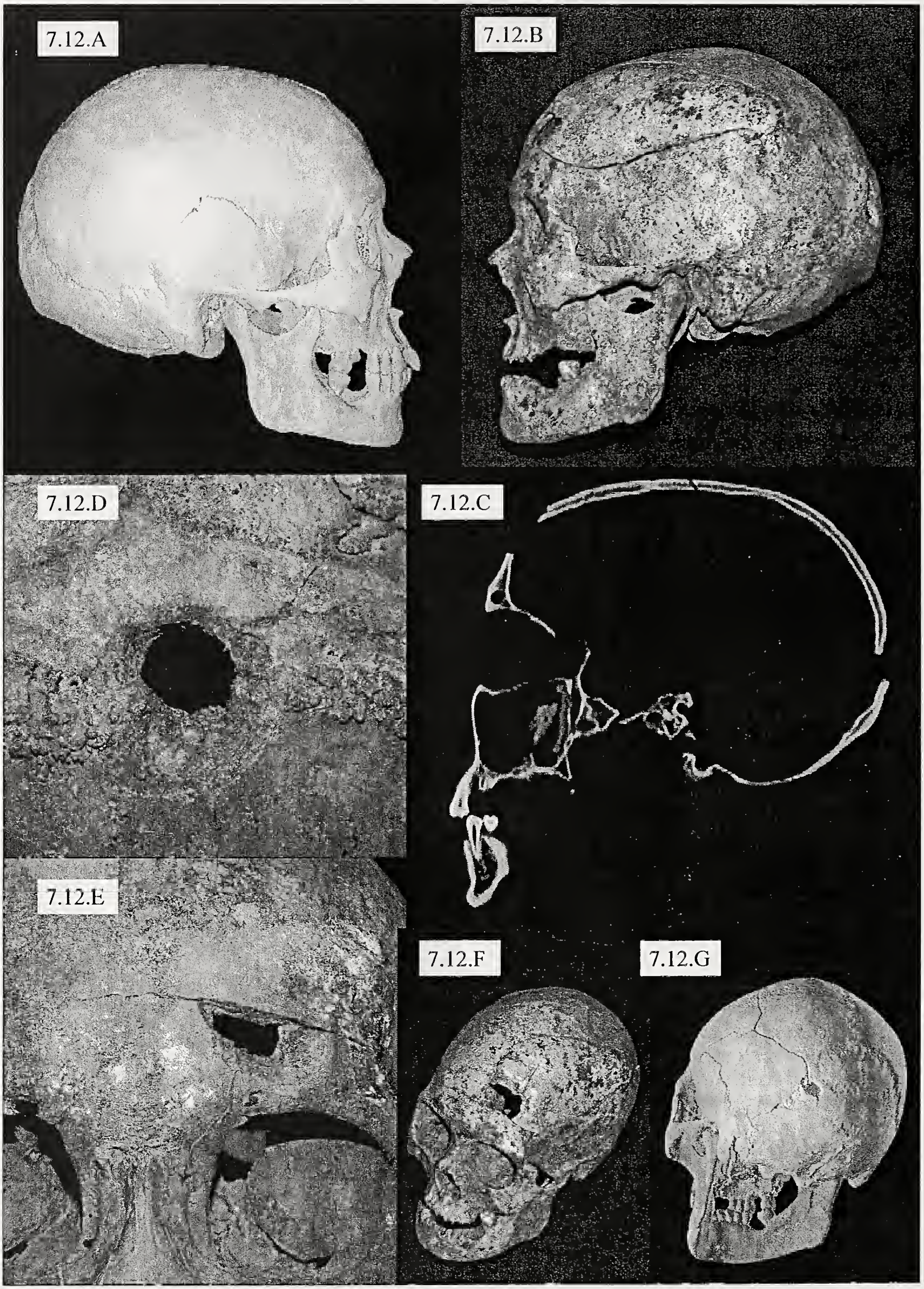
Fig. 7.10. Upper extremities exposed after the removal of torso. Arms were tied together behind the man's back.

Forensic Excavations at Hambiin Ovoo

We decided to make a few test pits, all measuring 1 x 1 meter. All test pits yielded human remains. It was impossible, however, to evaluate the degree of articulation because of the destruction of the original surfaces and the secondary deposits resulting from the removal of remains from earlier mass burials while preparing for newer mass burials. After obtaining a tentative idea about what was going on at the site we started excavating a 4 x 5.5 meter square (Fig. 7.8). In forensic phraseology we use a '*modified archaeological technique*' that has the purpose of satisfying established archaeological methodology as much as possible as well as resulting in the speed and accuracy most often necessary in forensic investigations, while at the same time securing good and reliable evidence handling.

Fig. 7.11. (Right) End view of casing found associated with bodies from the 4 x 5.5 meter square

Fig. 7.12 (Next page): (A) Three-dimensional reconstruction of skull based on approximately 200 CT (computed Tomography) slices. Lateral/right view. (B) Photograph of skull. Lateral/left view. (C) Anterior - Posterior CT section of skull depicting projectile entry (occipital bone) and projectile exit (frontal bone). (D) Close up view of projectile entry in occipital bone. (E) Close-up view of projectile exit in frontal bone. (F) Anterior/oblique view depicting projectile exit in frontal bone. (G) Three-dimensional reconstruction from CT images. Posterior/oblique view depicting projectile entry.


7.12.A
7.12.B
7.12.D
7.12.C
7.12.E
7.12.F
7.12.G

Our finds yielded several layers of human bodies of which all skulls, except for one, depicted an execution style similar to those recently reported by Lama Purevbat and forensic teams presently working in Eastern Europe. In general we reached the following reconstruction of how the executions and interments took place: the person was brought to the site of burial (the pit had already been excavated or was excavated by the victim before execution), forced to kneel down at the border of the burial pit and shot in the back of the head resulting in an entry opening in the lower left occipital bone and an exit opening in the frontal bone.

This was further elaborated by the find of a single burial about 550 meters northwest of the mass burial. This burial yielded an approximately 30-year-old male who had been shot in the back of his head and placed in a shallow grave (Fig. 7.9, 7.10). The hole was not deep enough to hold the body and so the killers had to turn the body around resulting in a supine position with the hands still tied behind his back (Fig. 7.9, 7.10).

After removing the body we found the heavily damaged projectile at the base of the burial pit. A reconstruction showed that this would be the place where we would expect to find the projectile after it had passed through the victim's head while being executed kneeling in front of the pit. This type of secure and accurate reconstruction became possible as we only had to work with a single burial. At our 4 x 5.5 meters square (Fig. 7.8) we found several layers of human bodies, mostly articulated but all mixed, suggesting that the bodies had been placed within the burial pit without any specific order in mind. Little or no soil deposits were found between the individual bodies and the individual layers, suggesting that the total number of identified bodies represent no more than one killing session (Fig. 7.8).

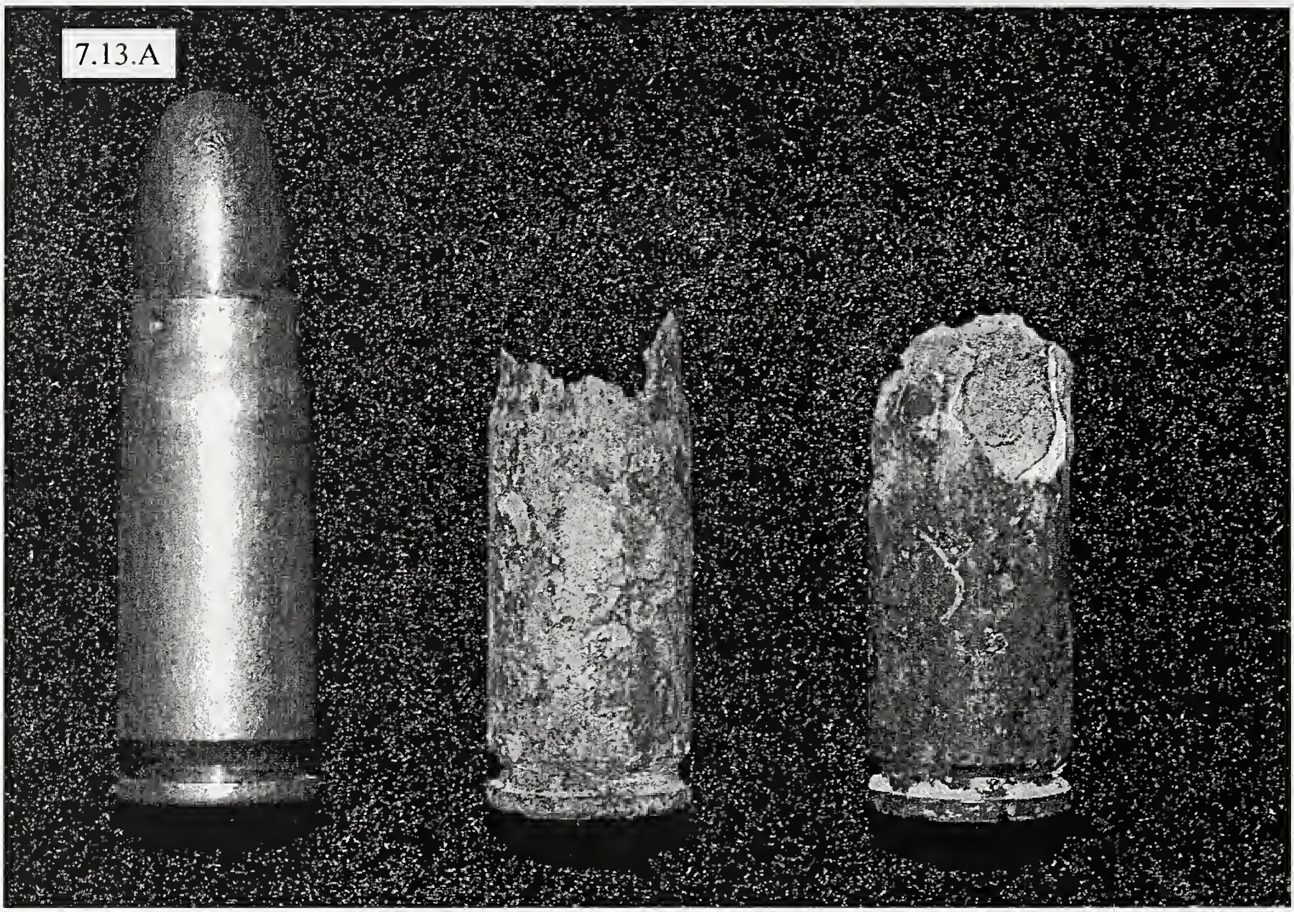
Most of the upper layers were significantly disturbed, making it difficult to establish complete articulation between the bones. It was evident, however, that as soon as we reached layers which had been less exposed to destructive forces, including later excavations for burials and heavy vehicle traffic, we started to find the degree of articulation we expected. Because of the extensive post-mortem destruction of the remains and likely post-mortem disarticulation we were unable to verify if the victims had been exposed to severe maltreatment and torture before the executions. We found based on data from Lama Purevbat's collection of human remains and some from our own excavations, several cases of well-healed fractures of lower extremities (leg bones). Although such healing took place without proper setting and alignment of the fractured bones, it suggested that the victims at an earlier time in their lives, most likely several years earlier, had received reasonable good care in recovering from fractured extremities. Such healed fractures are unrelated to the executions and burials of the victims.

Preservation of the remains found in the lower layers was significantly poorer than the bodies found and removed by Lama Purevbat. We would have expected the opposite if the bodies had been placed in the burial pit at the same time. For this reason we argue that this specific location includes more than one mass burial and most likely represents different time periods. At this time we have no specific information to make an exact dating; however, with the completion of the analysis of the associated gunshell casings and other objects we may be able to establish an approximate date for the killings and subsequent burials.

Protection of in-situ Remains

As our time was very limited, we were not able to complete the excavation and retrieval of all the bodies known to be located in this specific area. This was expected, since our visit was primary for the purpose of identifying if any bodies were remained in this location, to estimate the horizontal distribution of the mass burial site or sites, and to introduce forensic techniques to our Mongolian colleagues. The remains that had not been removed were fully covered, and later it will be decided by the Mongolian Government whether to continue the investigation.

Fig. 7.13.A and 7.13.B. (Next page). Several projectile casings were found and one damaged projectile was identified at the base of a burial pit located about 600 meters Northwest of the mass burial. The casings are presently being studied by archaeologists and other experts in Ulaanbaatar, by weapon experts at the Henry C. Lee Institute of Forensic Sciences in New Haven, Connecticut, and at the Office of the Chief Medical Examiner, Farmington, Connecticut.



7.13.A

7.13.B

Objects Recovered

Our tentative conclusion is based on the initial analysis and description of the human remains and on finds of associated objects such as clothes (mostly similar to items used by Buddhist monks), Russian artifacts including metal cups, and other objects.

A minimum of seven ammunition casings were identified to be of German origin. They all carried the following stamp at the rear end of the cartridge: 'K DWM K 403'. We have found the following but tentative information regarding the casings: 'DWM': Deutsche Waffen- und Munitionsfabriken AG. 'K' may identifiy the place of origin. In some cases, the DWM is followed by a capital letter indicating the place of origin, thus DWM B: Berlin-Borsigwalde, Germany, DWM H: Hertogenbosh, the Netherlands, DWM K: Karlsruhe, and DWM K Y Dynamite Nobel A-G, Troisdorf, Germany on contract from DWM. The DWM produced a line of semiautomatic firearms starting out with the Borchardt pistol around 1900. This model developed into the 7.63 mm Luger pistols and later into the Luger Parabellum which had a 9 mm bore. The 7.63 ammunition produced by DWM and known as the Mauser ammunition was used from early 20th century and up to the present time. It is, at this time of the investigation, unknown how many other countries produced DWM ammunition, and if so, what kind of stamps such ammunition would carry at the rear end. It is known, however, that the Luger pistol was produced in Switzerland, Holland, Bulgaria, Russia (Soviet Union), Portugal, Brazil, Mexico and in France. Most likely the ammunition could have been produced at the same geographical location. In the Soviet Union the Tokarev pistol (7.62 mm) was developed in the mid 1920s. This semi automatic weapon was very popular in the Soviet Army and is believed to have been manufactured in many of the Soviet satellite states. Indeed, the pistol was in use into the 1960s by Soviet and eastern European armed forces. The Tokarev pistol although in some cases identified as 7.62 bore uses the DWM 7.63 Mauser ammunition and most likely similar ammunition produced in the Soviet Union. At this time we do not know what kind of identification stamps were used in Mauser ammunition manufactured in the Soviet Union. Other Soviet weapons using the same 7.63 ammunition includes the Degtyarov PPd-40 weapon and possibly other models as well.

At this time we are studying the casings based on photographic eveidence only. In the near future we hope to bring the casings to the United States for detailed study at the Henry C. Lee Institute of Forensic Sciences (New Haven, Connecitcut) and at the Office of the Chief Medical Examiner in Farmington, Connecticut.

We have, so far, only found adult males although some could be older adolescents. This may be consistent with a mass burial of Buddhist monks. However, our sample size is not adequate to derive to a full conclusion on this issue. One cranium and one mandible were brought to the Smithsonian Institution for detailed analysis including x-ray analysis, CT scanning and facial reconstruction (Fig. 7.12. A to G).

Extension of Mass Burials at Hambiin Ovoo

The identified mass burial or mass burials do not represent an isolated case. Our survey found that an area covering at least 600 by 100 meters may have been used for executions and burials of human beings ranging from a single individual to several hundreds, or maybe thousands, of people. This is a hypothetical estimate based on relatively little data and information. Additional test excavations and surveys are necessary to fully understand the extension of the Hambiin Ovoo mass burials.

Hambiin Ovoo area is only one of several mass burials reported in Mongolia. We are told that similar burials have been found in Dornod (northeastern Mongolia) mostly including murdered Buriats, in Ulaango (northwestern Mongolia), Khovsgol (northern Mongolia), Bayankhongor (central-southern Mongolia), Tsetserleg (central Mongolia), and at other locations in the eastern part of Ulaanbaatar. It is believed that investigations of all these places and others unknown to us will show that the 30,000 number of individuals thought to have been murdered is a very conservative number.

Figure 7.14: Laboratory work is presently taking place both in Ulaanbaatar and in Washington. Tsend Amgalantugs, Erdene Batshatar, David Hunt, Batsukh Dunburee, and Nancy Tokola are preparing the Hambiin Ovoo remains for storage and study at the Institute of Archaeology, Mongolian Academy of Sciences in Ulaanbaatar.

Collection Management and Laboratory Research

All the human remains and associated objects collected during our two week investigation were transported to the Institute of Archaeology (Fig. 7.14). Before we left Mongolia we spent some time at the Institute organizing the newly-arrived skeletal collections. A detailed inventory, the recording of metric and non-metric variables, paleopathology, and a detailed study of the associated burial objects still need to be completed. Such information is very important in order to derive to the best possible reconstruction of the event. Before Bruno Frohlich and David Hunt returned to Washington DC, we succeeded in organizing, storing, and recording all of the remains. With everyone's help and support we had a small computerized collection management system up running within a few days. This was combined with an in-depth training in recording forensic data such as sex, age at death, metric and non-metric data, and in some cases paleopathology. We used recording forms developed by forensic anthropologist Doug Owsley's laboratory at the Smithsonian Institution and relied on David Hunt's and Naran Bazarsad's expertise in recording the data.

We had the pleasure of working with some very intelligent, and very enthusiastic people. Batsukh, Tugso, and Erdene from the Institute of Archaeology, and Bayaraa from the National Museum of Mongolian History were excellent assistants, helping with all the logistics, excavations, surveying, collection management, and photography. Nancy Tokola from the American Embassy assisted us with the medical-forensic descriptions of the human remains.

Needless to say that we could not have completed our research without the excellent support from Professor D. Tseveendorj, Director of the Institute of Archaeology, and Professor T. Galbaatar, President of the Mongolian Academy of Sciences. Lama Purevbat of the Gandan Monestary initially showed us some of the human remains which had not been cremated and visited the site of excavation several times. At the Smithsonian Institution William Fitzhugh, Chairman of the Department of Anthropology, and Christian Samper, Director of the National Museum of Natural History supported the project. Wayne Carver, Chief Medical Examiner of the State of Connecticut gave valuable advise on the identification of ammunition casings and the interpretation of projectile entries and exits. And Vladimir Pitulko of St. Petersburg, Russia supplied us with information about Soviet-Russian ammunition production and fire-arms used in Soviet block countries.

The next few months will be used to complete as much of the data recording as possible, and detailed scientific reports will be completed and submitted to the Mongolian Academy of Sciences. At the same time equipment and reference collections to be used by students and research staff members have been shipped from Washington DC to Ulaanbaatar. A training symposium in spring, 2004 in Ulaanbaatar is being organized by William Fitzhugh. This will include concentrated training sessions lasting from a few days to a week covering many professional fields including subjects related to the curation and analysis of human remains, forensic/archaeological photography, surveying techniques, and collection management.

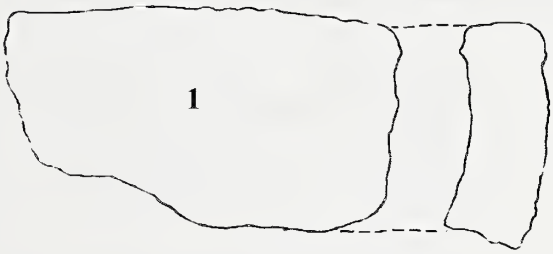
Soye, Hovsgol aimag. June 2003, photo by Bruno Frohlich

PART VIII

Artifacts and Samples

Erkhel Deer Stone 4 (William Fitzhugh 2003 field notes)

Artifact List: All artifact traces are reduced to 40% of originals. All depths are below triangle (BT) or below datum (BD) unless otherwise indicated, such as below surface (BS).

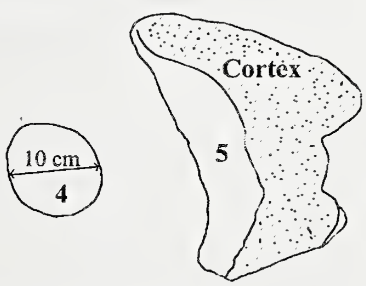


1- Brown earthenware sherd 8 cm below surface of turf humus – 133 bt, possible Huunu period sherd

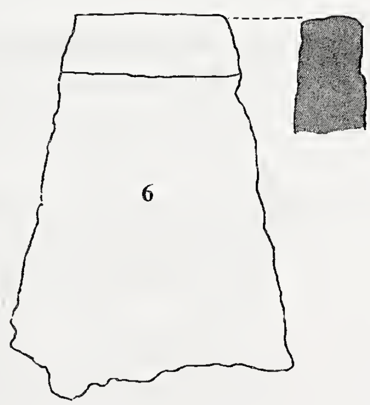
2- quartz spalled chunk – 152 BT, 28 cm below surface

3- burned ceramic chunk – 107 BT, 20 cm below surface in brown silty loam

4- Round granite ball 10 cm diam. On junction of silt and gravelly sand next to (-112 BT)



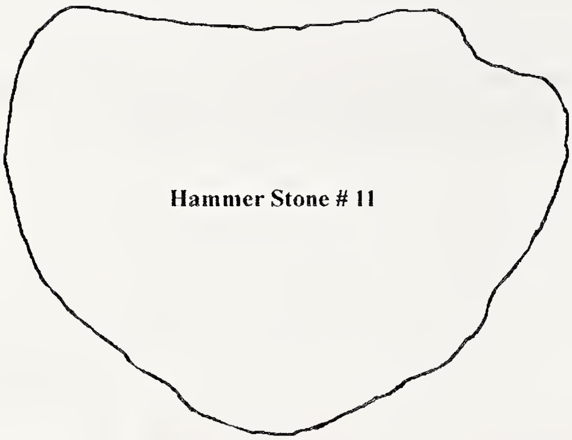
5- Heat-spalled flake -112 BT



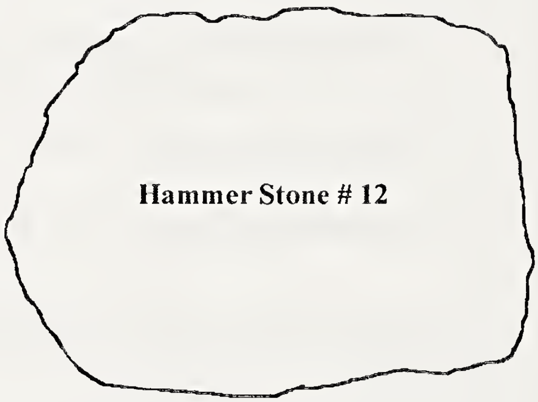
6- Stone bowl rim -139 in brown loam

8- at -134 in light brown sandy soil
Linear flake of brown silicified slate square 2E/1S

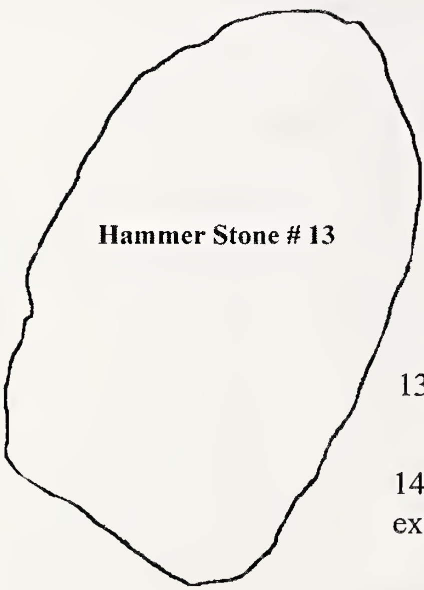
9- Small fragment of pottery
Square 1.5N/2 West -101 BT in light brown soil 5 cm below surface



11- Hammer stone in tan gravelly sand

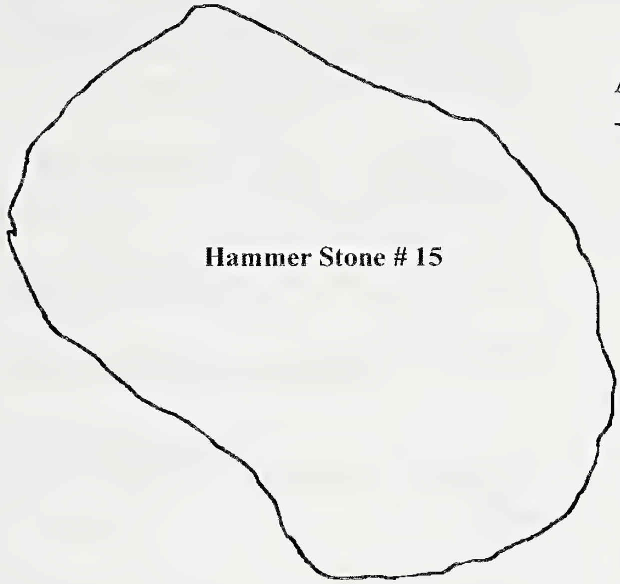


12- Hammer stone (red hematite?) at -151 on fire-cracked cobble floor (hearth?) between F1, F3,



13- Hammer stone from floor connecting Fea. 1, 3 at -151 BT

14- Hammer stone at -151 in Feature 2, but not recognized when excavated. Therefore no location provenance or tracing available.



Artifact 15 'greenstone hammer'
-142 outside Fea.1 NW edge

Erkhel D.S. 4 Sample List, 2003

Sample 1	charcoal at – 137 cm bt in brown loam 15 cm b.s. 207 cm south of datum
Sample 2	Charcoal at -149 BT 75 cm south of datum at junction of gravelly sand (fill from Deer stone setting?) and brown loamy soil, 20 cm below surface
Sample 3	Calcined bone at -113 BT and 30 cm below surface at junction between brown silt and top of gravelly sand, 2 pieces (small mammal)
Sample 5	Horse skull -143 BT
Sample 6	Bone fragment at -180 BT in sandy gravel – probably just inside pit wall
Sample 7	Small chunks (AMS!) of charcoal at -118 at base of silty level (brown) and top of tan gravelly sand. 30 cm below surface.
Sample 8	Clay-sand (granite) and an organic plug in one sample, -195 b.t. in the deer stone pit fill. Natural? Or a primitive cement?
Sample 9 A	Charcoal lump at base of dark level and top of gravelly tan sand at -127 (one chunk)

Sample 9 B	At -129 BT in dark brown sand (but not sure of location and level of this one)
Sample 10	Calcined bone -136 in light brown gravelly sand (only 1 piece)
Sample 11	Charcoal at -133 BT in dark brown sand
Sample 12	Bone (cut surface on one piece) at -135 BT
Sample 13	Charcoal -123 at top of second level brown sand
Sample 16	Calcined bone -113 in fill in rock pile (Feat.2)
Sample 17	Charcoal from F2 (1.5 N/ 1W) -126 BT
Sample 18	Small bone flake in screened sample from feature interior
Sample 19	Cancellous bone (hip) from screen, from feature interior
Sample 20	Splintered mammal bone 3 pieces at -113 alongside rock
Sample 21	Fea. 3 charcoal at -154 cm BT inside F3 fill near horse head
Sample 22	Worn bone fragment -125
Sample 23	-138 horse lower incisor in brown earth Fea. 2
Sample 24	Bone fragment -128 in black soil of Fea. 2, bagged with other bone
Sample 25	Skull fragments from horse head in Fea. 3
Sample 26	Bone from cobble floor -150
Sample 27	Horse tooth at -158 at West edge of connecting “floor” between F 1and F 3.

Finds from Erkhel Deerstone-4 Excavation, 2003
(Ochirhuiag & Baiyarsaikan notes)

Find	Count	Context
Hammer stone	6	Units 1, 2, 3
Ceramic fragments	1	Initial exploratory trench to the south
Very small ceramic fragments	1	Found in screened soil
Ceramic fragments	1	Unit 3
Horse tooth	1	Unit 3
Bone fragments	2	Unit 3
Small fragments of horse tooth	9	Units 2 & 3
Fragments of horse skull	9	Unit 4
Small bone fragments	many	Unit 4
Horse tooth	1	Units 1 & 4, central areas
Stone vessel rim	1	Unit 1
Partial horse skull	1	Unit 1
Horse skull, vertebrae, hooves	each separate	Unit 3
Horse skull and vertebrae	each separate	Unit 4
Total Artifacts Recovered	**35**	

Soye- 1: Site Notes (Fitzhugh)

Test Pits excavated on survey line 094 degrees (mag.) down the center of the Soeo lower terace in June 2003

Test Pit # 1 (Fitzhugh)

Area of turf and humus with flecks of charcoal 14 cm of silty brown soil with charcoal chunks; below that either tan silt with humic stains or light brown/black humic soil with lots of charcoal and unburned roots down to 30 cm. lots of forest fire activity here, and some must date to the c.14 1000 BP dates from the hearths in the bank last year. No culture material present here. Humic stains extend down into the tan silt from frost wedge activity and humus percolation.

Test Pit #2 (Bayarsaikhan)

Bone, tooth, in upper dark humus zone (20 cm deep level); microblade in upper tan sand at – 30 cm below surface. Expanded into 1x1 m pit when hearth rock concentration appeared.

Test Pit #3 (Fitzhugh)

Modern bone at 8 cm in black humus, small pieces of old bone 20-30 cm down in brown soil with charcoal flakes/lumps. Tan fine sand with humus-charcoal swirls below 30 cm, with modern charcoal (cryoturbation). First chert find at 55 cm in tan sand. Small "fossilized" fragment of bone at
-62 cm.

Test Pit #4 (Sanjmiatav)

Two large bones (cow? elk?) in upper 10 cm in black humus.

Test Pit #5 (Fitzhugh)

Microblade midsection 15 cm deep in upper black humus, showing how much cryoturbation has affected the site: Small pieces of hard old bone in cryturbated deposits between

15-30 cm. Charcoal throughout deposit in black humic soil. No tan soils here. Excavation terminated at 42 cm deep since the pit seems unproductive.

Test Pit 6 (Sanjmiatav)

Black earth upper soil until excavation ended with large boulder filling the square at 20-30 cm deep. No finds at all.

Soye-2

Surveyed on 6 June 2003 by Ochirhuiag Tseveendorj

Culture: Neolithic

Site Type/Seasonality: Small camps- short occupation

Site Location: In blowout in large grassy flood plain below (east of) the Soyö -1 site. Site is about halfway down the grass plain between Soyö -1 and the islands downstream, and about 100 yards north of the high bank to the south. Local people used to collect flints from Soyö 1and 2 for their old matchblade muskets, according to Ochirhuiag.

Description of Site: Two loci of eroding/eroded Neolithic material, one (L1) on the west end of the first large blowout when you approach from the west, and the other at the SE end of the extension of this blowout. Both have charcoal filled deposits with some fine-cracked rock, chert flakes and a few tools eroding from the band of an old soil (tan). There still is in situ material that could be excavated and finds to collect/map in the blowout, including charcoal that looks like it is associated with the Neolithic material since there is no evidence of forest fires or other occupations. On second inspection, I decided this charcoal may be related to a later forest fire or occupation.

Areal Extent of Site: Each are 10x10 m. L2 spreads out farther into the blowout

Raw Materials: Black chert, soapstone vessel fragments (2)

Nature of Soils/Sediments/Vegetation Cover: Sandy soil (wind blown), overlying old ground surface

Soye-3

Found by Sasha Sanjmiatav; Surveyed on 6 June 2003

Site Type/ Seasonality: Small collection area at east end of large stable blowout in flood plain east of Soye-1 site area.

Site Location/Description of Site: This site may only be a "boil-up" spot where someone broke their ceramic pot! No other cultural remains present except pieces of thick, sand tempered pottery- undecorated, but having through wall perforations and a slightly turned out rim. Sherds were found eroded out from the eastern blowout wall near a large swirly granite boulder, and due north across the blowout from Soyö-2, L2- a small Neolithic site also eroded and still eroding form the SE edge of the blowout.

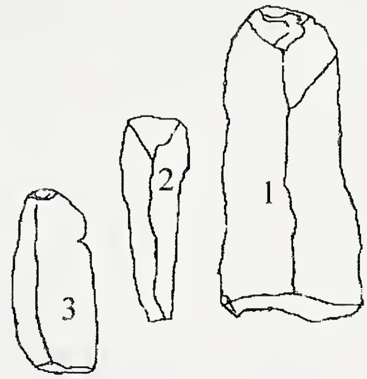
Areal Extent of Site: 6-8 meters, no sign of a buried cultural level.

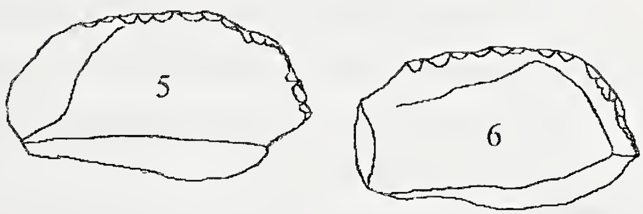
Collection Procedures: Sanjmiatav excavated/collected from the east side of the blowout, a large bag of sherds.

Soye-1: Feature 3 (W.F. 2003 field notes)

Illustrations are reduced to 40% of their actual size. Artifact numbers keyed to excavation map (fig. 9.1)
Depths are B.T (below triangle) which is 60 cm above ground surface at the southeast corner of excavation.

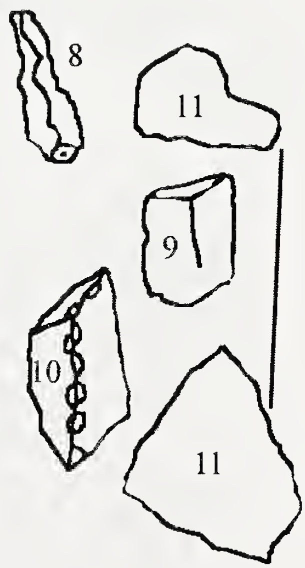
1. Grey chert blade in brown soil at -101 cm. below triangle
2. Grey chert blade microblade in brown soil at -109
3. Grey chert blade (proximal frag) – 97



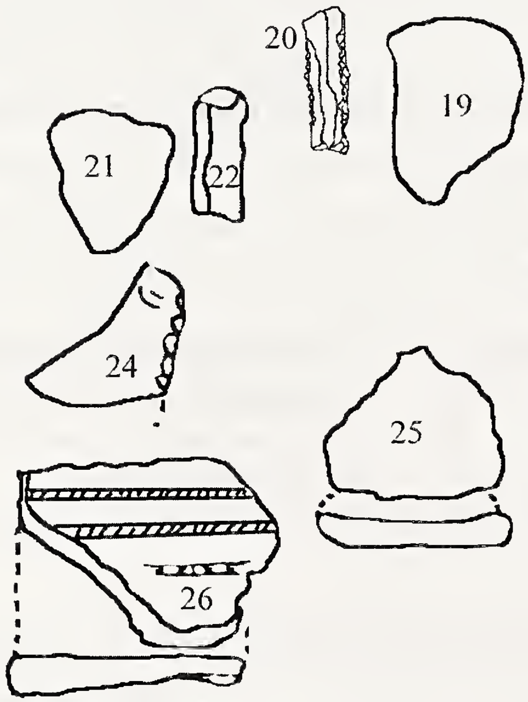


5. Grey chert side scraper in tan soil (vertical position) – 100 cm
6. tan chalcedony end scraper in tan soil in vertical position

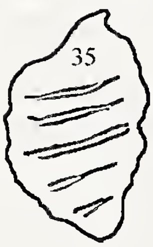
8. grey chert microblade (ridge, flake) in tan soil at – 92 cm
9. grey chert microblade proximal fragment in tan soil- 86 cm
10. grey chert microblade (thick) in tan soil at – 85
11. 2 small sand-tempered ceramics – 91, rough finish

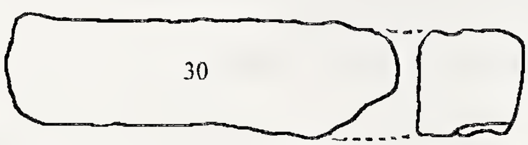


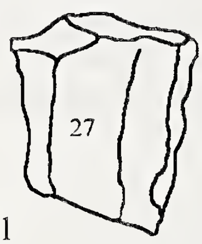
16. chalcedony microblade in tan soil, resting vertically at -90
17. grey chert utilized flake in tan soil – 95
18. grey chert microblade mid-section – 99 in tan soil in hearth

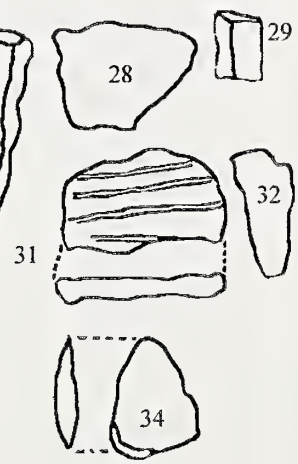


19. small ceramic sherd like #7 at -98 in tan soil with charcoal
20. grey chert microblade with retouch on both edges, -98
21. small ceramic fragment -99 in tan soil
22. chalcedony microblade at -99 in tan soil
24. chalcedony bifacially retouched flake knife -102
25. small ceramic -105
26. small ceramic -100 in tan sand (vertical pos.)









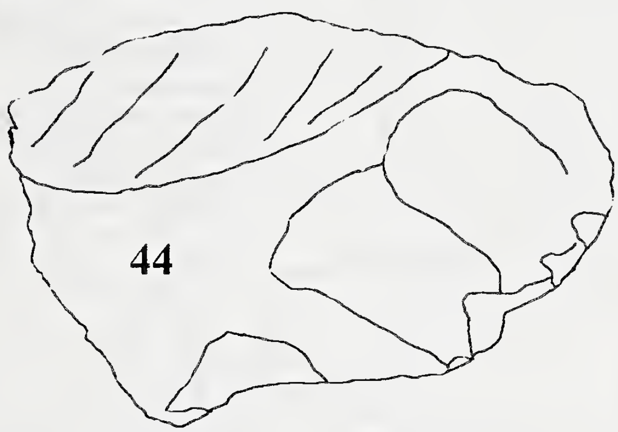
27. grey chert microblade core -106 tan soil
28. ceramic frag. -103 tan sand
29. grey chert microblade mid section -103 tan sand
30. possible whetstone in tan sand -98
31. ceramic frag (grooved sides) -100 tan soil

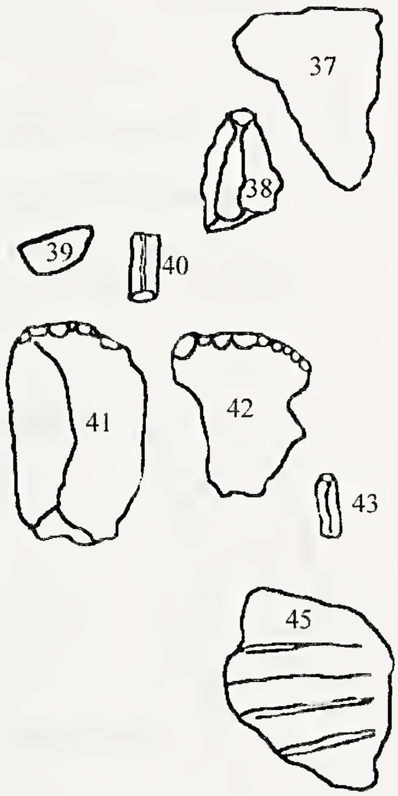
32.ceramic frag (grooved sides) -110 in tan soil beneath fire cracked rock

34. grey chert unifacial point -97 in tan soil

35. ceramic frag. In tan soil -105, grooved on both sides

36. grey chert microblade midsection -97 in tan soil





37. ceramic sherd at -105 in tan soil (textured surface)

38. grey chert microblade at -88 in red fired earth with *calcined* and *uncalcined* bone and charcoal

39. rose carnelian chert flake in middle of hearth

40. grey chert microblade midsection -94 tan sand

41. grey chert end scarper in tan sand -104

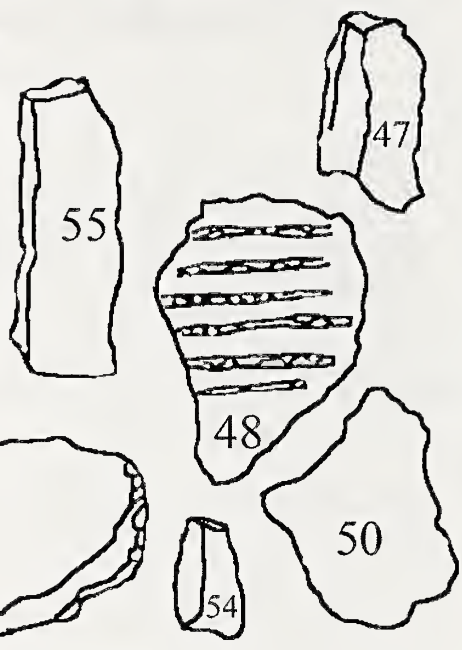
42. grey chert end scarper in tan sand -104

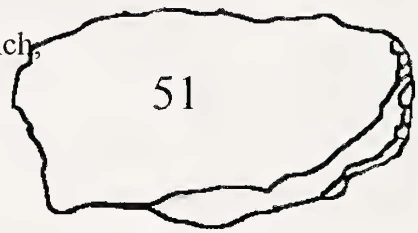
43. grey chert microblade proximal tan sand -104

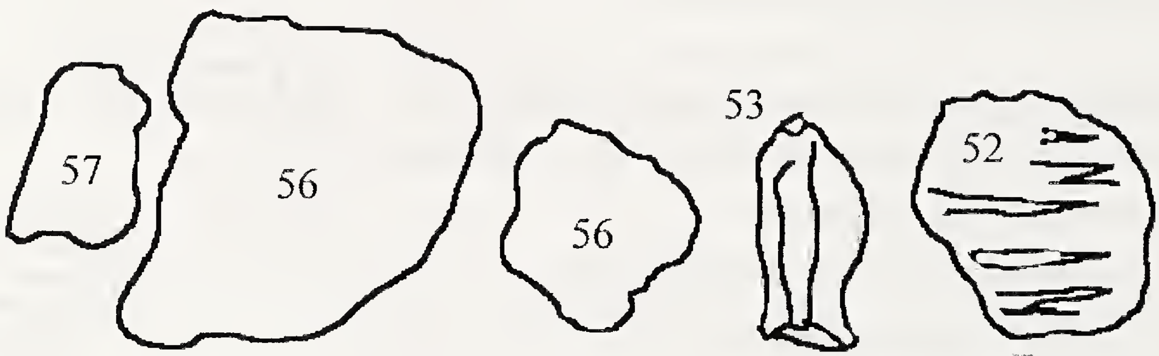
44. quartzite core not collected, but from which some flakes we found were originated.

45. grooved ceramic fragment -105 in hearth ring, tan sand

46. grey chert endscraper beneath hearth ring -111 tan sand and charcoal
47. grey chert microblade -108 tan sand
48. grooved ceramic sherd -113 in brown sand with charcoal
50. 1 frag. ceramic - 115
51. grey chert endscarper -108 in brown tan sand
52. ceramic sherd -111 in brown tan soil
53. grey chert microblade -113 in tan sand
54. grey chert microblade - 111 in brown-tan sand
55. grey chert microblade – 118 in pink soil
56. 2 ceramic sherds in brown earth trench,
-121 in deepest pocket in trench
57. ceramic sherd in brown sand -121







Soye-1: Feature 3 Samples

Sample 1	Charcoal at -104 in tan and in center of hearth with fire-cracked rock
Sample 2	Tooth (horse?) in middle of dark brown soil, above tan soil – 82 (pretty high up for Neolithic)

Soye-1 Artifact List (Ochirhuiag & Bayarsaikhan notes)

Artifact	Count	Context
Animal teeth and bone fragments	12	Soeo-1, test pit-2
Assorted stone tools	23	Test pit-2
Faunal bone fragments	4	Test pit-2
Burnt bone fragments	18	Test pit-3
Micro blades	2	Test pit-3
Large animal bones	2	Test pit-4
Bone fragments	5	Test pit-5
Micro blades	2	Test pit-5
Various bone fragments	10	Soeo-1, surface collection
Various bone fragments	5	Surface
Assorted stone tools	23	Surface
Micro blades	3	Surface
Lithic cores	1	Surface
Scraper	1	Surface
Lithic flakes	18	Surface
Assorted stone tools	98	Soeo-1, unit 1, level 1
Faunal bone fragment	6	Unit 1, level 1
Lithic flakes	34	Unit 1, level 1
Lithic flakes	29	Unit 1, level 1
Lithic cores	5	Unit 1, level 1
Lithic cores	1	Unit 1, level 2

Lithic flakes	3	Unit 1, level 2
Scrapers	1	Unit 1, level 2
Lithic cores	2	Unit 1, level 2
Scrapers and flakes	6	Unit 1, level 2
Low fire ceramic fragments	3	Unit 1, level 2
Assorted stone tools	25	Unit 1, level 2
Hearth stones		Unit 1, level 2
Small ceramic fragments	2	Unit 1
Small ceramic fragments	3	Soeo-1, unit 3
Small ceramic fragments with grid-like decoration	20	Unit 3
Pedant/bead fragment	1	Unit 3
Scrapers	1	Unit 3
Assorted stone tools	50	Unit 3
Small bone fragments	3	Unit 3
Scrapers and other lithics	12	Unit 3
Lithic cores	1	Unit 3
Micro blades	21	Unit 3
Small faunal bone fragments	14	Unit 3
Micro blades	5	Unit 3
Small ceramic fragments	5	Unit 3
Animal tooth	1	Unit 3
Hearth stones and burnt bone		Unit 3
Well-fired, brown sherds	1	Soeo-2, surface collection

Black ceramic sherds with a yellowish surface	1	Surface
Lithic cores	3	Surface
Scrapers	1	Surface
Small ceramic fragments	1	Surface
Micro blades	4	Surface
Stone tools	1	Surface
Assorted stone tools	56	Surface
Fragments of a stone vessel	2	Soeo-2, level 1
Stone tools	5	Level 1
Four types of sherds (or sherds of 4 vessels?)	31	Level 1
Faunal bone fragments	2	Level 1
Lithic cores	2	Level 1
Lithic flakes	1	Level 1
Fragments of a partially complete ceramic vessel rim	7	Level 1 (see picture)
Various stone tools	8	Soeo-3, surface collection
Hammer stones	1	Surface

Part IX
Site Maps

Soye-1: Maps and Profiles

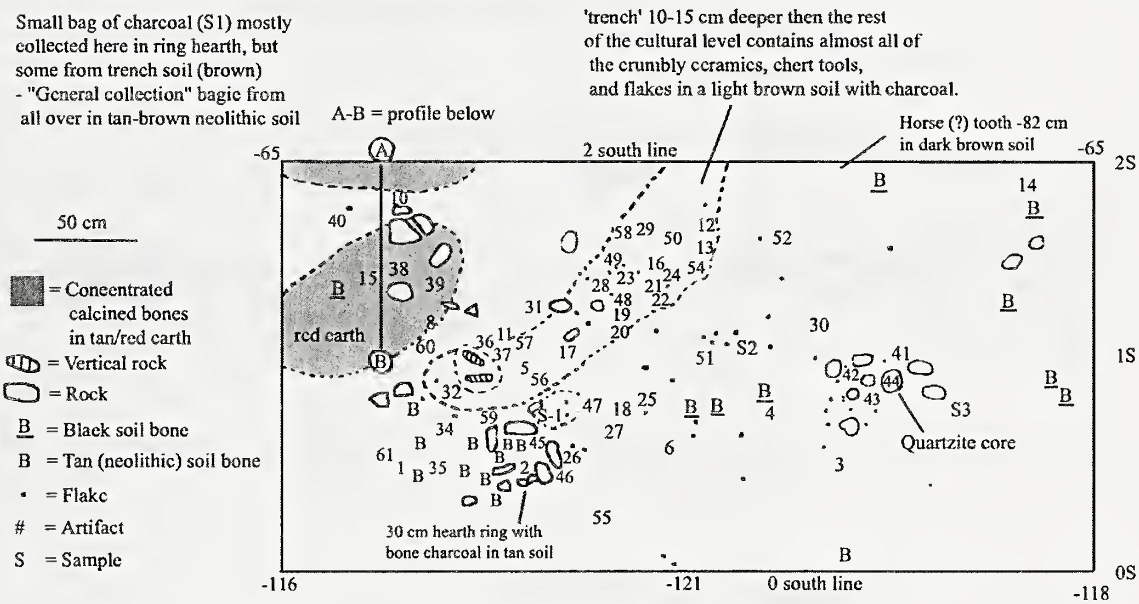


Fig. 9.1:Soye-1, Feature 3 finds

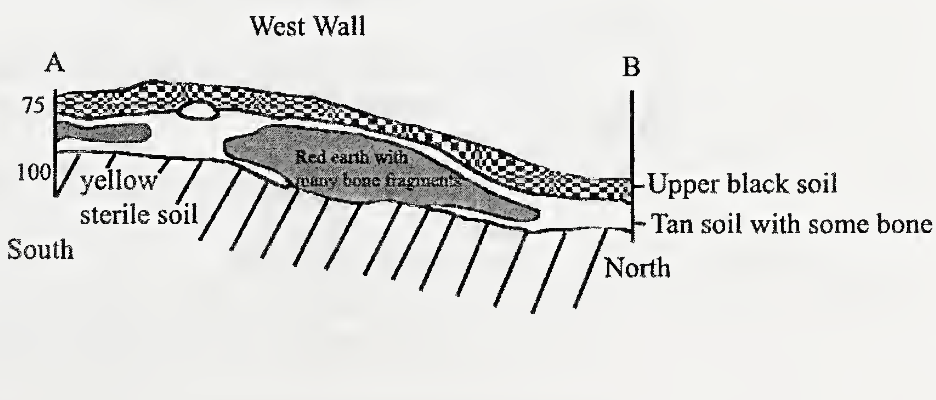


Fig. 9.2: Soye-1, A-B profile

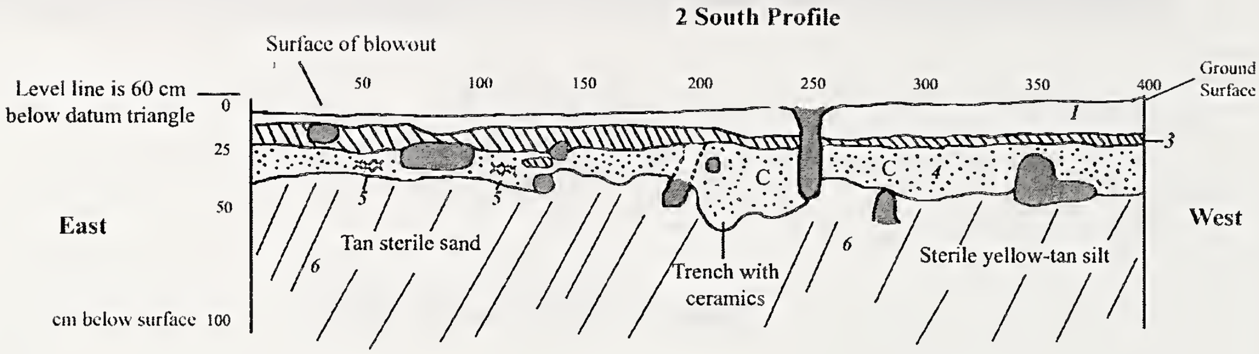


Fig. 9.3: Soye-1, Feature 3; South wall profile

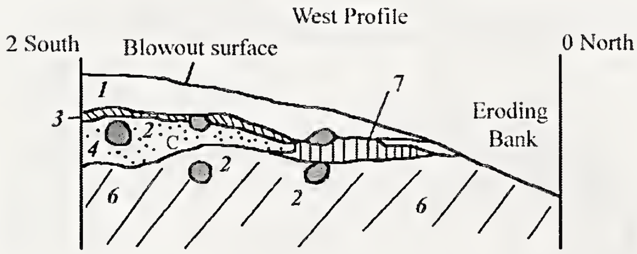


Fig. 9.4: Soye-1, Feature 3; West wall profile

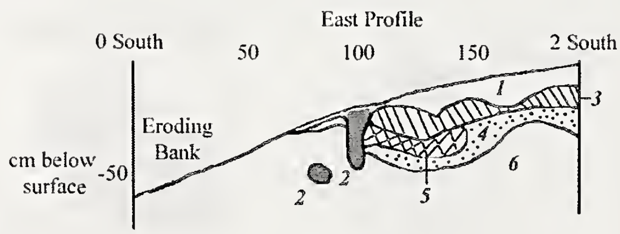


Fig. 9.5: Soye-1, Feature 3; East wall profile

1 = Grey mixed upper soil

2 = Rodent burrow

3 \\\ = Dark brown humic soil with late occupation component

4 = Light orange-tan soil with Neolithic component, charcoal lumps and consentrations

5 = Calcined bone in orange-tan soil

6 /// = Tan-yellow silt

7 ||| = Pink soil with modern tree roots

C = Charcoal lumps

Erkhel Maps and Illustrations

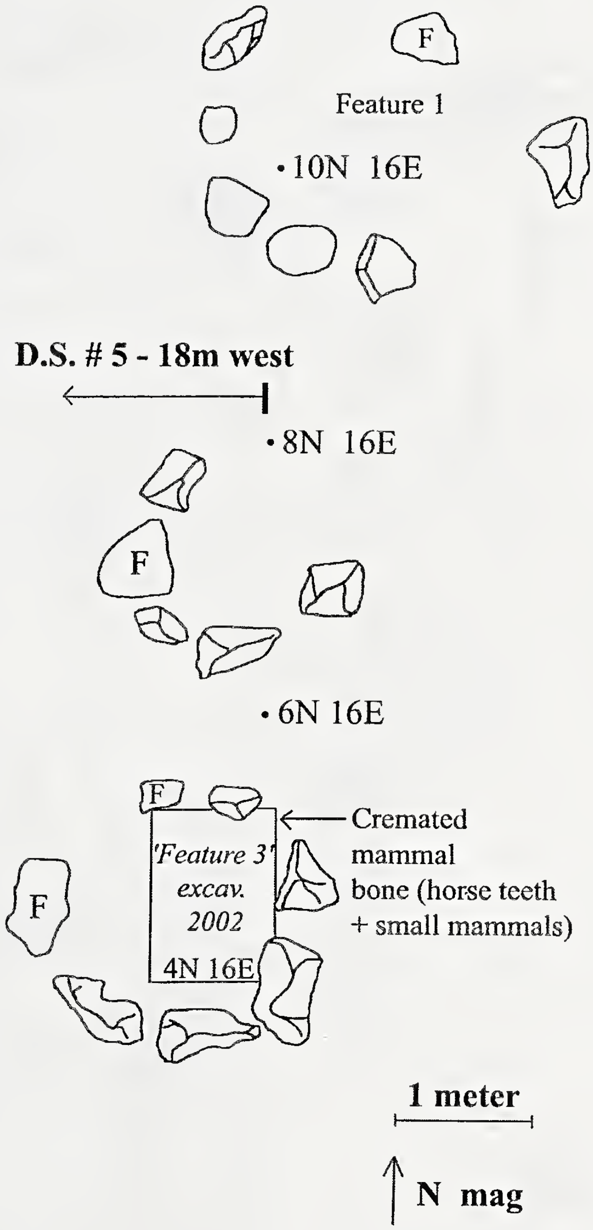
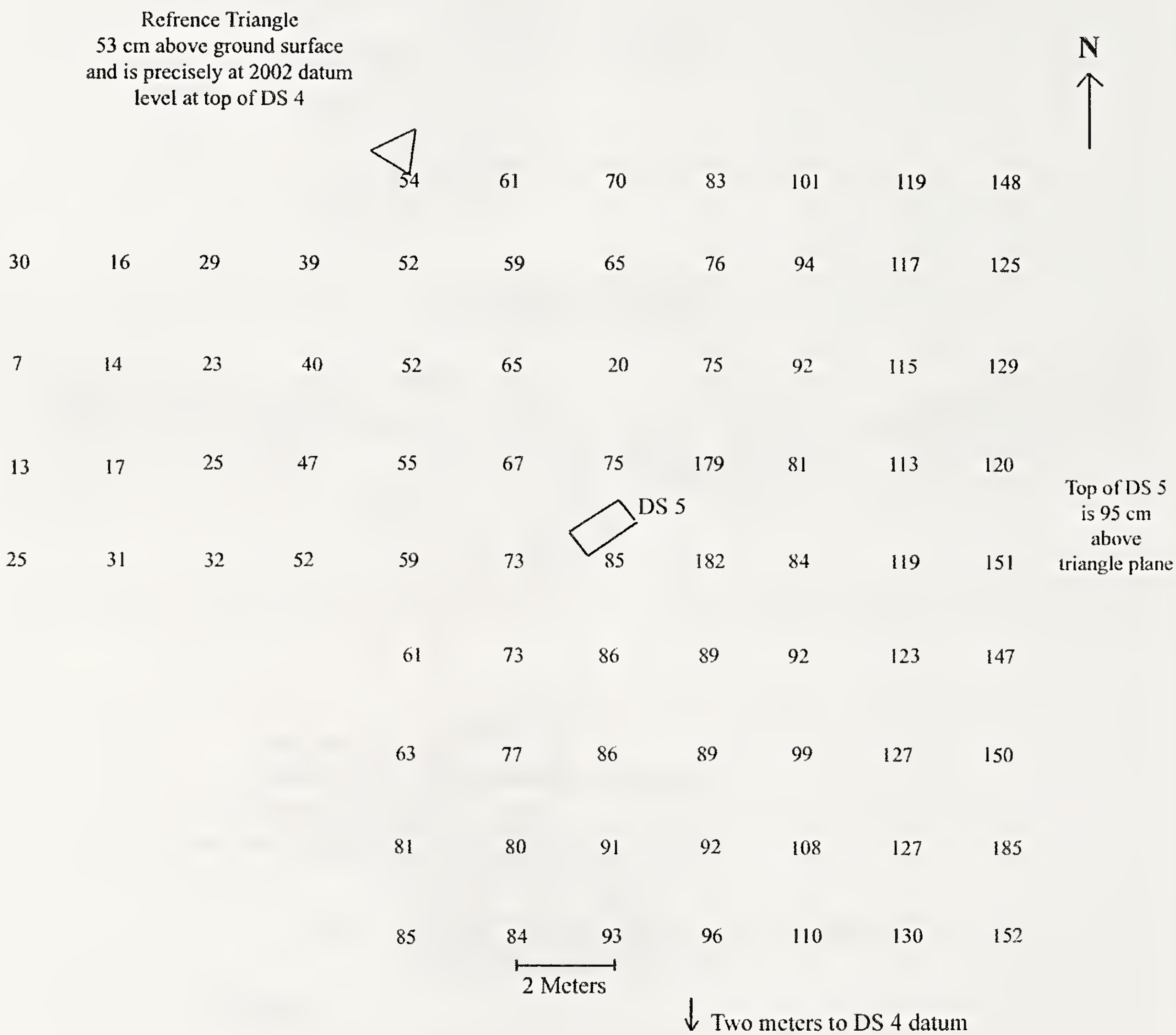


Fig. 9.6: Erkhel ring features east of Deer Stone 4, 5

Fig. 9.7: Erkhel ground surface elevations Deer Stone 5 area (cm below top of DS 4)



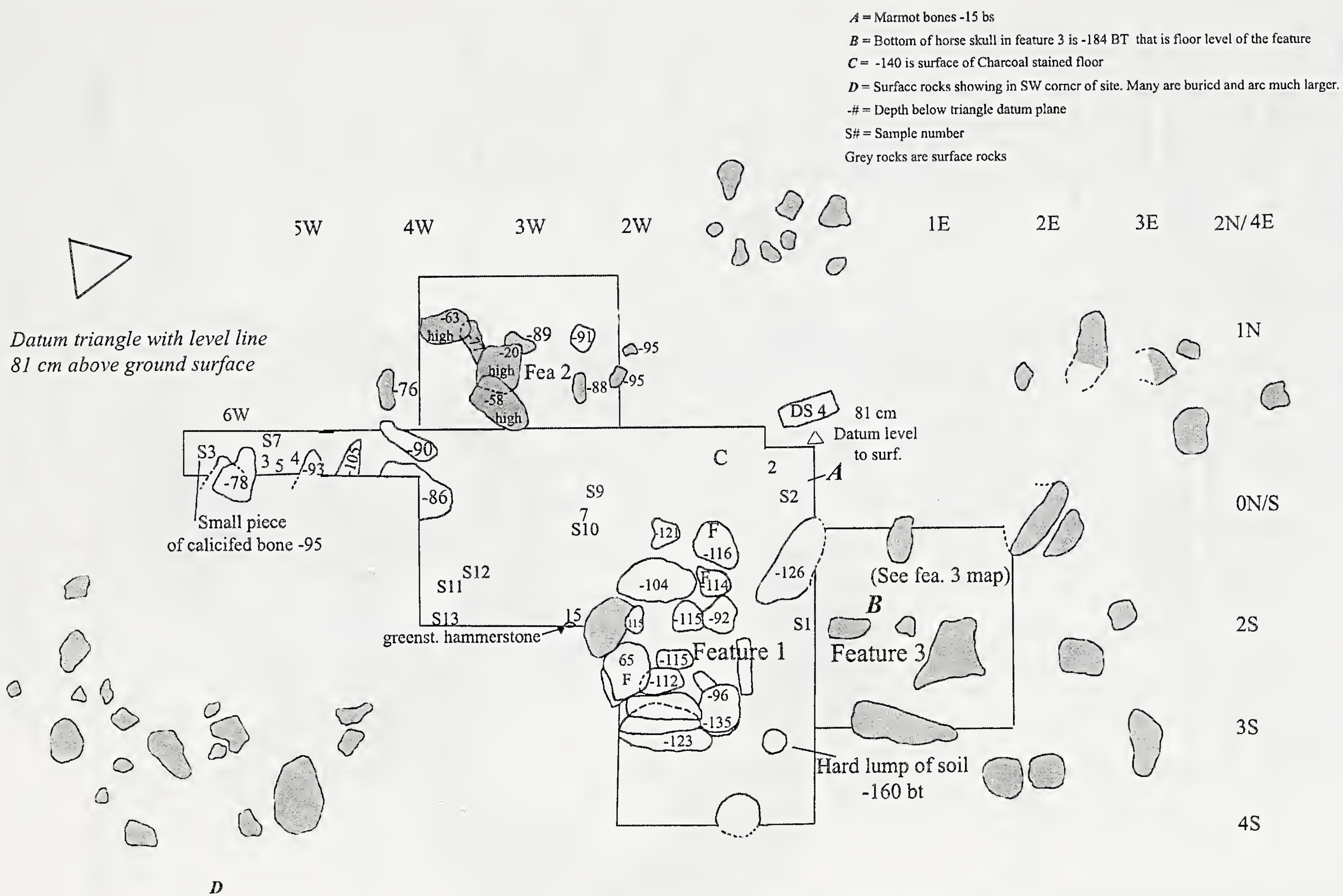


Fig.9.8: Erkhel DS 4 Map #1 (WF) General excavation layout with upper level Feature 1 rocks and surface rocks around DS4.

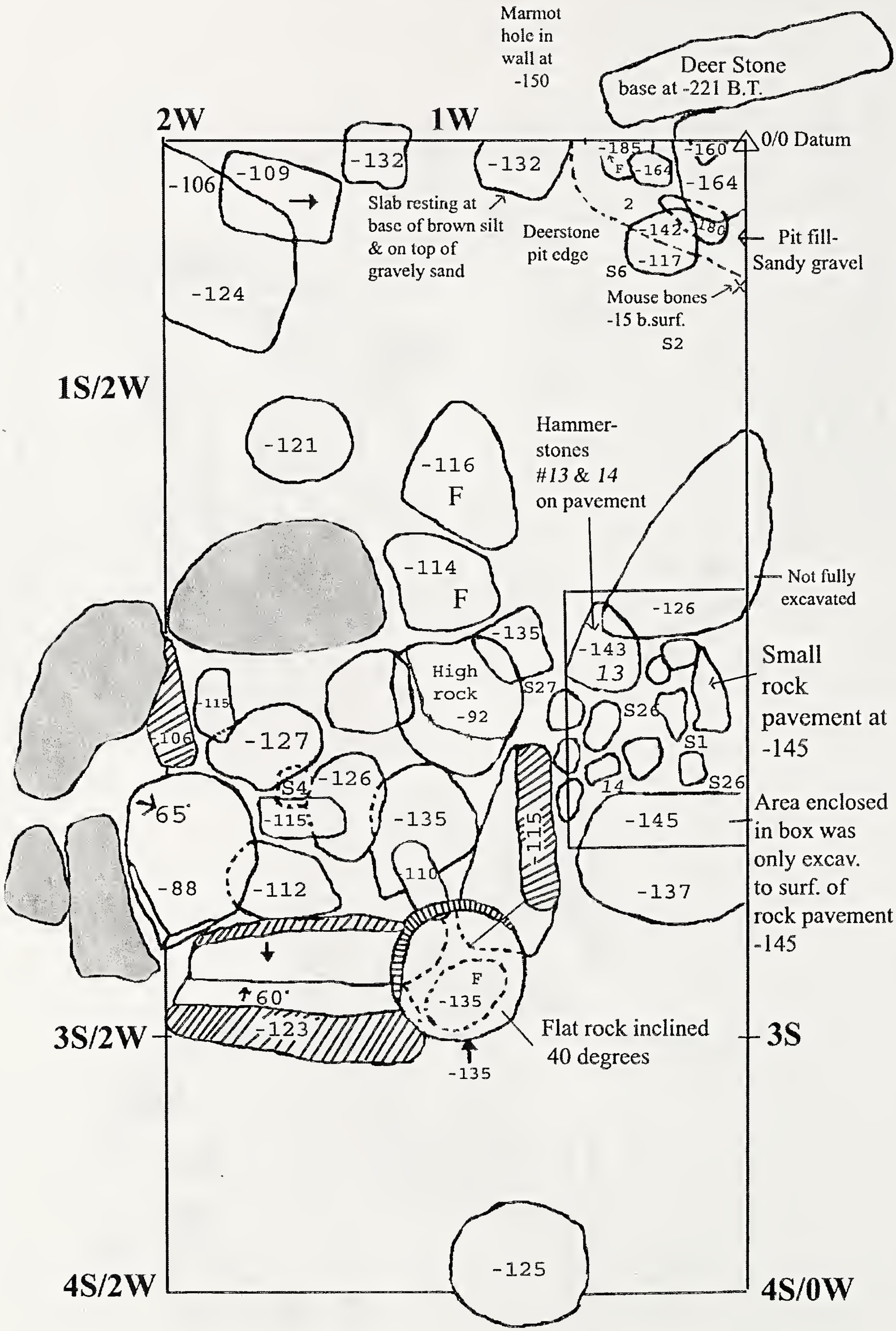


Fig. 9.9 : Erkhel DS 4, Feature 1, Upper level 1 map.

Fig. 9.10 : Erkhel DS 4, Feature 2. Level 2 map (L-1 is on Map 1 at 1 m=1 in. scale)

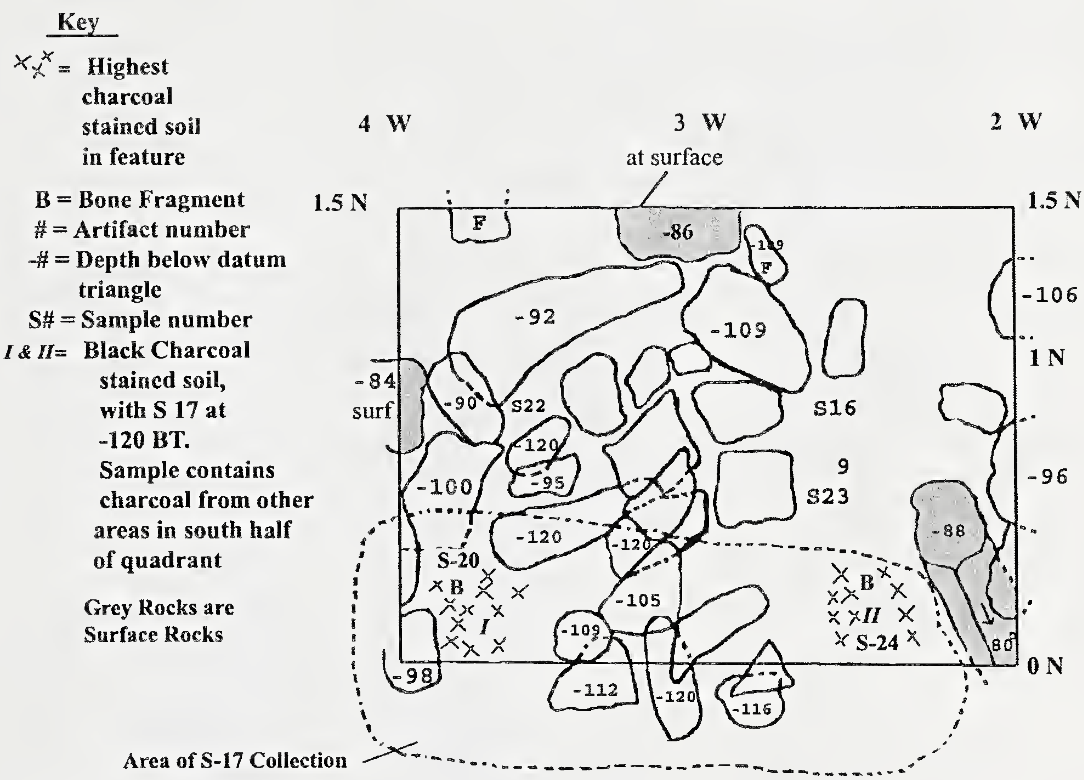


Fig. 9.11 : Erkhel Deer Stone 4, feature 2, level 3 map

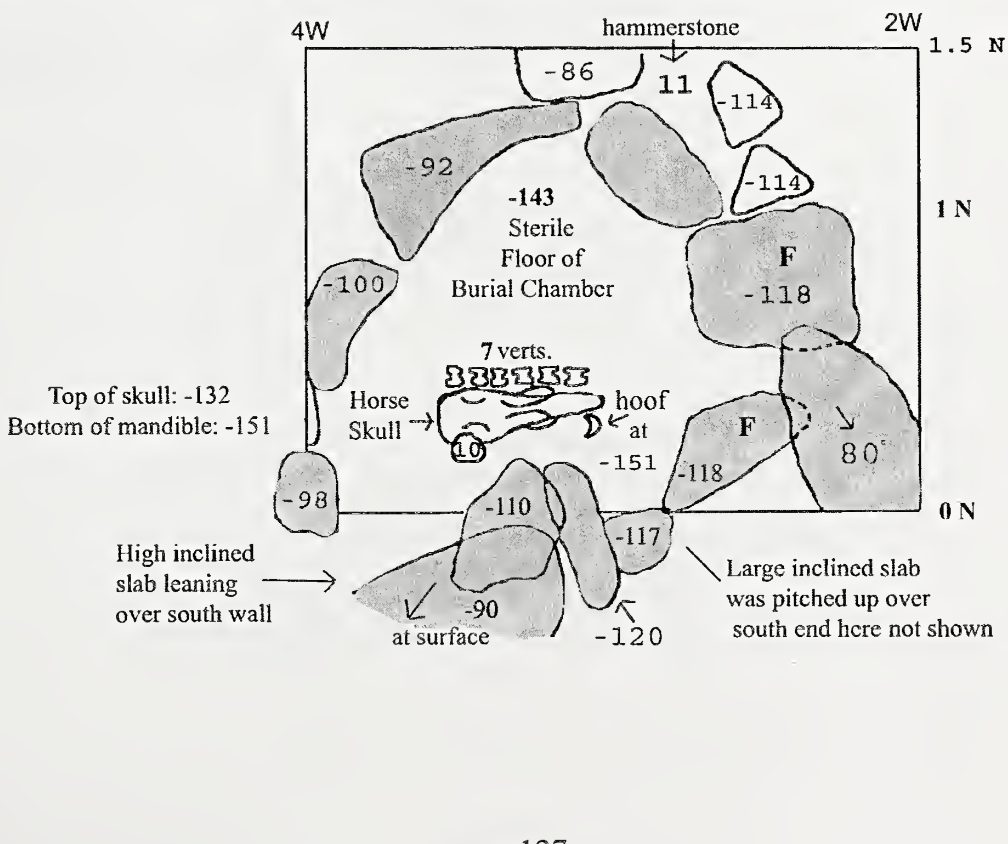
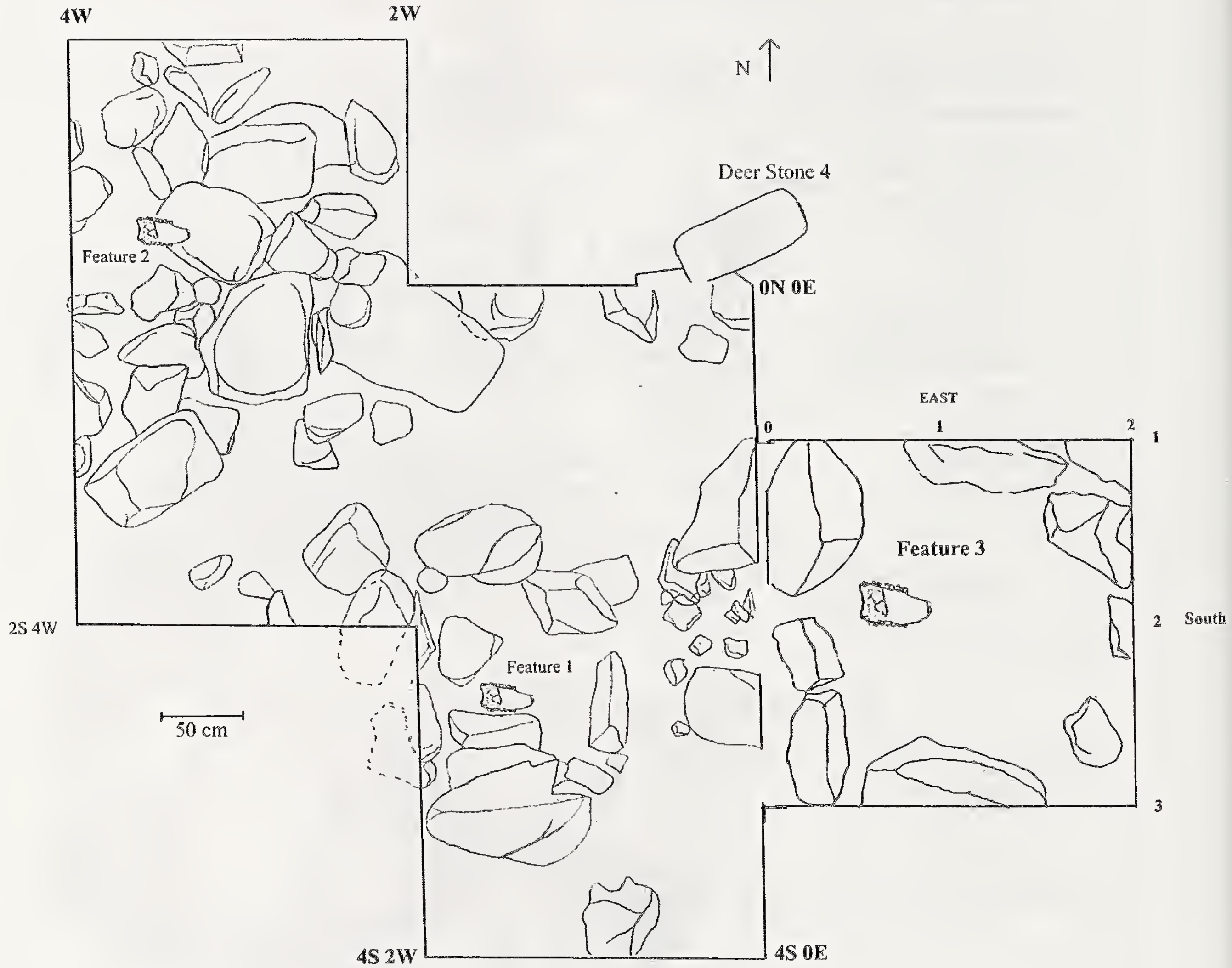


Fig. 9.12 :Erkhel DS 4 Features 1, 2, & 3. Basal level (Ochiruyag map)



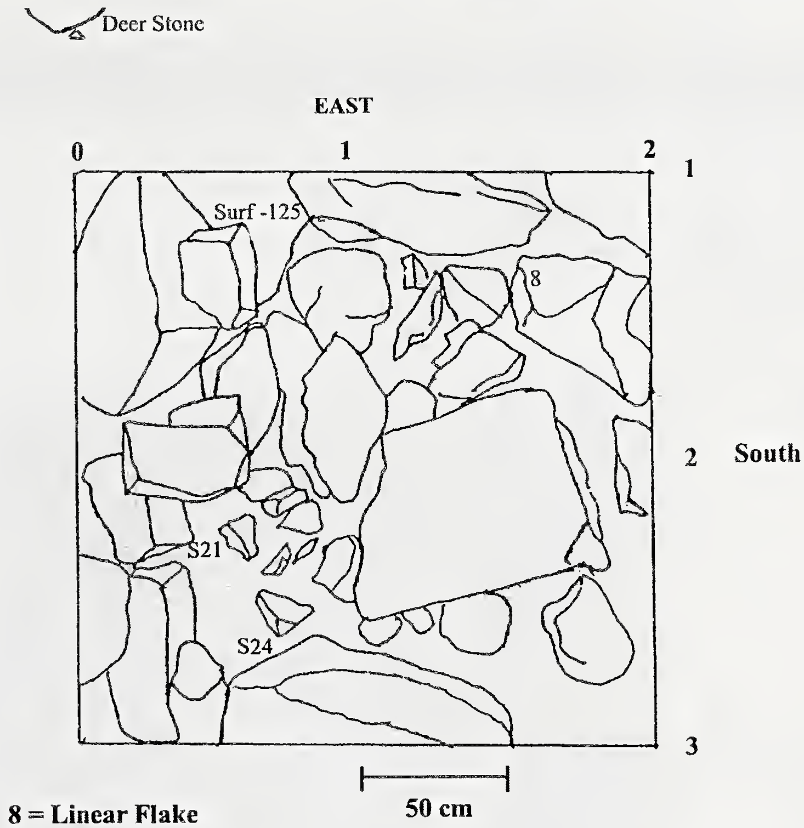
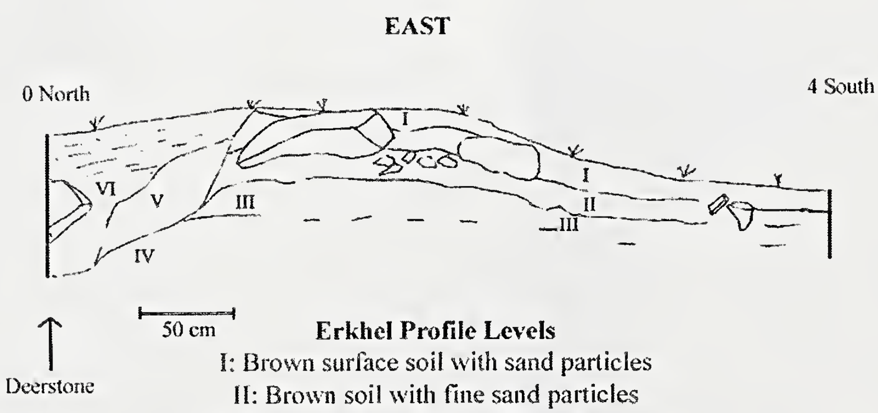


Fig. 9.13: Erkhel DS 4, Feature 3, Upper level rocks



Erkhel Profile Levels

I: Brown surface soil with sand particles
II: Brown soil with fine sand particles
III: Level with ochre colored chips of rocks
IV: Light grey colored fine soil
V: Brown colored sand with grain particles - Slump or fill deposit
VI: Grey sand level including several levels within it - Deerstone excavation fill

Fig. 9.14: DS 4, 0N-4S profile (Ochirhuyag)

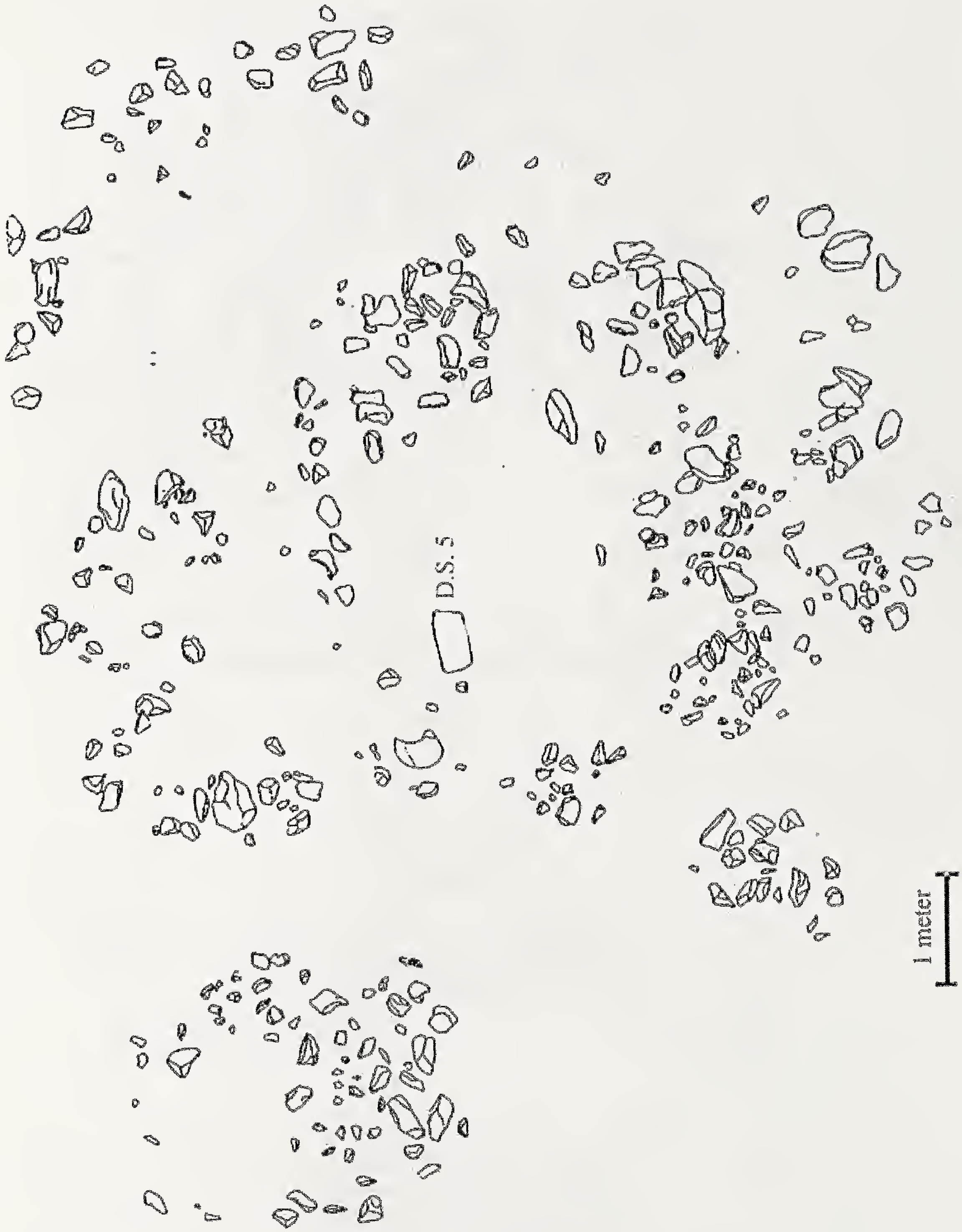


Fig. 9.15: Deer Stone 5 Surface rocks (prepared by Ochirhuiag and Bayarsaikhan)

Appendix A

Soye-1 Site Pictures

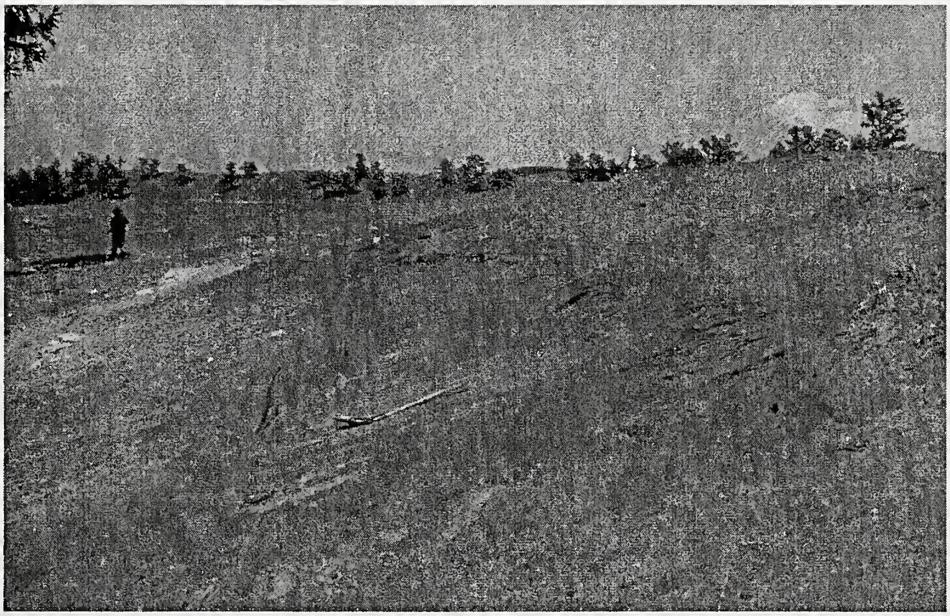


Fig A.1: Soye-1, Eroding bank showing old buried ground surface

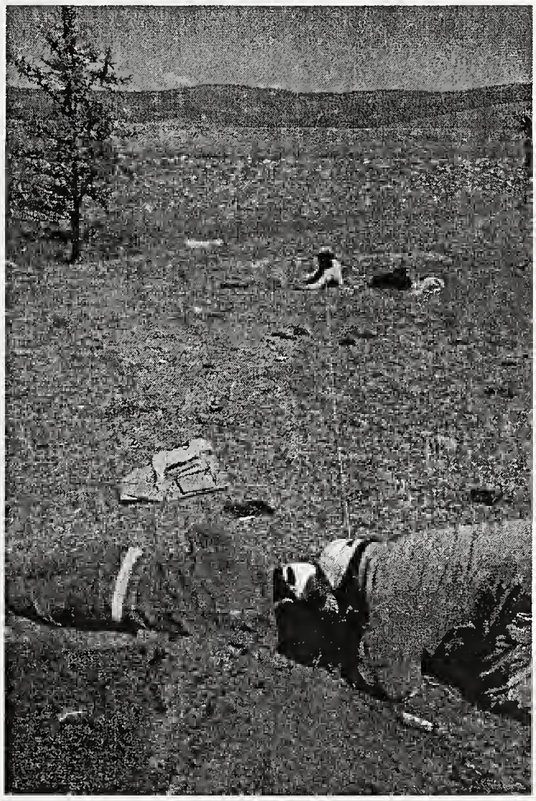


Fig A.2: Excavating test pits along an East-West line on the Soye-1 terrace. Feature 3 excavation area at bank to left. View East.

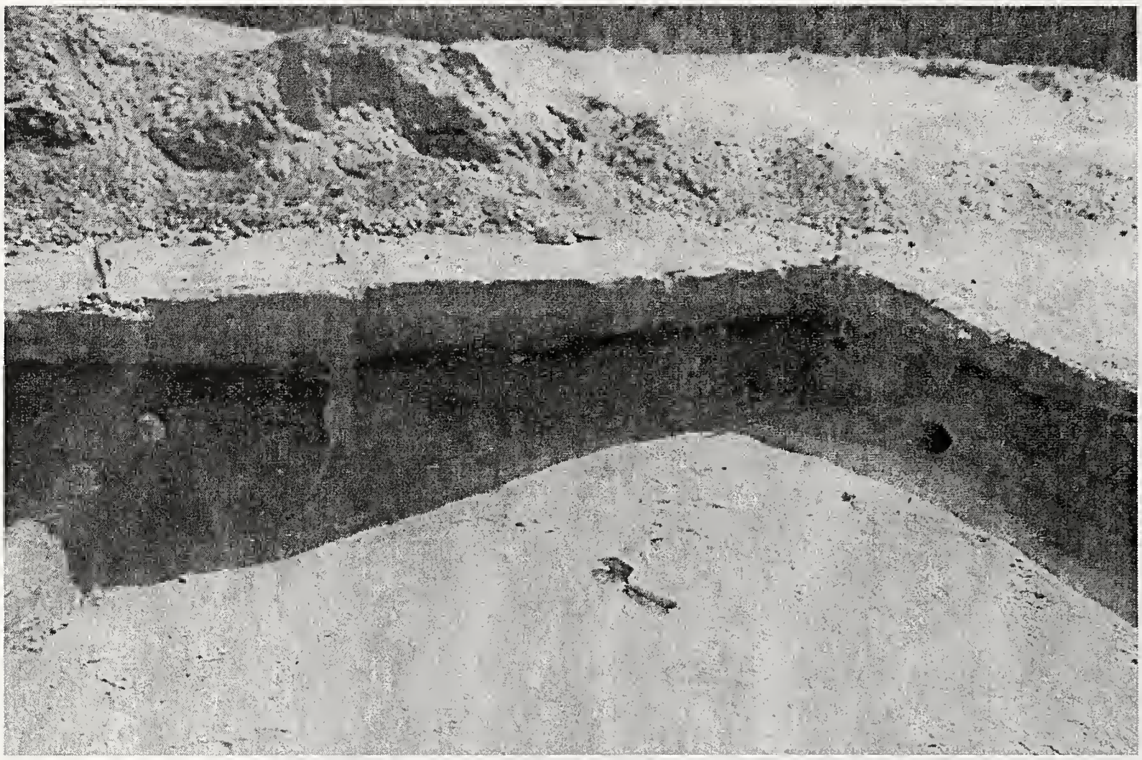


Fig. A.3: Soye-1 Feature 3, West end of excavation, View SW

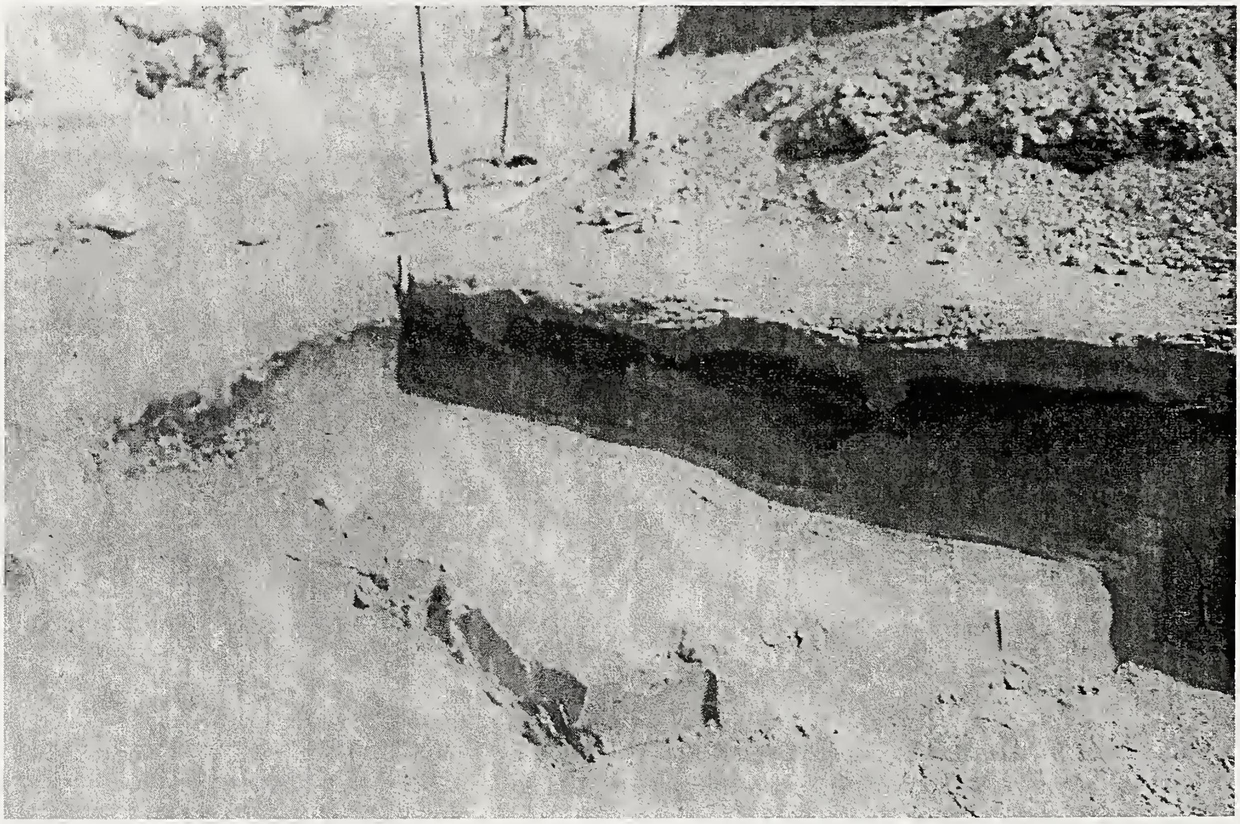


Fig A.4: Soye-1 Feature 3, East-West profile of east wall

Fig A.5: Soye-1, Feature 1 hearth view, West

Fig A.6: Soye-1 Feature 3 Calcined house deposits at SE corner of excavation

Fig A.7: Soye-1, Feature 3 excavation. View to South, tape extends 50 cm, lower half of area is wind eroded bank

Fig A.8: Soye-1 Feature 3, View South

Appendix B
Erkhel Site Pictures

Fig B.1: Mapping the Deer stone 4 excavations with GPS units. View SE

Fig B.2: Feature 1 with sod level removed. View SW

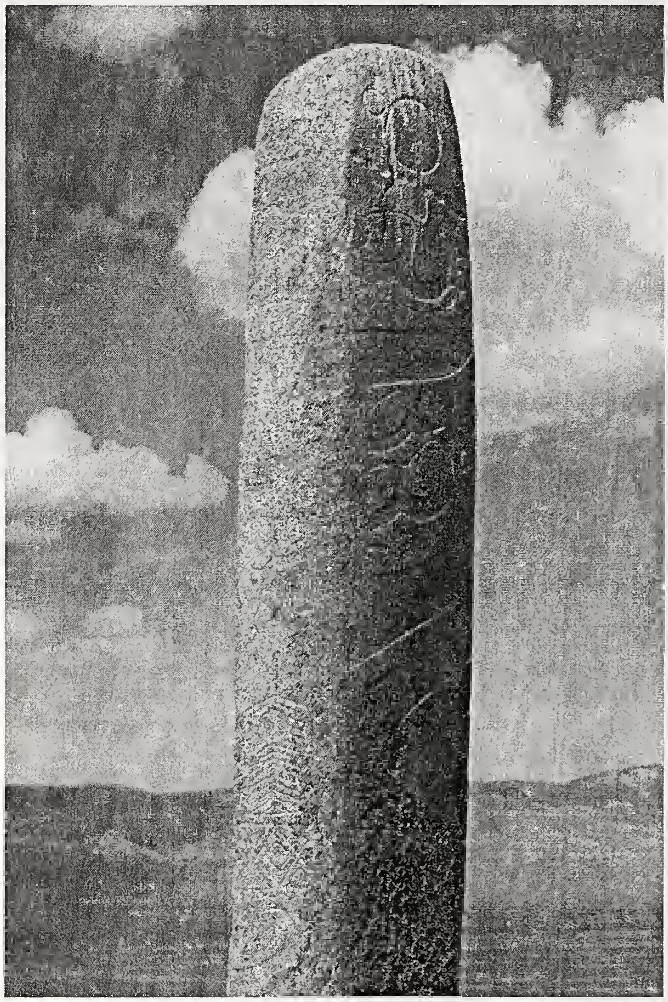


Fig B.3: Deer Stone 2, at 3.8m- the tallest Mongolian deer stone

Fig B.4: Feature 1, Internal fill

Fig B.5: Ulaan Tolgoi site. View South

Fig B.6: Feature 3in foreground, view to SW

Fig B.7: Feature 2 horse head removal. View SE

Fig B.8: Feature 2, Upper level. View North

Fig B.9: Feature 2, upper level. Vvew East

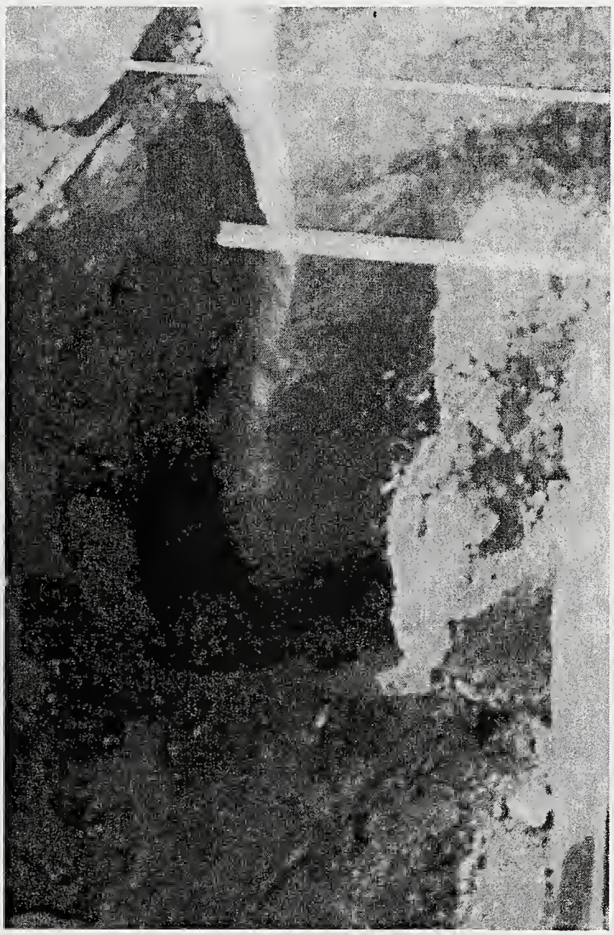


Fig. B.10: Southwest corner of Deer Stone 4 excavated to the base of the pit.

Fig B.11: Deer Stone 4, Feature 2, Upper Level. View East.

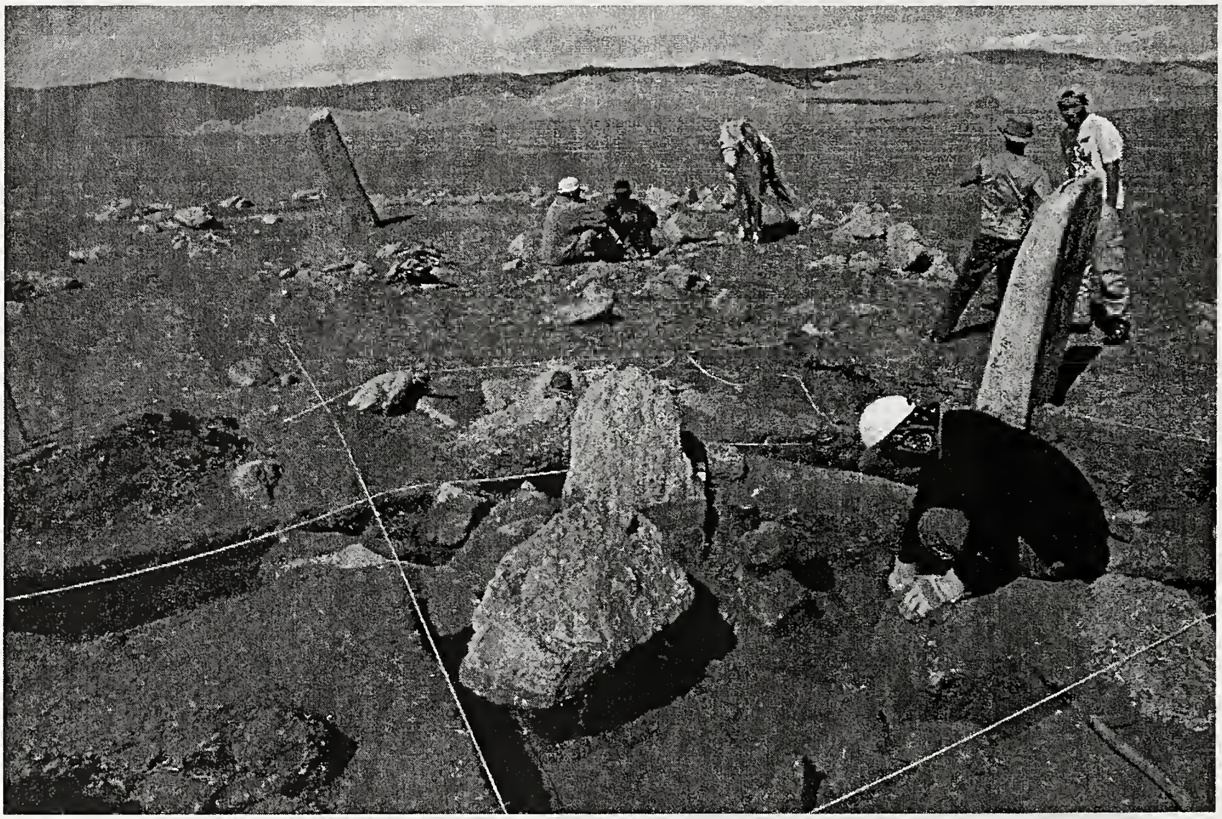


Fig B.12: Deer Stone 4 (right) and 5 (rear). View North

Fig B.13: Deer Stone 4 with Deer Stones 3 and 2 (large) in background. View South

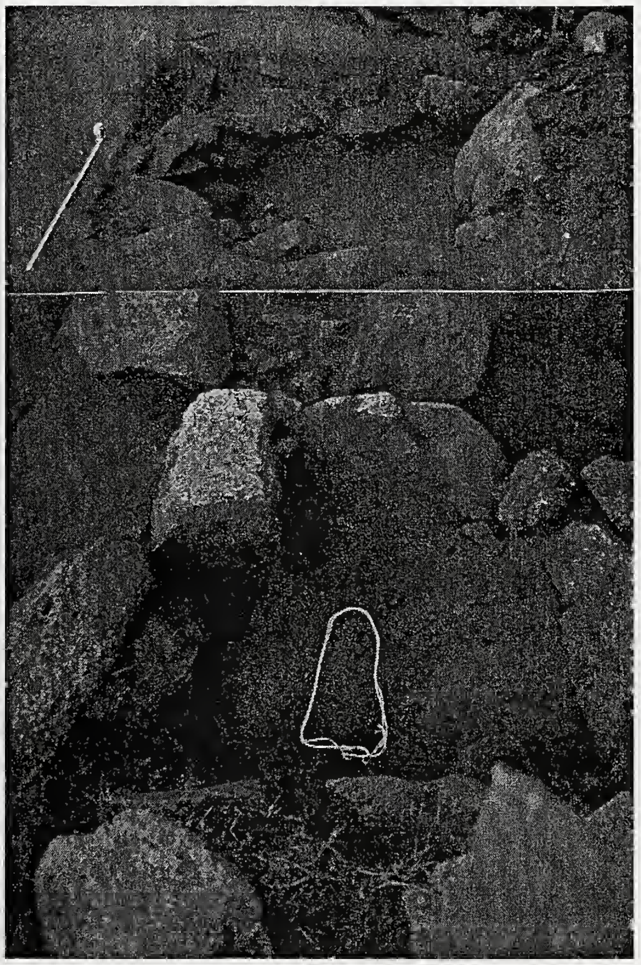


Fig B.14: Deer Stone 4, Features 1 and 3 (top) seen to East. String outlines horse head location in Feature 1

Fig B.15: Deer Stone 4, profile of East wall of 0N 4S line with datum peg at the left.

Fig B.16: Deer Stone 5. View North

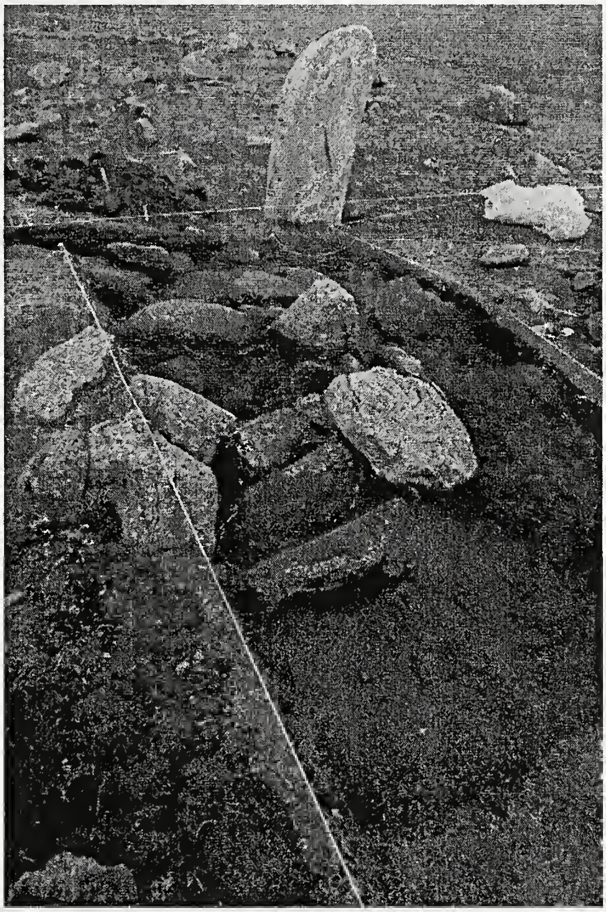


Fig B.17: Deer Stone 4, Feature 1 viewed to North

Fig B.18: Deer Stone 4 excavation, view to East showing 4W 0E trench and the datum plane tripod.

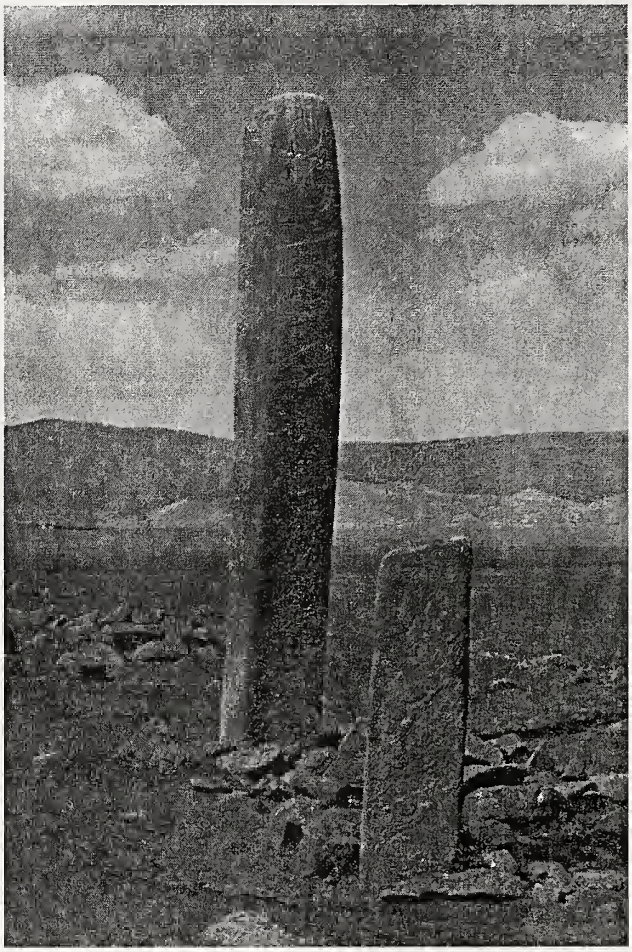


Fig B.19: Deer Stones 3 and 2 (large) viewed to South

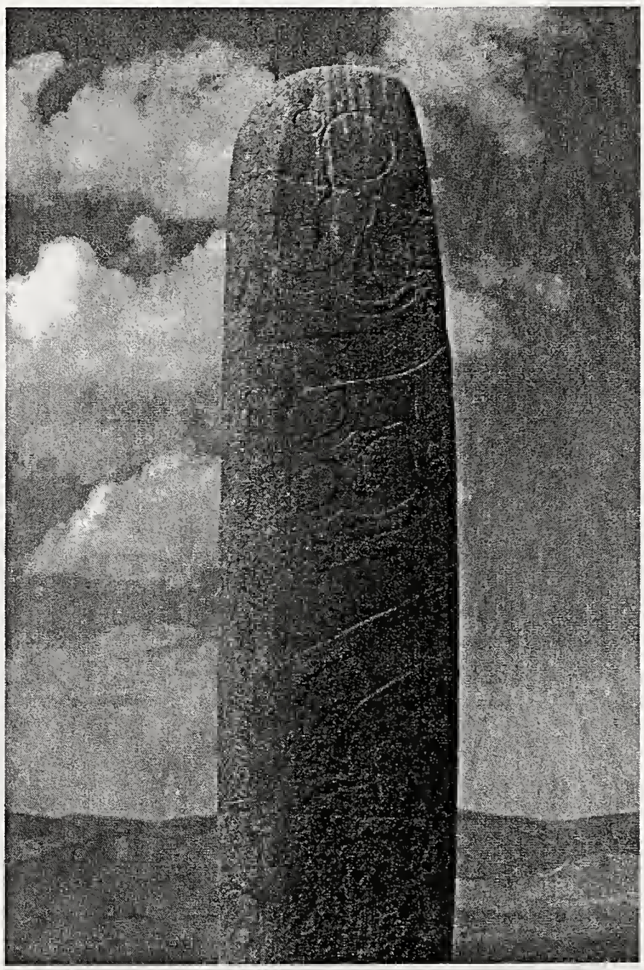


Fig B.20: Deer Stone 2 engraving

Fig B.21: Deer Stone 4 and excavation to North

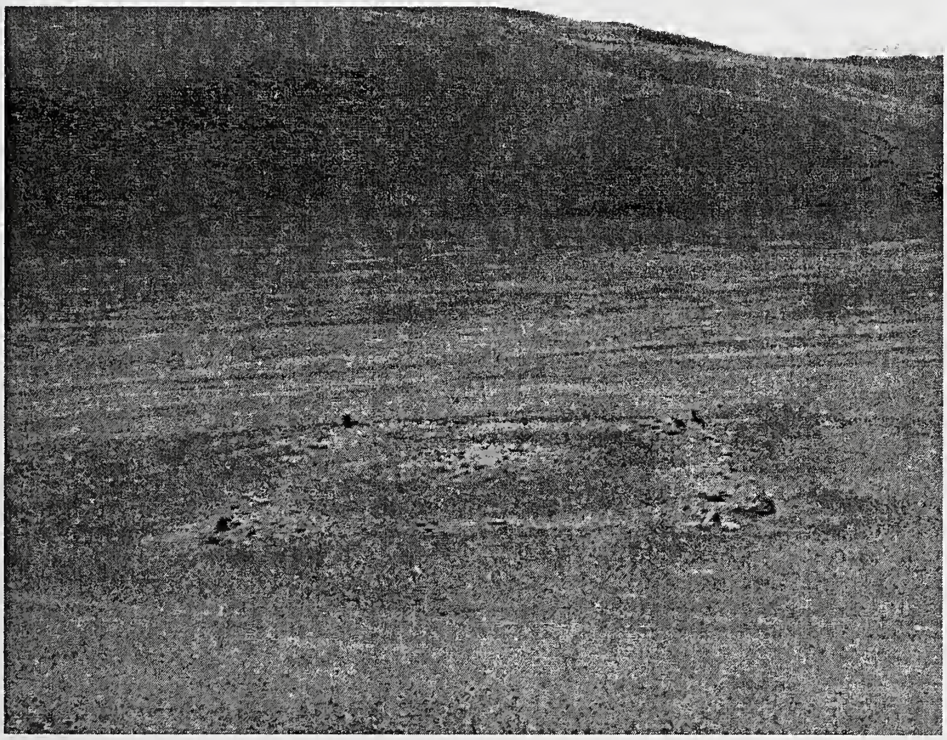


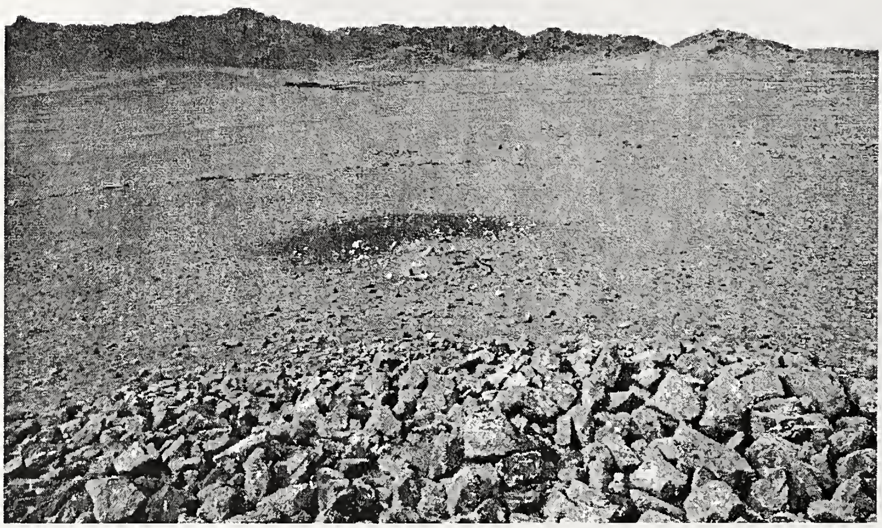
Fig. B.22: Erkhel Khirigsuur, South of field camp.

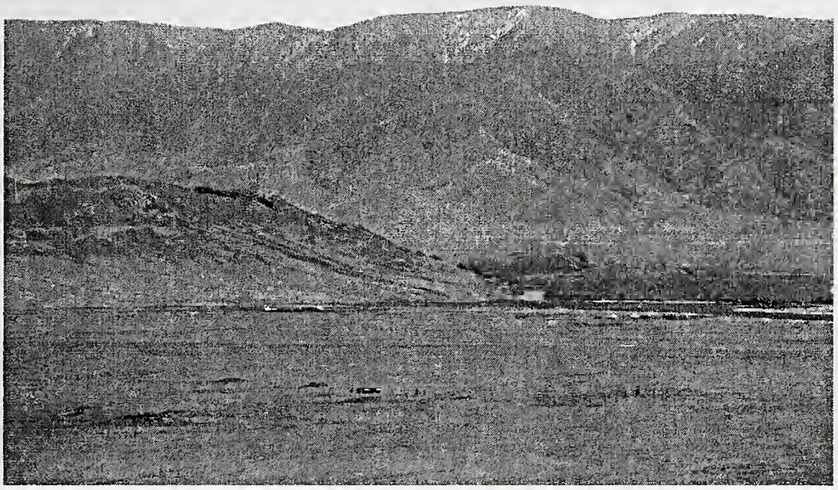
Fig.B.23: Deer Stone 4 and 5 to North. Tape is laid out on 0N 4S trench line

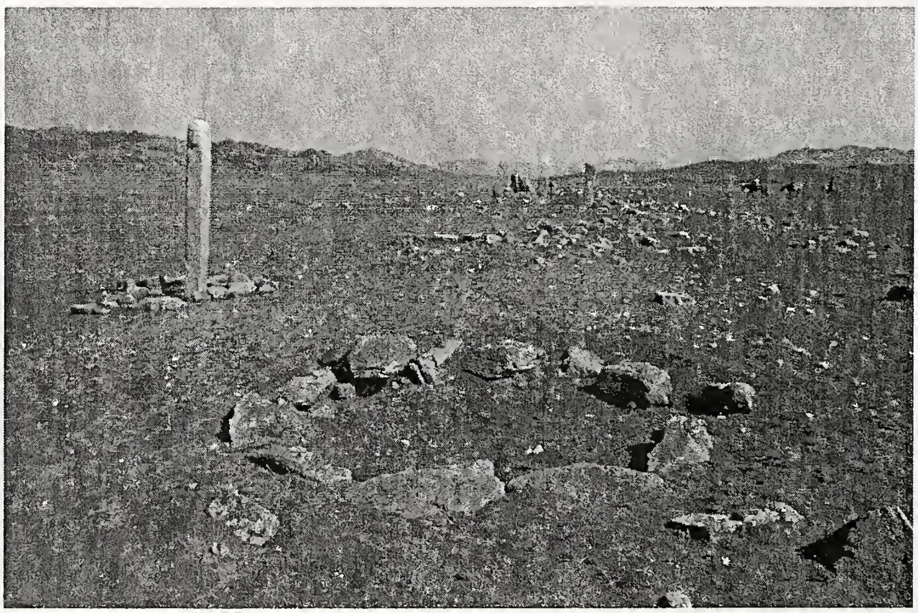
Fig.B.24: Overview of Deer Stone 4 to north showing F1 (center), F2 (upper left) , and F3 (right).

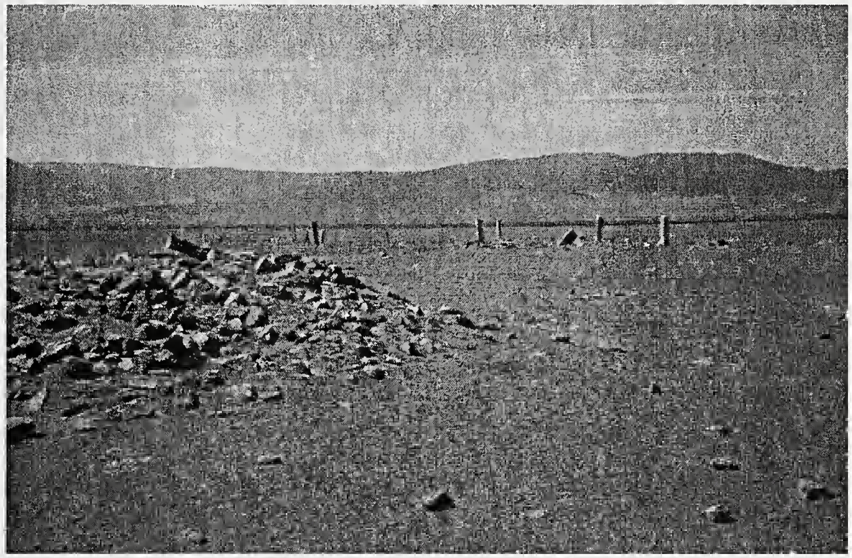
Appendix C

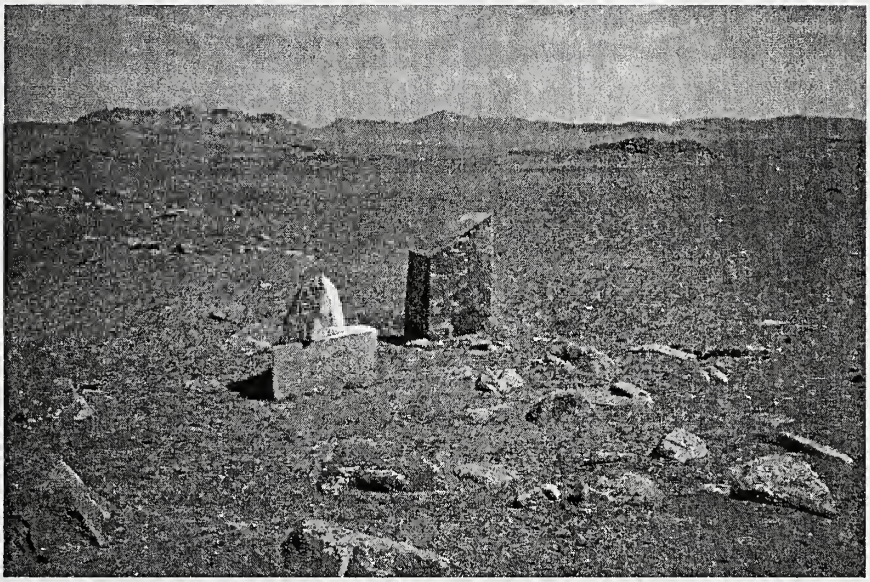
Ushkin Uver Gallery

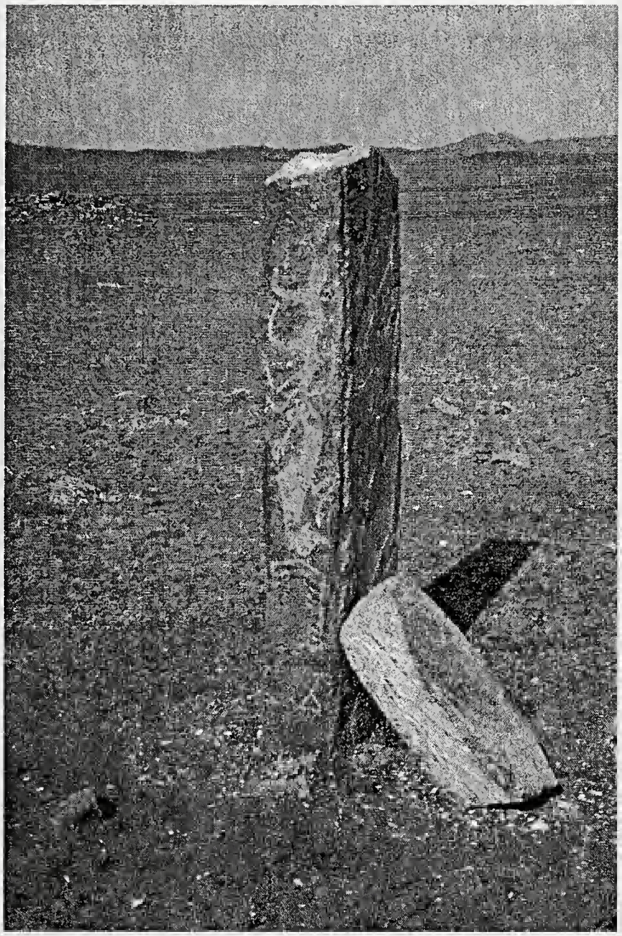


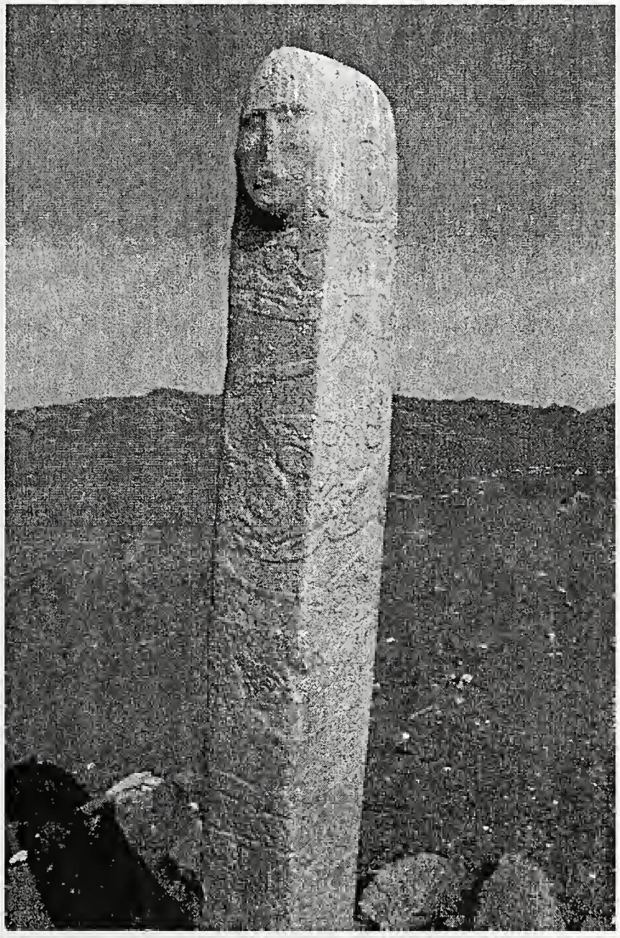












Appendix D
Expedition Photo Journal

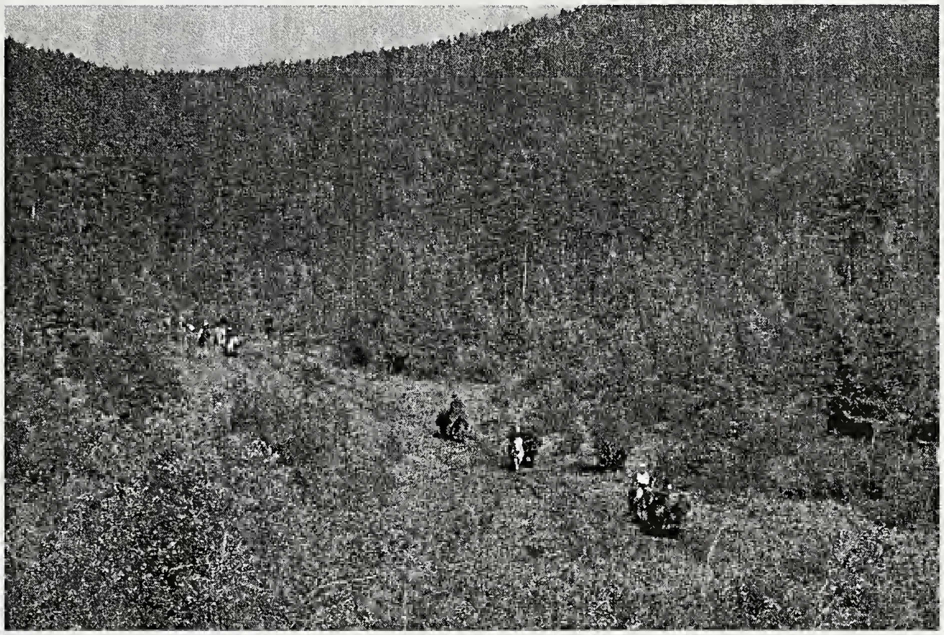


Fig. D.1: Expedition leaving tagia with Tsaatan (above).

Fig. D.2: Lake Coring expedition with Sanjin, Scott and Kevin. (below)

Fig. D.3: Water break at Horidal Saridag lakes.

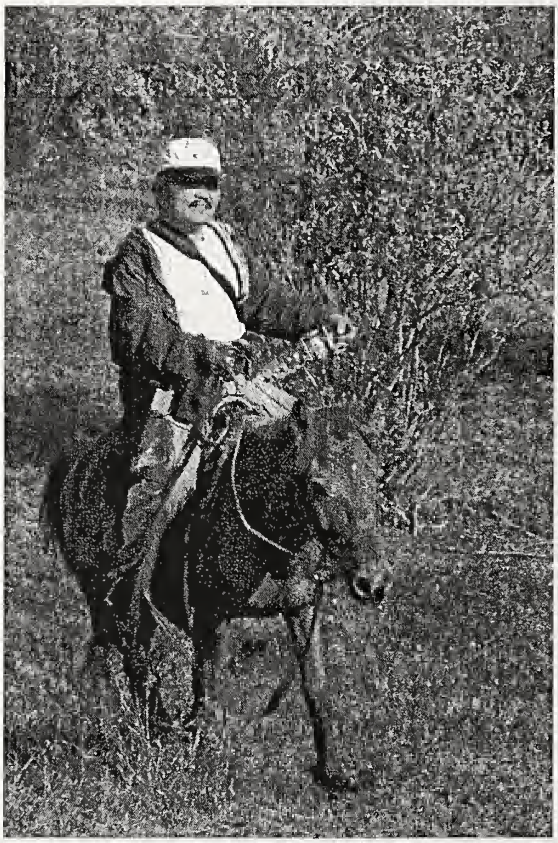


Fig. D.4: Ayush, ethnologist

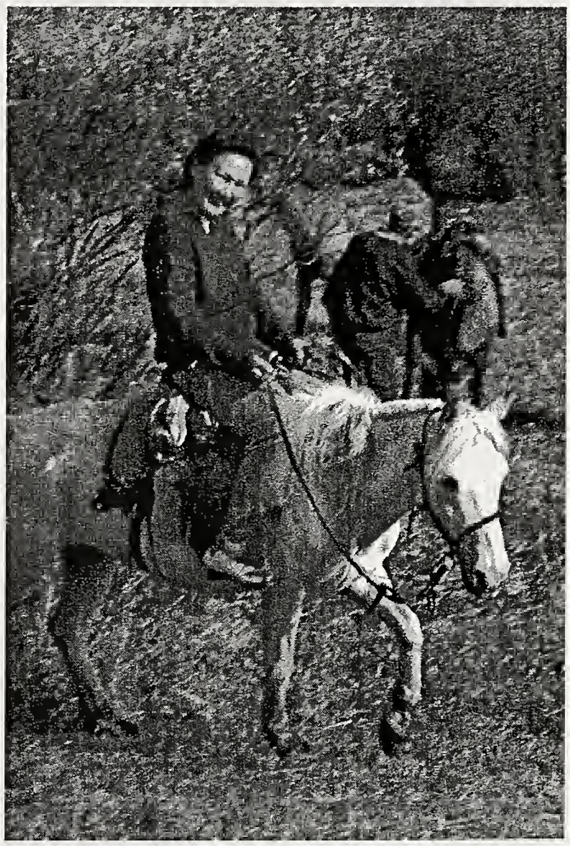


Fig. D.5: Amra, our cook

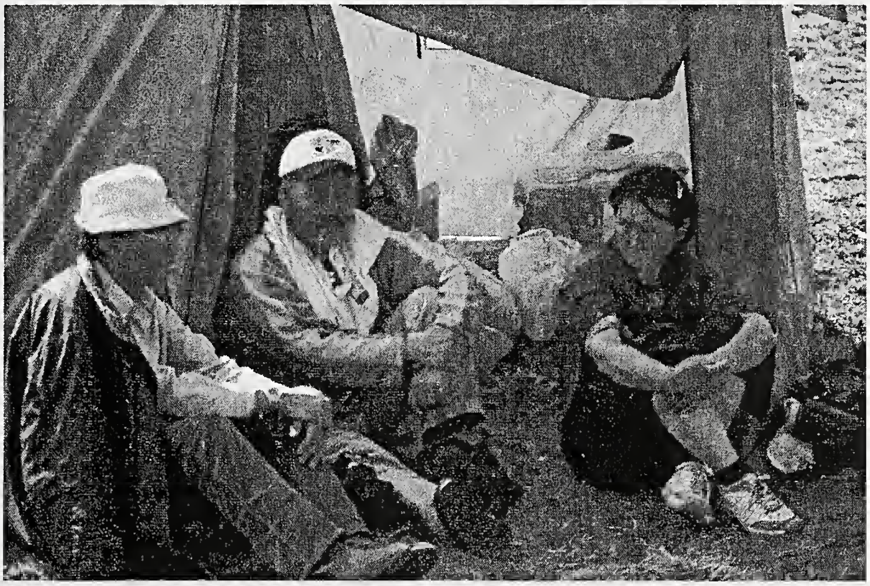


Fig. D.6: Sakhbaatar, Ayush, and Amra at tagia camp

Fig. D.7: Batsaya's spring camp

Fig.D.8: Biandalai collecting horses

Fig. D.9: Baiandalai's family in spring camp

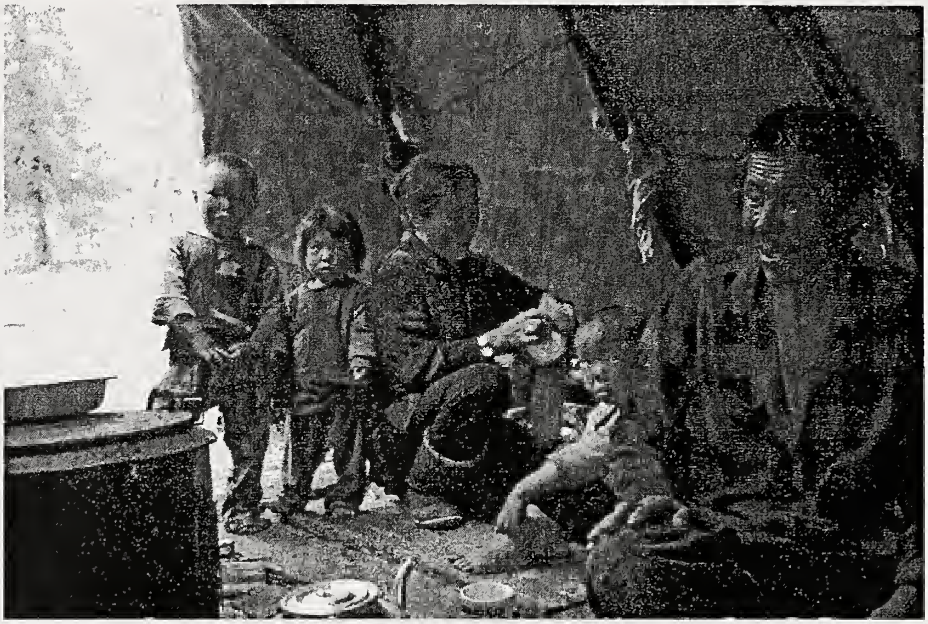


Fig. D.10: Bayaraa's relatives in spring camp

Fig. D.11: Bruno in Batsaya's spring camp

Fig. D.12: Batsaya, Tsetsegmaa, and daughter

Fig. D.13: Bayandalai

Fig. D.14: Batsaya with rhubarb

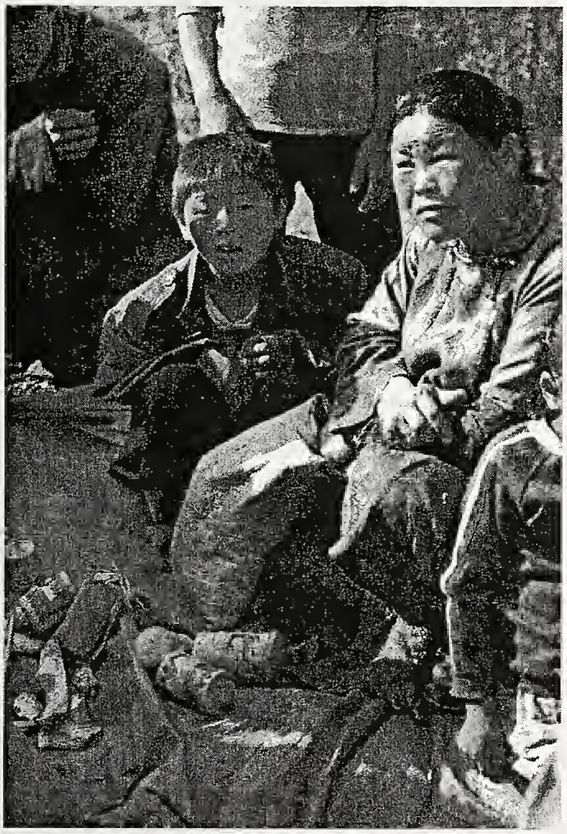


Fig. D.15: Taiga craft fair

Fig. D.16: Scott Stark and Kevin Robinson depart on coring expedition

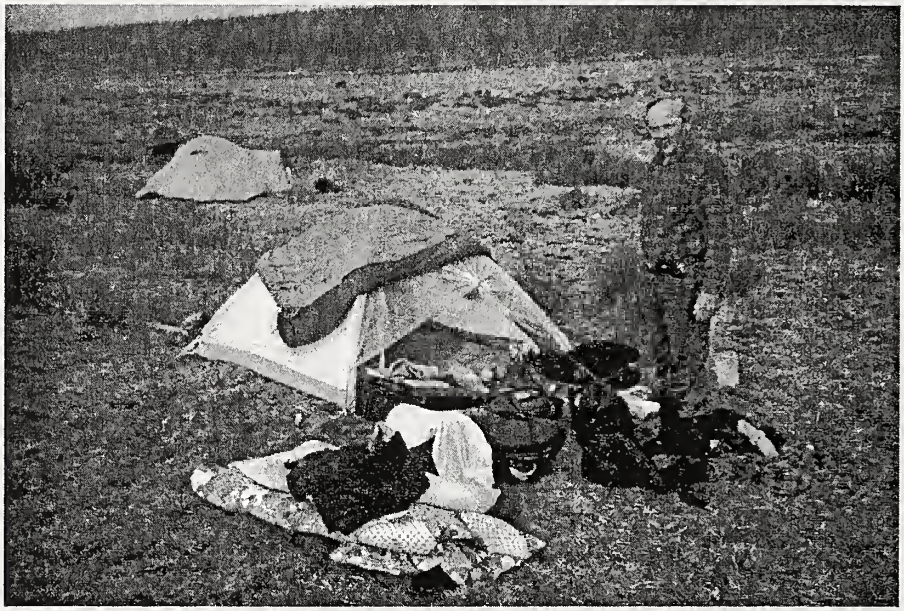


Fig. D.17: Bruno Frohlich's material world.

D. 18: Naymbayar, one of our Moron drivers.

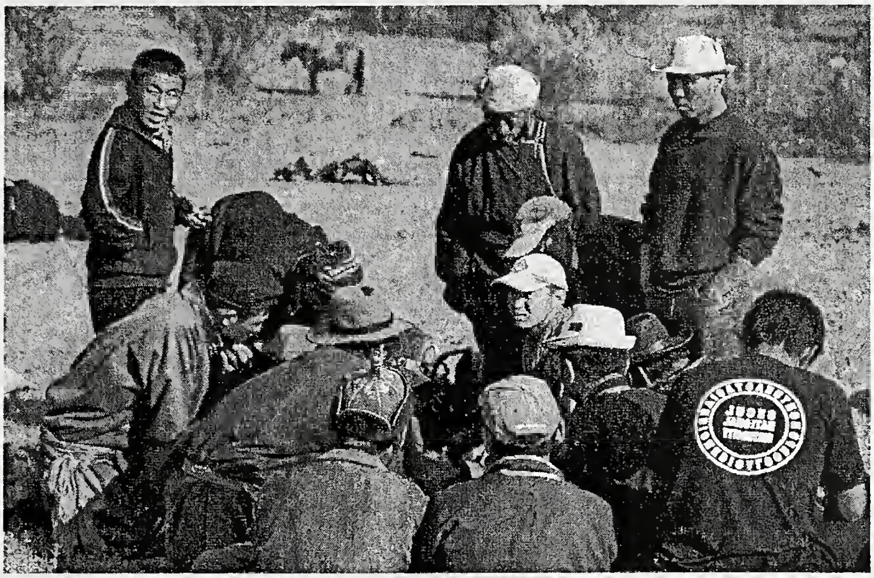


Fig. D.19: Adiyabold settles financial accounts with Tsaatan.

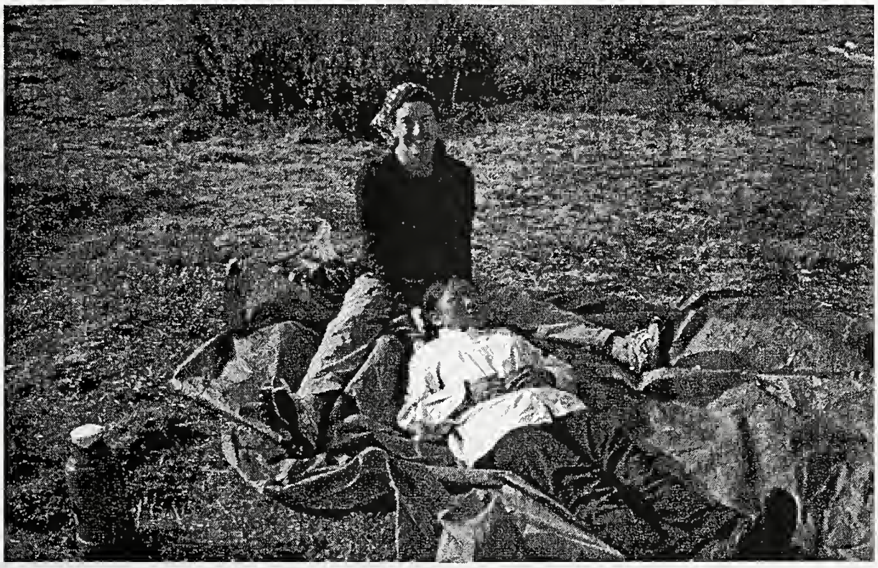


Fig. D.20: Julie Singer treats one of the Tsaatan with physical therapy.

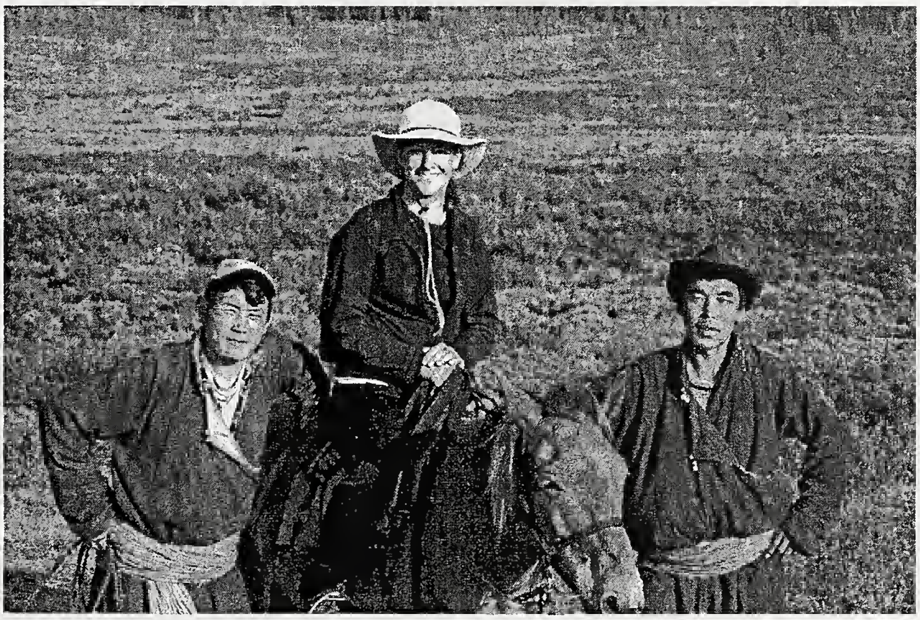


Fig. D.21: Julie Singer and Tsaatan.

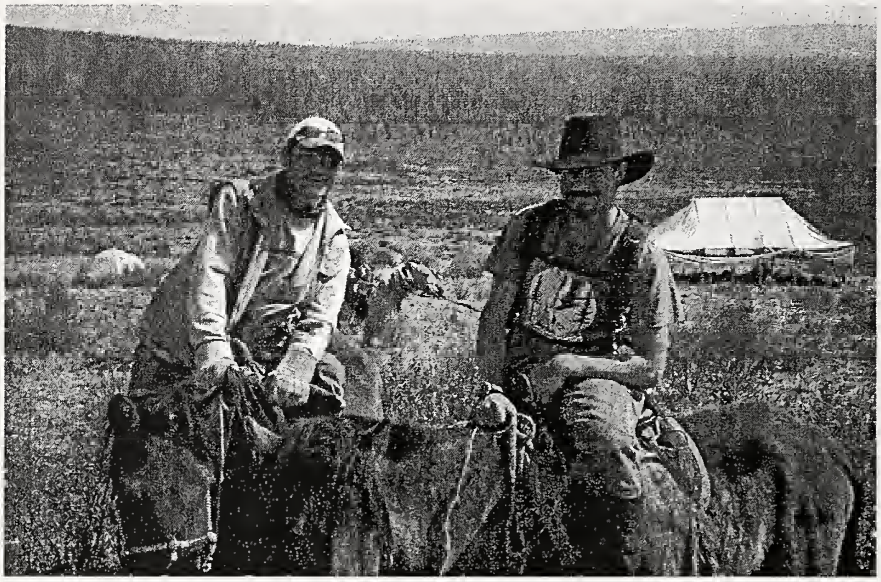


Fig. D.22: Bayarsaikhan and Matt Gallon prepare for survey on horseback..

Fig. D.23: Matt Gallon

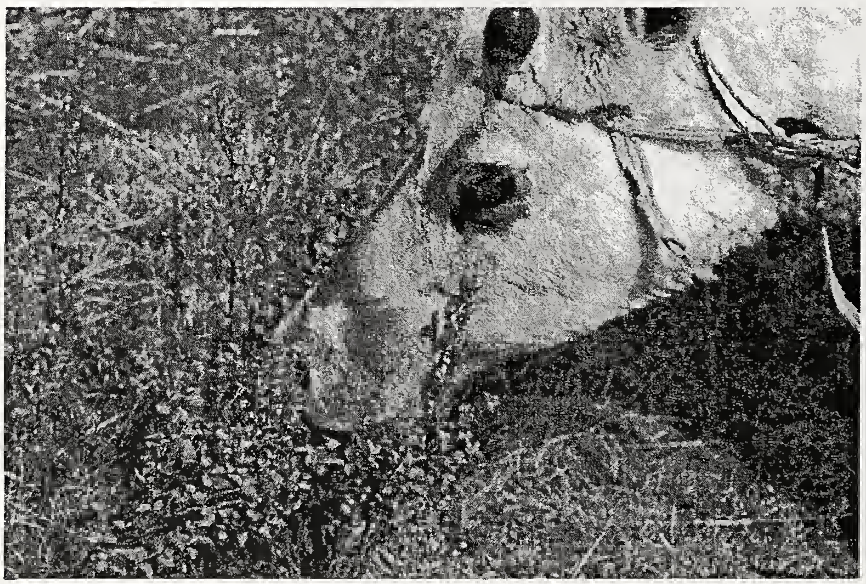


Fig. D.24: Tsaatan Reindeer eating new ground birch growth in spring camp.

Fig. D.25: Sanjin

Fig. D.26: Scott Stark

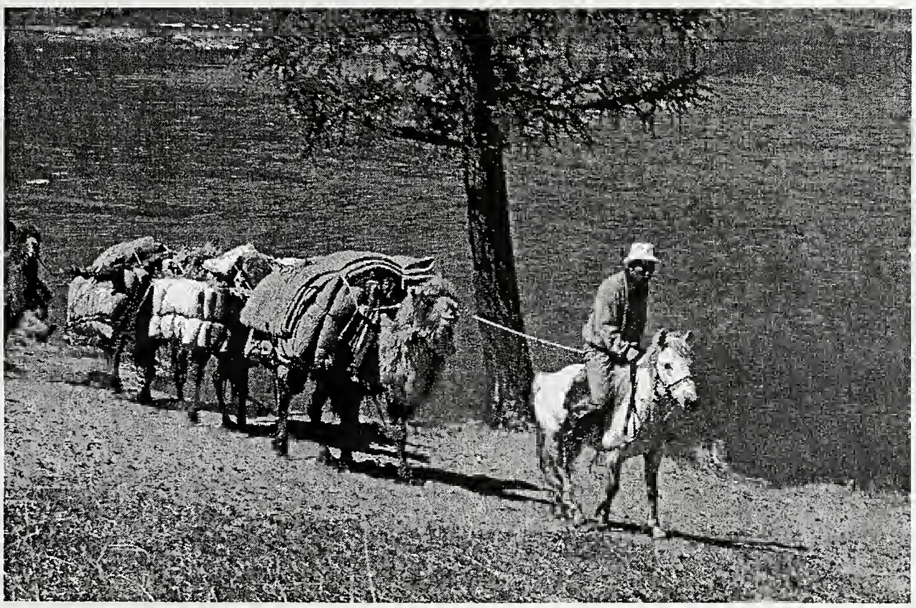


Fig. D.27: Spring camp move by camel caravan at Soye ford.

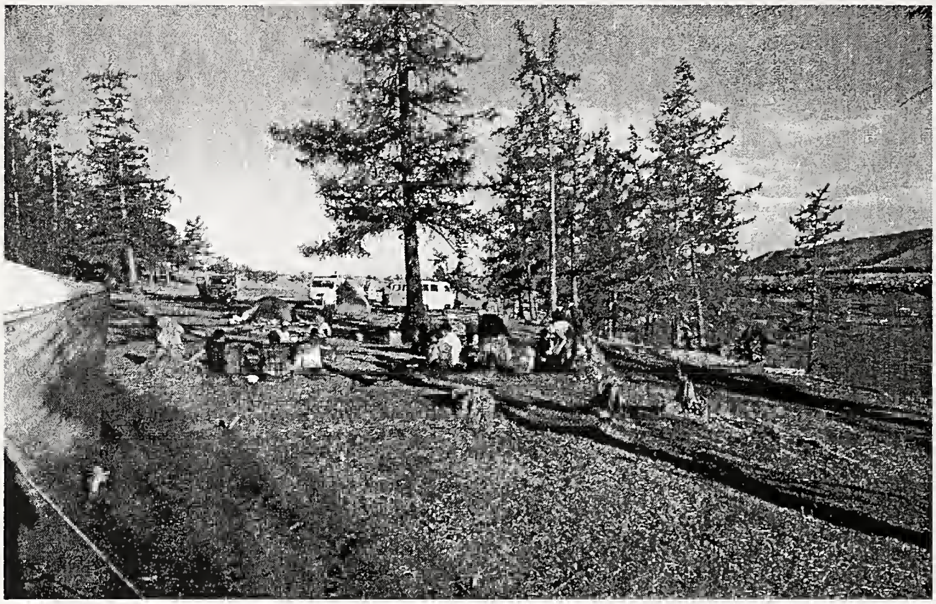


Fig. D.28: Soye camp

Fig. D.29: Ochirhuiag and group at Soye fair.

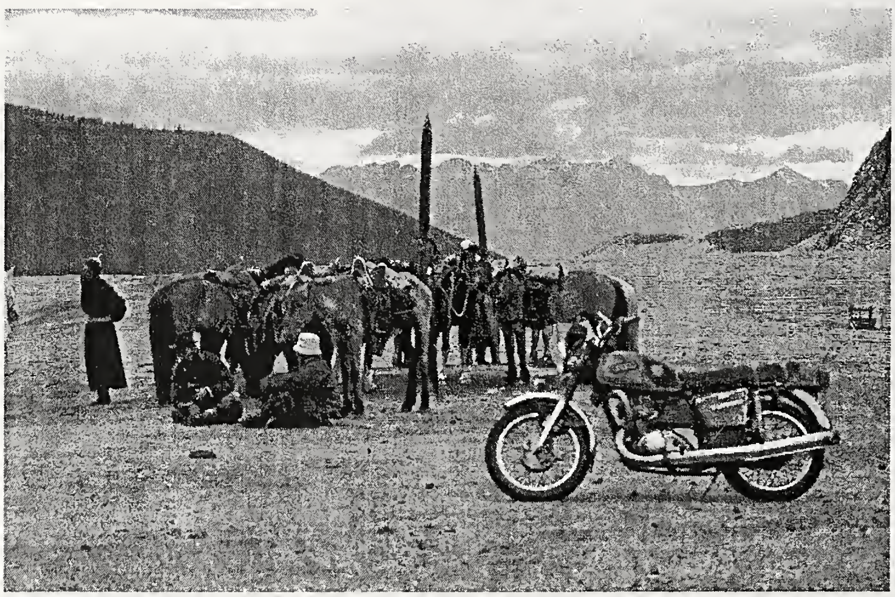


Fig. D. 30: Soye fair - various steeds against Hovsgol mountains.

Fig. D.31: Expedition prepares for departure from Soye camp.

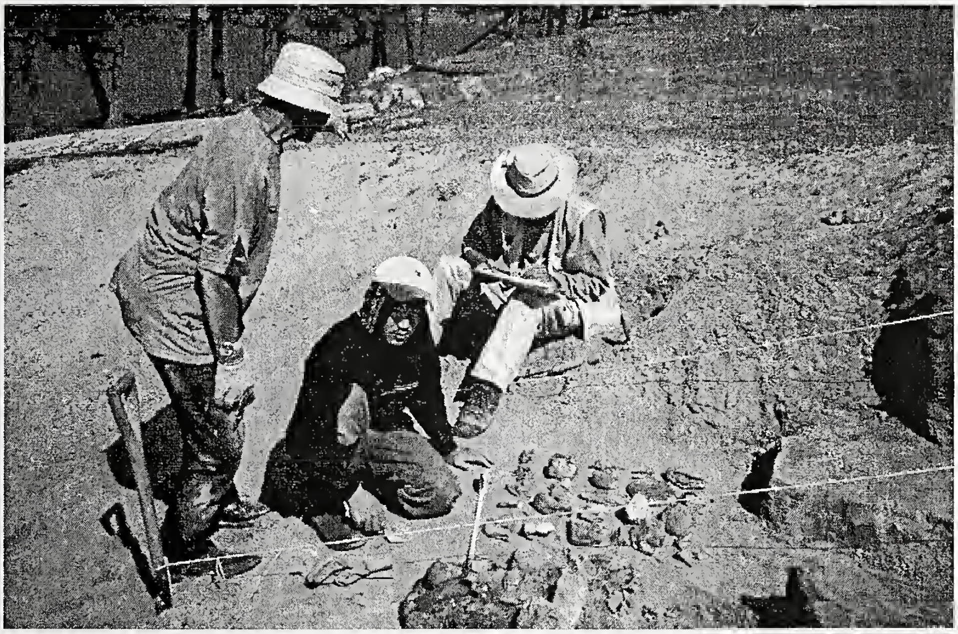


Fig. D.32: Sanjmiatav, Bayaraa, and Ochirhuiag excavatig Soye Feature 1 hearth.

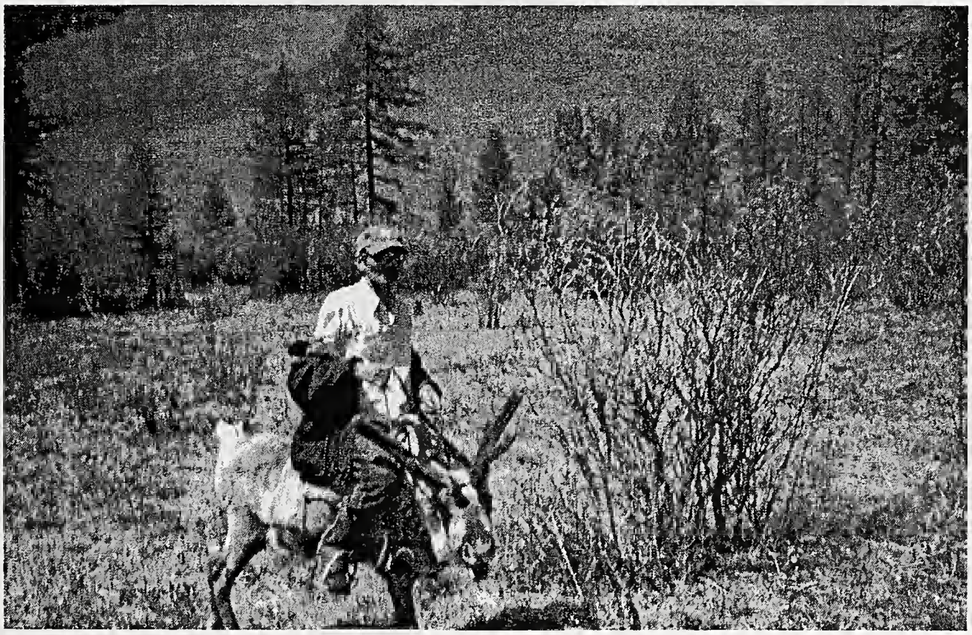


Fig. D.33: Sakhbaatar riding reeindeer - a proper mount for the director of the Mongolia Reindeer Fund.

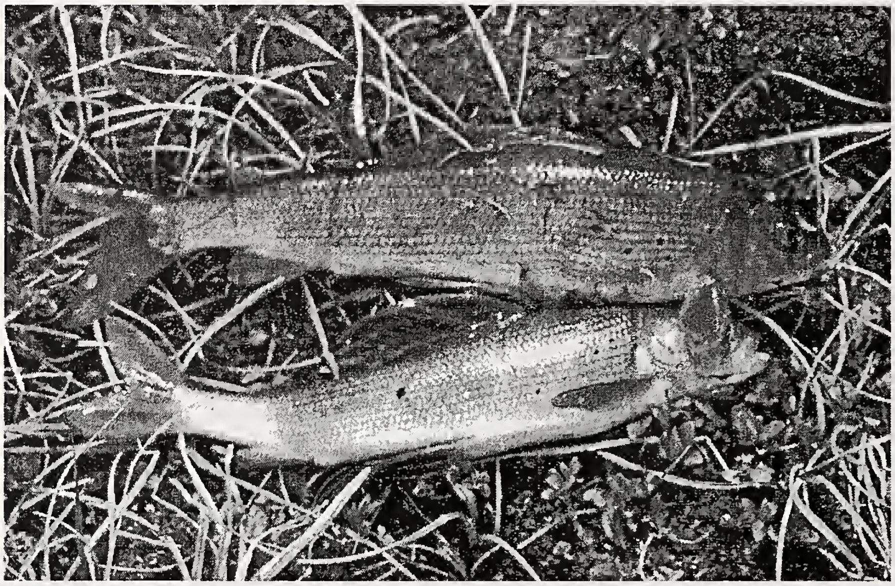


Fig. D.34: Moridal Sariday fish

Fig. D. 35: Truck-bed store from Tsagaan Nuur comes to Tsaatan trail head.

Fig. D.36: Tsaatan group at Batsaya's spring camp.

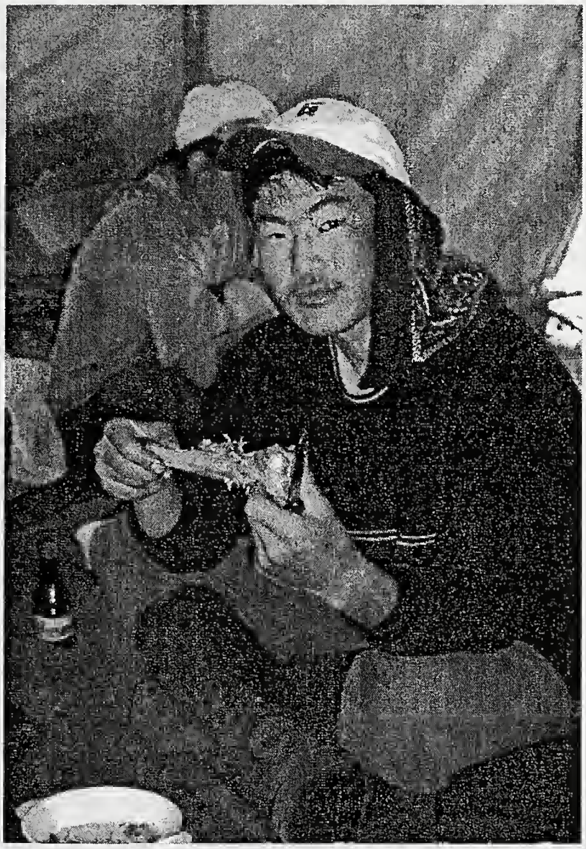


Fig. D.37: Bayarsaikhan with sheep shank.

Fig. D.38: Local catch at Soye ford.

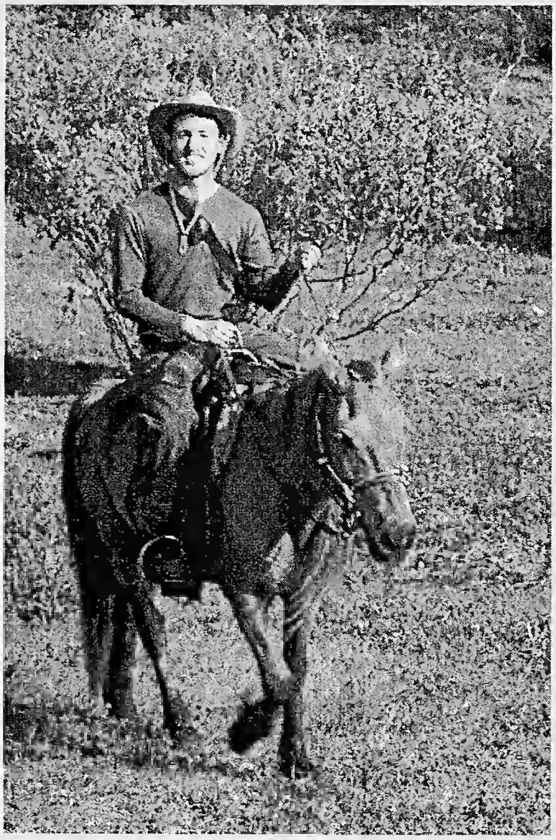


Fig. D.39: Kevin Robinson

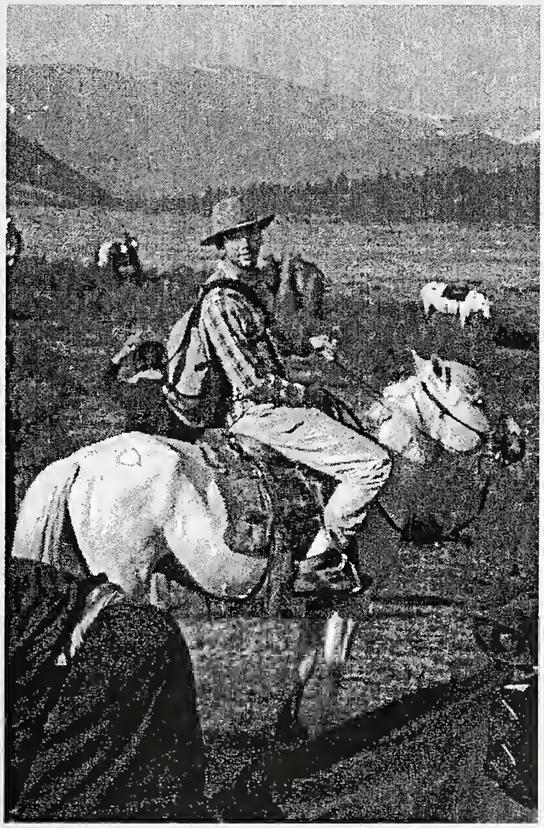
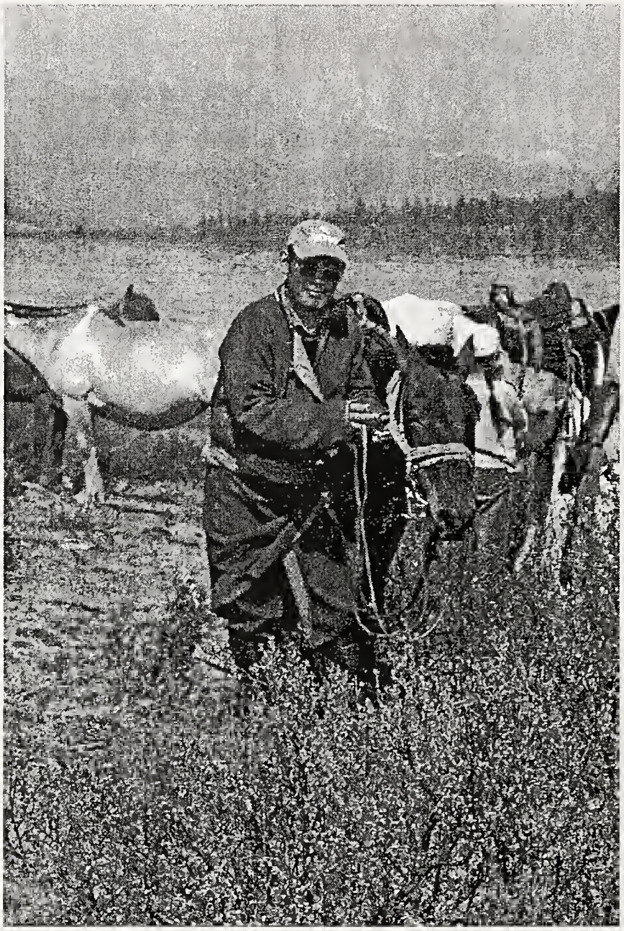


Fig. D.40: Scott Stark



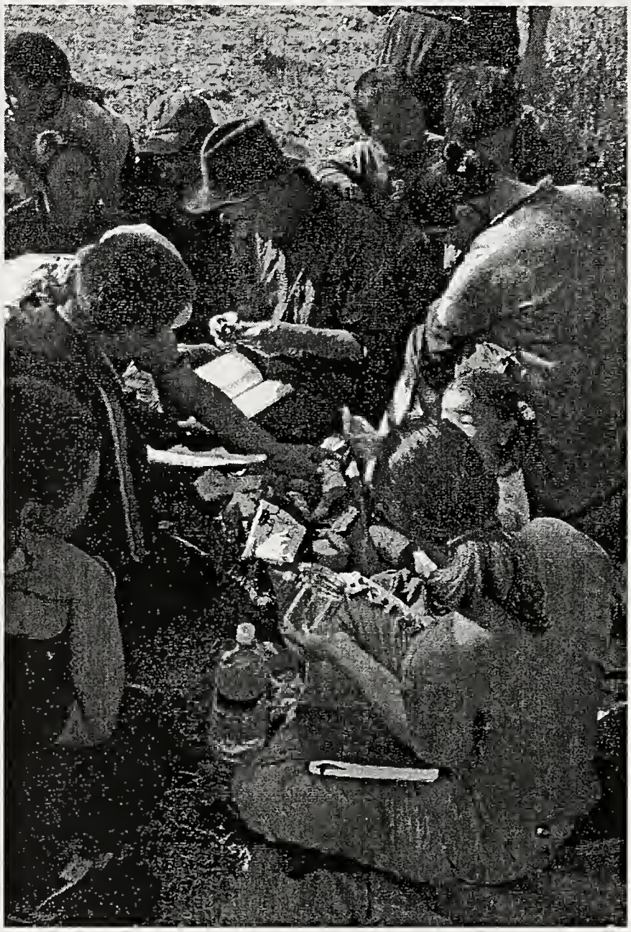


Fig. D.41: Tsaatan at Batsaya camp

Fig. D.42: Craft sales at Batsaya camp.

Fig. D.43: Craft sales at Batsaya's spring camp.

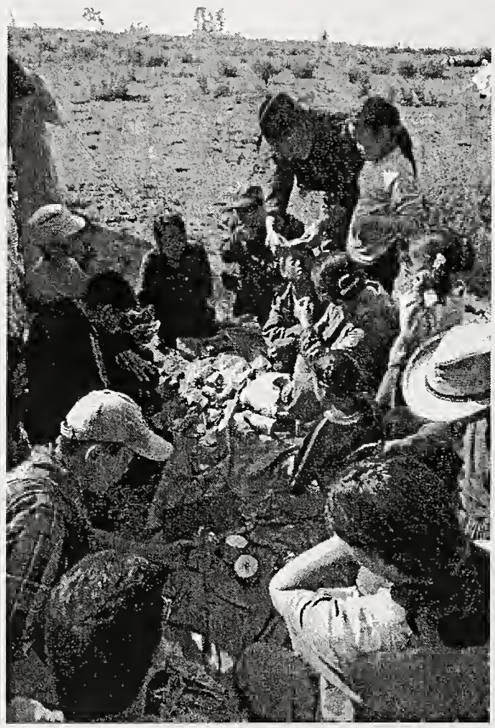


Fig. D.44: Tsaatan at the end of the taiga traip expedition