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RADIOCARBON DATES FROM NEOLITHIC AND BRONZE AGE HUNTER-GATHERER CEMETERIES IN THE CIS-BAIKAL REGION OF SIBERIA

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INTRODUCTION

Extensive radiocarbon dating of human remains from Neolithic and Bronze Age hunter-gatherer cemeteries in the Cis-Baikal region of Siberia has been undertaken as a part of the multidisciplinary examination of this material conducted by the Baikal Archaeology Project (BAP; http://baikal.arts.ualberta.ca). Due to the large number of analyzed samples, this paper reports the ^{14}C results only in the context of the basic archaeological information about each of the cemeteries. Comprehensive evaluation, analysis, and interpretation of this entire data set will be undertaken in separate publications. In fact, the dates for one such cemetery have already been examined on 2 recent occasions (Weber et al. 2004, 2005).

^{14}C dating of this material provides a temporal framework for other analyses, which include osteological and dental studies; examination of the stable isotope ratios of ^{13}C, ^{15}N, ^{18}O, and $^{87}Sr/^{86}Sr$; and studies of ancient genetic material, as well as comprehensive investigation of archaeological mortuary variability in various temporal and spatial scales. Together, this research will facilitate a better understanding of aspects of prehistoric hunter-gatherer adaptations such as diet, subsistence and mobility, social and political organization, and biological and cultural affinities, as well as patterns of culture change. With regard to the latter, of particular anthropological interest and significance is the cyclical nature of culture change in the Cis-Baikal, which during Neolithic and Bronze Age times witnessed 2 periods of increased social complexity and sedentism—the Early Neolithic and the Late Neolithic to Bronze Age—separated by the Middle Neolithic, a period lasting at least a millennium and characterized by lower social complexity and increased mobility (Weber et al. 2002). The cemeteries subjected to ^{14}C dating in this project constitute one of the most important archaeological manifestations of the former intervals, those featuring relatively more complex social and economic relations.

The following culture-history model, developed first by Weber (1995) and revised later by Weber et al. (2002), provides the main framework of reference for the presentation of our ^{14}C dates:

Period	Culture/mortuary complex	^{14}C age BP	Calibrated age BC
Late Mesolithic	Early Kitoi	~8000–7000	~6800–5800
Early Neolithic	Late Kitoi	~7000–6100	~5800–4900
Middle Neolithic	Hiatus	~6100–5300	~4900–4200
Late Neolithic	Early Isakovo/Serovo-Glazkovo	~5300–4800/4400	~4200–3400/3000
Bronze Age	Late Isakovo/Serovo-Glazkovo	~4800/4400–3300	~3400/3000–1000

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MATERIALS AND METHODS

The Cis-Baikal abounds in mortuary sites dating to Neolithic and Bronze Age times (Chard 1974; Michael 1958, 1992a,b; Okladnikov 1959; Weber 1995). The BAP has gathered information on approximately 150 cemeteries, whose number of known or excavated graves ranges from one or a handful, to a few dozen, to around 100, for a total of about 900 graves. A few of the larger cemeteries excavated within the last 2 decades have formed the core of the BAP research material. Two of these sites (Khuzhir-Nuge XIV and Kurma XI) have been excavated recently by the project; fieldwork at another (Shamanka II) is still ongoing; and 2 other cemeteries (Lokomotiv and Ust'-Ida) were excavated during the 1980s and 1990s by Russian investigators. A few smaller cemeteries of Khotoruk, Shamanskii Mys, Makrushina, and Turuka were included in the dating project in order to provide a more balanced regional representation.

In case of the cemeteries excavated by the BAP, sampling for ^{14}C dating and other laboratory analyses was consistently done by the human osteologist immediately after completion of each excavation season and after sorting of the individuals was completed and basic age and sex data were collected. Sampling of the Lokomotiv and Ust'-Ida collections had followed a similar protocol, with the exception that it was implemented sometimes as many as 20 yr after the original excavations. Consequently, the risk exists that in some cases—for example, those representing multiple, commingled, or disturbed and partial burials—sample identity cannot be fully guaranteed. The same risk applies to the above-mentioned remaining smaller cemeteries.

All bone samples were ^{14}C dated by the IsoTrace AMS facility at the University of Toronto (Ontario, Canada) on their collagen fractions, using a modification of the Longin method (Longin 1971). After mechanical cleaning, the bone samples were crushed and rapidly demineralized at low temperature. The residues were desalted and washed to neutrality. The raw collagen was extracted with cold, freshly prepared NaOH prior to gelatinization in hot, acidified water. Separation of the supernatant gelatin from the insoluble residue was obtained in a refrigerated, high-speed centrifuge at 25,000 *g*. After lyophilization, the gelatin was combusted in an ampoule combustion system. Two graphite targets were prepared from the CO_2 of each sample, and each target was analyzed separately. The final results are the weighted averages of both analyses. During the measurements, every target was analyzed on 16 spots for the ^{12}C, ^{13}C, and ^{14}C isotopes. The $^{13}C/^{12}C$ ratios were used to correct for ^{13}C natural isotopic fractionation, as well as for ion source sputter isotopic fractionation (Beukens et al. 1986). Stable isotope analysis of the collagen fraction was applied to most of these bones, but the results were not used in this paper and will be published elsewhere.

For a number of bones, collagen preservation was found to be low to very low, as a result of depth of burial that exposed the samples either to groundwater or to annual runoff. Taylor (1987) has demonstrated that contamination often becomes a problem for collagen yields of 5% of original content or approximately 1% total yield, implying that collagen yields are likely a more useful criterion for evaluating collagen dates than ^{13}C, or even C/N ratios. For the shallow Khuzhir-Nuge XIV graves, 65% of the samples were found to have collagen extraction yields of 1% or less, as a result of exposure to annual runoff (Weber et al. 2005). The variance in the dates is larger for these low-collagen samples than for the high-collagen samples, and collagen degradation with possible contamination is likely a factor in some of these results. As this kind of exposure is not always homogeneous, the bones were reanalyzed for 10 of the worst cases, dividing the samples into 3 equal portions in order to try to find a part of the bone with better-preserved collagen. If one or more portions were found to yield significantly higher collagen content, then these fragments were used for ^{14}C analysis. This approach was successful in 3 out of the 10 cases and resulted in some improvement in collagen yield in 4 more cases.

DATA PRESENTATION

The descriptions of each cemetery given below provide basic information regarding the geographical and depositional context, history of fieldwork, mortuary protocol, and spatial configuration. The results of ^{14}C dating are presented in tabular format, in the context of the grave's relative age and expected ^{14}C age, according to the following template:

No.	MASTER_ID	HSAMP_ID	LAB NO.	COLLYD %	C14 AGE ± S.D. BP
	Relative Age, Mortuary Tradition *Comment:*			Expected C14 age BP	Calibrated age BC (1 σ)

The MASTER_ID field provides information regarding the cemetery name in abbreviated form, as well as the year the grave was excavated, grave number, and the individual number when more than one interment was present. For example, the MASTER_ID "K14_1998.027.03" denotes individual No. 3 from Grave No. 27, excavated in 1998 at the Khuzhir-Nuge XIV cemetery.

HSAMP_ID represents the number assigned to a human bone sample in the databases of the BAP at the University of Alberta (Edmonton, Canada). Collagen yields are also reported (COLLYD %) as useful factors in the interpretation of ^{14}C dates derived from bone tissue.

Data in the fields "Relative Age" and "Mortuary Tradition" are based on the typological criteria generally accepted in the Neolithic and Bronze Age archaeology of the Cis-Baikal. For clarification, the Neolithic is defined on the basis of technological criteria, such as the introduction of pottery, ground stone tools, and the bow and arrow, rather than the economic conditions (involving domestication of plants and animals) that are accepted in most of Western prehistory. In the Cis-Baikal, the Neolithic ends with the introduction of the first metal objects, mostly of copper or bronze. The "Expected C14 age BP" relies on previous ^{14}C dates available for similar archaeological assemblages in the region; first reported in large numbers by Mamonova and Sulerzhitskii (1989), they have been reviewed extensively by Weber (1995). Calibrated results, generated using the IntCal04 data set (Reimer et al. 2004), are reported to within a 1-σ interval in the "Calibrated age BC" field. For simplicity, only the range for the solution with the highest probability is provided for each ^{14}C date. Finally, additional information or clarification is included in the "Comment" field whenever deemed necessary.

LOKOMOTIV

The Lokomotiv cemetery (LOK) was initially discovered in 1897 during the construction of the Trans-Siberian Railway (Ovchinnikov 1904). The total area of LOK is estimated to be approximately 5000 m^2 (Bazaliiskiy and Savelyev 2003). The site is situated on a promontory at the junction of the Irkut and Angara rivers, approximately 70 km downstream of Lake Baikal, in a downtown park in Irkutsk near the city's railway station (Figure 1; 52°17′13″N, 104°14′57″E). Since its original discovery, LOK has been excavated on several occasions, mostly in conjunction with various earthworks carried out in and around the park. In 1927, M M Gerasimov excavated 5 graves, and in the 1940s and 1950s, P P Khoroshikh unearthed an additional 21 (Gerasimov 1955; Khoroshikh 1966; Okladnikov 1974).

More systematic large-scale excavations, undertaken at LOK during the 1980s and 1990s by N A Savel'ev and V I Bazaliiskii (Irkutsk State University), produced 59 graves with a total of ~100 individuals (Bazaliiskii 2003; Bazaliiskiy and Savelyev 2003). Some of these graves were excavated in

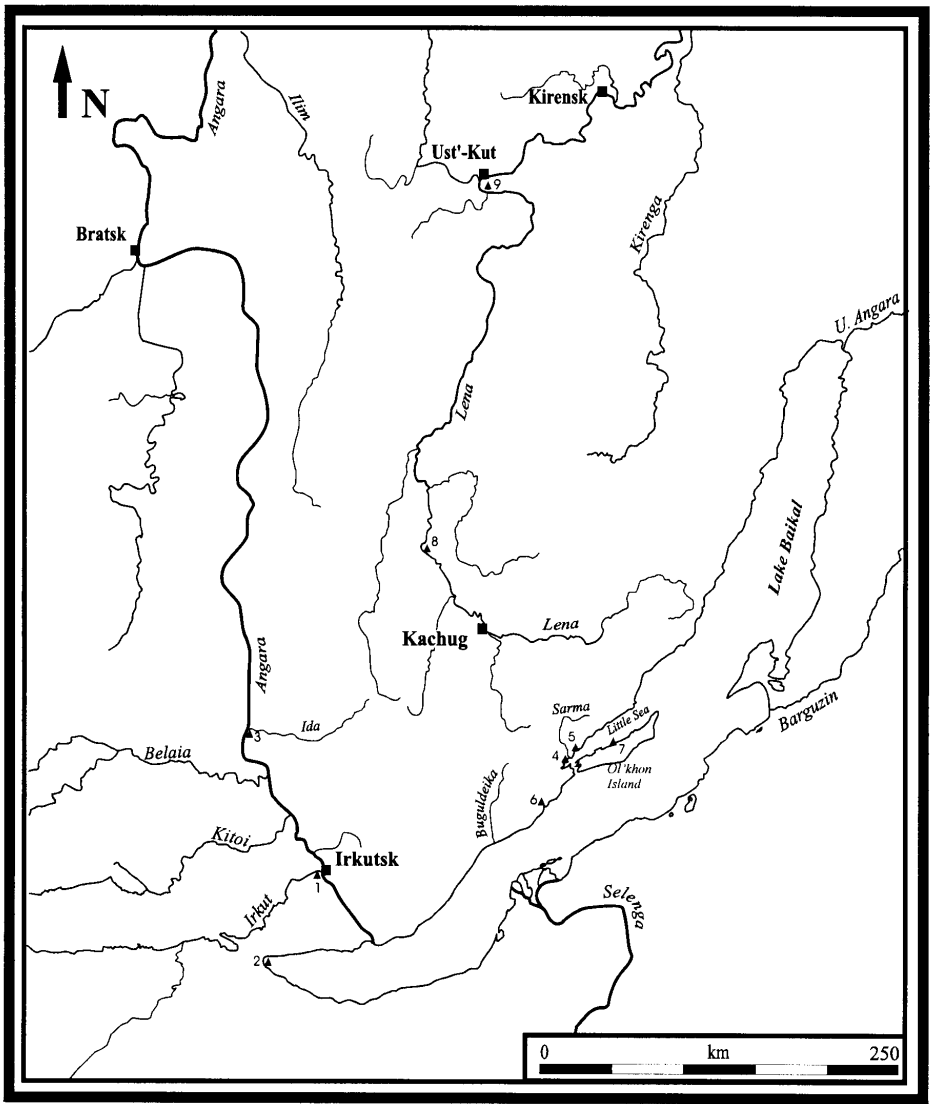

Figure 1 Map of Cis-Baikal and location of archaeological sites: 1–Lokomotiv; 2–Shamanka II; 3–Ust'Ida I; 4–Khuzhir-Nuge XIV; 5–Kurma XI; 6–Khotoruk; 7–Shamanskii Mys; 8–Makrushina; 9–Turuka.

the section of the cemetery referred to as Lokomotiv-Raisovet (LOR), located on the south side of Maiakovskii Street. Based on the few available interim reports, it is apparent that the cemetery represents the Early Neolithic Kitoi culture and displays a substantial amount of variability with regard to practically all major categories of archaeological data, such as grave type and body treatment, grave inclusions, demographic characteristics, and spatial distribution.

The grave pits were originally dug from a layer of red-brown loamy matrix (20–25 cm below the modern surface), with depths ranging from 0.30 to 2.20 m. Most graves contained single interments; however, double burials were not uncommon, and group graves with 3 to 8 deceased were also recorded. Some of the graves with multiple burials featured toe-to-head placement of the bodies, and in most of the group graves the dead were arranged on more than one level. With the exception

of 1 flexed and 1 prone interment, the body position in all remaining cases was extended-supine. Northeast and southwest body orientations were the most frequent, while some burials were aligned to the northwest and west. Two additional conspicuous characteristics of the mortuary treatment were the omnipresent coverage of interments with red ochre and the relative frequency of missing skulls. Spatial organization of the graves featured a few distinct clusters, within which some of the graves were arranged in rows.

Grave goods at LOK displayed a rich morphological and functional variability, as both utilitarian objects and ornaments were found in large numbers (Bazaliiskiy and Savelyev 2003). Lithic arrowheads, fishhook shanks, nephrite adzes and knives, bone or antler harpoons and points, and abraders prevailed among the former, while pendants made of teeth of various animals, zoomorphic and anthropomorphic organic art, and numerous beads were the most frequent among the latter. Distribution of grave accoutrements between the sexes and various age groups was also quite variable. While a few male and female burials had as many as 200–300 and 120–190 objects, respectively, most had only between 10 and 80. Some male and female interments had either very few or no objects at all; likewise, grave goods were not seen in the subadult burials.

Seven ^{14}C determinations for 6 graves were produced for this site in Russia in the 1980s (Mamonova and Sulerzhitskii 1989) and 98 were obtained recently by the BAP (Table 1). Human osteological remains from this cemetery were also subjected to ancient DNA studies (Mooder et al. 2005, forthcoming).

Table 1 ^{14}C dates from the Lokomotiv cemetery (98 dates).

No.	MASTER_ID	HSAMP_ID	LAB NO.	COLLYD %	C14 AGE ± S.D. BP
	Relative Age, Mortuary Tradition			Expected C14 age BP	Calibrated age BC (1 σ)
1	LOK_1980.002.01 Early Neolithic, Kitoi	2001.103	TO-10153	1.5 7000–6100 BP	5700 ± 50 BP 4595–4460 BC
	Comment: The date is somewhat inconsistent with the expected age for this mortuary tradition and the other dates available for this grave.				
2	LOK_1980.002.02 Early Neolithic, Kitoi	1992.009	TO-10505	0.8 7000–6100 BP	6810 ± 60 BP 5735–5640 BC
3	LOK_1980.002.03 Early Neolithic, Kitoi	2001.309	TO-10173	0.8 7000–6100 BP	6620 ± 60 BP 5620–5485 BC
4	LOK_1980.002.04 Early Neolithic, Kitoi	1992.010	TO-10109	2.7 7000–6100 BP	7040 ± 60 BP 5990–5875 BC
5	LOK_1980.003 Early Neolithic, Kitoi	2001.470	TO-10181	0.3 7000–6100 BP	6290 ± 50 BP 5315–5215 BC
6	LOK_1980.004 Early Neolithic, Kitoi	1992.011	TO-10110	2.2 7000–6100 BP	6550 ± 60 BP 5550–5470 BC
7	LOK_1980.005 Early Neolithic, Kitoi	2001.273	TO-10171	3.7 7000–6100 BP	6820 ± 70 BP 5740–5640 BC

Table 1 ^{14}C dates from the Lokomotiv cemetery (98 dates). *(Continued)*

No.	MASTER_ID	HSAMP_ID	LAB NO.	COLLYD %	C14 AGE ± S.D. BP
	Relative Age, Mortuary Tradition			Expected C14 age BP	Calibrated age BC (1 σ)
8	LOK_1980.006 Early Neolithic, Kitoi	2001.390	TO-10179	0.1 7000–6100 BP	7140 ± 130 BP 6090–5895 BC
9	LOK_1980.007 Early Neolithic, Kitoi	2001.124	TO-10156	0.6 7000–6100 BP	6490 ± 80 BP 5510–5370 BC
10	LOK_1980.008 Early Neolithic, Kitoi	2001.101	TO-10152	5.5 7000–6100 BP	6670 ± 70 BP 5635–5530 BC
11	LOK_1980.009 Early Neolithic, Kitoi	2001.112	TO-10155	0.4 7000–6100 BP	6610 ± 90 BP 5625–5475 BC
12	LOK_1980.010.01 Early Neolithic, Kitoi *Comment:* The date is somewhat inconsistent with the expected age for this mortuary tradition and the other dates available for this grave.	1992.015	TO-10111	2.9 7000–6100 BP	5140 ± 60 BP 3980–3940 BC
13	LOK_1980.010.02 Early Neolithic, Kitoi	1992.016	TO-10112	2.5 7000–6100 BP	6720 ± 60 BP 5665–5615 BC
14	LOK_1980.010.03 Early Neolithic, Kitoi	2001.236	TO-10166	8.9 7000–6100 BP	6890 ± 70 BP 5840–5715 BC
15	LOK_1980.010.04 Early Neolithic, Kitoi	2001.233	TO-10165	1.1 7000–6100 BP	6770 ± 70 BP 5720–5625 BC
16	LOK_1980.011 Early Neolithic, Kitoi	1992.019	TO-10113	2.3 7000–6100 BP	6430 ± 60 BP 5475–5320 BC
17	LOK_1980.012 Early Neolithic, Kitoi	2001.230	TO-10164	2.8 7000–6100 BP	6820 ± 70 BP 5740–5640 BC
18	LOK_1980.014.01 Early Neolithic, Kitoi	1992.021	TO-10114	2.1 7000–6100 BP	6750 ± 60 BP 5710–5620 BC
19	LOK_1980.014.02 Early Neolithic, Kitoi *Comment:* The 2 dates obtained for this individual are quite consistent with each other.	1992.022	TO-10115	2.3 7000–6100 BP	6550 ± 60 BP 5550–5470 BC
20	LOK_1980.014.02 Early Neolithic, Kitoi *Comment:* The 2 dates obtained for this individual are quite consistent with each other.	2003.503	TO-11522	3.7 7000–6100 BP	6320 ± 80 BP 5365–5215 BC

Table 1 ^{14}C dates from the Lokomotiv cemetery (98 dates). *(Continued)*

No.	MASTER_ID	HSAMP_ID	LAB NO.	COLLYD %	C14 AGE ± S.D. BP
	Relative Age, Mortuary Tradition			Expected C14 age BP	Calibrated age BC (1 σ)
21	LOK_1980.014.03 Early Neolithic, Kitoi	2001.247	TO-10168	8.9 7000–6100 BP	6620 ± 60 BP 5620–5485 BC
22	LOK_1980.014.04 Early Neolithic, Kitoi *Comment:* The 3 dates obtained for this individual are not very consistent with each other.	1992.024	TO-10502	0.9 7000–6100 BP	6470 ± 70 BP 5480–5365 BC
23	LOK_1980.014.04 Early Neolithic, Kitoi *Comment:* The 3 dates obtained for this individual are not very consistent with each other.	1997.267	TO-10503	2.2 7000–6100 BP	6710 ± 70 BP 5595–5555 BC
24	LOK_1980.014.04 Early Neolithic, Kitoi *Comment:* The 3 dates obtained for this individual are not very consistent with each other.	1997.268	TO-10489	3.1 7000–6100 BP	6310 ± 60 BP 5325–5215 BC
25	LOK_1980.014.05 Early Neolithic, Kitoi	2003.516	TO-11525	0.9 7000–6100 BP	6360 ± 70 BP 5380–5295 BC
26	LOK_1980.015 Early Neolithic, Kitoi	1992.025	TO-10116	0.5 7000–6100 BP	6480 ± 60 BP 5485–5370 BC
27	LOK_1980.016 Early Neolithic, Kitoi	1992.026	TO-10117	2.8 7000–6100 BP	6680 ± 60 BP 5635–5555 BC
28	LOK_1980.017 Early Neolithic, Kitoi	1992.027	TO-10118	5.5 7000–6100 BP	6480 ± 60 BP 5485–5370 BC
29	LOK_1980.018 Early Neolithic, Kitoi	2001.096	TO-10151	3.1 7000–6100 BP	6520 ± 70 BP 5530–5465 BC
30	LOK_1980.019 Early Neolithic, Kitoi	1992.029	TO-10119	2.0 7000–6100 BP	6610 ± 60 BP 5615–5480 BC
31	LOK_1980.020.01 Early Neolithic, Kitoi	1992.030	TO-10120	6.2 7000–6100 BP	6610 ± 60 BP 5615–5480 BC
32	LOK_1980.020.02 Early Neolithic, Kitoi	1992.031	TO-10121	1.7 7000–6100 BP	6870 ± 70 BP 5810–5705 BC
33	LOK_1980.021 Early Neolithic, Kitoi	2001.180	TO-10163	7.2 7000–6100 BP	6680 ± 70 BP 5640–5540 BC

Table 1 ^{14}C dates from the Lokomotiv cemetery (98 dates). *(Continued)*

No.	MASTER_ID	HSAMP_ID	LAB NO.	COLLYD %	C14 AGE ± S.D. BP
	Relative Age, Mortuary Tradition			Expected C14 age BP	Calibrated age BC (1 σ)
34	LOK_1980.022.02 Early Neolithic, Kitoi	2003.672	TO-11556	0.4 7000–6100 BP	6550 ± 70 BP 5555–5470 BC
35	LOK_1980.022.03 Early Neolithic, Kitoi	2002.153	TO-11685	0.5 7000–6100 BP	6490 ± 70 BP 5510–5370 BC
36	LOK_1980.022.05 Early Neolithic, Kitoi	1995.114	TO-10147	3.5 7000–6100 BP	6660 ± 100 BP 5660–5485 BC
37	LOK_1981.013 Early Neolithic, Kitoi	2001.139	TO-10158	1.2 7000–6100 BP	6130 ± 60 BP 5205–4985 BC
38	LOK_1981.023 Early Neolithic, Kitoi	1992.039	TO-10122	1.0 7000–6100 BP	6710 ± 60 BP 5660–5610 BC
39	LOK_1981.024.01 Early Neolithic, Kitoi	1992.040	TO-10123	1.4 7000–6100 BP	6660 ± 60 BP 5630–5530 BC
40	LOK_1981.024.02 Early Neolithic, Kitoi	1992.041	TO-10124	1.3 7000–6100 BP	6620 ± 60 BP 5620–5485 BC
41	LOK_1981.024.03 Early Neolithic, Kitoi	1992.042	TO-10125	2.1 7000–6100 BP	6520 ± 70 BP 5530–5465 BC
42	LOK_1981.024.04 Early Neolithic, Kitoi *Comment:* The 3 dates obtained for this individual are quite consistent with each other.	1997.270	TO-10493	2.0 7000–6100 BP	6540 ± 60 BP 5535–5470 BC
43	LOK_1981.024.04 Early Neolithic, Kitoi *Comment:* The 3 dates obtained for this individual are quite consistent with each other.	1992.043	TO-10126	0.9 7000–6100 BP	6440 ± 60 BP 5475–5355 BC
44	LOK_1981.024.04 Early Neolithic, Kitoi *Comment:* The 3 dates obtained for this individual are quite consistent with each other.	2001.423	TO-10180	1.1 7000–6100 BP	6600 ± 70 BP 5615–5480 BC
45	LOK_1981.024.05 Early Neolithic, Kitoi	1992.044	TO-10127	1.3 7000–6100 BP	6440 ± 60 BP 5475–5355 BC
46	LOK_1981.025.01 Early Neolithic, Kitoi	2001.174	TO-10161	1.0 7000–6100 BP	6280 ± 70 BP 5315–5210 BC

Table 1 ^{14}C dates from the Lokomotiv cemetery (98 dates). *(Continued)*

No.	MASTER_ID	HSAMP_ID	LAB NO.	COLLYD %	C14 AGE ± S.D. BP
	Relative Age, Mortuary Tradition			Expected C14 age BP	Calibrated age BC (1 σ)
47	LOK_1981.025.02 Early Neolithic, Kitoi	2001.288	TO-10172	0.7 7000–6100 BP	6380 ± 60 BP 5385–5305 BC
48	LOK_1981.025.03 Early Neolithic, Kitoi	1992.048	TO-10490	0.5 7000–6100 BP	6410 ± 70 BP 5470–5315 BC
49	LOK_1981.025.04 Early Neolithic, Kitoi	1992.049	TO-10128	0.8 7000–6100 BP	6540 ± 60 BP 5535–5470 BC
50	LOK_1981.025.05 Early Neolithic, Kitoi	2001.175	TO-10497	1.0 7000–6100 BP	6670 ± 60 BP 5635–5540 BC
51	LOK_1983.026 Early Neolithic, Kitoi	1992.050	TO-10129	2.8 7000–6100 BP	6590 ± 60 BP 5565–5480 BC
52	LOK_1984.027 Early Neolithic, Kitoi	2001.262	TO-10169	4.6 7000–6100 BP	6790 ± 70 BP 5730–5630 BC
53	LOK_1984.028 Early Neolithic, Kitoi	1992.052	TO-10130	4.9 7000–6100 BP	6380 ± 60 BP 5385–5305 BC
54	LOK_1984.029 Early Neolithic, Kitoi	1992.053	TO-10131	0.7 7000–6100 BP	6780 ± 60 BP 5720–5630 BC
55	LOK_1985.030.01 Early Neolithic, Kitoi	1992.054	TO-10132	0.4 7000–6100 BP	6800 ± 110 BP 5770–5620 BC
56	LOK_1985.030.02 Early Neolithic, Kitoi	1992.055	TO-10133	1.3 7000–6100 BP	6580 ± 60 BP 5560–5475 BC
57	LOK_1985.031.01 Early Neolithic, Kitoi	1992.056	TO-10134	2.6 7000–6100 BP	6870 ± 60 BP 5805–5710 BC
58	LOK_1985.031.02 Early Neolithic, Kitoi	1992.057	TO-10135	2.9 7000–6100 BP	6950 ± 60 BP 5895–5740 BC
59	LOK_1985.033 Early Neolithic, Kitoi	1992.058	TO-10136	0.3 7000–6100 BP	7250 ± 90 BP 6220–6020 BC
60	LOK_1985.034 Early Neolithic, Kitoi	1992.059	TO-10137	1.0 7000–6100 BP	6630 ± 60 BP 5620–5510 BC

Table 1 ^{14}C dates from the Lokomotiv cemetery (98 dates). *(Continued)*

No.	MASTER_ID	HSAMP_ID	LAB NO.	COLLYD %	C14 AGE ± S.D. BP
	Relative Age, Mortuary Tradition			Expected C14 age BP	Calibrated age BC (1 σ)
61	LOK_1985.035 Early Neolithic, Kitoi	1992.060	TO-10138	0.1 7000–6100 BP	6700 ± 230 BP 5805–5470 BC
62	LOK_1985.036 Early Neolithic, Kitoi	1992.061	TO-10139	8.7 7000–6100 BP	6600 ± 70 BP 5615–5480 BC
63	LOK_1986.037 Early Neolithic, Kitoi	1992.062	TO-10140	8.8 7000–6100 BP	6700 ± 70 BP 5595–5555 BC
64	LOK_1988.038.01 Early Neolithic, Kitoi	1992.063	TO-10141	4.3 7000–6100 BP	6700 ± 80 BP 5665–5555 BC
65	LOK_1988.038.02 Early Neolithic, Kitoi	1992.064	TO-10142	3.1 7000–6100 BP	6720 ± 70 BP 5670–5610 BC
66	LOK_1988.039 Early Neolithic, Kitoi	2001.379	TO-10177	0.6 7000–6100 BP	6720 ± 60 BP 5665–5615 BC
67	LOK_1990.040 Early Neolithic, Kitoi	2001.334	TO-10176	1.4 7000–6100 BP	6810 ± 60 BP 5735–5640 BC
68	LOK_1990.041.01 Early Neolithic, Kitoi	2001.310	TO-10174	9 7000–6100 BP	6820 ± 60 BP 5735–5655 BC
69	LOK_1990.041.02 Early Neolithic, Kitoi	2001.817	TO-10182	0.8 7000–6100 BP	6700 ± 50 BP 5640–5610 BC
70	LOK_1990.041.03 Early Neolithic, Kitoi	1992.069	TO-10143	8.7 7000–6100 BP	6870 ± 80 BP 5835–5670 BC
71	LOK_1990.042 Early Neolithic, Kitoi	1992.070	TO-10144	0.3 7000–6100 BP	7140 ± 70 BP 6060–5980 BC
72	LOK_1990.043.01 Early Neolithic, Kitoi	2001.406	TO-10504	4.6 7000–6100 BP	6710 ± 60 BP 5660–5610 BC
73	LOK_1990.043.02 Early Neolithic, Kitoi	2001.313	TO-10175	1.0 7000–6100 BP	6850 ± 60 BP 5770–5670 BC
74	LOK_1990.044.01 Early Neolithic, Kitoi	1992.072	TO-10145	0.7 7000–6100 BP	6800 ± 80 BP 5735–5630 BC

Table 1 ^{14}C dates from the Lokomotiv cemetery (98 dates). *(Continued)*

No.	MASTER_ID	HSAMP_ID	LAB NO.	COLLYD %	C14 AGE ± S.D. BP
	Relative Age, Mortuary Tradition			Expected C14 age BP	Calibrated age BC (1 σ)
75	LOK_1990.044.02 Early Neolithic, Kitoi	1992.073	TO-10146	3.3 7000–6100 BP	6740 ± 60 BP 5705–5620 BC
76	LOR_1980.001 Early Neolithic, Kitoi	2001.267	TO-10183	0.9 7000–6100 BP	6700 ± 60 BP 5590–5560 BC
77	LOR_1980.003.01 Early Neolithic, Kitoi	2001.130	TO-10185	1.4 7000–6100 BP	6670 ± 60 BP 5635–5540 BC
78	LOR_1982.005 Early Neolithic, Kitoi	2003.512	TO-11523	0.4 7000–6100 BP	6603 ± 70 BP 5615–5480 BC
79	LOR_1991.006.01 Early Neolithic, Kitoi	2001.155	TO-10186	2.5 7000–6100 BP	6690 ± 60 BP 5595–5555 BC
80	LOR_1991.006.02 Early Neolithic, Kitoi	1992.004	TO-10492	7.8 7000–6100 BP	6680 ± 60 BP 5635–5555 BC
81	LOR_1991.007.01 Early Neolithic, Kitoi *Comment:* This low-collagen date is inconsistent with the other 2 dates obtained for this grave.	2001.160	TO-10188	0.4 7000–6100 BP	7110 ± 180 BP 6105–5800 BC
82	LOR_1991.007.02 Early Neolithic, Kitoi	2001.157	TO-10187	1.2 7000–6100 BP	6670 ± 70 BP 5635–5530 BC
83	LOR_1991.007.03 Early Neolithic, Kitoi *Comment:* The 2 dates obtained for this individual are quite consistent with each other.	1992.005	TO-10494	1.4 7000–6100 BP	6650 ± 60 BP 5625–5525 BC
84	LOR_1991.007.03 Early Neolithic, Kitoi *Comment:* The 2 dates obtained for this individual are quite consistent with each other.	2001.223	TO-10487	4.1 7000–6100 BP	6630 ± 60 BP 5620–5510 BC
85	LOR_1997.008 Early Neolithic, Kitoi *Comment:* The 2 dates obtained for this individual are quite consistent with each other.	0020.000	TO-06482	1.3 7000–6100 BP	7750 ± 70 BP 6645–6480 BC
86	LOR_1997.008 Early Neolithic, Kitoi *Comment:* The 2 dates obtained for this individual are quite consistent with each other.	2001.821	TO-10507	12.0 7000–6100 BP	7840 ± 70 BP 6705–6600 BC

Table 1 ^{14}C dates from the Lokomotiv cemetery (98 dates). *(Continued)*

No.	MASTER_ID	HSAMP_ID	LAB NO.	COLLYD %	C14 AGE ± S.D. BP
	Relative Age, Mortuary Tradition			Expected C14 age BP	Calibrated age BC (1 σ)
87	LOR_1997.008-Wolf	2003.704	TO-11558	2.7	7320 ± 70 BP
	Early Neolithic, Kitoi			7000–6100 BP	6235–6075 BC
	Comment: This date was obtained from remains of a wolf (Bazaliiskiy and Savelyev 2003).				
88	LOR_1997.009	2001.307	TO-10501	1.2	6950 ± 70 BP
	Early Neolithic, Kitoi			7000–6100 BP	5900–5735 BC
89	LOR_1997.010	2001.285	TO-10191	1.4	6410 ± 100 BP
	Early Neolithic, Kitoi			7000–6100 BP	5475–5305 BC
90	LOR_1997.011	2001.283	TO-10189	1.0	6750 ± 70 BP
	Early Neolithic, Kitoi			7000–6100 BP	5715–5620 BC
	Comment: The 2 dates obtained for this individual are quite consistent with each other.				
91	LOR_1997.011	2001.284	TO-10190	0.6	6829 ± 100 BP
	Early Neolithic, Kitoi			7000–6100 BP	5800–5630 BC
	Comment: The 2 dates obtained for this individual are quite consistent with each other.				
92	LOR_1998.012	2001.293	TO-10192	1.2	6520 ± 80 BP
	Early Neolithic, Kitoi			7000–6100 BP	5535–5465 BC
93	LOR_1998.013.01	2001.300	TO-10488	0.4	6610 ± 60 BP
	Early Neolithic, Kitoi			7000–6100 BP	5615–5480 BC
94	LOR_1998.013.02	2001.296	TO-10495	7.4	6630 ± 60 BP
	Early Neolithic, Kitoi			7000–6100 BP	5620–5510 BC
95	LOR_1998.013.03	2001.291	TO-10500	1.5	6690 ± 70 BP
	Early Neolithic, Kitoi			7000–6100 BP	5660–5555 BC
96	LOR_1998.013.04	2001.226	TO-10498	3.5	6650 ± 60 BP
	Early Neolithic, Kitoi			7000–6100 BP	5625–5525 BC
97	LOR_1998.014	2001.120	TO-10184	0.2	6660 ± 160 BP
	Early Neolithic, Kitoi			7000–6100 BP	5715–5475 BC
98	LOR_1998.015.01	2001.303	TO-10499	1.7	6270 ± 70 BP
	Early Neolithic, Kitoi			7000–6100 BP	5315–5205 BC

SHAMANKA II

The Shamanka II cemetery (SHA) is located on the coast of Lake Baikal at its southwesternmost end (Figure 1; 51°41′54″N, 103°42′11″E). The cemetery is situated on a narrow peninsula that juts out

into the lake in the E–W direction, near the mouth of a small river (Kultuchnaia). The peninsula is formed by 2 hills connected with each other by a bottleneck of low-lying land. The western hill is smaller and lower, but more rocky, than the eastern hill, which is large enough (28 m above the lake at its highest point) to accommodate a cemetery on its southwest slope; the northeast side drops vertically into the lake.

The site was first discovered in 1962 when 3 graves were found to be eroding away along the cliff of the slope. No further fieldwork was done until the 1990s when one disturbed grave was found in 1996 and 6 more graves, endangered by the collapsing cliff, were rescued in 1998 and 1999 by A V Kharinskii and G V Turkin (Irkutsk State Technical University; Turkin and Kharinskii 2004). From 2002 to 2005, the cemetery has been subjected to large-area excavations directed by V I Bazaliiskii (Irkutsk State University) under the auspices of the Baikal Archaeology Project; these have yielded an additional 61 graves (Bazaliiskii and Weber 2004). Of all the 71 graves recorded thus far, 5 graves with 3 individuals represent the Bronze Age Glazkovo culture, while 65 graves with 129 recorded burials are associated with the Early Neolithic Kitoi culture. The cultural affiliation of the heavily disturbed grave documented in 1996 could not be ascertained. Fieldwork at this locality will continue in 2006.

The graves have been encountered about 20–25 cm below the modern surface. They were originally dug from a layer of bright brown loam down to the limestone bedrock, reaching depths of 1.10 to 1.80 m. The Early Neolithic component of this cemetery displays characteristics of the Kitoi mortuary tradition, including supine body position, N–S orientation, graves with multiple interments, toe-to-head arrangements, and the use of red ochre. This tradition is also reflected in the assortment of grave goods, among which the most diagnostic are the shanks of Kitoi composite fishhooks and items of zoomorphic art. The distribution of grave goods is quite variable, ranging from no objects, or very few, to interments with hundreds of items. The fact that many of the Kitoi graves at this site were extensively disturbed in the past is a rather unusual circumstance for this Early Neolithic culture. A large number of the Kitoi burials have substantial parts of their skeletons missing. Some of the younger Glazkovo graves at this site were also disturbed.

Since fieldwork at SHA has not yet been completed, only preliminary observations can be offered regarding the spatial organization. While most graves appear to be dispersed around the cemetery area, a few distinct clusters have been documented, including some side-by-side graves arranged into rows running in the SE–NW direction.

Table 2 presents all the ^{14}C dates obtained for this cemetery by the BAP. Turkin and Kharinskii (2004) have reported 4 dates produced from the Glazkovo graves excavated between 1998 and 2000.

Table 2 ^{14}C dates from the Shamanka II cemetery (48 dates).

No.	MASTER_ID	HSAMP_ID	LAB NO.	COLLYD %	C14 AGE ± S.D. BP
	Relative Age, Mortuary Tradition			Expected C14 age BP	Calibrated age BC (1 σ)
1	SHA_1999.007 Early Neolithic, Kitoi	2002.204	TO-11051	3.2 7000–6100 BP	6040 ± 70 BP 5025–4840 BC
2	SHA_2000.008 Early Neolithic, Kitoi	2002.174	TO-11060	2.2 7000–6100 BP	7020 ± 60 BP 5985–5840 BC

Table 2 ^{14}C dates from the Shamanka II cemetery (48 dates). *(Continued)*

No.	MASTER_ID	HSAMP_ID	LAB NO.	COLLYD %	C14 AGE ± S.D. BP
	Relative Age, Mortuary Tradition			Expected C14 age BP	Calibrated age BC (1 σ)
3	SHA_2000.009	2002.169	TO-11042	6.3	3600 ± 50 BP
	Bronze Age, Glazkovo			4800–3300 BP	2025–1890 BC
4	SHA_2000.010	2002.213	TO-11062	4.0	7140 ± 60 BP
	Early Neolithic, Kitoi			7000–6100 BP	6055–5980 BC
5	SHA_2001.011.01	2002.165	TO-11053	1.2	6640 ± 70 BP
	Early Neolithic, Kitoi			7000–6100 BP	5625–5510 BC
6	SHA_2001.011.02	2002.164	TO-11057	9.0	6860 ± 70 BP
	Early Neolithic, Kitoi			7000–6100 BP	5805–5670 BC
7	SHA_2001.012	2002.210	TO-11686	1.9	6680 ± 70 BP
	Early Neolithic, Kitoi			7000–6100 BP	5640–5540 BC
8	SHA_2001.013.01	2003.651	TO-11550	3.8	6730 ± 70 BP
	Early Neolithic, Kitoi			7000–6100 BP	5705–5615 BC
9	SHA_2001.013.02	2003.649	TO-11549	3.1	6610 ± 80 BP
	Early Neolithic, Kitoi			7000–6100 BP	5620–5480 BC
10	SHA_2001.013.03	2002.192	TO-11039	3.4	6890 ± 60 BP
	Early Neolithic, Kitoi			7000–6100 BP	5840–5715 BC
11	SHA_2001.014.01	2002.178	TO-11043	4.4	6560 ± 50 BP
	Early Neolithic, Kitoi			7000–6100 BP	5550–5475 BC
12	SHA_2001.014.02	2002.180	TO-11049	6.2	6870 ± 70 BP
	Early Neolithic, Kitoi			7000–6100 BP	5810–5705 BC
13	SHA_2001.015	2002.207	TO-11052	2.1	6870 ± 60 BP
	Early Neolithic, Kitoi			7000–6100 BP	5805–5710 BC
14	SHA_2001.016	2002.189	TO-11056	10.3	6450 ± 70 BP
	Early Neolithic, Kitoi			7000–6100 BP	5480–5355 BC
15	SHA_2001.017.01	2002.201	TO-11046	5.8	6770 ± 70 BP
	Early Neolithic, Kitoi			7000–6100 BP	5720–5625 BC
	Comment: The 2 dates obtained for this individual are quite consistent with each other.				
16	SHA_2001.017.01	2003.655	TO-11552	2.5	6870 ± 70 BP
	Early Neolithic, Kitoi			7000–6100 BP	5810–5705 BC
	Comment: The 2 dates obtained for this individual are quite consistent with each other.				

Table 2 ^{14}C dates from the Shamanka II cemetery (48 dates). *(Continued)*

No.	MASTER_ID	HSAMP_ID	LAB NO.	COLLYD %	C14 AGE ± S.D. BP
	Relative Age, Mortuary Tradition			Expected C14 age BP	Calibrated age BC (1 σ)
17	SHA_2001.017.02	2003.654	TO-11551	4.6	6860 ± 70 BP
	Early Neolithic, Kitoi			7000–6100 BP	5805–5670 BC
	Comment: The 2 dates obtained for this individual are quite consistent with each other.				
18	SHA_2001.017.02	2002.198	TO-11050	1.9	6910 ± 70 BP
	Early Neolithic, Kitoi			7000–6100 BP	5880–5720 BC
	Comment: The 2 dates obtained for this individual are quite consistent with each other.				
19	SHA_2001.018	2002.186	TO-11044	4.2	6790 ± 60 BP
	Early Neolithic, Kitoi			7000–6100 BP	5725–5630 BC
20	SHA_2001.019	2002.183	TO-11045	4.4	6830 ± 70 BP
	Early Neolithic, Kitoi			7000–6100 BP	5750–5655 BC
21	SHA_2002.021.01	2002.238	TO-11064	1.1	6530 ± 50 BP
	Early Neolithic, Kitoi			7000–6100 BP	5520–5470 BC
22	SHA_2002.021.02	2002.241	TO-11041	0.7	6430 ± 60 BP
	Early Neolithic, Kitoi			7000–6100 BP	5475–5320 BC
23	SHA_2002.021.03	2002.244	TO-11063	3.2	6920 ± 60 BP
	Early Neolithic, Kitoi			7000–6100 BP	5880–5725 BC
24	SHA_2002.022	2002.232	TO-11058	0.4	6110 ± 60 BP
	Early Neolithic, Kitoi			7000–6100 BP	5075–4945 BC
25	SHA_2002.023.01	2002.227	TO-11047	11.3	6340 ± 70 BP
	Early Neolithic, Kitoi			7000–6100 BP	5370–5290 BC
26	SHA_2002.023.02	2002.218	TO-11040	4.2	6840 ± 60 BP
	Early Neolithic, Kitoi			7000–6100 BP	5750–5665 BC
	Comment: The 2 dates obtained for this individual are quite consistent with each other.				
27	SHA_2002.023.02	2003.662	TO-11555	7.2	7090 ± 70 BP
	Early Neolithic, Kitoi			7000–6100 BP	5955–5895 BC
	Comment: The 2 dates obtained for this individual are quite consistent with each other.				
28	SHA_2002.023.04	2002.221	TO-11054	8.6	6690 ± 70 BP
	Early Neolithic, Kitoi			7000–6100 BP	5660–5555 BC
	Comment: The 2 dates obtained for this individual are somewhat less consistent with each other.				

Table 2 ^{14}C dates from the Shamanka II cemetery (48 dates). *(Continued)*

No.	MASTER_ID	HSAMP_ID	LAB NO.	COLLYD %	C14 AGE ± S.D. BP
	Relative Age, Mortuary Tradition			Expected C14 age BP	Calibrated age BC (1 σ)
29	SHA_2002.023.04	2003.661	TO-11554	2.8	7130 ± 70 BP
	Early Neolithic, Kitoi			7000–6100 BP	6055–5980 BC
	Comment: The 2 dates obtained for this individual are somewhat less consistent with each other.				
30	SHA_2002.023.05	2002.223	TO-11059	0.6	6740 ± 60 BP
	Early Neolithic, Kitoi			7000–6100 BP	5705–5620 BC
31	SHA_2002.024.01	2002.230	TO-11048	10.7	6960 ± 70 BP
	Early Neolithic, Kitoi			7000–6100 BP	5915–5740 BC
32	SHA_2002.024.02	2003.656	TO-11553	0.3	6010 ± 70 BP
	Early Neolithic, Kitoi			7000–6100 BP	4995–4820 BC
	Comment: This low-collagen date is inconsistent with the high-collagen date obtained for this individual.				
33	SHA_2002.024.02	2002.235	TO-11061	1.7	6680 ± 100 BP
	Early Neolithic, Kitoi			7000–6100 BP	5665–5515 BC
34	SHA_2003.025.01	2003.562	TO-11537	0.4	6610 ± 60 BP
	Early Neolithic, Kitoi			7000–6100 BP	5615–5480 BC
35	SHA_2003.026.01	2003.538	TO-11528	1.8	6134 ± 70 BP
	Early Neolithic, Kitoi			7000–6100 BP	5210–4980 BC
36	SHA_2003.026.02	2003.539	TO-11529	0.7	4880 ± 130 BP
	Early Neolithic, Kitoi			7000–6100 BP	3605–3520 BC
	Comment: This low-collagen date is inconsistent with the other high-collagen dates obtained for this grave and is inconsistent with the expected mortuary tradition.				
37	SHA_2003.026.03	2003.544	TO-11531	4.3	6250 ± 60 BP
	Early Neolithic, Kitoi			7000–6100 BP	5305–5205 BC
38	SHA_2003.026.05	2003.540	TO-11530	0.3	5270 ± 60 BP
	Early Neolithic, Kitoi			7000–6100 BP	4175–3985 BC
	Comment: This low-collagen date is inconsistent with the other high-collagen dates obtained for this grave and is inconsistent with the expected mortuary tradition.				
39	SHA_2003.027.01	2003.550	TO-11533	0.8	7010 ± 70 BP
	Early Neolithic, Kitoi			7000–6100 BP	5985–5835 BC
40	SHA_2003.027.02	2003.553	TO-11534	2.3	6970 ± 70 BP
	Early Neolithic, Kitoi			7000–6100 BP	5915–5745 BC

Table 2 ^{14}C dates from the Shamanka II cemetery (48 dates). *(Continued)*

No.	MASTER_ID	HSAMP_ID	LAB NO.	COLLYD %	C14 AGE ± S.D. BP
	Relative Age, Mortuary Tradition			Expected C14 age BP	Calibrated age BC (1 σ)
41	SHA_2003.027.03 Early Neolithic, Kitoi	2003.556	TO-11535	0.8 7000–6100 BP	6820 ± 70 BP 5740–5640 BC
42	SHA_2003.028 Early Neolithic, Kitoi	2003.568	TO-11539	0.9 7000–6100 BP	6260 ± 70 BP 5310–5205 BC
43	SHA_2003.029.01 Early Neolithic, Kitoi	2003.546	TO-11532	13.5 7000–6100 BP	6730 ± 70 BP 5705–5615 BC
44	SHA_2003.030 Early Neolithic, Kitoi	2003.560	TO-11536	1.6 7000–6100 BP	6190 ± 60 BP 5220–5045 BC
45	SHA_2003.031 Early Neolithic, Kitoi *Comment:* This low-collagen date is inconsistent with the expected age for this mortuary tradition.	2003.570	TO-11541	0.8 7000–6100 BP	5250 ± 70 BP 4080–3970 BC
46	SHA_2003.032 Early Neolithic, Kitoi	2003.536	TO-11527	7.6 7000–6100 BP	6620 ± 80 BP 5625–5480 BC
47	SHA_2003.033 Early Neolithic, Kitoi	2003.565	TO-11538	1.0 7000–6100 BP	6790 ± 70 BP 5730–5630 BC
48	SHA_2003.038 Early Neolithic, Kitoi	2003.572	TO-11542	1.0 7000–6100 BP	6820 ± 70 BP 5740–5640 BC

UST'-IDA I

The Ust'-Ida I cemetery (UID) is located on the bank of the Angara River at the mouth of its right tributary, the Ida, ~180 km north of Lake Baikal (Figure 1; 53°11′20″N, 103°22′05″E). Like many other cemeteries in this area, UID was revealed by the waters of the Angara River eroding its banks. The first grave was recorded by A P Okladnikov in the mid-1950s, and several more were spotted by local amateur naturalists in the mid-1980s (Tiutrin and Bazaliiskii 1996). Due to the severe disturbances, not much archaeological information is available on these graves. From 1987 to 1995, the cemetery was subjected to systematic archaeological excavations directed by V I Bazaliiskii (Irkutsk State University). This fieldwork produced 1 Early Neolithic Kitoi grave, 31 Late Neolithic Isakovo graves, and 19 Bronze Age Glazkovo graves.

The UID graves were originally dug from red-brown loam, reaching depths from 0.60 to 1.20 m below the modern surface. Spatially, the graves were dispersed along a section of the river terrace ~130 m long and 30 m wide, and formed 2 distinct clusters, each with about 20–25 graves. These 2 concentrations were separated from each other by ~20 m of gentle depression. The graves were either scattered or organized into rows of side-by-side graves, 3–6 per row. The rows ran in the E–

W direction (perpendicular to the Angara), while the grave pits themselves generally featured N–S alignment (parallel to the river). Both spatial groups of graves comprised Isakovo and Glazkovo graves in generally equal proportions, while the single Kitoi grave was found at the southeastern periphery of the northern group. Some of the rows appeared to have both Isakovo and Glazkovo graves in them.

The typological classification of the UID graves has relied on the following 2 main criteria: heads of the Isakovo burials point south, while the Glazkovo interments point north, and the Isakovo graves feature very few stones in the grave pits, while the Glazkovo graves are covered by pavings of local limestone slabs. Additional distinctions include the presence of mitre-shaped clay pots in the Isakovo graves, as well as white nephrite and limestone discs and copper or bronze objects in the Glazkovo graves. Many of the other grave accoutrements—such as lithic arrowheads, bifacial points and rectangular inserts, or organic points, harpoons, and needle boxes—are culturally less distinctive. The classification of the single Kitoi grave is based on the presence of lithic fishhook shanks, which are idiosyncratic of this mortuary tradition. Finally, many of the Isakovo graves feature multiple interments placed side by side, whereas most of the Glazkovo graves are single inhumations.

A number of ^{14}C determinations were produced for the UID cemetery in Russian laboratories; none, however, have been published thus far. Table 3 shows all the ^{14}C dates obtained for this cemetery by the BAP. The skeletal remains from UID were also examined for their ancient DNA content, first by Naumova et al. (1997; see also Naumova and Rychkov 1998) and then by Mooder et al. (forthcoming).

Table 3 ^{14}C dates from the Ust'-Ida I cemetery (64 dates).

No.	MASTER_ID	HSAMP_ID	LAB NO.	COLLYD %	C14 AGE ± S.D. BP
	Relative Age, Mortuary Tradition			Expected C14 age BP	Calibrated age BC (1 σ)
1	UID_1987.004	2001.391	TO-10358	1.6	4330 ± 60 BP
	Late Neolithic, Isakovo			5300–4400 BP	3015–2890 BC
2	UID_1987.005	2001.149	TO-10320	0.04	4690 ± 170 BP
	Late Neolithic, Isakovo			5300–4400 BP	3645–3335 BC
3	UID_1987.006	2001.107	TO-10312	2.7	4960 ± 90 BP
	Late Neolithic, Isakovo			5300–4400 BP	3800–3645 BC
4	UID_1987.007	2001.126	TO-10315	13.3	3940 ± 70 BP
	Bronze Age, Glazkovo			4800–3300 BP	2490–2340 BC
5	UID_1987.008	2001.386	TO-10356	0.7	4750 ± 70 BP
	Late Neolithic, Isakovo			5300–4400 BP	3435–3375 BC
6	UID_1987.009	2001.242	TO-10337	2.9	4720 ± 70 BP
	Late Neolithic, Isakovo			5300–4400 BP	3465–3370 BC
7	UID_1987.011	2001.170	TO-10324	2.3	4870 ± 70 BP
	Late Neolithic, Isakovo			5300-4400 BP	3705–3630 BC

Table 3 ^{14}C dates from the Ust'-Ida I cemetery (64 dates). *(Continued)*

No.	MASTER_ID	HSAMP_ID	LAB NO.	COLLYD %	C14 AGE ± S.D. BP
	Relative Age, Mortuary Tradition			Expected C14 age BP	Calibrated age BC (1 σ)
8	UID_1987.012	2001.359	TO-10349	4.8	4220 ± 60 BP
	Bronze Age, Glazkovo			4800–3300 BP	2810–2745 BC
9	UID_1988.014	1992.085	TO-10302	10.2	4750 ± 70 BP
	Late Neolithic, Isakovo			5300–4400 BP	3435–3375 BC
10	UID_1988.015	2001.376	TO-10354	2.8	4710 ± 60 BP
	Late Neolithic, Isakovo			5300–4400 BP	3465–3370 BC
11	UID_1988.016.01	1992.087	TO-10303	13.6	4710 ± 70 BP
	Late Neolithic, Isakovo			5300–4400 BP	3470–3370 BC
12	UID_1988.017	2001.477	TO-10361	0.4	3630 ± 70 BP
	Late Neolithic, Isakovo			5300–4400 BP	2045–1895 BC
13	UID_1988.017	2003.530	TO-11526	1.3	5260 ± 80 BP
	Late Neolithic, Isakovo			5300–4400 BP	4180–3970 BC
14	UID_1988.018	2001.240	TO-10336	1.7	4690 ± 70 BP
	Late Neolithic, Isakovo			5300–4400 BP	3530–3365 BC
15	UID_1989.019	2001.367	TO-10351	6.8	4270 ± 60 BP
	Bronze Age, Glazkovo			4800–3300 BP	2910–2875 BC
16	UID_1989.020.01	2001.361	TO-10350	11	4540 ± 60 BP
	Late Neolithic, Isakovo			5300–4400 BP	3240–3100 BC
17	UID_1989.020.02	2001.182	TO-10326	2.7	4840 ± 70 BP
	Late Neolithic, Isakovo			5300–4400 BP	3580–3525 BC
18	UID_1989.021.01	2001.337	TO-10342	1.1	4630 ± 160 BP
	Late Neolithic, Isakovo			5300–4400 BP	3635–3090 BC
	Comment: The 2 dates obtained for this individual are inconsistent with each other.				
19	UID_1989.021.01	1992.094	TO-10506	7.5	3700 ± 50 BP
	Late Neolithic, Isakovo			5300–4400 BP	2140–2025 BC
	Comment: The 2 dates obtained for this individual are inconsistent with each other.				
20	UID_1989.021.02	2001.373	TO-10353	2.4	4730 ± 60 BP
	Late Neolithic, Isakovo			5300–4400 BP	3450–3375 BC

Table 3 ^{14}C dates from the Ust'-Ida I cemetery (64 dates). *(Continued)*

No.	MASTER_ID	HSAMP_ID	LAB NO.	COLLYD %	C14 AGE ± S.D. BP
	Relative Age, Mortuary Tradition			Expected C14 age BP	Calibrated age BC (1 σ)
21	UID_1989.022	2001.208	TO-10333	>0.2	4880 ± 60 BP
	Late Neolithic, Isakovo			5300–4400 BP	3705–3635 BC
22	UID_1989.023	2001.212	TO-10334	>1.7	4640 ± 70 BP
	Late Neolithic, Isakovo			5300–4400 BP	3385–3355 BC
23	UID_1989.024	1992.097	TO-10304	3.0	4200 ± 70 BP
	Bronze Age, Glazkovo			4800–3300 BP	2810–2670 BC
24	UID_1989.025.01	2001.564	TO-10362	1.4	4560 ± 60 BP
	Late Neolithic, Isakovo			5300–4400 BP	3160–3110 BC
25	UID_1989.025.02	2001.163	TO-10322	4.2	4740 ± 70 BP
	Late Neolithic, Isakovo			5300–4400 BP	3455–3375 BC
26	UID_1989.025.03	2001.204	TO-10332	0.6	4930 ± 70 BP
	Late Neolithic, Isakovo			5300–4400 BP	3780–3645 BC
27	UID_1989.026.01	2001.191	TO-10328	4.3	4740 ± 70 BP
	Late Neolithic, Isakovo			5300–4400 BP	3455–3375 BC
28	UID_1989.026.02	1992.101	TO-10496	0.1	5030 ± 150 BP
	Late Neolithic, Isakovo			5300–4400 BP	3975–3650 BC
	Comment: The 2 dates obtained for this individual are quite consistent with each other.				
29	UID_1989.026.02	2003.525	TO-11524	1.0	4930 ± 70 BP
	Late Neolithic, Isakovo			5300–4400 BP	3780–3645 BC
	Comment: The 2 dates obtained for this individual are quite consistent with each other.				
30	UID_1989.026.03	2001.446	TO-10360	1.1	4480 ± 60 BP
	Late Neolithic, Isakovo			5300–4400 BP	3345–3080 BC
31	UID_1989.026.04	2001.135	TO-10316	2.5	4600 ± 60 BP
	Late Neolithic, Isakovo			5300–4400 BP	3375–3345 BC
32	UID_1989.026.05	2001.161	TO-10321	0.4	4700 ± 90 BP
	Late Neolithic, Isakovo			5300–4400 BP	3540–3365 BC
33	UID_1989.029	2001.316	TO-10339	7.1	3870 ± 70 BP
	Bronze Age, Glazkovo			4800–3300 BP	2465–2200 BC

Table 3 ^{14}C dates from the Ust'-Ida I cemetery (64 dates). *(Continued)*

No.	MASTER_ID	HSAMP_ID	LAB NO.	COLLYD %	C14 AGE ± S.D. BP
	Relative Age, Mortuary Tradition			Expected C14 age BP	Calibrated age BC (1 σ)
34	UID_1989.030	2001.122	TO-10314	10.8	4860 ± 110 BP
	Late Neolithic, Isakovo			5300–4400 BP	3600–3520 BC
35	UID_1989.031	1992.108	TO-10305	12.3	4670 ± 70 BP
	Late Neolithic, Isakovo			5300–4400 BP	3520–3360 BC
36	UID_1989.032	2001.196	TO-10330	9.2	4650 ± 70 BP
	Late Neolithic, Isakovo			5300–4400 BP	3515–3355 BC
37	UID_1990.033.01	1992.110	TO-10306	3.3	4890 ± 70 BP
	Late Neolithic, Isakovo			5300–4400 BP	3705–3635 BC
38	UID_1990.033.02	2001.218	TO-10335	3.2	4680 ± 70 BP
	Late Neolithic, Isakovo			5300–4400 BP	3525–3365 BC
39	UID_1991.036.01	2001.146	TO-10319	12.5	4630 ± 60 BP
	Late Neolithic, Isakovo			5300–4400 BP	3380–3355 BC
	Comment: The 2 dates obtained for this grave are inconsistent with each other.				
40	UID_1991.036.02	2001.339	TO-10343	6.0	3590 ± 70 BP
	Late Neolithic, Isakovo			5300–4400 BP	2030–1880 BC
	Comment: The 2 dates obtained for this grave are inconsistent with each other.				
41	UID_1991.038	2001.388	TO-10357	0.6	4730 ± 60 BP
	Late Neolithic, Isakovo			5300–4400 BP	3450–3375 BC
42	UID_1991.039	2001.330	TO-10340	1.0	3740 ± 60 BP
	Bronze Age, Glazkovo			4800–3300 BP	2205–2030 BC
43	UID_1991.040.01	2001.351	TO-10347	7.2	3650 ± 60 BP
	Bronze Age, Glazkovo			4800–3300 BP	2060–1935 BC
44	UID_1991.041	1992.116	TO-10307	1.6	4790 ± 70 BP
	Late Neolithic, Isakovo			5300–4400 BP	3645–3515 BC
45	UID_1991.042	2001.348	TO-10346	0.1	4930 ± 180 BP
	Bronze Age, Glazkovo			4800–3300 BP	3950–3625 BC
	Comment: Burial in flexed position with head to the east.				

Table 3 ^{14}C dates from the Ust'-Ida I cemetery (64 dates). *(Continued)*

No.	MASTER_ID	HSAMP_ID	LAB NO.	COLLYD %	C14 AGE ± S.D. BP
	Relative Age, Mortuary Tradition			Expected C14 age BP	Calibrated age BC (1 σ)
46	UID_1993.043	2001.172	TO-10325	5.9	6470 ± 80 BP
	Early Neolithic, Kitoi			7000–6100 BP	5485–5360 BC
47	UID_1993.043	2003.676	TO-11557	0.6	7090 ± 80 BP
	Early Neolithic, Kitoi			7000–6100 BP	6025–5890 BC
48	UID_1993.044.01	2001.341	TO-10344	6.3	4590 ± 70 BP
	Late Neolithic, Isakovo			5300–4400 BP	3375–3335 BC
49	UID_1993.044.02	2001.143	TO-10318	8.6	4630 ± 60 BP
	Late Neolithic, Isakovo			5300–4400 BP	3380–3355 BC
50	UID_1993.044.03	2001.137	TO-10317	9.1	4890 ± 70 BP
	Late Neolithic, Isakovo			5300–4400 BP	3705–3635 BC
51	UID_1993.045	2001.343	TO-10345	6.8	3760 ± 60 BP
	Bronze Age, Glazkovo			4800–3300 BP	2210–2125 BC
52	UID_1994.046	2001.428	TO-10359	0.5	3790 ± 60 BP
	Bronze Age, Glazkovo			4800–3300 BP	2295–2135 BC
53	UID_1994.047	2001.275	TO-10338	2.0	3770 ± 60 BP
	Bronze Age, Glazkovo			4800–3300 BP	2285–2130 BC
54	UID_1994.048	1994.005	TO-10308	3.0	3830 ± 70 BP
	Bronze Age, Glazkovo			4800–3300 BP	2410–2195 BC
55	UID_1994.049	2001.117	TO-10313	1.9	3910 ± 80 BP
	Bronze Age, Glazkovo			4800–3300 BP	2485–2285 BC
56	UID_1994.051	1995.003	TO-10309	6.5	3960 ± 80 BP
	Bronze Age, Glazkovo			4800–3300 BP	2500–2395 BC
57	UID_1994.052	2001.332	TO-10341	5.2	4850 ± 70 BP
	Late Neolithic, Isakovo			5300–4400 BP	3695–3630 BC
58	UID_1994.053.01	2001.193	TO-10329	1.5	4790 ± 100 BP
	Late Neolithic, Isakovo			5300–4400 BP	3650–3500 BC

Table 3 ^{14}C dates from the Ust'-Ida I cemetery (64 dates). *(Continued)*

No.	MASTER_ID	HSAMP_ID	LAB NO.	COLLYD %	C14 AGE ± S.D. BP
	Relative Age, Mortuary Tradition			Expected C14 age BP	Calibrated age BC (1 σ)
59	UID_1994.053.02	2001.165	TO-10323	5.0	4570 ± 70 BP
	Late Neolithic, Isakovo			5300–4400 BP	3160–3105 BC
60	UID_1994.054	1995.007	TO-10310	0.7	4710 ± 70 BP
	Late Neolithic, Isakovo			5300–4400 BP	3470–3370 BC
61	UID_1994.055.01	2001.201	TO-10331	1.3	4730 ± 90 BP
	Late Neolithic, Isakovo			5300–4400 BP	3470–3370 BC
62	UID_1994.055.02	2001.357	TO-10348	2.1	4580 ± 60 BP
	Late Neolithic, Isakovo			5300–4400 BP	3370–3335 BC
63	UID_1994.056.01	2001.184	TO-10327	6.0	4730 ± 70 BP
	Late Neolithic, Isakovo			5300–4400 BP	3460–3370 BC
64	UID_1994.056.02	2001.370	TO-10352	2.7	4920 ± 60 BP
	Late Neolithic, Isakovo			5300–4400 BP	3715–3645 BC

KHUZHIR-NUGE XIV

The Khuzhir-Nuge XIV cemetery (K14) is located on the west coast of the Maloe More (Little Sea) region of Lake Baikal, near the southern end of Ol'khon Island and ~3 km southwest of the mouth of the Sarma River (Figure 1; 53°04′58″N, 106°48′21″E). Six seasons of excavation at K14 (1993, 1997–2001) produced archaeological data on 79 graves, including the remains of 89 individuals (Goriunova 1995; Goriunova and Weber 1997, 2002b; Goriunova et al. 1998). K14 is the largest Bronze Age cemetery ever excavated in the entire Cis-Baikal region.

The site is situated on the southeast slope of a hill rising from a shallow bay of the Little Sea. The slope is transected by a few large bedrock outcroppings running in the NE–SW direction, i.e. perpendicular to the fall line. The cemetery lies between 2 such outcroppings about 150 m apart, in an open, semi-arid, grass-covered area, about 16–30 m above the lake level. The main body of the cemetery extends for about 200 m and 30 m in the NE–SW and NW–SE directions, respectively.

The graves at K14 were either scattered about the cemetery area without forming any distinct clusters or were arranged parallel to each other in NW–SE rows consisting of 3–6 graves. Grave Nos. 2 and 7 were located ~70 and 50 m to the north and west of the main cemetery, respectively.

All the graves comprised quite shallow sub-rectangular pits, which reached a depth of only 30–60 cm. Their bottoms rested directly on the bedrock, built of Archean metamorphic schist. The graves were filled with rocks and loamy sand and covered by pavings built of stone slabs that were still visible on the site surface prior to archaeological excavation. Most graves contained single inhumations; 7 were double, and 2 were triple interments. Of the 9 graves with multiple burials, in 2 cases

the skeletal remains were arranged one on top of the other, whereas in all other cases they were placed side by side.

The N–S orientation of Grave No. 7 is consistent with the Late Neolithic Serovo graves of the Ol'khon region on Lake Baikal, while all the other graves evince clear similarities with the mortuary tradition of the Bronze Age Glazkovo culture of the area (Goriunova 1997, 2002; Goriunova and Khlobystin 1991; Komarova and Sher 1991; Konopatskii 1982; Kharinskii and Sosnovskaia 2000). The most diagnostic Glazkovo characteristics include the SW–NE orientation of the burials, grave goods such as copper or bronze objects (rings, knives, needles, and bracelets), and rings and discs made of white nephrite or calcite. Other, less diagnostic but more frequent artifacts included an assortment of arrowheads and large bifaces (spearheads or knives), bifacial rectangular inserts for composite tools, flakes and blades of various lithic material, green nephrite adzes and knives, abraders, bone or antler harpoons, points, awls and needles, red deer canine pendants, and kaolinite beads.

All the ^{14}C dates obtained for K14 by the BAP are provided in Table 4. Three more dates for this site were obtained in Russia (Weber et al. 2004).

Table 4 ^{14}C dates from the Khuzhir-Nuge XIV cemetery (85 dates).

No.	MASTER_ID	HSAMP_ID	LAB NO.	COLLYD %	C14 AGE ± S.D. BP
	Relative Age, Mortuary Tradition			Expected C14 age BP	Calibrated age BC (1 σ)
1	K14_1993.001	1997.007	TO-10097	0.7	3740 ± 60 BP
	Bronze Age, Glazkovo			4800–3300 BP	2205–2030 BC
2	K14_1993.005	1997.008	TO-10098	0.7	3910 ± 60 BP
	Bronze Age, Glazkovo			4800–3300 BP	2470–2290 BC
3	K14_1997.007	1997.198	TO-06862	0.04	5110 ± 270 BP
	Late Neolithic, Serovo			5300–4400 BP	4255–3640 BC
4	K14_1997.009	1997.199	TO-06863	0.3	3940 ± 70 BP
	Bronze Age, Glazkovo			4800–3300 BP	2490–2340 BC
5	K14_1997.010	1997.200	TO-07834	0.6	3530 ± 60 BP
	Bronze Age, Glazkovo			4800–3300 BP	1940–1765 BC
6	K14_1997.011	1997.201	TO-06864	10.3	3910 ± 60 BP
	Bronze Age, Glazkovo			4800–3300 BP	2470–2290 BC
7	K14_1997.012	1997.202	TO-07835	1.7	3700 ± 70 BP
	Bronze Age, Glazkovo			4800–3300 BP	2150–2010 BC
8	K14_1997.014	1997.203	TO-06865	0.7	3580 ± 60 BP
	Bronze Age, Glazkovo			4800–3300 BP	1980–1880 BC
9	K14_1997.015	1997.204	TO-06866	1.7	3960 ± 60 BP
	Bronze Age, Glazkovo			4800–3300 BP	2495–2455 BC

Table 4 ^{14}C dates from the Khuzhir-Nuge XIV cemetery (85 dates). *(Continued)*

No.	MASTER_ID	HSAMP_ID	LAB NO.	COLLYD %	C14 AGE ± S.D. BP
	Relative Age, Mortuary Tradition			Expected C14 age BP	Calibrated age BC (1 σ)
10	K14_1997.016	1997.205	TO-07836	2.5	3860 ± 60 BP
	Bronze Age, Glazkovo			4800–3300 BP	2465–2200 BC
11	K14_1997.017	1997.409	TO-08483	1.8	3950 ± 60 BP
	Bronze Age, Glazkovo			4800–3300 BP	2490–2430 BC
12	K14_1997.019	1997.206	TO-07837	0.7	4300 ± 60 BP
	Bronze Age, Glazkovo			4800–3300 BP	2920–2885 BC
13	K14_1997.021	1997.410	TO-08484	0.3	3580 ± 110 BP
	Bronze Age, Glazkovo			4800–3300 BP	2040–1765 BC
14	K14_1997.022	1997.235	TO-06867	0.7	3920 ± 70 BP
	Bronze Age, Glazkovo			4800–3300 BP	2485–2290 BC
15	K14_1997.023	1997.230	TO-07838	0.2	3760 ± 80 BP
	Bronze Age, Glazkovo			4800–3300 BP	2295–2030 BC
16	K14_1997.024	1997.236	TO-06868	0.1	3200 ± 150 BP
	Bronze Age, Glazkovo			4800–3300 BP	1630–1365 BC
17	K14_1998.025	1998.303	TO-09375R	0.1	4330 ± 470 BP
	Bronze Age, Glazkovo			4800–3300 BP	3635–2340 BC
	Comment: Repeat dating on the same sample in an attempt to obtain a higher collagen yield.				
18	K14_1998.026	2001.608	TO-10101	0.2	3490 ± 120 BP
	Bronze Age, Glazkovo			4800–3300 BP	1955–1680 BC
19	K14_1998.026	2003.594	TO-11543	0.7	4320 ± 70 BP
	Bronze Age, Glazkovo			4800–3300 BP	3015–2885 BC
	Comment: Dating on a different sample representing the same individual in an attempt to obtain a higher collagen yield.				
20	K14_1998.027.01	1998.304	TO-08485	0.7	4060 ± 120 BP
	Bronze Age, Glazkovo			4800–3300 BP	2775–2465 BC
21	K14_1998.027.02	1998.305	TO-09376	0.4	4240 ± 170 BP
	Bronze Age, Glazkovo			4800–3300 BP	3025–2575 BC

Table 4 ^{14}C dates from the Khuzhir-Nuge XIV cemetery (85 dates). *(Continued)*

No.	MASTER_ID	HSAMP_ID	LAB NO.	COLLYD %	C14 AGE ± S.D. BP
	Relative Age, Mortuary Tradition			Expected C14 age BP	Calibrated age BC (1 σ)
22	K14_1998.027.03	1998.306	TO-09377	0.7	4080 ± 70 BP
	Bronze Age, Glazkovo			4800–3300 BP	2535–2490 BC
23	K14_1998.029	1998.308	TO-08487	0.4	4230 ± 80 BP
	Bronze Age, Glazkovo			4800–3300 BP	2810–2740 BC
24	K14_1998.031	1998.309	TO-09378	0.2	4700 ± 70 BP
	Bronze Age, Glazkovo			4800–3300 BP	3470–3370 BC
25	K14_1998.034	1998.390	TO-09380	0.6	3610 ± 70 BP
	Bronze Age, Glazkovo			4800–3300 BP	2035–1885 BC
26	K14_1998.035.01	1998.391	TO-09381	4.7	4030 ± 70 BP
	Bronze Age, Glazkovo			4800–3300 BP	2625–2470 BC
27	K14_1998.035.02	1998.313	TO-09382	0.3	3770 ± 140 BP
	Bronze Age, Glazkovo			4800–3300 BP	2460–2010 BC
28	K14_1998.036.01	1998.318	TO-09383	0.2	3930 ± 90 BP
	Bronze Age, Glazkovo			4800–3300 BP	2495–2290 BC
29	K14_1998.036.02	1998.392	TO-09384	0.5	3910 ± 140 BP
	Bronze Age, Glazkovo			4800–3300 BP	2575–2195 BC
30	K14_1998.037.01	2001.594	TO-10108	0.5	4120 ± 70 BP
	Bronze Age, Glazkovo			4800–3300 BP	2870–2570 BC
31	K14_1998.037.01	2003.601	TO-11544	0.4	4160 ± 70 BP
	Bronze Age, Glazkovo			4800–3300 BP	2880–2620 BC
	Comment: Dating on a different sample representing the same individual in an attempt to obtain a higher collagen yield.				
32	K14_1998.037.02	1998.393	TO-09386	0.9	3540 ± 60 BP
	Bronze Age, Glazkovo			4800–3300 BP	1950–1765 BC
33	K14_1998.038	1998.326	TO-09387	1.1	4200 ± 90 BP
	Bronze Age, Glazkovo			4800–3300 BP	2815–2655 BC
34	K14_1998.039	1998.323	TO-09388	1.7	3930 ± 100 BP
	Bronze Age, Glazkovo			4800–3300 BP	2500–2285 BC

Table 4 ^{14}C dates from the Khuzhir-Nuge XIV cemetery (85 dates). *(Continued)*

No.	MASTER_ID	HSAMP_ID	LAB NO.	COLLYD %	C14 AGE ± S.D. BP
	Relative Age, Mortuary Tradition			Expected C14 age BP	Calibrated age BC (1 σ)
35	K14_1998.040	1998.324	TO-09389	3.4	3870 ± 70 BP
	Bronze Age, Glazkovo			4800–3300 BP	2465–2200 BC
36	K14_1999.044	1999.180	TO-09391	0.3	4120 ± 180 BP
	Bronze Age, Glazkovo			4800–3300 BP	2900–2465 BC
37	K14_1999.045	1999.155	TO-09392	0.2	4820 ± 90 BP
	Bronze Age, Glazkovo			4800–3300 BP	3605–3520 BC
38	K14_1999.045	2003.624	TO-11546	1.9	3910 ± 70 BP
	Bronze Age, Glazkovo			4800–3300 BP	2475–2290 BC
	Comment: Dating on a different sample representing the same individual in an attempt to obtain a higher collagen yield.				
39	K14_1999.046	1999.128	TO-09393	0.3	4260 ± 110 BP
	Bronze Age, Glazkovo			4800–3300 BP	2925–2855 BC
40	K14_1999.046	1999.128	TO-09393R	0.4	3920 ± 70 BP
	Bronze Age, Glazkovo			4800–3300 BP	2485–2290 BC
	Comment: Repeat dating on the same sample in an attempt to obtain a higher collagen yield.				
41	K14_1999.047	1999.150	TO-09394	2.0	3780 ± 100 BP
	Bronze Age, Glazkovo			4800–3300 BP	2405–2030 BC
42	K14_1999.048	1999.188	TO-09429	1.0	3650 ± 50 BP
	Bronze Age, Glazkovo			4800–3300 BP	2045–1945 BC
43	K14_1999.049	1999.184	TO-09395	2.6	4030 ± 60 BP
	Bronze Age, Glazkovo			4800–3300 BP	2620–2470 BC
44	K14_1999.050	1999.187	TO-09396	31.1	4090 ± 60 BP
	Bronze Age, Glazkovo			4800–3300 BP	2695–2565 BC
45	K14_1999.051	1999.138	TO-09397	0.3	3950 ± 150 BP
	Bronze Age, Glazkovo			4800–3300 BP	2625–2270 BC
46	K14_1999.053	1999.144	TO-09399	3.2	3890 ± 110 BP
	Bronze Age, Glazkovo			4800–3300 BP	2490–2200 BC

Table 4 ^{14}C dates from the Khuzhir-Nuge XIV cemetery (85 dates). *(Continued)*

No.	MASTER_ID	HSAMP_ID	LAB NO.	COLLYD %	C14 AGE ± S.D. BP
	Relative Age, Mortuary Tradition			Expected C14 age BP	Calibrated age BC (1 σ)
47	K14_1999.054	1999.177	TO-09400	0.2	3570 ± 530 BP
	Bronze Age, Glazkovo			4800–3300 BP	2635–1370 BC
48	K14_1999.055	1999.143	TO-09401	0.4	4540 ± 150 BP
	Bronze Age, Glazkovo			4800–3300 BP	3380–3015 BC
49	K14_1999.057.01	1999.182	TO-09402	0.5	3740 ± 140 BP
	Bronze Age, Glazkovo			4800–3300 BP	2345–1945 BC
50	K14_1999.057.02	1999.175	TO-09403	0.1	4080 ± 550 BP
	Bronze Age, Glazkovo			4800–3300 BP	3370–1885 BC
51	K14_1999.058.01	1999.154	TO-09404	0.7	3910 ± 80 BP
	Bronze Age, Glazkovo			4800–3300 BP	2485–2285 BC
52	K14_1999.058.02	1999.181	TO-09405	0.8	3870 ± 50 BP
	Bronze Age, Glazkovo			4800–3300 BP	2460–2280 BC
53	K14_1999.059.01	1999.148	TO-09406	1.0	3700 ± 90 BP
	Bronze Age, Glazkovo			4800–3300 BP	2200–1950 BC
54	K14_1999.059.02	1999.186	TO-09407	2.2	3670 ± 50 BP
	Bronze Age, Glazkovo			4800–3300 BP	2135–1955 BC
55	K14_1999.060	1999.178	TO-09408	1.1	4210 ± 50 BP
	Bronze Age, Glazkovo			4800–3300 BP	2805–2750 BC
56	K14_1999.060	2003.626	TO-11547	8.2	3940 ± 70 BP
	Bronze Age, Glazkovo			4800–3300 BP	2490–2340 BC
	Comment: Dating on a different sample representing the same individual in an attempt to obtain a higher collagen yield.				
57	K14_2000.061	2000.160	TO-09409	1.4	3850 ± 50 BP
	Bronze Age, Glazkovo			4800–3300 BP	2460–2200 BC
58	K14_2000.062.01	2000.136	TO-09410R	0.3	3800 ± 60 BP
	Bronze Age, Glazkovo			4800–3300 BP	2305–2135 BC
	Comment: Repeat dating on the same sample in an attempt to obtain a higher collagen yield.				

Table 4 ^{14}C dates from the Khuzhir-Nuge XIV cemetery (85 dates). *(Continued)*

No.	MASTER_ID	HSAMP_ID	LAB NO.	COLLYD %	C14 AGE ± S.D. BP
	Relative Age, Mortuary Tradition			Expected C14 age BP	Calibrated age BC (1 σ)
59	K14_2000.063	2000.145	TO-09412	0.5	3150 ± 70 BP
	Bronze Age, Glazkovo			4800–3300 BP	1495–1380 BC
60	K14_2000.063	2001.623	TO-11540	0.4	3600 ± 70 BP
	Bronze Age, Glazkovo			4800–3300 BP	2030–1880 BC
	Comment: Dating on a different sample representing the same individual in an attempt to obtain a higher collagen yield.				
61	K14_2000.064	2000.129	TO-09413	0.2	4110 ± 110 BP
	Bronze Age, Glazkovo			4800–3300 BP	2885–2475 BC
62	K14_2000.064	2003.617	TO-11545	1.3	3740 ± 60 BP
	Bronze Age, Glazkovo			4800–3300 BP	2205–2030 BC
	Comment: Dating on a different sample representing the same individual in an attempt to obtain a higher collagen yield.				
63	K14_2000.065	2000.158	TO-09414	0.2	4630 ± 110 BP
	Bronze Age, Glazkovo			4800–3300 BP	3520–3335 BC
64	K14_2000.065	2003.630	TO-11548	0.3	3940 ± 70 BP
	Bronze Age, Glazkovo			4800–3300 BP	2490–2340 BC
	Comment: Dating on a different sample representing the same individual in an attempt to obtain a higher collagen yield.				
65	K14_2000.066	2000.152	TO-09415	0.9	3820 ± 50 BP
	Bronze Age, Glazkovo			4800–3300 BP	2340–2195 BC
66	K14_2000.068	2000.135	TO-09416	1.8	3690 ± 50 BP
	Bronze Age, Glazkovo			4800–3300 BP	2140–2015 BC
67	K14_2000.070	2000.155	TO-09417	10.8	3940 ± 60 BP
	Bronze Age, Glazkovo			4800–3300 BP	2495–2335 BC
68	K14_2000.071	2000.147	TO-09418	0.6	3470 ± 60 BP
	Bronze Age, Glazkovo			4800–3300 BP	1880–1730 BC
69	K14_2000.072	2000.162	TO-09419	0.2	4410 ± 90 BP
	Bronze Age, Glazkovo			4800–3300 BP	3120–2910 BC

Table 4 ^{14}C dates from the Khuzhir-Nuge XIV cemetery (85 dates). *(Continued)*

No.	MASTER_ID	HSAMP_ID	LAB NO.	COLLYD %	C14 AGE ± S.D. BP
	Relative Age, Mortuary Tradition			Expected C14 age BP	Calibrated age BC (1 σ)
70	K14_2000.073	2000.154	TO-09420	0.5	4040 ± 90 BP
	Bronze Age, Glazkovo			4800–3300 BP	2675–2465 BC
71	K14_2000.074	2000.163	TO-09421	1.2	3950 ± 60 BP
	Bronze Age, Glazkovo			4800–3300 BP	2490–2430 BC
72	K14_2000.075	2000.165	TO-09422	4.2	3900 ± 50 BP
	Bronze Age, Glazkovo			4800–3300 BP	2465–2290 BC
73	K14_2000.076	2000.120	TO-09423	0.3	4120 ± 110 BP
	Bronze Age, Glazkovo			4800–3300 BP	2880–2560 BC
74	K14_2000.077	2000.169	TO-09424	1.0	3450 ± 50 BP
	Bronze Age, Glazkovo			4800–3300 BP	1780–1685 BC
75	K14_2000.078	2000.131	TO-09425	0.2	4040 ± 60 BP
	Bronze Age, Glazkovo			4800–3300 BP	2625–2470 BC
76	K14_2000.079	2000.121	TO-09426	1.9	3830 ± 50 BP
	Bronze Age, Glazkovo			4800–3300 BP	2345–2200 BC
77	K14_2000.080.01	2000.122	TO-09427	0.5	4580 ± 180 BP
	Bronze Age, Glazkovo			4800–3300 BP	3530–3020 BC
78	K14_2000.080.02	2000.125	TO-09428	2.8	4640 ± 180 BP
	Bronze Age, Glazkovo			4800–3300 BP	3640–3085 BC
79	K14_2001.081	2001.617	TO-10107	0.2	3710 ± 110 BP
	Bronze Age, Glazkovo			4800–3300 BP	2210–1945 BC
80	K14_2001.082	2001.610	TO-10103	0.6	3880 ± 150 BP
	Bronze Age, Glazkovo			4800–3300 BP	2500–2135 BC
81	K14_2001.083	2001.607	TO-10100	0.5	3630 ± 60 BP
	Bronze Age, Glazkovo			4800–3300 BP	2040–1915 BC
82	K14_2001.084	2001.611	TO-10104	1.4	3890 ± 70 BP
	Bronze Age, Glazkovo			4800–3300 BP	2470–2280 BC

Table 4 ^{14}C dates from the Khuzhir-Nuge XIV cemetery (85 dates). *(Continued)*

No.	MASTER_ID	HSAMP_ID	LAB NO.	COLLYD %	C14 AGE ± S.D. BP
	Relative Age, Mortuary Tradition			Expected C14 age BP	Calibrated age BC (1 σ)
83	K14_2001.085	2001.609	TO-10102	1.3	3890 ± 80 BP
	Bronze Age, Glazkovo			4800–3300 BP	2470–2275 BC
84	K14_2001.086	2001.614	TO-10105	2.7	3870 ± 70 BP
	Bronze Age, Glazkovo			4800–3300 BP	2465–2200 BC
85	K14_2001.087	2001.616	TO-10106	0.5	3820 ± 80 BP
	Bronze Age, Glazkovo			4800–3300 BP	2460–2135 BC

KURMA XI

The cemetery of Kurma XI (KUR), comprised of 26 excavated graves, is located on the northwest coast of the Little Sea area of Lake Baikal, ~15 km northeast of the Khuzhir-Nuge XIV cemetery (53°10′45″N, 106°57′46″E). Grave No. 8 of KUR was excavated in 1994 by A V Kharinskii (Irkutsk State Technical University), and the remaining 25 graves (Nos. 1–7, 9–10, and 12–27) were excavated by O I Goriunova and A W Weber in 2002 and 2003 (Goriunova and Weber 2002a, 2003a,b; Sosnovskaia 1996; Weber and Goriunova 2005).

The graves of this cemetery formed 2 distinct spatial arrangements. The first group, consisting of 18 graves (Nos. 1–10, 12–19), was situated along the bottom of the southeast-facing slope of a small hill, about 6–16 m above the water table of Lake Baikal. Most of these graves were organized within a line extending ~200 m from SW to NE, without forming any distinct concentrations, although Grave Nos. 3–6 formed a small cluster at the southwestern end of this group. The second group was located about 18–32 m above the lake, higher on the hill on one of its small ledges, and consisted of 8 graves arranged into small clusters of 1, 3, and 4 graves. The 2 groups were separated by a distance of 30–40 m.

The graves at KUR were sub-rectangular pits originally dug out of the bedrock of Archean metamorphic schist. The graves located at the foot of the hill ranged in depth from 0.50 to 2.00 m; these were much deeper than the graves of the upper group, which were only about 20–30 cm deep. The grave pits were filled with rocks and loamy sand or sandy loam and covered by pavings built of stone slabs that were visible on the site surface prior to archaeological excavation. Most graves contained single inhumations, while 1 contained 2 individuals placed side by side.

Despite its relatively small size, the cemetery produced quite a rich and variable collection of archaeological materials. The variability was observed with regard to such aspects as body position (extended, flexed, and sitting) and orientation (SW–NE, N–S), as well as the kind and quantity of grave inclusions. With regard to the latter, many artifacts found in these graves were of a very rare category (e.g. a semi-lunar green nephrite pendant and large rings made of white nephrite), even constituting unique finds within the entire Cis-Baikal region (a bronze medallion and a silver ring). While the SW–NE orientation and the grave goods found in these graves—specifically, the metal and white nephrite objects—are consistent with the Glazkovo culture of the region, the 6 graves

with the N–S orientation produced a total of only 5 microblades, which moreover lacked any diagnostic characteristics. The sitting burials were also consistent with the Glazkovo mortuary protocol.

Table 5 presents all the ^{14}C dates obtained for this cemetery by the BAP.

Table 5 ^{14}C dates from the Kurma XI cemetery (21 dates).

No.	MASTER_ID	HSAMP_ID	LAB NO.	COLLYD %	C14 AGE ± S.D. BP
	Relative Age, Mortuary Tradition			Expected C14 age BP	Calibrated age BC (1 σ)
1	KUR_2002.001	2002.110	TO-10996	0.7	3990 ± 70 BP
	Bronze Age, Glazkovo			4800–3300 BP	2575–2460 BC
2	KUR_2002.003	2002.130	TO-11001	0.8	4020 ± 50 BP
	Bronze Age, Glazkovo			4800–3300 BP	2575–2470 BC
3	KUR_2002.004	2002.117	TO-10998	6.2	4140 ± 60 BP
	Bronze Age, Glazkovo			4800–3300 BP	2875–2615 BC
4	KUR_2002.005	2002.141	TO-11003	4.7	4030 ± 60 BP
	Bronze Age, Glazkovo			4800–3300 BP	2620–2470 BC
5	KUR_2002.006	2002.113	TO-10997	2.4	3960 ± 60 BP
	Bronze Age, Glazkovo			4800–3300 BP	2495–2455 BC
6	KUR_2002.007.01	2002.090	TO-10992	1.2	4010 ± 60 BP
	Bronze Age, Glazkovo			4800–3300 BP	2575–2465 BC
7	KUR_2002.007.02	2002.103	TO-10995	2.2	4360 ± 70 BP
	Bronze Age, Glazkovo			4800–3300 BP	3025–2900 BC
8	KUR_2002.009	2002.151	TO-11005	0.6	3630 ± 50 BP
	Bronze Age, Glazkovo			4800–3300 BP	2035–1920 BC
9	KUR_2002.010	2002.101	TO-10994	5.4	4050 ± 60 BP
	Bronze Age, Glazkovo			4800–3300 BP	2630–2485 BC
10	KUR_2002.012	2002.127	TO-11000	0.2	4060 ± 100 BP
	Bronze Age, Glazkovo			4800–3300 BP	2700–2470 BC
11	KUR_2002.013	2002.122	TO-10999	2.5	4030 ± 60 BP
	Bronze Age, Glazkovo			4800–3300 BP	2620–2470 BC
12	KUR_2002.014	2002.096	TO-10993	3.1	4190 ± 60 BP
	Bronze Age, Glazkovo			4800–3300 BP	2810–2670 BC

Table 5 ^{14}C dates from the Kurma XI cemetery (21 dates). *(Continued)*

No.	MASTER_ID	HSAMP_ID	LAB NO.	COLLYD %	C14 AGE ± S.D. BP
	Relative Age, Mortuary Tradition			Expected C14 age BP	Calibrated age BC (1 σ)
13	KUR_2002.015 Bronze Age, Glazkovo	2002.135	TO-11002	5.1 4800–3300 BP	4340 ± 60 BP 3020–2895 BC
14	KUR_2002.016 Bronze Age, Glazkovo	2002.145	TO-11004	1.1 4800–3300 BP	4220 ± 60 BP 2810–2745 BC
15	KUR_2003.018 Bronze Age, Glazkovo	2003.006	TO-11677	1.1 4800–3300 BP	4260 ± 60 BP 2910–2875 BC
16	KUR_2003.019 Bronze Age, Glazkovo *Comment:* Burial in sitting position.	2003.012	TO-11678	3.0 4800–3300 BP	4010 ± 60 BP 2575–2465 BC
17	KUR_2003.021 Neolithic *Comment:* Insufficient data for typological dating.	2003.022	TO-11680	1.5 7000–4400 BP	6450 ± 80 BP 5480–5320 BC
18	KUR_2003.022 Neolithic *Comment:* Insufficient data for typological dating.	2003.027	TO-11681	0.1 7000–4400 BP	6340 ± 120 BP 5470–5210 BC
19	KUR_2003.024 Neolithic	2003.033	TO-11682	0.4 7000–4400 BP	5850 ± 70 BP 4790–4665 BC
20	KUR_2003.025 Bronze Age, Glazkovo *Comment:* Burial in sitting position.	2003.041	TO-11684	0.6 4800–3300 BP	4170 ± 60 BP 2815–2655 BC
21	KUR_2003.026 Bronze Age, Glazkovo *Comment:* Burial in sitting position.	2003.036	TO-11683	4.0 4800–3300 BP	4240 ± 60 BP 2900–2865 BC

KHOTORUK

Khotoruk (KHO) is a small Early Neolithic cemetery located near the mouth of the Anga River on the northwest coast of Lake Baikal, about 50 km southwest of Ol'khon Island (52°47′05″N, 106°31′43″E). Topographically, the cemetery is situated on a south-facing slope, about 20–30 m above the marshy estuary of the Anga River and about 1.5–2.0 km inland from the lake. The site was discovered in 1977 while an early medieval cemetery was being excavated by a team of archaeologists from Novosibirsk. Three graves were documented in 1977, 3 more were excavated in 1978,

and 1 was excavated in 1979 (Konopatskii 1982). The graves were encountered about 50 cm below the modern surface, and their depth reached 1.20–1.50 m. They were covered by structures built of large stone slabs and filled with a gravelly and sandy matrix. All the dead were interred with their heads in the northern ends of the grave pits. Five of the graves were individual inhumations, one (No. 3) was a double, and one (No. 2) was a triple. In cases where the preservation of the skeletal elements was sufficient to make relevant observations, body positions were either supine or on their right side, and most featured legs flexed in the knees. In general, the dead were provisioned with very few grave goods, and some had no accompanying objects at all. The artifact assemblage included red deer canine pendants, a split boar tusk, a large stone adze, a scraper, and the grooved bone handle of a composite tool. None of these objects displayed any diagnostic properties, and moreover, the characteristics of body treatment were also rather equivocal; thus, the culture-historical position of the cemetery as representing the Kitoi culture was suggested based primarily on the presence of red ochre, which was observed in most of the graves.

The ^{14}C dates obtained for KHO by the BAP are provided in Table 6. One date for Grave No. 2 was produced previously in Russia (Mamonova and Sulerzhitskii 1989).

Table 6 ^{14}C dates from the Khotoruk, Shamanskii Mys, Makrushina, and Turuka cemeteries (19 dates).

No.	MASTER_ID	HSAMP_ID	LAB NO.	COLLYD %	C14 AGE ± S.D. BP
	Relative Age, Mortuary Tradition			Expected C14 age BP	Calibrated age BC (1 σ)
1	KHO_1977.002.01	1993.009	TO-04824	3.7	7020 ± 70 BP
	Early Neolithic, Kitoi			7000–6100 BP	5985–5835 BC
	Comment: The date represents individual "A" according to original description of Grave 2 by Konopatskii (1982).				
2	KHO_1977.002.03	1991.040	TO-04826	2.2	6770 ± 60 BP
	Early Neolithic, Kitoi			7000–6100 BP	5720–5625 BC
	Comment: The date represents individual "C" according to original description of Grave 2 by Konopatskii (1982).				
3	KHO_1978.005.01	1991.043	TO-04825	3.0	6550 ± 70 BP
	Early Neolithic, Kitoi			7000–6100 BP	5555–5470 BC
4	SHM_1972.001.01	1995.231	TO-10980	10.4	4220 ± 60 BP
	Bronze Age, Glazkovo			4800–3300 BP	2810–2745 BC
5	SHM_1972.002	1993.005	TO-10981	2.3	4100 ± 60 BP
	Bronze Age, Glazkovo			4800–3300 BP	2700–2570 BC
	Comment: The 2 dates obtained for this individual are quite consistent with each other.				
6	SHM_1972.002	1993.003	TO-10979	5.9	4150 ± 60 BP
	Bronze Age, Glazkovo			4800–3300 BP	2875–2620 BC
	Comment: The 2 dates obtained for this individual are quite consistent with each other.				

Table 6 ^{14}C dates from the Khotoruk, Shamanskii Mys, Makrushina, and Turuka cemeteries (19 dates). *(Continued)*

No.	MASTER_ID	HSAMP_ID	LAB NO.	COLLYD %	C14 AGE ± S.D. BP
	Relative Age, Mortuary Tradition			Expected C14 age BP	Calibrated age BC (1 σ)
7	SHM_1972.003	1995.232	TO-10311	10.5	6310 ± 80 BP
	Early Neolithic, Kitoi			7000–6100 BP	5365–5215 BC
8	SHM_1973.001	1993.007	TO-10983	6.1	4240 ± 60 BP
	Bronze Age, Glazkovo			4800–3300 BP	2900–2865 BC
9	SHM_1973.002	1993.002	TO-10984	1.3	3990 ± 50 BP
	Bronze Age, Glazkovo			4800–3300 BP	2500–2465 BC
10	SHM_1973.003.01	1993.006	TO-10985	1.0	4380 ± 60 BP
	Bronze Age, Glazkovo			4800–3300 BP	3090–2905 BC
11	SHM_1973.003.02	1993.001	TO-10986	4.9	4080 ± 50 BP
	Bronze Age, Glazkovo			4800–3300 BP	2675–2565 BC
12	SHM_1973.004	1991.021	TO-10987	0.8	4150 ± 50 BP
	Bronze Age, Glazkovo			4800–3300 BP	2820–2620 BC
13	SHM_1975.001	1995.235	TO-10989	0.2	6100 ± 80 BP
	Bronze Age, Glazkovo			4800–3300 BP	5080–4930 BC
	Comment: The date is inconsistent with the expected age for this mortuary tradition				
14	SHM_1976.001	1993.008	TO-10988	1.7	4780 ± 60 BP
	Late Neolithic, Serovo			5300–4400 BP	3640–3515 BC
15	MAK_1989.001	1992.124	TO-04817	2.5	6920 ± 70 BP
	Early Neolithic, Kitoi			7000–6100 BP	5885–5725 BC
16	MAK_1989.002	1992.125	TO-04818	1.4	6720 ± 70 BP
	Early Neolithic, Kitoi			7000–6100 BP	5670–5610 BC
17	MAK_1990.003	1992.126	TO-04819	2.3	4430 ± 60 BP
	Bronze Age, Glazkovo			4800–3300 BP	3115–3000 BC
18	TUR_1993.003	1992.127	TO-04820	1.2	7020 ± 80 BP
	Early Neolithic, Kitoi			7000–6100 BP	5990–5835 BC
19	TUR_1993.004	1992.128	TO-04821	>0.2	6720 ± 80 BP
	Early Neolithic, Kitoi			7000–6100 BP	5705–5610 BC

SHAMANSKII MYS

Shamanskii Mys (SHM) is another small cemetery in the Ol'khon region, excavated by archaeologists from Novosibirsk in the 1970s (Konopatskii 1982; Okladnikov and Konopatskii 1974/1975). SHM is located on a narrow cape (Russian: *mys*) that is 10–20 m wide and steep on all 3 sides, jutting out from the northeast coast of Ol'khon Island towards the Little Sea part of Lake Baikal (Figure 1; 53°12′03″N, 107°20′46″E). The peninsula ends with a cliff that drops almost to lake level, beyond which a spectacular rock with a cave rises from the lake to a height of ~30 m. This site is also known in the literature under 2 other names: Khuzhir and Mys Burkhan. The former is the name of the nearby town, while in the latter "Burkhan" denotes a deity of the Buriat nation.

All together, 11 graves were excavated in 4 fieldwork campaigns: 3 in 1972, 4 in 1973, 3 in 1975, and 1 in 1976. Based on the diagnostic properties of quite rich grave accoutrements, 3 graves were classified as Serovo (1975.002, 1975.003, and 1976.001) and 6 as Glazkovo. One grave (1972.003) was classified as Kitoi based on the presence of fishhook shanks and red ochre. Grave and burial orientation also assisted in the culture-historical classification. The Kitoi grave displayed a W–E orientation; however, the orientation of the burial itself could not be established better than probably W–E due to the poorly preserved skeletal elements. It also produced a mitre-shaped pot with net impressions. All 3 Serovo graves had a N–S alignment, the burials placed with their heads in the north end. The Glazkovo burials were all oriented W–E or SW–NE. Six Glazkovo graves and 1 Serovo grave formed a group along the eastern edge of the peninsula; 2 Serovo graves were found close to the northeast cliff, about 30 m from the first group; and the Kitoi grave and 1 Glazkovo grave were found at the base of the cape, about 25 m south of the main group of graves where 4 Glazkovo graves were arranged parallel to each other, forming a row.

All the SHM graves were originally dug from a loamy matrix and covered by structures built of limestone slabs and rocks of various size and shape. The Kitoi grave was encountered about 50 cm below the modern surface and reached a depth of 1.50 m. The Serovo and Glazkovo graves were found 30–50 cm below the surface and were generally rather shallow, not exceeding 50 cm below the surface from which they were dug out. The Kitoi grave, 1 Serovo grave, and 6 Glazkovo graves contained single inhumations; 1 Serovo grave and 1 Glazkovo grave were double burials; and 1 Serovo grave was a triple. The Kitoi grave also contained the skeletons of 2 dogs, and a few of the Glazkovo burials were furnished with seal remains. Excavations of the middle part of the cape revealed archaeological material abounding in faunal remains (mostly seal), lithic artifacts, and pottery fragments; however, no graves were found in this area (Konopatskii 1982; Weber et al. 1993; Weber et al. 1998).

A few ^{14}C dates, obtained from charcoal and wood samples, were first published by Konopatskii (1982); 2 more, derived from bone, were reported by Mamonova and Sulerzhitskii (1989). The new dates produced by the BAP are provided in Table 6.

MAKRUSHINA

Makrushina (MAK) is an Early Neolithic and Bronze Age cemetery located on the 8–10-m-high terrace on the right bank of the upper Lena River, about 0.4 km SW of the village of the same name (Figure 1; 53°52′38″N, 106°17′19″E; Vetrov et al. 1995). The site was first discovered in 1989 and then excavated in 3 consecutive fieldwork campaigns starting in 1992. A total of 16 graves were documented, 5 of which were classified as Kitoi (Nos. 1, 2, 5, 9, and 22) and the remaining 11 as Glazkovo (Nos. 3, 4, 6, 13–19, and 24). Only the Kitoi graves have been published thus far (Vetrov et al. 1995).

The Kitoi graves were originally dug from a sandy loam matrix, and all but one were covered by stone pavings. The depth of the pits ranged from 0.30 to 1.10 m below the modern surface. The geographic orientation of the graves and burials varied from NW–SE to NE–SW; all these burials were placed with their heads in the northern ends of the pits. All Kitoi graves at MAK were single inhumations, 3 of them extended-supine and 1 supine with legs flexed in the knees to the east; in one case the body position was not possible to ascertain due to the disarticulation and poor overall condition.

Grave accoutrements at MAK also displayed substantial variability, both in kind and number, ranging with regard to the latter from no objects in the disturbed Grave No. 2, to 6 in Grave No. 5 and 67 in Grave No. 1. The artifact assemblage collected from Grave No. 1 consisted mostly of organic objects, including 2 bracelets each made of 6 perforated mussel shell plates, several one-sided harpoons, and various bone points, needles, and awls, as well as the teeth of several different animal species. In contrast, the goods in Grave No. 9 included 27 lithic objects, 24 of which were chert flakes, in addition to a few organic implements and 1 calcite disc with an aperture. Red ochre, the distinctive element of Kitoi graves in the Cis-Baikal, was documented at MAK only in Grave No. 9, where a few small patches were found around the abdominal and upper leg area of the burial.

Vetrov et al. (1995) reported 3 Kitoi and 3 Glazkovo dates for this site, while 3 more determinations obtained by the BAP are provided in Table 6.

TURUKA

Turuka (TUR) is a small cemetery located in the northern part of the upper Lena valley (Figure 1; 56°41′07″N, 105°44′00″E) in a village bearing the same name. Topographically, it is situated on a 10-m-high terrace on the right bank of the Lena River, which in this area flows more or less from east to west (Bazaliiskii 1995). The first reports about the possible existence of a prehistoric cemetery here go back to the 1950s, when some red-stained human bones and a few adzes were found by locals in one of their gardens. In 1992 and 1993, V I Bazaliiskii unearthed 10 graves here, all of which were classified as representing the Early Neolithic Kitoi culture. The number of graves destroyed prior to this fieldwork, however, is difficult to estimate.

The 10 graves were found configured in a single compact row of 7 side-by-side graves, an adjacent cluster of 2 similarly placed graves, and 1 additional grave located on the other side of some farm buildings. All the graves shared the same W–E orientation—that is, parallel to the Lena—and all burials were interred with their heads in the upstream, or western ends, of the grave pits. Due to gardening activity, it was impossible to ascertain whether the graves were originally covered with any kind of stone structures. They had been dug from the pale-yellow sandy loam matrix and filled with a similar sediment that was somewhat darker in color than what surrounded it. The burials were found at depths ranging from 0.50 to 1.00 m. With the exception of 1 prone interment, all the other burials were in an extended-supine position. All 10 represented adult individuals, of which 1 was buried without the skull (No. 2). Red ochre was documented in all graves; however, its use varied from an isolated small patch of red ochre pigment to copious sprinkling of the entire skeleton.

Grave accoutrements ranged from none in Grave No. 7 and 3 lithic artifacts in Grave No. 1, to 396 various objects in Grave No. 10. In general, the stone artifacts included Kitoi fishhook shanks, abraders, arrow straighteners, arrowheads, flakes and blades, rectangular bifaces for composite insert tools, and adzes, while organic goods comprised a variety of small points, needles and awls, split boar tusks, harpoons and assorted large points, and a bone fish lure.

The ^{14}C dates obtained for this cemetery by the BAP are presented in Table 6.

CONCLUSION

As the next stage of this research, the entire set of ^{14}C dates will be analyzed from the perspective of their relevance to understanding Middle Holocene hunter-gatherer cultures in the Cis-Baikal region (Weber at al., forthcoming), using a similar methodology that we have recently applied to the interpretation of dates from the Khuzhir Nuge XIV cemetery (Weber et al. 2005). Here, we would like to reiterate one of the main conclusions of that study. Namely, examination of the dates from Khuzhir-Nuge XIV revealed unequivocally that the accuracy and precision of ^{14}C dates obtained from bone samples depends heavily on collagen yields. For clarification, it is useful to recall that, generally, accuracy indicates how close a measured value is to the true value, while precision indicates how close together or how repeatable the measurements are. More specifically, bone samples with collagen yields lower than 1% are likely to produce inaccurate and imprecise dates. Therefore, since collagen yield appears to be an important measure of accuracy and precision of such dates, it seems reasonable to recommend that ^{14}C laboratories always include this information on their reports and that the researchers publish these data as an additional means of allowing the academic community to verify their findings. It follows, then, that many past studies based on ^{14}C dating of bone samples should be revisited, in at least 2 alternative ways. First, collagen yields, if available, should be obtained from the dating laboratories, published, and then used to reanalyze the entire relevant archaeological material. Second, if collagen data are no longer available, interpretations of ^{14}C dates with no collagen yields need to be viewed with extreme caution until new dates that follow this new reporting protocol become available.

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