

THE RADIOCARBON DATINGS OF THE STONE AGE – – EARLY METAL PERIOD ON THE KARELIAN ISTHMUS

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Abstract: During the last years the investigations of Stone Age and Early Metal sites on the Karelian Isthmus were much intensified. Presently, about 180 archaeological sites belonging to these periods are recorded. A considerable part of these sites have been found and investigated by joint cooperative efforts of Russian and Finnish archaeologists. 12 sites of Mesolithic, Neolithic and Early Metal ages are characterized by 30 radiocarbon dates. Several dates were obtained from the sites of prolonged duration and with a mixed stratigraphy, which makes them less reliable. This article includes the catalogue of ¹⁴C dates and the information regarding their attribution.

1. INTRODUCTION

The Karelian Isthmus (the Leningrad region of Russia) which occupies the central position between North-Western Russia, Finland and Baltic States, plays a key role for understanding prehistory of the Europe's northern boreal zone. Since the late 1990s intensive field surveys are conducted by the Institute for History of Material Culture, Russian Academy of Sciences (St-Petersburg), jointly with Finnish archaeologists (Department of Archaeology at University of Helsinki, National Board of Antiquities, Lahti Historical Museum, and the Microlit ltd). During the course of these investigations a certain number of radiocarbon dates has been obtained. Although relatively small in number, these dates are of paramount importance for developing the preliminary chronological scheme for prehistoric sites in that area. The aim of the present paper consists in the tentative analysis of available chronological evidence.

2. RESULTS AND DISCUSSION

The map of sites with ¹⁴C dates is presented in **Fig. 1** and the radiocarbon results are shown in **Table 1**.

Antrea-Korpilaht

Antrea-Korpilaht, the Mesolithic sites with the earliest evidence of human presence on the Karelian Isthmus was found in 1914 (Pälsi, 1920). The conventional ¹⁴C –dates obtained for the preserved fragments of fish-net are: 9230±210 (Hel-269) and 9130±140 BP (Hel-1303) or 8800-7800 cal BC (Timofeev, 1993). In recent years the area was surveyed by Dolukhanov *et al.* (in print) and also Jussila and Kriiska (<http://www.dlc.fi/~microlit/antrea/antrea.htm>). Supposedly, this period corresponds to the initial human occupation of the Karelian Isthmus and the adjacent areas. At least the connection of this connection with the Kunda Culture in Estonia seems well attested.

Bol'shoye Zavetnoye

The excavation of the *Bol'shoye Zavetnoye* (Juoksemajarvi) 4 site, in Melnikovo, was carried out in 2002 by the joint Russian-Finnish expedition (Timofeev *et al.*, 2003; Gerasimov, and Kulkova, 2003). The site was discovered during the Russian-Finnish field seminar in 1999 (Lavento *et al.*, 2001) on the south-western shore of the Bol'shoye Zavetnoye Lake, near Zavetnoye (Priozersk District). The excavations were conducted in May-June

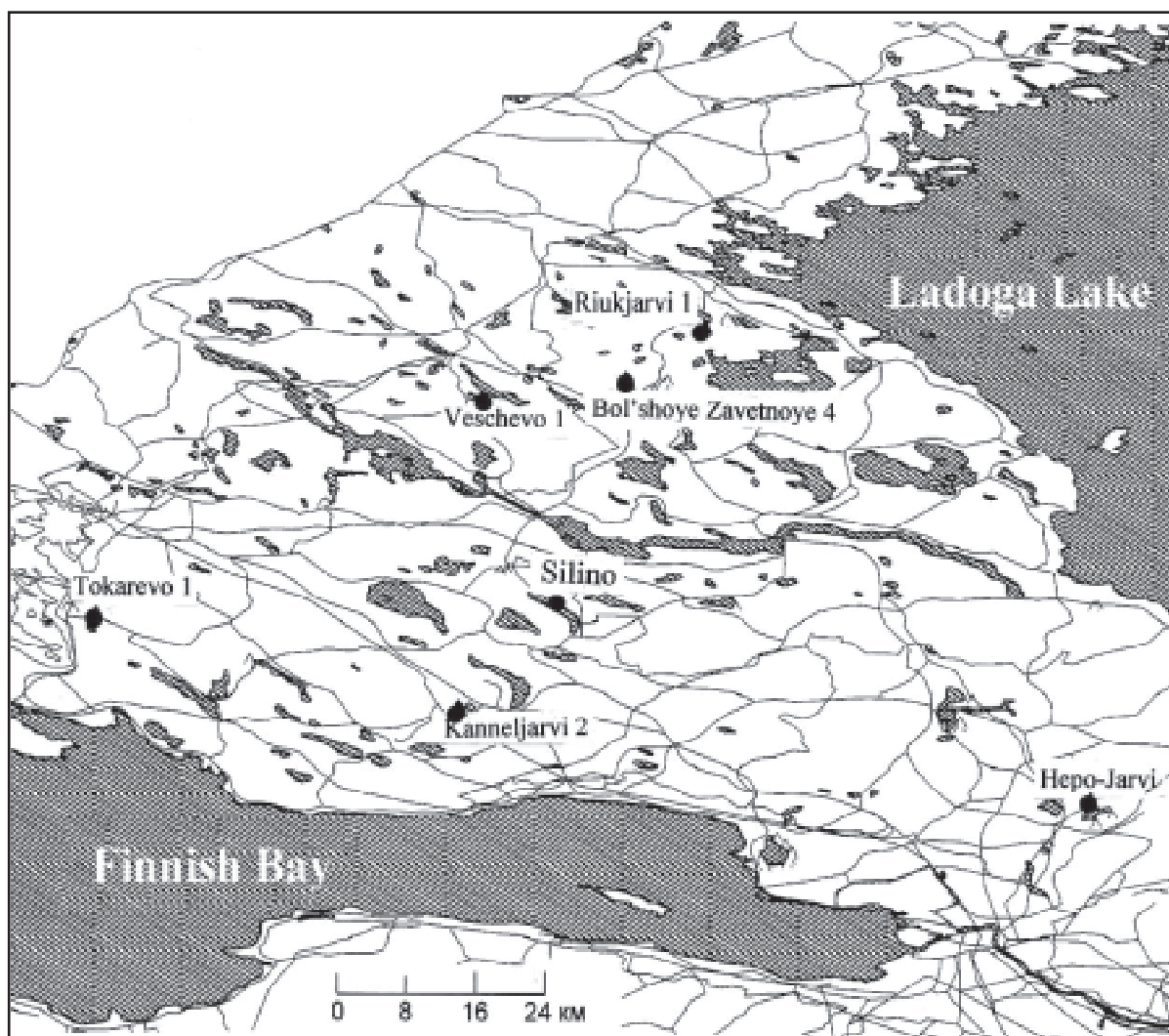


Fig. 1. The sites of Mesolithic-Neolithic-Early Metal periods of Karel'ian Isthmus dated by radiocarbon method

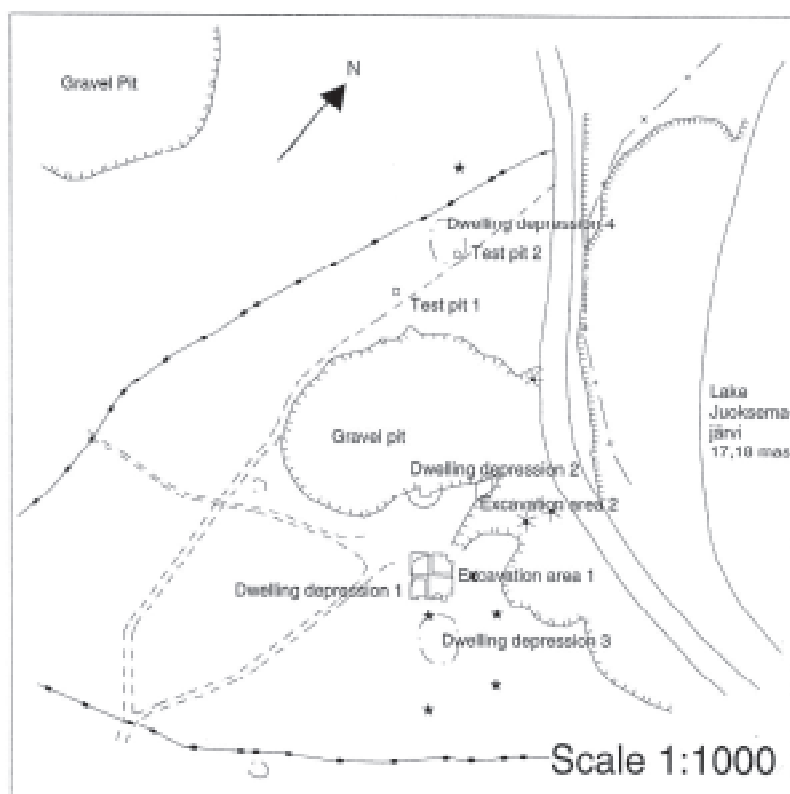


Fig. 2. The planigraphy of the Bol'shoje Zavetnoye 4 site

Table 1. Radiocarbon dates for the sites of Stone Age and Early Metal period on the Karelian Isthmus. Dates are presented in a chronological succession

No.	Site	Period	Lab. number	¹⁴ C Age (BP)	Intervals of Calibrated Age (BC)	
					1σ	2σ
1.	Antrea-Korpilahti	Early Mesolithic	Hel-269	9230±210	8800-8200	9200-7800
2.	Antrea-Korpilahti	Early Mesolithic	Hel-1303	9130±140	8560-8200	8750-7900
3.	Bol'shoye Zavetnoye 4	Late Mesolithic	Le-6556	7750±180	7050-6400	7100-6207
4.	Silino*	Late Mesolithic	Hela-524	6975±80	5980-5740	6020-5710
5.	Silino*	Late Mesolithic	Hela-526	6860±75	5840-5660	5900-5620
6.	Silino*	Late Mesolithic	Hela-525	6815±80	5780-5630	5850-5560
7.	Hepojärvi	Late Mesolithic/ Early Neolithic (Sperrings ceramics)	Le-1412	6480±60	5490-5360	5610-5310
8.	Hepojärvi	Late Mesolithic/ Early Neolithic (Sperrings culture)	Le-1411	6380±60	5470-5330	5480-5250
9.	Silino*	Early Neolithic (Sperrings ceramics)	Hela-554	5830±80	4780-4550	4850-4490
10.	Veschevo 1	Sperrings culture	Le-6511	5770±130	4780-4460	4950-4300
11.	Silino	Middle Neolithic, Comb-Pit Ware	AAR-7129	5050±100	3960-3710	4050-3640
12.	Silino*	Middle Neolithic, Comb-Pit Ware	Hela-553	4965±80	3910-3650	3960-3640
13.	Silino*	Middle Neolithic, Comb-Pit Ware	Hela-591	4965±60	3800-3660	3940-3640
14.	Johannes Väntsi**	Middle Neolithic Typical Combed Ware	Hela-465	4870±85	3770-3530	3950-3350
15.	Tokarevo 1	Middle Neolithic, Comb-Pit Ware	Ki-10298	4790±210	3950-3100	4000-2900
16.	Riukjärvi**	Middle Neolithic, Combed Ware	Hela-359	4780±70	3650-3380	3700-3370
17.	Vyborg Häyryn-mäki**	Late Neolithic	Hela-358	4550±60	3370-3100	3500-3030
18.	Silino	Late Neolithic Asbestos ware culture	AAR-7130	4430±65	3310-2920	3340-2910
19.	Bol'shoye Zavetnoye 4	Late Neolithic	Le-6641	4550±80	3490-3090	3550-2900
20.	Bol'shoye Zavetnoye 4	Late Neolithic	Le-6512	4150±50	2880-2620	2880-2580
21.	Piiskunsalmi**	Late Neolithic	Hela-468	4130±60	2870-2580	2880-2490
22.	Hepojärvi	Middle/Late Neolithic, Comb-and-pit ware culture	Le-1409	4100±60	2860-2500	2280-2490
23.	Hepojärvi	Middle/Late Neolithic, Comb-Pit Ware	Le-1408	4020±70	2840-2450	2900-2300
24.	Kanneljärvi 2	Final Neolithic/ Early Metal period	Le-2549	3890±40	2460-2310	2470-2200
25.	Bol'shoye Zavetnoye 4	Late Neolithic	Le-6557	3700±20	2140-2035	2190-1950
26.	Bol'shoye Zavetnoye 4	Late Neolithic	Le-6603	3660±30	2130-1970	2140-1940
27.	Kanneljärvi 2	Final Neolithic/Early Metal period	Le-2550	3500±40	1880-1740	1930-1690
28.	Riukjärvi**	Early Metal period, Textile ceramics	Hela-467	3085±70	1430-1260	1520-1120
29.	Veschevo 1	Early Metal period	Le-6559	2400±50	760-390	770-390
30.	Melnikovo Kalmisto-mäki**	Early Metal Period	Hela-8	2360±70	760-260	800-210

The AMS-dates for the Silino site obtained by the Lahti Historical Museum (Takala & Sirviö 2003) are marked*. AMS-dates reported by Huurre (2003) are marked by **.

2002 by the Karelian Neolithic Group the IHMC RAS together with the Department of Archaeology, Helsinki University (Timofeev *et al.*, 2003). Four dwelling-depressions were found on a terrace at 24-25.5 m above the sea-level. The NW-SE directed depressions roughly oval in shape were oriented along the terrace edge. The large area between the depressions NN 3 and 4 was destroyed by a sand pit. The main excavation site (51 m²) included one depression (**Fig. 2**). The excavation was carried out by removing thin horizons, taking into consideration the lithological composition and topography. All finds were measured in three-dimensional space with x, y, z - coordinated with the use of a permanent reference point.

Special attention was paid to collecting the samples for different types of scientific analyses. The following stratigraphy has been established: beneath the humus layer and the "pine-forest sand" in the part of excavated area was found darkish sand that included the chipped quartz, and numerous burnt bone fragments; below this layer was uncovered yellow medium-grained sand with inclusions of pebble and gravel. The thickness of this layer was about 15-25 cm. The light unsorted sand was found beneath the yellow sand. The layer of dark sand was observed in the middle part of the excavation area. The reddish-brownish sand with inclusions of charcoal was the main filling of the dwelling.

The maximal dimensions of this filling area are about 5.8 by 4.0 m. The filling was clearly recognizable from the depth 10-15 cm, its thickness in the central part reached ca. 40 cm. It is essential to note that on several occasions, indices of the later disturbances were observed during the excavation. There were lenses of grey and light-grey sand in the upper portion of the filling, which could be as a result of washing off the material downwards, along the slope of the terrace. Charcoal lenses were visible particularly in the lower part of the filling in the central part of the dwelling. The remains of pits were also observable in

the bottom of the dwelling. The amount of the small fragments of burnt and calcinated bones increased considerably in the areas of the fillings. Concentrations of burnt stones and lenses of sand with charcoal particles were also observed in the periphery of the dwelling and outside of the dwelling, obviously connected with the remains of fire-places of different degree of preservation. The finds (the total of more than four thousand items, and excluding fragments of burnt bones) are represented by the objects of quartz, quartzite, slate, flint, granite, sandstone (**Fig. 3**). The mace-heads of sandstone with slightly polished sur-



Fig. 3. Flint and quartz finds of the Bol'shoye Zavetnoye 4 site: 1-17-quartz tools, 18-20-flint tools

faces and their fragments were found (**Fig. 4**). One mace-head was found in the layer in the in a right-angle position, which indicates, probably, that originally it had a wooden handle. In addition, there are numerous quartz tools (including a fragment of tanged point), sandstone plates for slate tools polishing, some flint objects, including microblades.

Only 24 fragments of pottery were found inside the dwelling and in its south-eastern part, outside the depression. The fragments of Early Neolithic (Sperrings) pottery in the filling are of special importance for dating the dwelling site. Several small-size ceramic fragments may be attributed to the Typical Combed Ware.

Two amber pendants were found. The first one was long-oval, or “tongue-shaped”, and broken into two pieces. According to the Finnish typology, it can be viewed as a “classical amber ornament” dating to the Middle Neolithic. The second amber object is different in its form, and it might be possible to be linked even with the Mesolithic context. These pendants were found outside of the dwelling.

One ^{14}C date obtained for this the site may be related to the Late Mesolithic occupation: 7750 ± 180 BP, Le-6566 or 7050-6200 cal BC. This date is also confirmed by Mesolithic quartz implements, and mace-heads mentioned above. In general terms, three main chronological units may be distinguished at this site. Remains of the Late Mesolithic occupation are mainly destroyed by the later settlements at the site. Early Neolithic assemblage can be linked with the dwelling depression which partly destroyed the Mesolithic layer. The latter phase is signaled by the finds of the Sperrings ceramics.

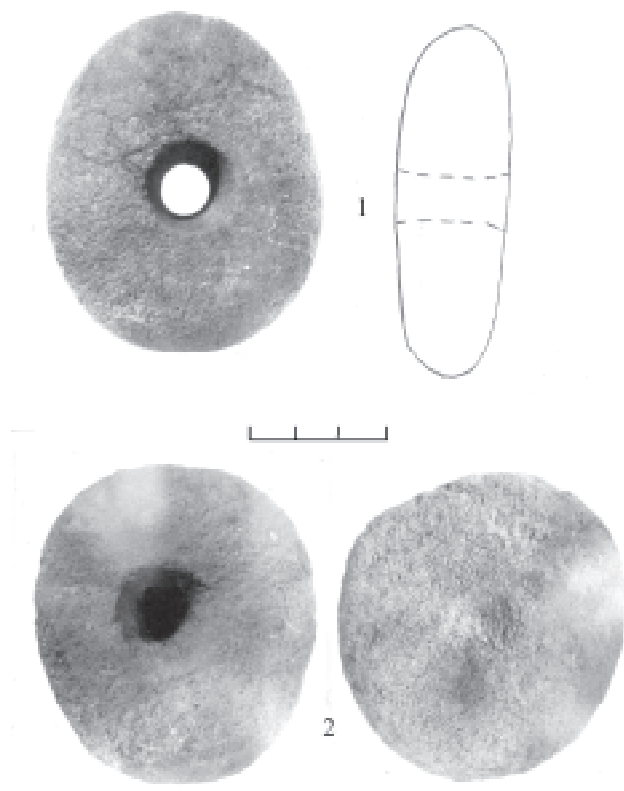


Fig. 4. Stone mace-heads from the Bol'shoye Zavetnoye 4 site

The occurrence of a Late Neolithic assemblage is more problematic. No pottery, which could be connected directly with this period finds are reported at the site. Samples from dark-coloured charcoal patches and scattered charcoal concentrations were radiocarbon dated to the Late Neolithic or even later periods (4550 ± 180 , 4150 ± 50 , 3740 ± 90 , 3700 ± 320 , 3660 ± 30 BP (Le-6641, 6512, 6601, 6557, 6603), corresponding to the calibrated time interval between 33550 and 1940 cal BC. Yet these dates should be treated with caution, taking into consideration the mixed stratigraphy and the occurrence of later disturbances. Among the finds one notes one large slate point, which might be possibly connected with the later periods.

Hepojärvi

The site is situated on the small promontory of the northern shore of Lake Hepojärvi, in the Southern part of Karelian Isthmus. Part of the site (124 sq. m.) was excavated by Vereschagina in 1978 (Vereschagina, 2003). At least, two periods of periods of occupation dating to the Neolithic period could be recognized. The first one belongs to the Early Neolithic (with the Sperrings ceramics), and the second one dates back to the second half of the Neolithic. Three fireplaces with remains of stone-framed hearths were uncovered. Charcoal lenses and remains of open-air fireplaces were also uncovered.

Four charcoal samples have been ^{14}C dated (Timofeev and Zaitseva, 1991). The earlier group (6480 ± 60 , 6380 ± 60 BP, Le-1412, 1411) originates from the filling of two stone-framed hearths. The later group could be connected with the Late Neolithic period (4100 ± 60 , 4020 ± 70 BP, Le-1409, 1408) (**Fig. 5**).

The samples and their contexts at Hepojärvi site are of particular importance, if they can be associated with the Sperrings ceramics. Significantly, after calibration the earlier dates are at least 200 years older than the earliest dates of the Sperrings ceramics in Finland (Carpelan, 1999). According to Huurre (2003), the pottery-making on the Karelian Isthmus began ca 5000 cal BC (Early Combed Ware Ka I 1). One of the possible explanations is that the Early Combed Ware emerged on the Karelian Isthmus earlier than in Finland. Yet this preliminary conclusion should be treated with caution. More information is needed for solving this question.

Veschevo I

Veschevo I is situated in the Heinijoki area, on the North-West part of the Karelian Isthmus. The site is located near the lake, on the terrace at an elevation ca 21-22 m above sea-level. The site is stratified. An area of 12 m² was excavated in 2002 (Timofeev and Gerasimov, 2003). The thickness of deposits reached 1-1,3 m. Culture layers of the early Metal Age, Late, Middle and Early Neolithic horizons were discernable; stone artifacts probably belonging to the Mesolithic were found in the bottommost deposits (Timofeev and Gerasimov, 2003). Remains of a large pit were recovered together with traces of fireplaces. The ^{14}C dates obtained at the site are connected with Late Neolithic (or perhaps with the very early

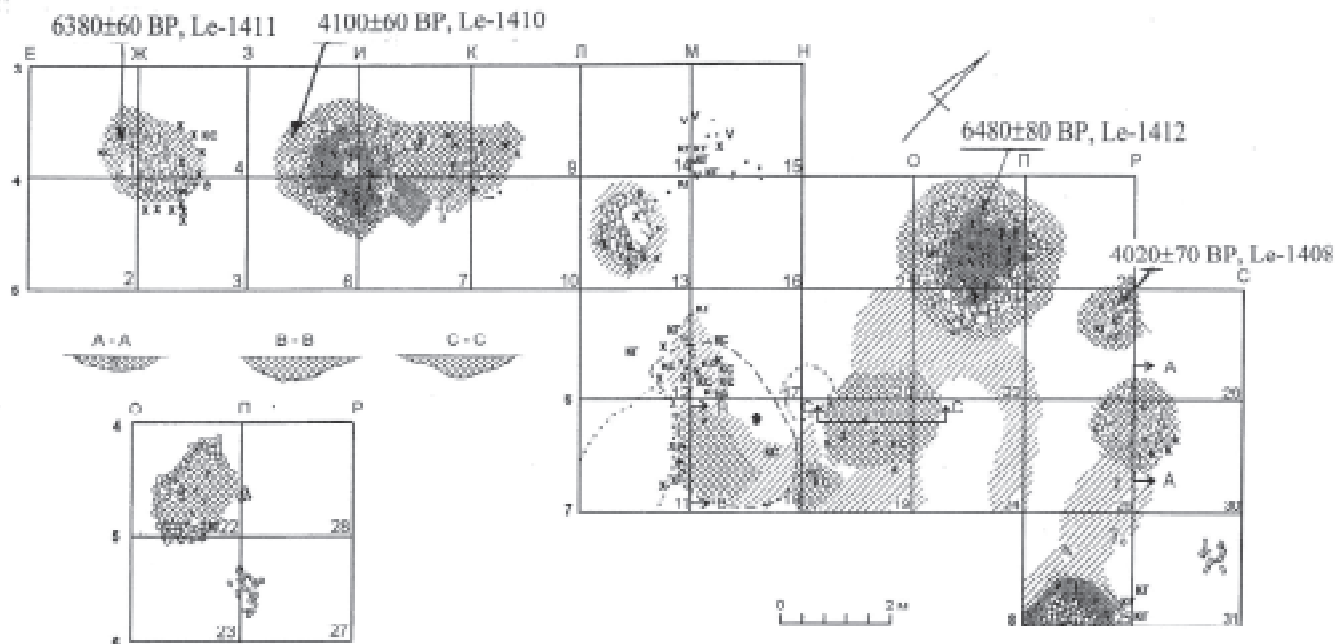


Fig. 5. Planigraphy of the Hepojärvi site and position of dated radiocarbon samples

Sperrings period) occupation, probably to the middle stage of the Sperrings ceramics (lens of charcoal, 5770 ± 130 BP, Le-6511). The upper cultural layer yielded an Early Metal Age date (2400 ± 150 BP, Le-6559, charcoal). It is overlaid by the horizon containing the finds of Early Metal Age and Iron Age materials (1470 ± 140 , Le-6509, charcoal).

Silino

Silino in the former parish of Muolaa by the River Vuoksi is the multi-layered site, situated at the North-Eastern coast of Pravdinskoye lake, in the Central part of the Isthmus, on the elevation ca. 17.0-17,5 m above sea level. The site was investigated by the Russian-Finnish expedition in 2000 and 2001. The Finnish team was represented by the Lahti Historical Museum under the leadership of H. Takala, the Russian one, by Timofeev (2000) and Gerasimov (2001) being in charge of the Russian part of the project. The site was particularly interesting by the thickness of stratified sand deposits reaching 2 m. Cultural layers of the Late Mesolithic Early Metal-Late Neolithic, Middle Neolithic, Early Neolithic were represented in sequence (see table 1). Important geological observations were made by M. Saarnisto and interesting results were reached also by M. Kulkova's investigations on the geochemistry of the sediments. Two samples collected by the Russian team were radiocarbon dated at AMS Laboratory of Institute of Physics and Astronomy, University of Aarhus, Denmark were made on the food-crust of the pottery-sherds in. The crust on a pot-sherd of Typical Combed Ware was dated: 5050 ± 100 BP, AAR-7129 (4050-3640 cal BC), and the Neolithic Asbestos ceramics, 4430 ± 65 BP, AAR-7130 (3340-2910 cal BC). Three AMS-dates from Silino are now available (Talkala and Sirviö, 2003:66), characterizing the Late Mesolithic settlement phase. One AMS-dated ceramic sample seems to refer to the Iron Age habitation (Takala and Sirviö, 2003).

Tokarevo 1

Tokarevo 1, situated South-West from Sovetskyi (Johannes) parish in the Vyborg district, on the coast of the Gulf of Finland, at an elevation of about 15 m above the sea-level. The site was largely destroyed by the previous gas pipe-line development. The excavation was carried out in 2001 by S. Lisitsyn (Lisitsyn and Murashkin, 2002; Lisitsyn, 2003). On an excavated area of 29 m^2 the assemblage belonging to the Middle Neolithic, and Typical Combed Ware were identified. Remains of fire-places were recovered. One pot-sherd with food-crust was dated at the Kiev Radiocarbon Laboratory, Ukraine. The date suggests the age of the Finnish Typical Combed Ware 4790 ± 210 BP, Ki-10298 (4000-3640 cal BC).

Kanneljärvi 2

Kanneljärvi 2 is situated in the central part of the Kreljan Isthmus, on the South-Western shore of the Lake Pobedinskoje (Kanneljärvi), close to the water. Excavation of the site were conducted by Timofeev in 1984. According to shore displacement and ^{14}C -chronology, the site has been use at the turn of Final Neolithic/Early Metal period. A limited excavation area (7 m^2) uncovered remains of pits and post-holes. The ornamentation of the pottery is scant and the paste was tempered by organic matter (indicating the asbestos ceramic influences). Several uartz and slate artifacts were also recovered. The charcoal from the filling in one of the vessels was dated 3890 ± 40 , 3500 ± 40 BP: 2470-1690 cal BC (Le-2549,2550) (Timofeev, 1993; Timofeev and Zaitseva, 1991).

Riukjärvi and Piiskunsalmi

The cluster of **Riukjärvi** and **Piiskunsalmi** dwelling sites is situated on the North-Western part of the Karelian Isthmus on the Lake Riukjärvi and River Ilmetjoki (Tossikanlahti). Most sites were excavated by J. Ailio in 1908 - 1909 and Sakari Pälsi in 1911 - 1912 and 1915 (Pälsi,

1915). Several periods of occupation are distinguishable. Presently, three AMS dates are available (Huurre, 2003). The earlier dates suggest the Middle Neolithic period, the later one, the Late Neolithic. The food-crust on a Textile-type pot has been dated to 3085 ± 70 BP, 1520-1120 calBC, Hela-467 (Lavento, 2001).

3. CONCLUSION

Presently the tentative chronology of Stone Age and Early Metal Age sites on the Karelian Isthmus may be based on 31 conventional radiocarbon and AMS –dates.. 16 analyses have been performed at the Radiocarbon Laboratory of the IIMK RAS, and 14 samples were measured at the Radiocarbon Laboratory of the University of Helsinki.

A considerable number of dates is available for the Mesolithic. Apart from the earlier date for the Early Mesolithic Antrea, six samples apparently belong to the Late Mesolithic period. Two latest of them (in Hepojärvi) may be seen as corresponding to the transition period from Mesolithic to Neolithic. One of the dates for the Mesolithic layer of Bol'shoje Zavetnoye 4 is substantiated by the archaeological assemblages, its elevation above the lake-level, and geochemical data. No archaeological records may confirm a Sperrings age date available for Veschevo 1. The attribution of the Hepojärvi dates (see before) to the Early Sperrings ceramics is more complicated, but, in principle, cannot be wholly excluded.

The dates for Combed and Pit-Combed Ware sites show a rather prolonged period of the existence of these cultures. The Neolithic Asbestos Ware at Silino shows this site was in use in the Middle Neolithic period. The Kanneljarvi 2 site is of particular importance, as this site may reflect the transition period from the late Neolithic to the Early Metal Age on the Karelian Isthmus. This does not contradict the other data for this site, which material culture includes the elements of Neolithic Asbestos ceramics. The tentative radiocarbon chronology for the Karelian Isthmus (Table 1) is essentially in accord with similar schemes suggested in Finland and Karelia. It is necessary to note that several important details (particularly the transition periods between Mesolithic and Neolithic, and between Neolithic and the Early Metal Period), and their interpretation necessitate further studies.

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Unfortunately, Dr. V. Timofeev is no longer with us. His co-writers devote this article to his memory.

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