Kola Oleneostrovskiy Grave Field: A Unique Burial Site in the European Arctic

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Abstract

The Kola Oleneostrovskiy grave field (KOG) is the main source of information for the physical and cultural anthropology of the Early Metal Period population of the Kola Peninsula and the whole northern Fennoscandia.[1] Excavations were conducted here in 1925, 1928, 1947–1948, and 2001–2004 by A. Shmidt, N. Gurina, and V. Shumkin. Altogether 32 burials containing the remains of 43 individuals were investigated. During the excavations, also remains of wooden grave constructions were found.

The site is exceptionally rich in burial goods, including numerous bone, antler, stone, ceramic, and bronze items. Grave goods differ slightly between male and female burials. There is some evidence of long-distance contacts between the local population and southern and western Scandinavia, most notably in the chemical composition of bronze items and in some types of bone tools. Anthropological data, including the analysis of paleoDNA, suggests that people from geographically more eastern areas took part in the genesis of the ancient population of the northern Kola Peninsula. These people belonged to a specific physical type associated with modern Siberian anthropological groups.

1 Introduction

The Kola Oleneostrovskiy grave field (KOG) is currently the main source of information about the burial rites of the Early Metal Period population of northern Fennoscandia. This is due to the unique preservation of bone and antler artefacts, remains of wooden funerary structures, skeletal remains of buried people, and faunal materials.

The first burials were found 90 years ago, in 1925. Since then, excavations at the site have been carried out three times. Bilingual publication of the whole material is still pend-

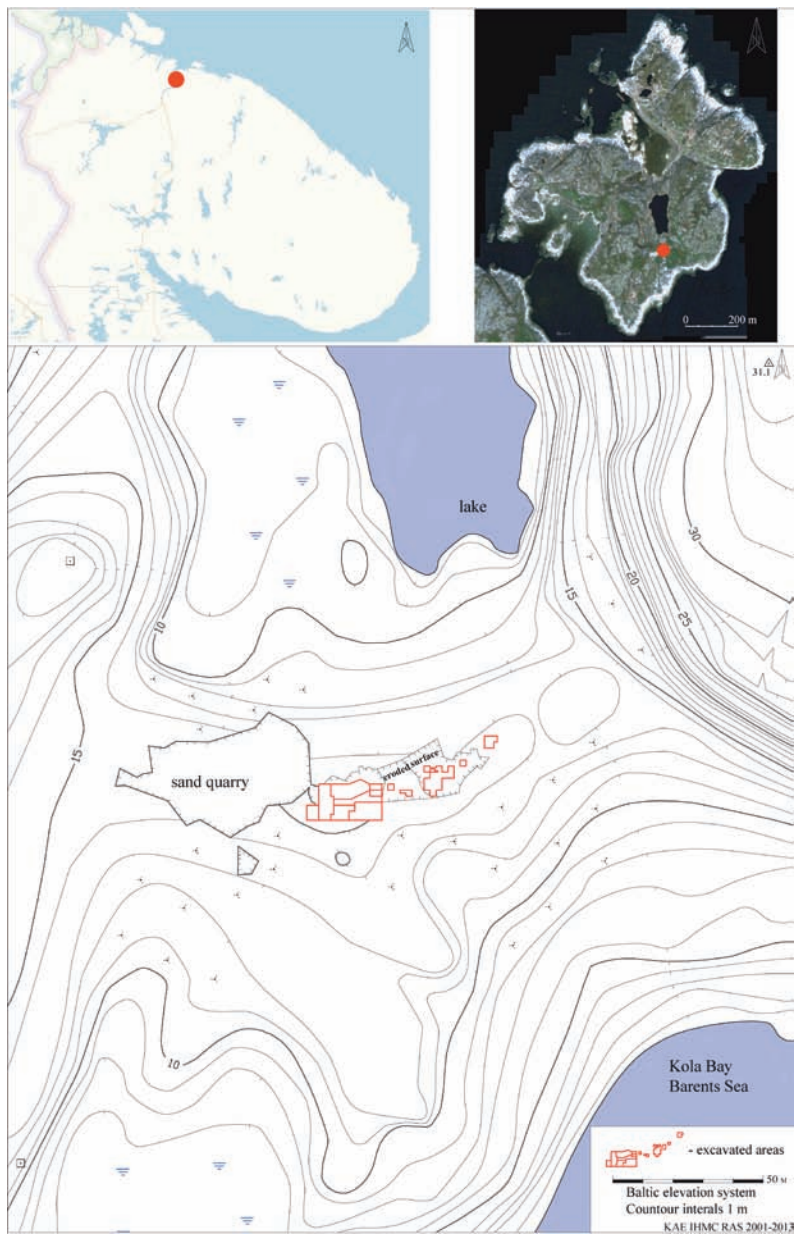

Figure 1. General map of the Kola Oleneostrovskiy grave field. Drawing: E. Kolpakov.

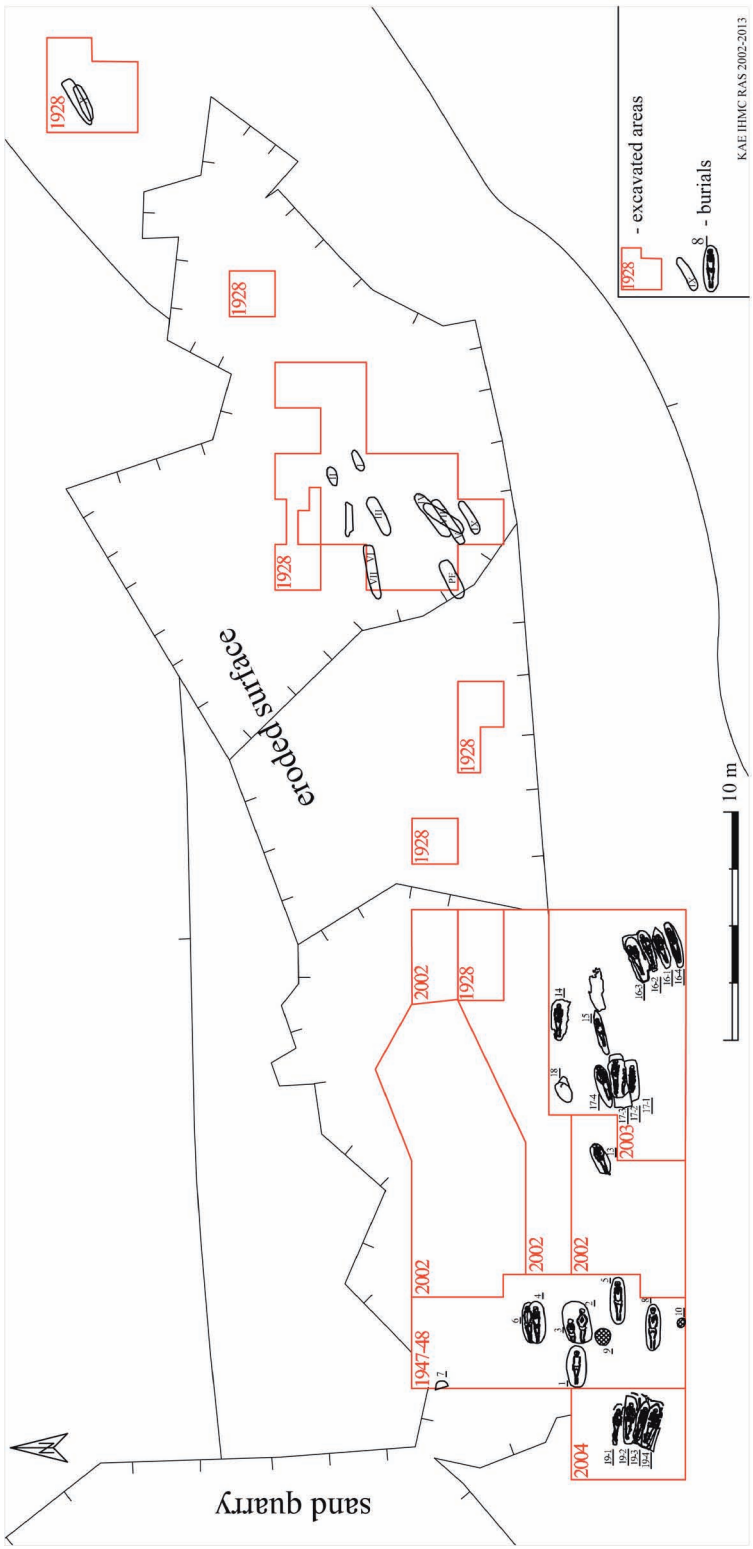

Figure 2. Kola Oleneostrovskiy grave field, map showing the areas and burials excavated in 1928, 1947–1948, and 2001–2004. Drawing: E. Kolpakov.

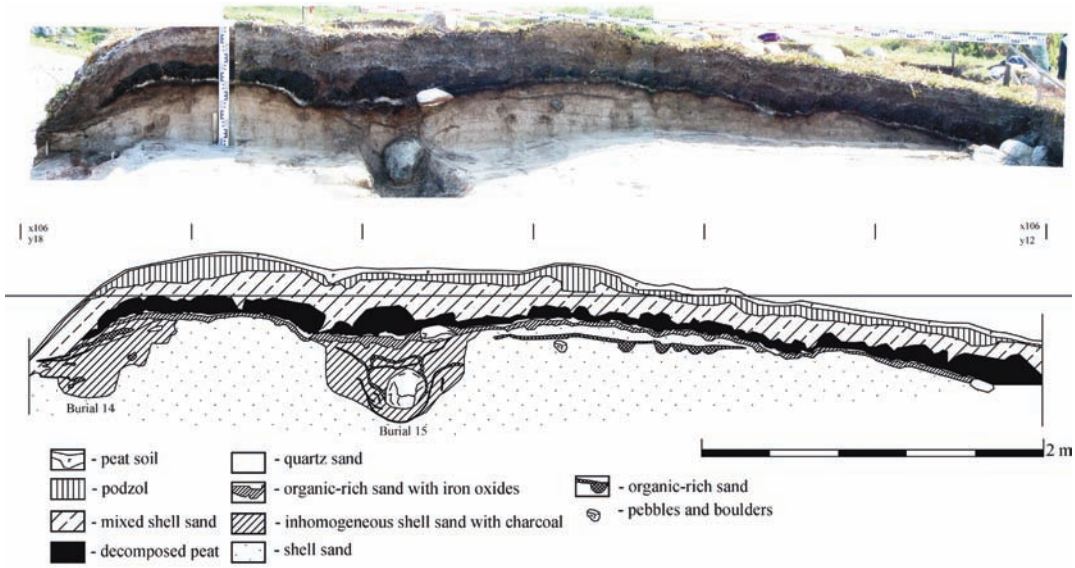

Figure 3. Kola Oleneostrovskiy grave field, stratigraphy. Section of burials 14 and 15. Photo and drawing: E. Kolpakov.

ing, and the present article is intended to present just some general conclusions based on recent excavations in 2001–2004.

2 Research history

Bolshoy Oleniy Island (En. *Big Deer Island*), on which the burial ground was discovered, is located in Kola Bay, 12 km from the mouth of the bay and 2.4 km from the city of Polyarniy. The burial field is located in the southern part of the island, between an inland lake and the island's southern shore, on a relic tombolo composed of shell sand. The tombolo has an altitude of 14–15 m a.s.l. and is located between two rocks (Fig. 1).

In the summer of 1925, two researchers working at the Murmansk biological station, S. Yegorov and G. Rikhter, found and excavated two damaged burials. Information about the site and the finds was reported to the Ethnographic Department of the State Russian Museum. In 1928, an expedition led by A. Shmidt excavated 94 m^2 and investigated 13 graves (including the burials unearthed by Yegorov and Rikhter) (Shmidt 1930). In 1934, Polyarniy had become the main base of the Russian Northern Fleet. During the construction of coastal fortifications on Bolshoy Oleniy Island, sand quarrying was organised in the area of the KOG and a large part of the site was destroyed. At that time, military engineer A. Tsiplenkov collected archaeological and anthropological material from about 25 burials. He sent four artefacts to the Museum of Anthropology and Ethnography in Moscow, but the fate of the rest of the collection is unknown.

In 1947–1948, an area of 56 m^2 was excavated and 10 burials were studied by N. Gurina (Gurina 1953; 1997). In 2001–2004, excavations were carried out by the Kola Archaeological Expedition of the Institute for the History of Material Culture of the Russian Academy of Science (KAE IHMC RAS), led by V. Shumkin. Three excavation areas with a total area of 120 m^2 were placed along the southern edge of the sand quarry, and an additional 100 m^2 were dug in an area covering the southern part of Gurina's trench and the partially collapsed southern part of the quarry. Altogether nine graves were investigated (Fig. 2) (Shumkin & Murashkin 2003; Shumkin et al. 2005; 2006). Thus, 32 burials containing

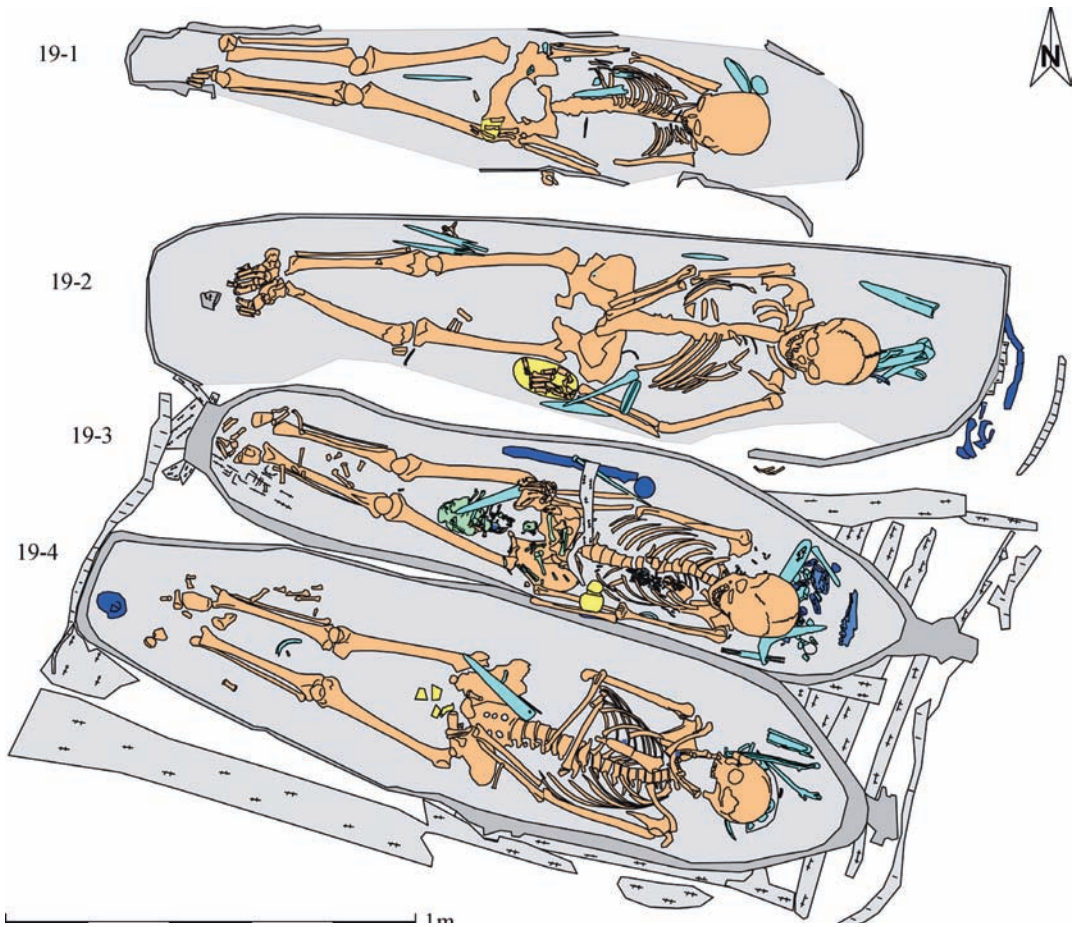

Figure 4. Kola Oleneostrovskiy grave field, map of burial 19 at the level of caskets and grave goods. Orange – skeletal remains; light green – skeletal remains of a newborn child (19-6); grey – wooden constructions; blue – tar; light blue – lithic, bone, and antler artefacts, animal bones; yellow – pieces of ironstone. Drawing: E. Kolpakov.

the remains of 43 individuals have been studied through archaeological excavations. In addition, the copy of Tsiplenkov's letter contains a brief overview of about 25 skeletons. In the following, we use the historically developed notations of burials: RE-1–2 – discovered and partially excavated by G. Rikhter and S. Yegorov; I–X – investigated by A. Shmidt in 1928; 1–10 – investigated by N. Gurina in 1947–1948; 11–19 – investigated by V. Shumkin in 2001–2004.

Archaeological materials from the excavations of the KOG are currently housed in four museums. The Peter the Great Museum of Anthropology and Ethnography (Kunstkamera), St Petersburg, keeps artefacts collected by Shmidt and Tsiplenkov (collection No 4082), as well as a part of Gurina's finds (collection No 6152). The Murmansk Regional Museum stores another part of Gurina's finds (collection No 363, 364, 3133). Artefacts collected by the KAE are housed in the Polyarniy Museum of Local Lore and History. The location of the finds recovered by Rikhter and Yegorov is unknown – according to Shmidt (1930: 122), the finds were given to the State Russian Museum, but their current location is unknown.

3 Stratigraphy

The stratigraphy documented in different parts of the relic tombolo is similar in general features. The uppermost peat soil (ca. 6 cm thick) is underlain by moderately well decomposed peat, with a maximum thickness of 41 cm. Within the burial ground area, a layer of shell sand, mixed with fine organic debris, separates these two layers – such a phenomenon was not observed in any other area (Shumkin et al. 2005: 470–471). Fine quartz sand with an admixture of feldspar grains was recorded below the peat and has a maximum thickness of 11 cm and a sharp lower boundary. Underneath the quartz sand, a thin (up to 6 cm) layer of dark brown organic-rich sand with iron oxide concentrations was observed. The lowermost part of the sequence consists of medium- to coarse-grained shell sand, with occasional concentrations of pebbles and stones in the upper part of the layer. In some areas, organic-rich old soil was observed below some of the stones.

The shell sand often contains fragments and intact shells of marine molluscs typical of the so-called Trivia transgression, which started during the late Atlantic to early Subboreal and terminated by the end of the Subboreal.[2] In other words, the composition of the mollusc assemblage suggests that the tombolo was formed during the Trivia transgression. The thin, organic-rich layer overlaying the shell sand is interpreted as a buried soil that was formed when the grave field was no longer in use. The soil formation probably stopped as a result of the drying climate, as indicated by pollen analysis, while intensive aeolian processes resulted in the accumulation of the fine-grained quartz sand on the soil surface. The subsequent peat formation should be attributed to more humid conditions established in the Subatlantic (Shumkin et al. 2005: 470–471).

The burials were dug into the shell sand, to a depth of ca. 0.5–1 m from the present ground surface. The boundaries of grave pits were indistinct on horizontal levels. Also in vertical sections, their upper parts are indistinguishable, completely merging with shell sand, and are not visible in the dark brown organic-rich sand with iron oxides either. The grave pits were filled with slightly charcoal-mixed shell sand, inhomogeneous in colour (Fig. 3).

4 Burial rites (archaeological observations)

Our excavations in 2001–2004 provided new data for the interpretation of the site. Based on this, the burial practices of the Early Metal Period on Bolshoy Oleniy Island can be described as follows. Apart from three cases of cremation, all burials were inhumations with the deceased laid on their backs and with their heads directed towards the east and north-east. There were single, double (RE-1–2, IV–V, 2–3, 13), and collective burials (16, 17, and 19, including four, five, and six deceased respectively).

The dead were placed in rectangular or oval pits, to a depth of approximately 0.5 m under the ancient surface. All burials, except 14 and 18, included stone features in the form of rows and other structures. These structures are usually one or two stones high and wide, although a feature on the north-eastern side of burial 16 was four stones wide. The lower parts of the stones sit on the shell sand and their upper parts reach the brown turf – in fact, these stones mark the original ground surface, from which grave pits were dug. In some cases, stones were also placed inside the grave pit, by the legs and behind the head of the deceased.

The burial constructions have been preserved as dark brown, decomposed woody or organic matter. In many parts, the fibrous structure of the wood is still clearly visible, although in some cases the wood has already transformed into matter without any internal texture. The bones of the dead were covered with thin, dense, black organic matter – most likely the remains of clothing made of animal skins.

Most of the bodies had been buried in wooden, boat-shaped, lidded caskets, which looked like small boats or traditional Sámi sledges (Ru. *kerezhka*). It seems that the boards of the boats were made of thin wooden planks and were probably tarred. Also the joints between

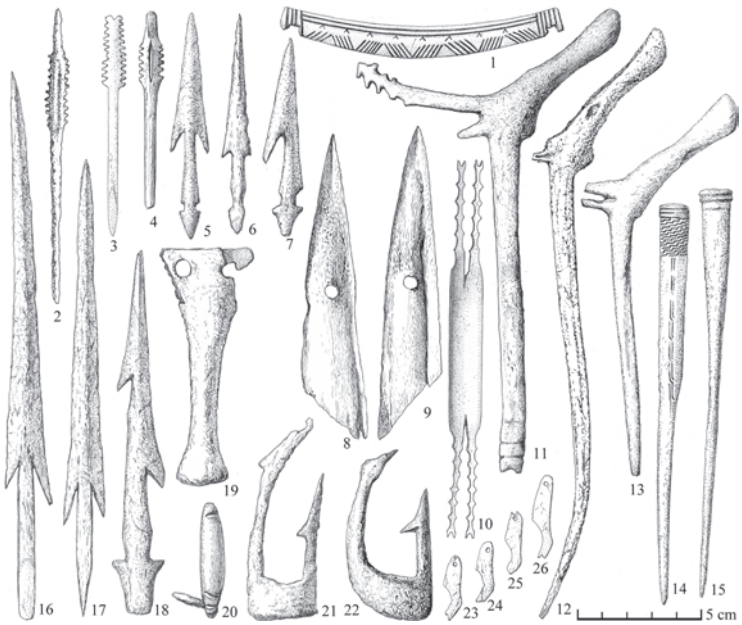

Figure 5. Kola Oleneostrovskiy grave field, bone and antler artefacts. 1 – ornamented plate; 2–4 – 'notched-head pins'; 5–7, 18 – harpoon heads; 8–9 – toggling harpoon heads; 10 – 'four-tooth comb'; 11–13 – rods with reindeer heads; 14–15 – 'dagger-shaped pins'; 16–17 – dart heads; 19 – hilt; 20 – compound fishing hook; 21–22 – fishing hooks; 23–26 – 'whale-shaped' pendants. 1 – burial 17-4; 2–3, 12 – burial 13-1; 4, 8, 9, 11, 22 – burial 16-3; 5–6, 20, 21 – burial 14; 7 – burial 17-5; 10 – burial 19-3; 13, 14, 15 – burial 16-2; 16–17, 18 – burial 16-4; 19 – burial 16-1; 23–26 – burial 19-4. Drawing: A. Stepanova.

the boards and lids were caulked with tar. Unquestionable elements of the inner frame of a boat (frames and beams) were recorded only in burial 15. Based on a fragment of tar sealant, found in burial 19-4, the thickness of the bottom planks was at least 1.6 cm and the width at least 6 cm. In three cases, some elements, which could be interpreted as remnants of a stem, were recorded – these protruded forwards at least 18 cm. The stems may have been somehow decorated, as a worked long bone was found on the stem of one of the boats. The sterns of the boats were straight like in the traditional Sámi *kerezhkas*. Cross-sections of the boats were oval and the bows pointed, apart from one case, which had a straight, non-narrowing hull (Fig. 4). It seems that small boat- (or sledge-) shaped caskets had been specially made for two child burials, although it is also possible that ordinary wooden cradles were used.

Intensive caulking of joints between the boards and lids and meticulous sealing of hulls and knotholes on the bottom of the boat all suggest that funeral boats (or sledges) were used for transportation over the water. Such caulking is necessary only for sailing, and, on the other hand, moving (dragging) boats on dry land would damage the tarring. Therefore, it is very likely that the 'coffins' were first moved on dry land to the shore, after which they were carefully sealed with tar, and then rafted in tow across the bay to the burial place on the island.

Interments in the collective burials were originally made in separate grave pits and were not synchronous. Subsequent grave pits were dug next to previous ones without disturbing them. These conclusions are backed up by observations of the different orientations, depths, and lengths of neighbouring but individual grave pits. In one case, even a thin soil layer was documented between the grave pits (burials 17-3 and 17-4).

Double burials occur as such or as parts of collective burials. In two cases, an adult male and an adult female were placed in a grave facing each other (IV–V and 2–3). A double burial of an adult female and a juvenile was included as part of a collective burial (17-2 and 17-3). However, only in the case of burial 19 could the sequence of burials in a collective grave be defined. Apparently, an adult male and female with a new-born child were buried here first (19-4, 19-3 and 19-6), and later an adult male (19-2), an adult female (19-1), and an infant (19-5) were added.

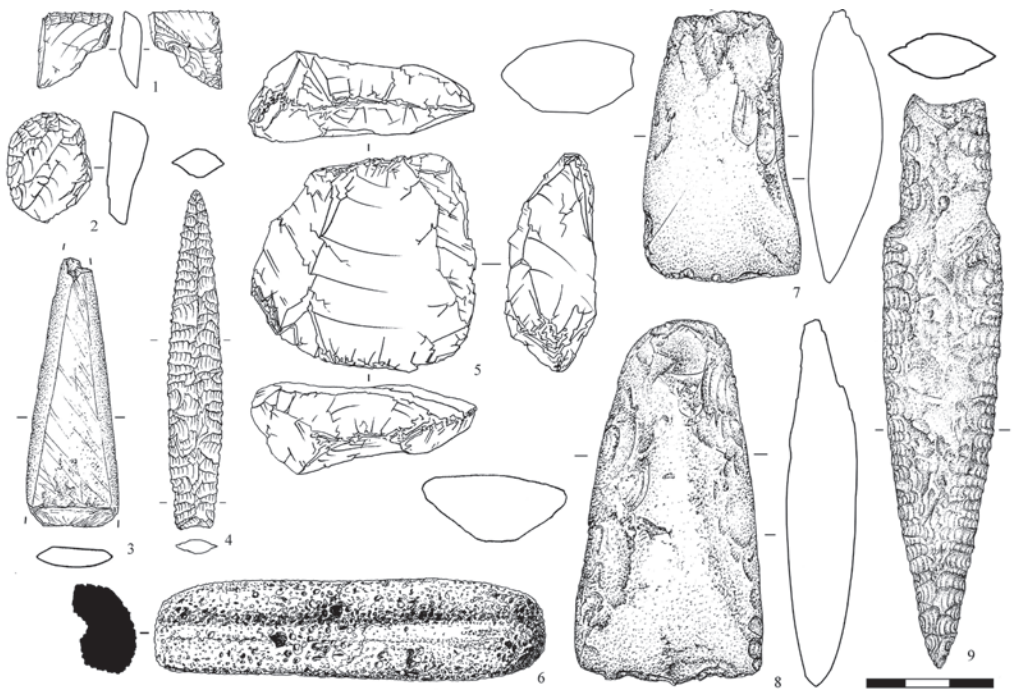

Figure 6. Kola Oleneostrovskiy grave field, stone artifacts. 1–2 – scrapers; 3–4 projectiles; 5 – bipolar core; 6 – pumice fragment with groove; 7–8 – adzes; 9 – dagger. 1 – burial 19-3; 2, 8 – burial 16-3; 3 – burial IV; 4 – burial II; 5 – burial 19-1; 6 – burial 19-2; 7 – burial 16-4; 9 – burial 15. 1, 2, 9 – chert; 3, 7, 8 – slate; 4 – flint; 5 – quartz; 6 – pumice. Drawing: A. Kostyleva.

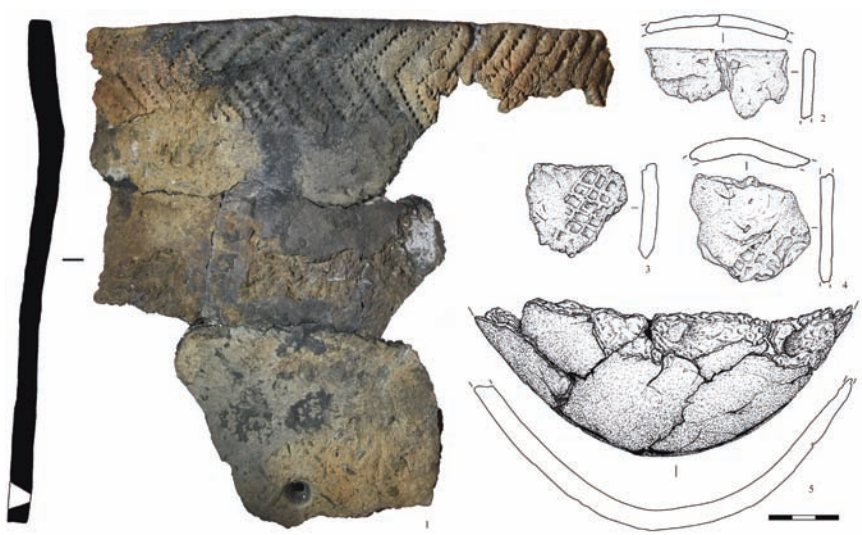

Figure 7. Kola Oleneostrovskiy grave field, pottery. 1 – vessel fragment from the destroyed area; 2–4 – fragments of rim and wall of a vessel from burial X; 5 – bottom of a vessel from burial 16-2. Photo: E. Kolpakov, drawing: A. Kostyleva.

Wooden covers, consisting of one or two layers of wood, were recorded in collective burials 16, 17, and 19. The covers were made either of planks or split timbers. In burial 16, the cover was of one layer, which was placed parallel with the deceased. In burials 17 and 19, two layers were observed. In burial 17, the lower layer was set perpendicularly, whereas the upper layer was placed parallel to the skeletons. In burial 19, the two covers were placed parallel to the grave and the casket of an infant burial (19-5) had been placed on the lower cover. The ends of planks or timbers were supported on the edges of the grave pits. In burials 19-3 and 19-4 (apparently contemporary), the walls of the grave pit had been covered by vertical planks. The floor of this same burial was covered with planks and stakes running crosswise to the grave, whereas in burial 19-2, the flooring was placed parallel to the interment.

Several factors indicate that grave pits were not filled during the funeral. Firstly, the covers had fallen into the grave pits and on the caskets or bodies in a way that implies the pits were not filled. Secondly, the upper boundaries of grave pits are unclear because loose sand seeped into the empty space of the burial chamber. Thirdly, the boat-shaped caskets inside collective burials had collapsed and broken up in various directions, which implies that there was some empty space inside the chambers. Of course, soil could have been piled on the wooden covers of the graves.

During their own time, the burials were not subjected to destruction – they were clearly visible, and the integrity of the burials was maintained. No evidence of damaging the graves was documented during our excavations. The few cases when adjacent burials seem to overlap each other provides evidence of the sequence of their collapse, not the sequence of interments. Only burial VII was possibly damaged during the construction of burial VI, as suggested by Shmidt (1930: 132).

Three cremations have been recorded during excavations of the grave field. Particular attention should be paid to the burial investigated by Shmidt (burial X), as everything in it contradicts the typical traits of the local burial rite. The burial consists of an incomplete, charred skeleton – like a failed attempt to burn the body – whose orientation to the west deviates from all other burials. In addition, a stone cairn up to three layers high was built on top of the cremation. The second cremation was recorded by Tsiplenkov during the sand quar-

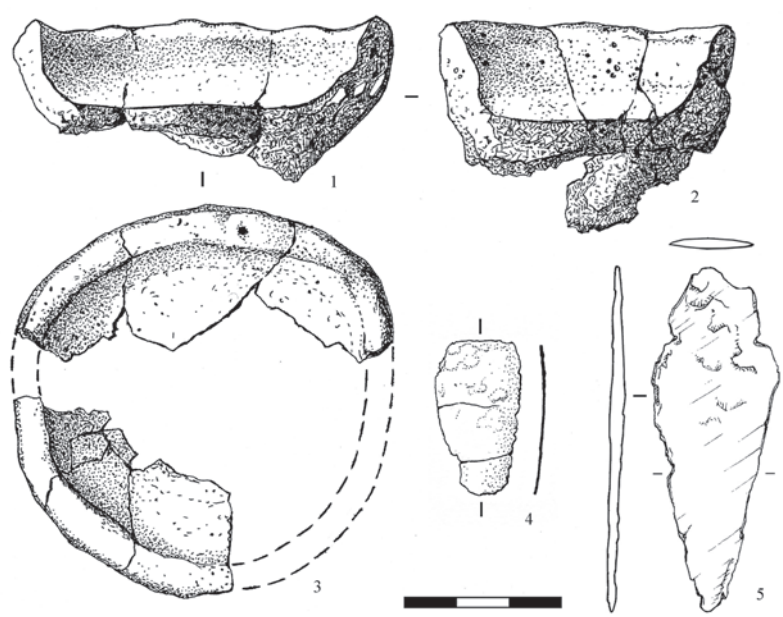

Figure 8. Kola Oleneostrovskiy grave field, crucible and bronze artefacts. 1–3 – fragments of a crucible from the destroyed area and its reconstruction; 4 – blade (burial 15); 5 – dagger (burial VIII). Drawing: A. Stepanova and A. Kostyleva.

rying, and there is no further information about it. The third cremation (burial 9) comes from Gurina's excavation. It was a concentration 'of medium-sized fragments of bones mixed with ash and charcoal, among which the fragments of a skull were most clearly visible' (Gurina 1953: 407). No finds were made in this burial.

5 Burial goods

Almost all bodies were buried with abundant and various objects made of bone and antler (Fig. 5), whereas ceramic, stone, and metal artefacts were less numerous. The most common categories of bone and antler artefacts are the following: daggers, various projectiles like arrowheads, darts, harpoon heads (including toggling harpoon heads), fishing hooks, rods, borers, needles, adzes and chisels, pendants, 'pins', 'combs', hafts, and needle boxes (Gurina 1953; Murashkin 2007; Shmidt 1930). There is a number of rods with reindeer heads, probably used as pommels or finials (Murashkin & Shumkin 2004). Some bone objects were decorated with carved geometric patterns, similar to the decoration of bone tools found at the sites of Mayak 2 (Gurina 1997: Figs. 52: 10 & 53: 6, 8; Shumkin 1984: Fig. 194: 2–3) and Ust-Drozdovka 3 (Helskog et al. forthcoming).

In addition to bone and antler artefacts, there are many bones of birds, fish, and mammals. The remains of birds are mainly represented by leg and wing bones. The row of Greenland shark (*Somniosus microcephalus*) teeth from burial 16-3 is a unique find – they were probably used as adornments. The most common mammal remains were the bones of reindeer (*Rangifer tarandus*; antlers, metapodias, lower jaw and teeth), otters (*Lutra lutra*), beavers (*Castor fiber*; lower jaws and incisors), bears (*Ursus arctos*; tooth), and seals (Phocidae).

Stone artefacts are not that abundant: there are four polished slate axes and adzes, two chert daggers, one polished slate arrowhead, ten arrowheads and their fragments made of chert, as well as numerous scrapers, retouched flakes, and flakes of flint, chert, slate, and quartz (Fig. 6). The material also includes one bone harpoon with an inserted head of chert (Shmidt 1930: Table II: 3). Pieces of pumice and grindstones made of sandstone are present, too. Some pumice fragments have grooves, which were probably formed through the sharpening of bone tools. Pieces of ironstone (?) were found in seven burials and red ochre fragments in one grave. In many burials, various shells were discovered (Shmidt 1930: 136). In burials VI, 7, and 19-3 large concentrations of *Dentalium* shells (up to 300 pieces in burial 19-3) were encountered – these were used as beads or decorative ornaments.

Fragments of ceramic vessels were found in burials X (Shmidt 1930), 1, 10 (Gurina 1953), 16-2, and 19-5, as well as in the destroyed part of the grave field. A small vessel with a rim diameter of 3.5 cm, discovered in burial 10, was made of clay 'without any visible temper' (Gurina 1953: 377). The rest of the pottery was made of clay tempered with crushed asbestos, and can be divided into two types. About 150 potsherds, probably from just one large vessel, were collected in the destroyed area. Together with two vessel bottoms from burials 16-2 and 19-5 they are attributed to Lovozero Ware (Fig. 7: 1, 5). The clay paste of these fragments is tempered with large pieces of crushed asbestos (rods up to 3 cm long) and in some cases with hair or shells (?). The vessels were built of clay bands (width ca. 3–6 cm) and are well-fired. The colour of the sherds varies from reddish to dark brown and dark grey – the inner surface of the sherds is always black or dark grey. The outer surfaces are slightly smoothed. The reconstructed vessel has a straight rim and a wall thickness of 0.7–0.9 cm. The zone below the rim is decorated with a zig-zag pattern made with a comb stamp, in addition to which some small holes were drilled through the walls. Pottery fragments discovered in burial X were made of clay with fine crushed asbestos. This vessel has a wall thickness of 0.4–0.6 cm, a straight rim, and an outer surface covered with stamp impressions (Fig. 7: 2–4). In Norwegian and Finnish literature, similar impressions are called 'textile' or 'imitated textile' – in Russian literature, the term 'waffle' is usually used (Carpelan 2004: 35).

Lab-index	^{14}C date (BP)	Calibrated date / 1 σ	Burial / location	Material
Le-800	3000±50	1370–1130 BC	6	Decomposed wood and skin(?)
Le-6802	3080±110	1500–1130 BC	15	Charcoal
Le-6804	3090±50	1430–1300 BC	16-4	Charcoal
Le-6803	3130±100	1510–1260 BC	17-1	Charcoal
Le-6801	2750±40	925–830 BC	17-4	Charcoal
Le-8138	2635±35	830–790 BC	19	Decomposed wood
Le-6805	4010±45	2575–2470 BC	16-2	Tar
Le-6806	890±30	1050–1210 AD	Turf layer above burial 15	Turf

Table 1. Radiocarbon datings from the Kola Oleneostrovskiy grave field.

A few fragments of a crucible with drops of bronze on the inner surface were recovered from the destroyed part of the grave field. A small bronze dagger, 6.5 cm long, was found in burial VIII (although published as an arrowhead; Shmidt 1930: 146 Table V: 7). A bronze blade, 3 x 1.4 cm in size, was found in burial 15 (Fig. 8).

There are clear differences in the burial goods between male and female burials. About two thirds of the artefacts were discovered in male burials, and most of the burials distinguished by the quality and abundance of their grave goods are male (burials VI, VIII, 16-3, 17-4, 19-2, and 19-4 (?)). 'Rich' female burials include only burials 1, 2, and 19-3. An interesting difference between the male and female burials is also visible in the tool types included in the burials. Only male burials contained double-barbed darts, harpoon heads, fishing hooks, needle-shaped arrowheads and arrowheads with triangular cross-section, 'pins with notched head', and 'shaft straighteners' made of pumice. On the other hand, *Unio* shells, reindeer mandibles, and 'four-tooth combs' were found in female burials only.

6 Anthropological data

Cranial and postcranial bones of the Kola Oleneostrovskiy grave field are housed in the Peter the Great Museum of Anthropology and Ethnography (collection No 4952, 5715, and 7265). Most bones are well-preserved, and only minor restoration was needed. In total, the analysed series includes 31 postcranial skeletons and 20 skulls.

Comparative analysis of the metric characteristics of long bones reveals that the KOG people had a more robust postcranium skeleton than the Kola Sámi of the 18th and 19th centuries AD. Based on characteristics like body length and the proportion indices of upper and lower limbs, the modern Sámi are better adapted to life in northern environments than the people from Bolshoy Oleniy Island (Borutskaya et al. 2011).

The most common skeletal pathologies among KOG people include osteoporosis of cranial vault and facial bones, periodontitis, enamel hypoplasia, osteoporosis of postcranial bones, traces of bruises and periostitis on shin bones. One third of individuals display signs of childhood rickets. Thus, it can be suggested that the KOG population suffered from a low level of insolation and a consequent deficiency of vitamin D, cold stress, and a shortage of plant foods (Borutskaya et al. 2011: 52). At the same time, no traces of caries were detected in the KOG series.

The skulls of people buried on Bolshoy Oleniy Island are rather gracile and mesocranial in form. In most cases, the rugosity of the nuchal crest and other muscle ridges is weakly expressed. Sometimes the sex-diagnostic features of the same individual are contradictory. Metrically the skulls of KOG people are characterised by rather low and very wide flat faces, low orbits and nasal apertures, and wide frontal bones. Many skulls display a tendency to alveolar prognathism. Nasal bones are flat in both horizontal and vertical dimensions (Moiseyev & Khartanovich 2012).

The morphological characteristics of the skull series of the KOG are not like those of any other ancient or modern series from the Kola Peninsula, including the Sámi people. Instead, the series shows closer biological affinities with ancient Altai Neolithic and modern, Ugric-speaking Siberian groups (Moiseyev & Khartanovich 2012). It has earlier been suggested that modern Ugric-speaking Siberians, together with Samoyeds and Volga Finnic populations, share some common morphological characteristics that indicate their common origin (Alekseyev 1974; Bunak 1956; Gokhman 1992).

The results of the analysis of KOG mtDNA, which was done at the Australian Centre for Ancient DNA of the University of Adelaide, matches the results of the morphological studies to a high degree (Der Sarkissian et al. 2013). The analysis shows that the haplogroups found in the KOG series are similar to the haplogroups of modern western Siberian peoples. In this case, the KOG people are more closely related to the European Nenets, who speak Samoyed languages and are very recent migrants from western Siberia. The genetic studies also show that the KOG population is not closely related to the Mesolithic people of northern and eastern Europe.

7 Dating

Currently, there are seven radiocarbon dates from different burials (Table 1). The first date was obtained in 1968 from a sample of organic matter ('casket' or remains of clothing?) in burial 6 and published by Gurina (see Gurina 1997: 96, 138). Recently, a series of samples of different materials was obtained from burials 15, 16-4, 17-1, 17-4, and 19, as well as the overlaying turf layer.

Three dates taken from charcoal and one from organic matter indicate an age of 1510–1130 calBC for the burial ground and generally correspond with the typology of pottery and stone and bone tools.[3] The contradicting of dates Le-6805 (burial 16-2) and Le-6806 (burial 15) can be explained. Firstly, the sample from burial 16-2 is mineralised tar used for caulking – obviously the tar had been treated (heated?), which has affected the ^{14}C concentration in the sample. Secondly, the date obtained from the sample of buried brown turf overlying burial 15 does not relate directly to the burials, but indicates the natural, later formation of this layer. However, there is no explanation for the two radiocarbon dates from burials 17-4 (charcoal, Le-6801) and 19 (decomposed wood, Le-8138), which point towards the first half of the 1st millennium BC.

Nevertheless, in the light of the ^{14}C datings, the typological analysis of burial inventory, and the geomorphological observations, we suggest that the burials were made during the later Early Metal Period, in the second half of the 2nd millennium BC.

8 The cultural affiliation of the site – discussion

The Kola Oleneostrovskiy grave field clearly stands apart from the rare Early Metal Period burial sites of northern Fennoscandia. Burials of this time are especially known in the Varanger Fjord area in northern Norway (Simonsen 1961). However, most of them were located on the periphery of settlements. With the exceptions of the infant burial inside house J at the Advik site, skulls and other human bones found in the middens at the Gressbakken Nedre Vest site, and the poorly documented burials at the Barsnjarga Ovre and Kvalnes sites, all burials had stone cairns or other stone constructions built on top of them, some even up to 0.35 m high and containing three layers of stones (Gressbakken Nedre Ost). These inhumations were usually carried out on the ground surface, in the stone-free central part of the cairn, or, at times, in shallow (0.5 m) grave pits (Gressbakken Nedre Ost, Nyelv Nedre Vest). Graves were oriented either east to west or north-north-west to south-south-east. Burial goods often included arrowheads, daggers, axes, and adzes.

According to literature and archival sources, four burials of the Late Stone Age or Early

Metal Period have been excavated elsewhere on the Kola Peninsula: a burial at Peskanets Bay (Gurina 1986; 1997: 97–99; Shumkin 1984: 113–114), two burials at Lovozero 3 (Titov 1971: 14–15), and a burial at Niva X (Titov 1972: 49–50). These burials had similar features, such as pits that were oriented from south-east to north-west or from east to west and of substantial depth (0.8 m). Small bone fragments as well as fragments of human skulls and teeth were found in the graves. Only in two cases (Peskanets and Niva X), stone implements intentionally placed as grave goods were found, including axes and adzes, arrowheads, and daggers. A layer of red ochre was recorded on the bottom of the grave pit at the Niva X site, and a stone construction (cairn?) at the Peskanets site.

Many bone and antler tool types from the burials at the KOG, as well as their ornamentation, bear a strong resemblance to the artefacts found at the sites of Mayak 2 (Gurina, 1997; Murashkin 2007; Shumkin 1984), Ust-Drozdovka 3 (Helskog et al. forthcoming), Gressbakken Nedre Vest, Advik, and Nyelv Nedre Vest (Simonsen 1961). It has been repeatedly proposed that the burial field, as well as the other sites, belonged to the culture of sea mammal hunters (Gurina 1997: 97; Shumkin 1984: 104).

Based on the materials from the grave field, we can argue that there were direct or indirect contacts between the inhabitants of the Kola Peninsula and southern and western Scandinavia (Murashkin & Tarasov 2013). In Russian literature, this problem was first addressed by V. Shumkin and N. Gurina after the excavations of the burial in Peskanets Bay. Both authors suggested that the flint daggers and a polished gouge with four-sided cross-section (Gurina 1986: Fig. 5) were of southern Scandinavian origin (Gurina 1986: 92–93; 1997: 97–99; Shumkin 1984: 113–114).

The antler hilt with two holes for dowels or rivets fastening the blade, found in burial 16-1, is a unique find in the North (Fig. 5: 19). However, it is similar to the bronze hilts of daggers and swords that were common during the Late Bronze Age in the Mediterranean and western and northern Europe. Interestingly, according to V. Bochkarev, this technique of fastening was unknown in eastern Europe (Bochkarev, pers.comm.). E. Hinsch has published a series of slate artefacts with drilled holes originating in western Norway – some of them could be blades inserted into similar hilts (Hinsch 1957: Figs. 1: c & 7: a, b, d). Also bronze blades with holes for dowels or rivets for fastening are known from western Norway (Engedal 2010: Appendix 9 Pl. 27–28).

Additional evidence suggesting contacts between the Kola Peninsula and southern Scandinavia is provided by the chemical composition of a bronze dagger, a small metal blade, and droplets on the inner surface of a crucible. According to the XRF analysis of three samples, performed in the Laboratory of Scientific and Technical Expertise of the State Hermitage in St Petersburg by S. Khavrin, they are copper-based alloys. The proportion of additions in the bronze items is the following:

- dagger: tin (Sn) – 10–14%, arsenic (As) – <0.7%; lead (Pb) – <0.5% [nickel (Ni), antimony (Sb), silver (Ag) – traces];
- blade: tin (Sn) – 14–16%, arsenic (As) – <0.1%, antimony (Sb) – 0.4%; nickel (Ni) – <0.8%; iron (Fe) – <0.2% [lead (Pb) – traces];
- droplets of bronze: tin (Sn) – 10–12%, lead (Pb) – 4.8%; nickel (Ni) – 1%.

Similar results are shown by Emission Spectrum Analysis performed on the small blade in the Laboratory of Archaeological Technology IHMC RAS by A. Yegorkov. The proportion of additions is the following: tin (Sn) – 15%; lead (Pb) – 0.5%; arsenic (As) – 0.3%; antimony (Sb) – 0.2%; zinc (Zn) – 0.06%; silver (Ag) – 0.05%; nickel (Ni) – 1.2%; cobalt (Co) – 0.05%, iron (Fe) – 0.1%; manganese (Mn) – 0.02%.

The bronze artefacts known in north-west Russia, the Baltic States, and Finland from the 2nd millennium BC are related either to the Seima-Turbino tradition or the Nordic tradition. In general, artefacts of both traditions contain tin (Yushkova 2010: 272–274). However, E. Chernykh and S. Kuz'minykh have stressed that the quantity of tools produced of copper-tin

alloys decreases strongly to the west of the Ural Mountains and that copper-arsenic alloys or pure copper items become dominant (Chernykh & Kuz'minykh 1989: 173 Ind. 1–10). At the same time, the Nordic bronze artefacts contain high concentrations of tin – from 3 to 16% (Engedal 2010: Fig. 3; Ling et al. 2012: Table 2; 2014: Table 2). Thus, the elemental analyses of copper-based alloys from the KOG indicate a Scandinavian origin for the metal.

In discussing the cultural connections of the population buried in the KOG, it is necessary to mention the 'waffle'-stamp-decorated vessel from burial X. Already N. Gurina noted the similarity of this vessel and the Neolithic pottery of Yakutia and Chukotka (Gurina 1953: 377). V. Shumkin suggested that the appearance of 'Waffle' Ware on the Kola Peninsula may indicate the infiltration of Ymyyakhtakh culture from Siberia (Shumkin 1984: 112; 1991: 142–143). However, according to C. Carpelan, the 'Waffle' Ware of the Kola Peninsula belongs together with Vardøy Ware, which was distributed over northern Norway and northern Finland. He also points out that such pottery decoration is not known in the area between northern Fennoscandia and the Taimyr Peninsula (Carpelan 2004: 35–36).

In conclusion, the work with the Kola Oleneostrovskiy grave field materials continues. Many issues raised in this article can be resolved only by analysing extensive materials from other Early Metal Period sites on the Kola Peninsula and in adjacent territories.

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Notes

1 In Russian literature, the Early Metal Period of north-western Russia is dated from 3500/3000 BC to 1000/500 BC (see also Nordqvist 2013).

2 M. Lavrova has correlated the Trivia transgression with the 2nd Litorina transgression of the Baltic Sea (Lavrova 1960).

3 Radiocarbon dates were calibrated using the OxCal 3.10 program and IntCal09 curve (Bronk Ramsey 2009; Reimer et al. 2009).

4 Burials at the Niva XII site, which are mentioned in literature (Gurina 1997: 99; Pesonen 1980: 41–43), do not appear to be graves.

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