

# 7 Archaeological survey in Kaukola and Räisälä in 1999 and a study of environmental settings of the Stone Age dwelling sites in the area

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## Abstract

The former municipalities of Kaukola and Räisälä, located in the Karelian Isthmus, Russia, have been known to be rich in Stone Age sites and finds from the late 19<sup>th</sup> century on. This paper presents the general outline of the research history of the Stone Age and Early Metal Period and the results of an archaeological survey conducted in the area in 1999 by Finnish and Russian researchers. The paper also serves as a short study of the environmental settings of the Stone Age dwelling sites in the area. This analysis follows the method adopted in the studies of the Lake Saimaa area, Finland.

As a result, a tentative overview of preferred environments of Stone Age sites can be presented. In general, sheltered locations along the shores of bays and fjords were preferred. Areas on and around eskers, on the mainland coast, and on islands adjacent to coastal waterways were the most intensively used. Also junctions of several routes seem to have been utilized often.

There seem to be differences in the location of the sites classified as extended activity sites and as limited activity sites. The limited activity sites have more variation in their environmental settings, probably reflecting their more varied purposes. However, due to the shortcomings

of the material used in this study, the question about the purpose, function, and duration of use of the sites cannot be concluded solely according to the criteria used here. Further research on their nature is necessary.

## 7.1 Introduction

From the late 19<sup>th</sup> century Kaukola (Ru. Sevast'janovo) and Räisälä (Ru. Mel'nikovo) have been known as municipalities rich in Stone Age sites and finds. The amount of archaeological material from this area is actually so large that in the early 20<sup>th</sup> century it comprised the majority of the Stone Age collections of the National Museum of Finland. The research history of Kaukola and Räisälä covers a time span of well over 100 years and particularly the dwelling site clusters by Lake Riukjärvi (Ru. ozero Uzlovoe) and the Piiskunsalmi Inlet as well as Lake Pitkäjärvi (nowadays dried) still influence the view of the Stone Age in Finland and in the Karelian Isthmus (Fig. 7.1, see also Figs. 7.3 and 7.8).

Despite the intensive fieldwork on the north-eastern Karelian Isthmus in the early 20<sup>th</sup> century, the archaeological activities radically decreased after the 1910s and almost totally halted after World War II. Therefore the archaeological sur-

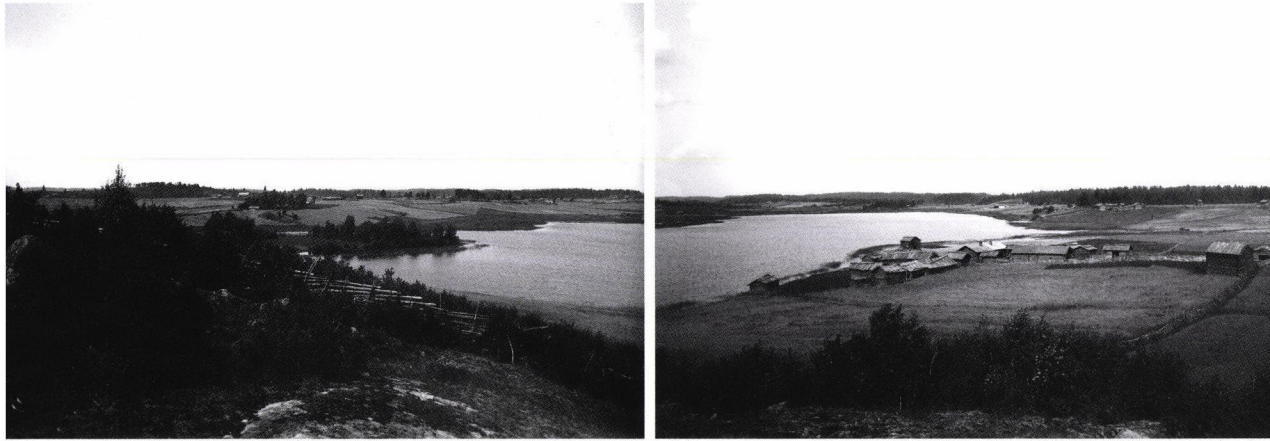


Figure 7.1 Lake Riukjärvi region in Kaukola, overview from the Tiitunmäki hill on the south-west side of the lake. The Kankaanmäki sites are located on the left side of the lake around the house group in the middle of fields, the Kyöstälänharju sites on the right side around and between the houses on top of the ridge. The dwelling site in the J. Iivonen's & S. Lankinen's estates is situated in the foreground, by the buildings on the lakeshore and the Nököpelto site in the background on the other side of the lake. (Photo: J. Ailio 1908, National Board of Antiquities)

veys carried out in Kaukola and Räisälä in May 1999 (Halinen *et al.* 1999; Lavento *et al.* 2001; Gerasimov 2004; Bel'skij & Gerasimov 2005) and the excavations of a semi-subterranean dwelling conducted in Räisälä in June 2002 (Halinen 2003; Timofeev 2002; Timofeev *et al.* 2003; see also Halinen *et al.* 2008, this volume) represent the first comprehensive stage of archaeological research in the study area after World War II. Both of these studies were executed in cooperation with the Department of Archaeology, University of Helsinki and the Institute for the History of Material Culture, Russian Academy of Sciences, St. Petersburg (hence IIMK/RAN). The funding of these studies came from several sources. The 1999 research was funded by Karjalaisen Kulttuurin Edistämissäätiö (The Foundation for the Promotion of the Karelian Culture). The excavations in 2002 were financed mainly by a grant from the Finnish Cultural Foundation, but some funding came also from the Russian Foundation for Fundamental Research (RFFI No 02-06-80469).

The main aim of this paper is to present the results of the 1999 survey and to give an over-

view of the Stone Age and Early Metal Period studies and material known up to date (1999) in the Kaukola-Räisälä region<sup>1</sup>. However, it also serves as a short study of the geographical background and the environment of the Stone Age dwelling sites in the area. The locations of the dwelling sites were dictated by numerous factors and therefore analyzing their location can reveal many facts about the Stone Age communities and their way of life. This paper follows the line and method adopted in the studies in the Lake Saimaa area (see Vikkula 1994; Mökkönen 2000; see also Lavento 2008a, this volume). A similar study has also been done in Kurkijoki (Ru. Kurkiëki) (Seitsonen & Gerasimov 2008, this volume) and serves as comparative material. As a result, a tentative presentation of preferred environments and factors affecting the choice of these environments is given.

## 7.2 Methodology for studying the location of sites in the landscape

Studying the location of the dwelling sites has

been considered an important source of information in examining Stone Age hunter-gatherer communities, their economy, ecology and land use (e.g. Kvamme & Jochim 1989: 1; Mökkönen 2000: 101–102). This is based on the assumption that sites used for different functions and purposes were located in different kinds of environments. The location of a dwelling site was not only dictated by ecological factors and factors strictly related to day-to-day subsistence as was thought for a long time. Also social, religious and other cognitive factors were at play, which has been more and more acknowledged during the past decade or two (e.g. Bradley 2000; Tilley 1994). However, considering that a large part of the data used in this study consists of limited survey finds only, it is clear that at this point only environmental factors affecting the locations can be determined with some accuracy. Of course, the excavated sites in the Riukjärvi-Piiskunsalmi area could provide material for other kinds of analyses, but the amount of material available there is far too large for the scope of this study.

While studying the placement of prehistoric dwelling sites several factors have been regarded as important. One of the focal ones is a location in a sheltered place. This includes most of all the local topography and for example the direction of the site; traditionally it is thought that southern directions were preferred. Local topography is also connected with numerous other aspects, which include a generally easy access to and movement around the site. Places from where there was a good visibility over surrounding territories and the possibility to observe movements of prey as well as other people were seen as beneficial. Soil type at the site was obviously important: the general thought is that clayish soils were avoided and dry and absorbent sandy soils preferred. Other ecological-economic factors affecting the location include

the general carrying capacity of the area in question and the availability of and accessibility to different basic resources, e.g. drinking water and firewood. (e.g. Kelly 1983: 295; Kvamme & Jochim 1989: 7–8; Huurre 1998: 62; Lavento *et al.* 2001: 11.)

In Finland the environment of the dwelling sites has been touched upon when studying the Stone Age inter-site settlement patterns (e.g. MatisKainen 1989; Siiriäinen 1987; Zvelebil 1981) but the actual analyses considering the immediate environment of dwelling sites have been few so far (Mökkönen 2000: 102; see also Lavento 2008a, this volume; Seitsonen & Gerasimov 2008, this volume). The environmental variables used in this paper are based on the ones used by Anne Vikkula (1994: 173) when studying the environment of the dwelling sites in the Ancient Lake Saimaa area (see also Mökkönen 2000). The same variables have been used in a similar study concerning the Kurkijoki area (Seitsonen & Gerasimov 2008, this volume) and therefore these studies are comparable.

The variables are 1) the type of the shoreline, 2) the amount of open water in front of the site and 3) the direction of the slope. Additional variables used in this study include 4) the steepness of the background and 5) the soil type at the site. Variables 1, 2 and 3 have been defined according to field observations and research reports and by analyzing topographic maps. Variables 4 and 5 are based solely on personal field observations and research reports. If one or several of the five variables could not be defined, the dwelling site in question was left out of the study.

In this study only the immediate environment of the dwelling sites was included in the analysis. The background environment was given less attention and is observed only visually on a general scale. Background environment

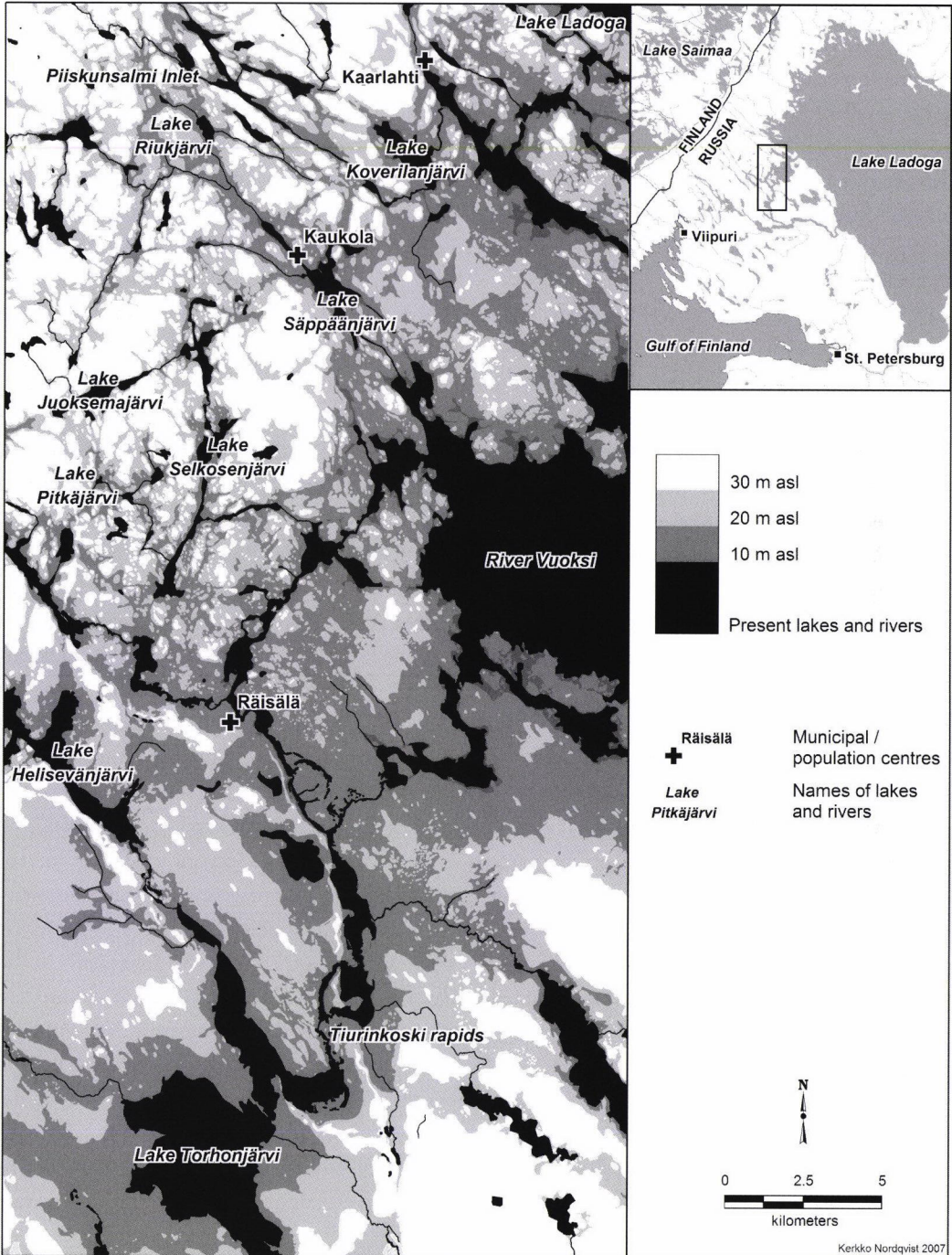


Figure 7.2 The location of study area in the Karel'ian Isthmus and the most important locations mentioned in the text. The hydrological reconstructions give an idea of the Stone Age environment: the 20 m asl level (light grey) prevailed after the end of the Ancylus transgression (ca. 9500 BP) until the breakthrough of River Neva (ca. 3350 BP). The 10 m asl level depicts roughly the situation during the Early Metal Period, after the birth of River Neva. (Map: K. Nordqvist)

cannot be totally left out, however: without observing the background it would be impossible to determine which of the variables vary notably from the general landscape (see Kvamme & Jochim 1989: 2). Still, this study does not try to define resource areas or to reconstruct for example settlement patterns or annual changes in it (e.g. Siiriäinen 1981; Matiskainen 1989; also Lavento 2008a, this volume).

Archaeological hunter-gatherer sites have been studied with the aid of ethnographical sources and classified according to different mobility strategies. These divisions have often been based on the artefact assemblages found at the sites as well as on the size of the sites (e.g. Binford 1980). One way of dividing sites into two dichotomous categories is to divide them into extended activity sites and limited activity sites as proposed by Kenneth L. Kvamme (1985). The extended activity sites are locations where multiple activities have been performed. Therefore these sites ought to be situated in 'better' and more 'beneficial' locations than the limited activity sites as their locations have to fulfill several requirements set for 'a good dwelling site'. Limited activity sites, on the other hand, are perceived more as special purpose sites whose location is dictated by some particular criteria. Extended activity sites were used for prolonged periods of time, whereas limited activity sites were used only for shorter periods of time.

In this study the tentative division into these two groups is made on the basis of find materials and structures observed at the site (see also Seitsonen & Gerasimov 2008, this volume). Sites with dwelling depressions and with clear cultural layers and ceramics are considered as extended activity sites. This is based on the supposition that dwelling depressions represent long-term or recurrent settlement (e.g. Mökkönen 2000: 17). Also the existence of

ceramics is often seen to reflect activities of long duration (Nuñez 1990: 35–36; Siiriäinen 1981: 18–19). In addition, the development of a cultural layer requires long term, permanent or at least recurrent activities at a location. Sites with just a few finds and no structures or sites of small size are classified as limited activity sites.

### 7.3 Geography, geology and hydrological history of the study area

The study area is situated on the eastern and north-eastern part of the Karelian Isthmus and equals roughly the former Finnish municipalities of Kaukola and Räisälä. Small areas of the Käkisalmi (Ru. Priozersk) rural municipality and Pyhäjärvi (Ru. Plodovoe), Sakkola (Ru. Gromovo), Vuoksela (Ru. Novaja Derevnja), Vuoksenranta (Ru. Ozërscoe) and Äyräpää (Ru. Baryševo) municipalities are also included. More precisely, it includes the area of eight topographical map sheets (1:20 000, each 10 x 10 km in size) resulting in a study area of 800 km<sup>2</sup> in size (Fig. 7.2).

The study area is located on the border of two major geological zones. Consequently there are considerable differences in the environment within the area. The area south of the River Vuoksi (Ru. reka Vuoksa) is dominated by relatively low terrain where thick sediment layers cover the bedrock and deep river valleys cut through the landscape. To the north of the River Vuoksi the terrain starts to change into one typical for the geological zone of the northern Karelian Isthmus and Ladoga Karelia. Here the terrain is more broken and differences in elevation are often considerable. Large areas of exposed bedrock are visible and the landscape gradually becomes fjord-like, especially north of the study area. (Saarnisto 2003: 26, 34.)

The southern and central parts of the area

are dominated by till, while the northern part is covered by exposed bedrock and clayey soils. Clayey soils are present also in the south around larger bodies of water. The south-western part of the area is characterized by large bogs. There are few eskers running through the region. A large esker originating north of the Kiviniemi (Ru. Losevo) rapids and branching into two parts on the southern side of the Tiuri rapids runs through the southern and western parts of the study area. The northern branch runs through the Räsälä municipal centre and the Lake Pitkäjärvi and the Lake Juoksemajärvi (Ru. ozero Bol'shoe Zavetnoe) areas. The other branch follows Lake Helisevänjärvi (Ru. ozero Ljubimovskoe) and the valley of the River Kuunjoki (Ru. reka Dymovka) and continues all the way to the end moraine of Salpausselkä I. Smaller remains of eskers come up around Tekemälahti Bay and on the eastern side of Lake Selkosenjärvi (Ru. ozero Podgrjadovoe).

In Kaukola the most prominent esker formations are situated in the Lake Säppäänjärvi (Ru. ozero Nevskoe) area and near the railway station of Kaarlahti (Ru. Kuznečnoe). The glaciofluvial delta in the area of Lake Säppäänjärvi continues discontinuously towards the Lake Riukjärvi area where there are also esker formations. The large esker originating south of Lake Koverilanjärvi (Ru. ozero Bogatyrskoe) and running through the Kaarlahti area continues towards Hiitola (Ru. Hijtola) and further on to Kurkijoki. All the eskers and heaths mentioned above follow more or less the north-west – south-east direction.

An essential element in the landscape is water. Lake Ladoga (Fi. Laatokka, Ru. Ladožskoe ozero) touches the area in the north-eastern corner and the River Vuoksi dominates the study area running through its central and southern parts from east to south – south-west. Smaller lakes, rivers and ponds are abundant and usual-

ly also follow the north-west – south-east direction. During the Stone Age the survey area was located at the eastern end of a large waterway, the Heinjoki channel, connecting Lake Ladoga and the Baltic Sea. The hydrological histories of these two basins were central in the formation of the landscape (see also Saarnisto 2008, this volume).

In order to illustrate different phases in the development of the landscape, hydrological reconstructions corresponding to archaeologically significant 30, 20 and 10 m asl water levels were made (Fig. 7.2). However, since there is not enough information about the gradients of shorelines of different periods, the effects of tilting are not shown on these maps. The reconstructions are just rough estimates showing the central features of the Mesolithic, the Neolithic and the Early Metal Period environments.

Right after the Ice Age, when the water level of the Baltic Ice Lake was at its highest, the Kaukola-Räsälä region was completely under water. It was not until the water level sank below 70–65 m asl during the Yoldia regression (c. 8700–9500 BC, i.e. 10 700–11 500 BP<sup>2</sup>) that the tops of the highest hills and ridges in the northern and north-western parts of the area rose from the water as tiny, isolated islands. The subsequent descent of the water level led to the situation represented by the 30-m asl curve in Figure 7.2. This situation prevailed also near the maximum of the Ancyclus transgression (c. 8500–8100 BC). It roughly corresponds with the Mesolithic environment although the Mesolithic sites in the northern part of the Karelian Isthmus are usually found at slightly lower elevations of 25–30 m asl (e.g. Halinen 2003; Jussila 2001).

Already during the end of the Yoldia period the water level reached the 20 m asl level and stabilized after the Ancyclus transgression at this elevation and remained more or less there for



Figure 7.3 Räsälä 18 Pitkäjärvi. Sakari Pälsi's 1915 excavation site is located by the small sand pit next to the lonely tree on the left. The dwelling site area continues also on the fields to the right of Antti Huppunen's buildings. (Photo: S. Pälsi 1915, National Board of Antiquities)

thousands of years. Only the breakthrough of the River Vuoksi 5700 years ago (c. 3700 BC) seems to have launched small transgression of 1–2 m in the northern Lake Ladoga (Saarnisto 2003: 57–58; Saarnisto & Grönlund 1996: 206–207). Therefore the 20-m asl curve represents the environment that prevailed from the Late Mesolithic until the initial Early Metal Period.

This situation changed radically only because of the outburst of the River Neva (Ru. reka Neva) (c. 1350 BC or 3350 BP) in the southern part of the Lake Ladoga basin. The environment after the apparently rapid fall of the water level is roughly represented by the 10-m asl curve. Local differences still existed; in the south-western corner of the study area the Tiurinkoski rapids acted as a threshold and kept the water level in the valley of the River Vuoksi at about 17 m asl for a long time (Saarnisto 2003: 66, 70–77; 2008, this volume).

It is evident in the hydrological reconstructions that there are big differences in the scale of environmental changes in different parts of the study area. In the north and north-west parts

it was not before the birth of the River Neva that very radical changes took place because of the generally steep topography of the region. In the north-east, central and south-west parts the changes were much more considerable, mostly due to a gentler terrain and lower altitudes. These are also the areas where the tilting caused by isostatic land uplift could well have had an effect.

## 7.4 Research history

### 7.4.1 Stone Age and Early Metal Period research prior to World War II

The Stone Age research in the Karelian Isthmus saw its heyday during the first two decades of the 20<sup>th</sup> century (see also Lavento 2008b, this volume). Scientific archaeology in the study area started as early as around 1880 but during the early phase the main interest was mostly directed into Iron Age studies (e.g. Schwindt 1893; Uino 2003: 119–120). A central figure in this early phase was Theodor Schwindt, who worked for

the Archaeological Commission (Fi. Muinaistieteellinen toimikunta), and conducted numerous Metal Period studies in the area (Schwindt 1893). However, the flow of Stone Age stray finds to the collections of the Finnish State Historical Museum – later the National Museum of Finland – started to attract the attention of archaeologists. In 1892 Schwindt conducted the first Stone Age excavations in the Karelian Isthmus – and at the same time in the whole of Finland – at the dwelling site Räsälä 25 Teperinaho (Ailio 1902; 1909a: 166–170) (see Fig. 7.4 and Appendix 1). Excavations were also carried out in Räsälä 26 Papinkangas (Ailio 1906a; 1909a: 158–166; Tallgren 1907a) but after this the focus of research turned to Kaukola.

On the basis of the large amount of stray finds Julius Ailio, a key person in the early research of the Stone Age in the Karelian Isthmus and in Finland, urged for investigations in the Riukjärvi-Piiskunsalmi area (Ailio 1906b&c). In 1907 A. M. Tallgren started this fieldwork by excavating at the dwelling site Kaukola 22 Piiusuonkangas (Tallgren 1907b). During the following summers 1908–1909, 1911–1912 and 1915 Julius Ailio and Sakari Pälsi conducted several excavations at numerous sites in the Riukjärvi-Piiskunsalmi area (Ailio 1909a&b; Pälsi 1911; 1912; 1915). In 1915 Pälsi excavated also at the Räsälä 18 Pitkäjärvi site (Pälsi 1918). (Figs. 7.1, 7.3 and 7.8)

The results of these excavations were published by Ailio in his two volume doctoral dissertation 'Die Steinzeitlichen Wohnplatzfunde in Finland I–II' (Ailio 1909a) and by Pälsi in his dissertation 'Riukjärven ja Piiskunsalmen kivikautiset asuinpaikat Kaukolassa' (Pälsi 1915). Pälsi returned to the Pitkäjärvi site in an article in 1918 where he presented the famous reconstruction of 'Pälsi's hut' (1918: 29–31). However, after these studies the interest for the Stone Age in the study area and the whole of

Karelia soon faded out (Uino 2003: 131). The only research concerning the Stone Age in the study area after 1915 was the excavations in the Pyhäjärvi 1 Konnitsa Äijö dwelling site in 1936 (Pälsi 1937; see also Nordqvist 2006). Nevertheless, the awareness and the collecting activities of the local inhabitants did not completely end and some stray finds were sent to the National Museum of Finland up until the beginning of World War II (Nordqvist 2005).

Although much light was shed on the Stone Age and the Iron Age cultures, the Bronze Age in the Karelian Isthmus remained enigmatic for the archaeologists in the early 20<sup>th</sup> century. Theodor Schwindt did not mention the period at all in his dissertation 'Tietoja Karjalan rautakaudesta ja sitä seuraavilta ajoilta' (Schwindt 1893) and neither was it mentioned in the excavation reports of Julius Ailio and Sakari Pälsi, although a considerable amount of Bronze Age or Early Metal Period material was also recovered from the sites in the Riukjärvi-Piiskunsalmi area in Kaukola (see e.g. Lavento 2001: 244–253). Interestingly, Sakari Pälsi had paid attention to the peculiar surface treatment of some ceramics at the sites of Riukjärvi and Piiskunsalmi and separated textile-impressed ceramics in the material. Being interested in experimental archaeology – already in the early 1900s – he simulated the pot making process of Textile-impressed Ware. On the grounds of these experiments he assigned one manner of making this kind of pottery with the help of a mould and a piece of fabric (Pälsi 1916). Despite the successful results of his experiments Pälsi did not make any typology for the ceramics from the Riukjärvi-Piiskunsalmi area but exploited the already established typologies (Ailio 1909a), although the 'Textile Ceramics' can be seen almost as an independent type (Pälsi 1915; 1916).

The research of the Early Metal Period concentrated on the dwelling site of Räsälä 27



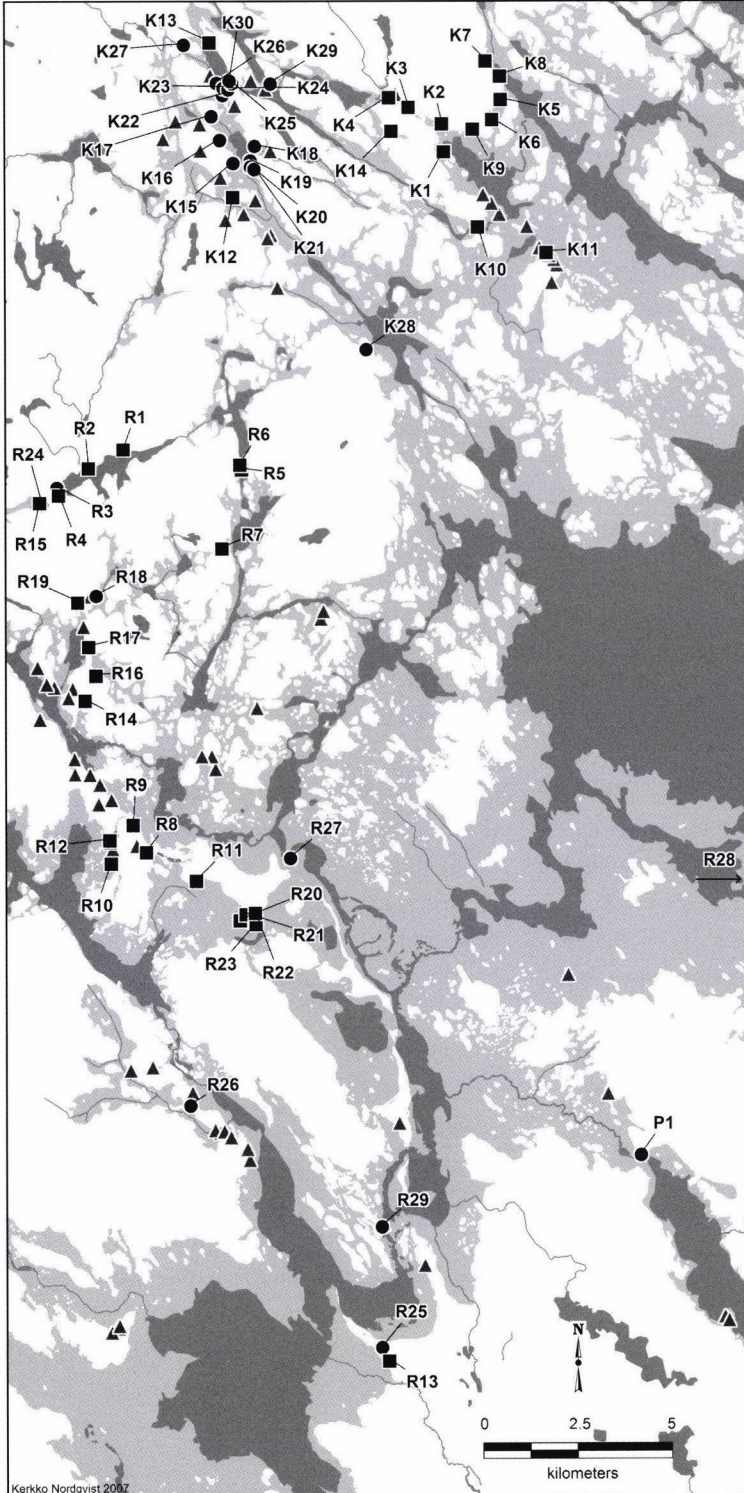


Figure 7.4 The distribution of dwelling sites in the study area. Sites known prior to World War II are shown as dots and sites found in 1999 survey as squares – sites found 2000–2005 shown as triangles for comparison (adopted from Halinen & Mökkönen 2004; Mökkönen *et al.* 2006; Seitsonen *et al.* 2005). Numbering refers to Appendix 1, letters K, R and P indicating municipalities Kaukola, Räisälä and Pyhäjärvi respectively. The water level presented corresponding the Ancient Lake Ladoga (20 m asl), present waters shown dark grey. (Map: K. Nordqvist)

Hovi Kalmistomäki, and the site has remained the most important Early Metal Period dwelling site in the archaeology of the Karelian Isthmus until the present day. The excavations at the site, which in the early 1880s was mostly destroyed by sand hauling, were started in 1885 by Th. Schvindt, who also continued fieldwork in 1887 and 1892 (Schvindt 1893). Schvindt carried out four excavations all in all and uncovered both human bones and ceramics. He realised that the ceramics were different from the types he had seen before in the Karelian Isthmus but was not able to connect it with the Bronze Age. Schvindt was most interested in human bones and thus he did not mention the remains of the Bronze Age settlement in his dissertation (Schvindt 1893) or excavation report.

A. M. Tallgren (1914a) continued the excavations at Kalmistomäki in 1914 and unearthed pieces of a casting mould for a necklace. Ceramics at the site were probably unknown to him because he did not pay attention to them. By using the fragments of a clay mould as his argument, Tallgren came to the conclusion that the site was not only a cemetery but it also included a Late Bronze Age dwelling site (Tallgren 1914b; 1935: 46–47). A few years later Alfred Hackman (1917: 243–246), while defining Epineolithic ceramics, discussed the material from Kalmistomäki and understood its Early Metal Period character.

Sakari Pälsi (1935) made a short excavation at Kalmistomäki in 1935, and in 1939 C. F. Meinander (1939) conducted the so far last excavations there just a few months before World War II broke out and ended almost all archaeological research in the Karelian Isthmus. Already at that point the site was almost totally destroyed – today the ruins of a cowshed witness its total destruction.

In the early 1920s Aarne Europaeus (Äyräpää) (1923) wrote an article on the prehistory

and the state of its research in Karelia. He stated that after the rich habitation during the Stone Age, the number of sites and finds was conspicuously small during the Bronze Age. Äyräpää interpreted this as resulting from the concentration of the metallurgical centres in the Volga-Kama region. A decade later he assumed that quitting the use of stone implements and replacing them with bronze axes could explain the lack of finds; the source of the new raw material was in the above-mentioned region (Äyräpää 1935: 48–49). Äyräpää explained the sudden reduction in the population by referring to radical changes in natural conditions caused by the outbreak of the River Neva during the early phase of the Bronze Age. According to him this caused further migration to the more fruitful areas from the point of view of early agriculture; an argument which was already suggested by Ailio (1909a: 90–91). Äyräpää further developed his argument by accepting the deterioration of climatic conditions as a reason for the disappearance of the population (Äyräpää 1935: 49–50).

#### 7.4.2 Stone Age and Early Metal Period research after World War II

After World War II the scale of archaeological research crashed and fieldwork was scanty. In the 1960s and the 1970s fieldwork was sporadically carried out in Kaukola and Räisälä by a scholar A. N. Rumjancev, and by two local researchers, Ju. N. Urban and teacher Vitalij M. Sokolov. In the 1980s and the 1990s archaeologist Vladimir I. Timofeev (IIMK/RAN) conducted some research in Kaukola, namely in the Riukjärvi-Piiskunsalmi area (Timofeev 1986; Gerasimov *et al.* 2003: 33–38; Lavento *et al.* 2001: 7–8; Mökkönen & Nordqvist 2006; Uino 2003: 141–142).

New interest towards the Stone Age and Early Metal Period archaeology of the Karelian Isthmus started to appear in earnest in the 1990s,

both in Russia and in Finland. Since then several expeditions and investigations in different parts of the Karelian Isthmus have taken place (e.g. Jussila & Matsikainen 2003; Takala 2004; Takala & Sirviö 2003; Timofeev *et al.* 2002; see also Lavento 2008b, this volume).

Expeditions were also launched in Kaukola and Räisälä. These municipalities were chosen to be the fieldwork areas in the 1999 survey organized by the Department of Archaeology, University of Helsinki and the IIMK/RAN, St. Petersburg. The results of the expedition, which also acted as a field school for archaeology students of the University of Helsinki, proved to be unexpectedly promising<sup>3</sup>. During the two weeks fieldwork the number of known dwelling sites in the study area more than doubled: in 11 days 35 new sites were found. New dwelling site clusters were located in the Kaarlahti region in Kaukola (12 sites), in Juoksemajärvi-Pitkäjärvi area in northern Räisälä (11 sites) and near the Räisälä municipal centre (9 sites). Out of the new sites all but one (Kaukola 13 Tossikanjärvi N, an Early Metal Period Lapp cairn) were Stone Age dwelling sites and at least five of these sites contained dwelling depressions, which had not been formerly known in the area at all. (Halinen *et al.* 1999; Lavento *et al.* 2001; Gerasimov 2004.) (Figs. 7.4, 7.5 and 7.7)

Co-operation continued in June 2002 when excavations were conducted at Räisälä 4 Hytintlahti Juoksemajärvi Westend, one of the dwelling depression sites found in the 1999 survey. This expedition also had an educational aspect: it was the field school of the University of Helsinki. During the four weeks one of the dwelling depressions observed at the site was excavated. The results showed that there had been a multi-period dwelling site dating at least to the Mesolithic and the Early Combed Ware but probably also to the Late Neolithic, including a rectangular semi-subterranean dwelling. Finds were



Figure 7.5 Inspection of a road cut underway at the site Räisälä 21 Ampumaradan tausta near the former Räisälä municipal centre in May 1999. (Photo: H. Pyy 1999)

numerous: about 6000 artefacts, as well as over 20 000 bone fragments were found. (Halinen 2003; Timofeev 2002; Timofeev *et al.* 2003; 2004; Halinen *et al.* 2008, this volume.)

Even though the Stone Age material acquired prior to World War II was considerable, it was not used much after the war. Karelian Isthmus was on the other side of the border and the general interest towards the Stone Age in the area was not there. Therefore much that was said about the material by Ailio in 1909 and Pälsi in 1915 and 1918 started to be repeated in the following studies as such (e.g. Kähäri 1952; Luho 1948; 1953). Some aspects, such as the concept of Riukjärvi and Piiskunsalmi as an exceptional Stone Age centre or the 'Pälsi's hut', remained in use almost up to the present day (e.g. Edgren 1992; Huurre 1998; however, see Huurre 2003: 202–203; Seitsonen 2006). Some parts of the material were utilized in different kinds of artefact studies (e.g. Heikkurinen 1980), but the only presentation where the whole material was utilized – at least to some scale – and partly reworked is the one made by Matti Huurre (2003).

After World War II the Epineolithic and Bronze Age material collected before the war was touched upon in several studies. In his article in 1953 Äyräpää concentrated on the Bronze Age in inland Finland, in Häme, Savo

and Northern Finland and in the Karelian Isthmus, with the purpose of characterizing the general cultural situation in inland Finland. In this article he separated the Textile-impressed Ware and Säräisniemi 2 Ware. The former type he presented in the pictures from the material of Riukjärvi-Piiskunsalmi area. (Äyräpää 1953.) According to his analysis it was not possible to find Säräisniemi 2 Ware in the Karelian Isthmus (Äyräpää 1953) although later individual exceptions have been reported (Carpelan 1997).

C. F. Meinander put the material found in Kaukola, Räisälä and Kurkijoki under examination in his doctoral dissertation 'Die Bronzezeit in Finnland' (Meinander 1954). He observed Sarsa-Tomitsa Ware at some dwelling sites of Riukjärvi and Piiskunsalmi, but particularly at the dwelling site of Kalmistomäki in Räisälä. He dated the ceramic type to the Bronze Age, to the period of 1500–500 BC. (Meinander 1954: 191–198; 1969: 42). Further, Meinander separated a new ceramic type in Karelia, which was more local in its character and also defined by only a few features in ornamentation. This ceramic group he dated first to between 1000–500 BC (Meinander 1954: 195), and later – on the basis of information obtained from N. N. Gurina (1961) – to between 500–0 AD (Meinander 1969: 43; Saarnisto & Siiriäinen 1970: 18). Later these materials have been utilized e.g. by Mika Lavento (2001).

## 7.5 The archaeological material in numbers – the 1999 situation

The number of Stone Age – Early Metal Period dwelling sites known in Kaukola and Räisälä by the end of 1999 is 59 including both the sites known before World War II and those detected during the survey in 1999<sup>4</sup>. Of these sites 30 are in Kaukola and 29 in Räisälä (Fig. 7.4, Appen-

dix 1). However, the number of sites discussed and examined more closely in this paper is 52, including 26 sites in Kaukola and 25 in Räisälä. Of the sites located in neighboring municipalities only the dwelling site of Pyhäjärvi 1 Äijö is situated within the borders of the study area. Of these sites 25 are termed as extended activity sites and 27 as limited activity sites.

The number of sites (59) is actually just an estimate because the extent and relations of some of the dwelling sites found and studied before World War II are unclear. In the early 1900s some of the dwelling sites were artificially separated, some artificially combined and in the worst cases the one and the same site may have had several names (see Lavento 2001: 244; Pälsi 1915: 12–13). Depending on the method of calculation the number of sites in Riukjärvi and Piiskunsalmi varies between 8 and more than 30. In this paper some of these dwelling sites are combined under one name (Kaukola 15 Kankaanmäki, Kaukola 19 Kyöstälänharju and Kaukola 24 Hiekkaharjunpelto). As stated earlier, some dwelling sites were left out of the study because of inadequate environmental and other information. This group includes the dwelling sites Kaukola 28 Paavolan kangas, Kaukola 29 Penttinen and Kaukola 30 Ahoniemenpelto mentioned by Pälsi (1915: fig. 3) but also two dwelling sites – Balahanovskoe 1 and 2 – recently found by Russian archaeologists on the northern shores of Lake Torhonjärvi (Ru. ozero Balahanovskoe) (Gerasimov *et al.* 2003: 47; 2004). The dwelling sites Räisälä 27 Hovi Kalmistomäki, Räisälä 28 Särkisalo Hovinsaari Tontinmäki Hynninen, Räisälä 29 Tiuri Linna-saari and possibly also Räisälä 20 Ristiniitty SE as well as the lapp cairn site Kaukola 13 Tossikanjärvi N represent Early Metal Period settlement and are not discussed here.

Apart from the dwelling sites, the archaeological material from the study area includes over 4400 National Museum catalogue numbers

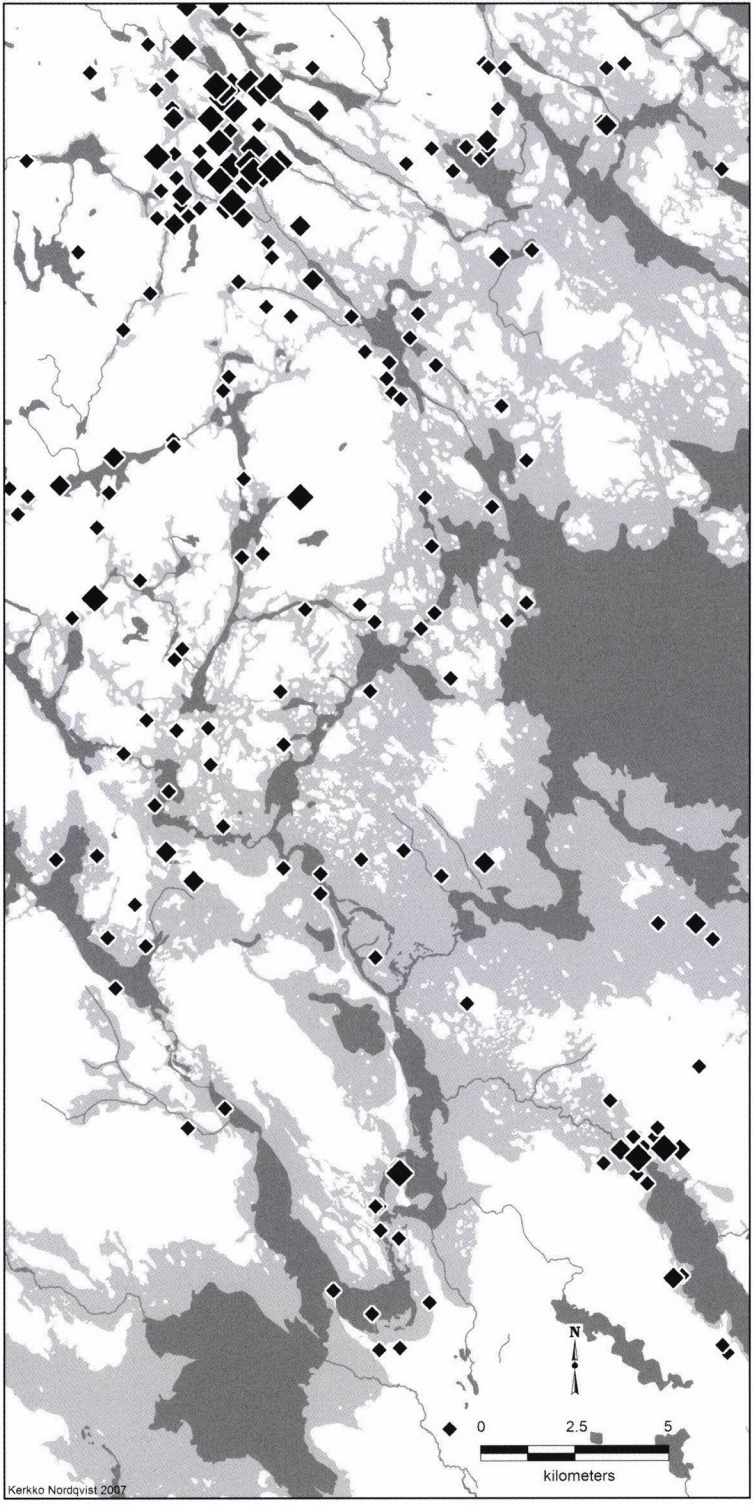


Figure 7.6 The distribution of stray finds in the study area. The relative size of the symbol indicates the amount of finds (smallest 1–5, medium 6–20 and largest over 21 finds – note: the locating accuracy varies). Water level presented at 20 m asl, present waters in dark grey. (Map: K. Nordqvist)

(NM-numbers) of artefacts that are not products of archaeological excavations but have mostly been found by local peasants during agricultural and sand extraction activities. The vast majority of these artefacts are finds from the known and often partly excavated dwelling sites and only about one thousand NM-numbers belong to the category of actual stray finds (for terminology, see Lavento 2008a, this volume; also Nordqvist 2005). These stray finds were sent to the collections of the National Museum of Finland over a long time period between the 1860s and the 1940s. In the majority of cases it is only possible to locate the find place in the vicinity of a farm house or even rougher than that. However, quite many finds can also be located more precisely and there are clear artefact concentrations that indicate locations of so far unknown or currently already destroyed sites (Fig. 7.6). These concentrations are most numerous in the vicinity of the Riukjärvi-Piiskunsalmi area but many concentrations also exist in the Räsälä and Pyhäjärvi areas. (Nordqvist 2005.) Because of the uncertainty of the character and the exact location of these probable sites, they are not handled as dwelling sites and the distribution of the stray finds is viewed only on a large scale and as general background material.

## 7.6 Sites in the landscape of Kaukola and Räsälä

On a large scale the dwelling sites are predominately located on eskers and glaciofluvial deltas or in the immediate vicinity of these formations. In the southern part of the study area the extended activity sites of Räsälä 13 Kukkulamäki and Räsälä 25 Teperinaho, as well as Räsälä 26 Papinkangas further north-west, are situated on a large esker (Fig. 7.4; for numbering of the sites, see Appendix 1). A large concentration of mostly

limited activity sites (Räsälä 8–11 and 21–23) to the south and west of the Räsälä church are all located on the edges of an esker and on a glaciofluvial delta. Extended activity sites of Räsälä 14, 16–18 are situated further north on the same esker (Fig. 7.3). Dwelling sites in the Lake Juoksemajärvi region (Räsälä 1–4, 15) are also located on a glaciofluvial delta environment.

In the Riukjärvi-Piiskunsalmi area most of the extended activity sites (Kaukola 15–22) are located on a low discontinuous esker, especially the end parts of it. The esker is not shown in the soil maps made before World War II, which may be explained by the fact that the esker is not a very prominent one and actually most of these dwelling sites are today located on fields (Figs. 7.1 and 7.8). In the Kaarlahti area there is a large concentration of limited activity sites (Kaukola 2–9) located at the southern end of a long esker running towards Hiitola (Fig. 7.7). The extended activity site of Kaukola 11 Pontuksenhauta is also located at a glaciofluvial end formation of the same esker. Most of the dwelling sites are distinctively situated on the broken coast of the mainland or on the large islands in the immediate vicinity of the mainland.

Visual observation of the distribution of stray finds partly supports this picture. A large number of stray finds is situated on or near the eskers and along the mainland coasts and the densest stray find concentrations are located on the eskers, near the known dwelling sites. However, the stray finds in general have a wider distribution along the tangled waterways and in the archipelago indicating a wider scope of Stone Age activity in the area – as well as the areas under cultivation in the late 19<sup>th</sup>–early 20<sup>th</sup> century.

Examined on a micro-scale, on site level, almost half (48%) of the extended activity sites are located at the points of capes, the rest being situated at the ends of bays (36%) and on straight stretches of beaches (16%). The loca-



Figure 7.7 Survey crew documenting a pit dug by a wild boar at the Kaukola 4 Jaakkola site, which belongs to the site cluster of Kaarlahti area. (Photo: A. Saksä 1999)

tions of limited activity sites are a bit more varied indicating a more varied use. The most common locations are, however, also at the points of capes (40%), ends of bays (26%) and on straight beaches (19%). A difference can be seen between the sites located in Kaukola, in the northern part of the study area, and Räisälä, in the southern part of the study area. In Kaukola the points of capes are the mostly preferred locations (65%), straight beaches being the second (19%). In Räisälä the ends of bays are by far the most common places for dwelling sites (50%). This reflects the differences in topography and surveyed areas between the two regions. In water conditions there are no considerable differences: most of the dwelling sites are located on relatively restricted bodies of water (87% by less than 1000 m wide).

The direction of dwelling sites varies but sites usually open towards the east (15%), south-east (25%), south (17%) or south-west (19%). It is an interesting observation that extended activity sites are more often directed towards northern directions than limited activity sites (28% vs. 4%) although these directions are traditionally considered to be less protected and less favorable for habitation. The background of the dwelling sites is normally protected by an esker, hill or

other high terrain. The immediate background is normally gently sloping (64%). The extended activity sites, especially in Räisälä, seem to be more often located at the base of steep slopes or immediately in front of steep rocks.

Soil at the dwelling sites is predominantly sand. On limited activity sites there is more variation in soil type but on the other hand extended activity sites in Kaukola are often situated on clayey soils (at present). In Räisälä the soil is almost without exception sand. Still, one should take into account that sites in the Riukjärvi-Piiskunsalmi area are found in fields which are still in use as meadows and also several sites in the Kaarlahti area are located on the border between a sandy esker and a clayish field. The majority of the sites known in Räisälä are, however, located in forests (Fig. 7.5). Therefore, by concentrating the future research in Kaukola more on eskers located in forests the situation in soil type might change. The same phenomenon – but in the opposite way – might happen in Räisälä (see also discussion).

## 7.7 Dwelling depressions in the landscape of Kaukola and Räisälä

Sites with dwelling depressions (nine sites in this study) are distinctively situated at the ends of bays that are sheltered and relatively shallow. Only two sites differ in this respect: Räisälä 13 Kukkulamäki is situated on a straight beach and Räisälä 6 Sylj järvi SW2 at the point of a small cape. These two sites are deviatory also in their relation to shores. Usually depressions are located on quite restricted waters but Räisälä 6 Sylj järvi SW2 lies on a deep and narrow strait and Räisälä 13 Kukkulamäki on an open wide. Still, it should be noted in general, that this difference might be related to the research situation: most of the sites with dwelling depressions are found in Räisälä, which differs in topography from Kaukola (see also above and below).

Of the sites with dwelling depressions the site Kaukola 11 Pontuksenhauta is interesting in its overall location. It lies on a wider body of water than the rest of the sites. This site is located on the shore of a bay at the northern tip of a large island; normally the dwelling sites in the study area are only seldom located on islands outside the immediate coastline. The site was found in an area that belongs to the head of a long esker, which is beneficial for Stone Age activities, but surrounding areas of the site remained unfortunately without a careful survey because of lack of time<sup>5</sup>.

One third of the sites are directed towards the south-west, one third towards the north-east and the rest either towards the east, south-east or south. All these sites are in sheltered locations regardless of their direction. This indicates that local topography with its labyrinth-like archipelago and waterways had an effect on the direction of the sites. The background of the sites is usually gentle although the sites implying depression(s) are more often located in front of

steep slopes than the sites without depressions. All of the depression sites are situated on eskers and they all have higher ground sheltering their background. The soil type on the sites is always sand.

A brief comparison of the dwelling depression sites in Kurkijoki uncovers some similarities but also differences. As in Kaukola and Räisälä the depression sites in Kurkijoki are located at the ends or shores of the bays, on gentle slopes. Soil on the sites is always sand. However, in Kurkijoki sites with dwelling depressions have been found on quite wide bodies of water, whereas in Kaukola and Räisälä more restricted waters are preferred. The direction of the slope in Kurkijoki is either east or south-east where as in Kaukola and Räisälä it varies between the north-east and the south-west. The explaining factor is again the local environment. In the region where depression sites are located in Kurkijoki the general water conditions are more open than in Kaukola and Räisälä. Also, in Kurkijoki the preference for eastern and south-eastern directions can be explained by the fact that these are the general directions towards Lake Ladoga, which apparently was the major focus of the Stone Age subsistence activities (see Seitsonen & Gerasimov 2008, this volume). In the tangled waterway network of Kaukola and Räisälä such a clear target did not exist although in some parts of the study area the Heinjoki channel leading towards the Gulf of Finland apparently acted as such.

## 7.8 Observations and discussion

The analysis of environmental variables shows that there are some differences in the location of the dwelling sites classified as extended activity sites and as limited activity sites. However, these features are not as clear or distinctive as in



Kurkijoki, where the environments of extended activity and limited activity sites differ markedly (see Seitsonen & Gerasimov 2008, this volume). In the study area the limited activity sites seem to have more variation in relation to the shoreline and the soil type than the extended activity sites. This probably reflects their more varied purpose of use. Anyway, the question about the purpose, function and duration of the use of the dwelling sites in the study area cannot be concluded solely according to the criteria used in this study. Further research on their nature is necessary: according to the present information only the dwelling sites with dwelling depressions form a more clearly defined group.

Apart from the lack of adequate material from several sites, a problem in defining the function of the sites as pursued here is the insufficiency of the environmental variables used. The types of shore variables are too generalized and the variables concerning the amount of open water in front of the sites far too rough and few (see also Vikkula 1994). Also, defining the value of some of the variables can be open to various interpretations.

The current picture of the Stone Age habitation in the study area is heavily affected by the research history. In the late 19<sup>th</sup> and the early 20<sup>th</sup> centuries systematic archaeological surveys were not conducted in the study area and the research was targeted according to where the richest stray finds came from. The stray finds, on their behalf, came above all as side products of agricultural activities. Consequently, the research was concentrated in areas with most fields on the 'correct', that is on Stone Age shoreline elevations of c. 20 m asl. Also the interests of the few local enthusiastic collectors responsible for acquiring the vast majority of the material are of central importance when discussing the emphasis and targeting of research (see Nordqvist 2005).

The 1999 survey took as one of its aims to find out how the archaeologists' perception of where to search and find sites has changed after World War II. The results showed that today different kinds of sites, such as sites with dwelling depressions, are found in different kinds of environments than before. (Lavento *et al.* 2001: 5, 16–17.) Even the areas where agriculture and other land use made sites visible to the archaeologists' eyes in the early 1900s and the areas where the survey groups moved during the survey in 1999 are different in nature, the study area is far from being totally surveyed. The lack of research can, for example, partly explain the relative emptiness of the southern and eastern parts of the study area, at the mouth of the Heinjoki channel and in the archipelago where stray finds give evidence of some human activities. Still, large parts of these areas were open water and outer archipelago, whereas the northern and western parts of the study area are the areas where most of the eskers, the mainland coast and much of the immediate coastal archipelago were situated. According to our present understanding these are just the most preferred ecological zones for Stone Age habitation – not surprisingly, with the majority of Stone Age finds.

That eskers seem to have attracted Stone Age habitation, and activity is not surprising as it is generally acknowledged that Stone Age habitation preferred this kind of environment and absorbent sandy soils. In an area where tills, clayey soils and bedrock dominate, much of the sites suggesting extended activities and longer duration of use have been located near the eskers. Still, it is also evident that people utilized also the areas further away from these glacial formations; these other areas were regions where Stone Age people moved around e.g. in search of nutrition and raw materials.

Eskers, apart from being suitable for habitation, are also very good natural transportation



Figure 7.8 Piiskunsalmi in Kaukola. Picture is taken from the northern side of Piiskunsalmi Inlet (Lavamäki site) where people are cutting reeds. The Stone Age dwelling sites on the southern shore are located around the houses of Aati Ruuska and Olli Korte on top of the steep shore terrace (cf. Fig. 1.11 in Siiriäinen *et al.* 2008, this volume). (Photo: J. Ailio 1908, National Board of Antiquities)

routes: they are dry and open, so moving is quite easy and effortless. In addition to the eskers and heaths, as well as bogs in winter, also waterways have always been important transportation routes. In the study area the shores of the waterways, as well as locations at the junctions of two or more transportation routes, were favored as dwelling sites (see also Pälsi 1915: 7–8).

In Kurkijoki the inner archipelago was noticed to have been the most important watercourse in the Stone Age (Seitsonen 2004) and a similar situation could have prevailed also in Kaukola and Räisälä region. For example, the sites Räisälä 5 Sylj järvi SW1, Räisälä 6 Sylj järvi SW2 and Räisälä 7 Selkosenjärvi were situated by a sheltered narrow waterway; stray finds scattered to the inner archipelago further support this picture. Also the mouths of wa-

terways leading further inland were preferred locations, e.g. the sites in the Piiskunsalmi region (Kaukola 22–29) are at the mouth of a long fjord-like bay (Fig. 7.8). Also, one should not forget the importance the Heinjoki channel most likely had: the dwelling sites Räisälä 13 Kukkulamäki and Räisälä 25 Teperinaho are situated at locations where prominent eskers and waterways meet each other at the bifurcation point of these routes. These examples refer to the conclusion that the location of a site was sometimes at least partly dictated by the need or wish to observe and maybe control traffic on land and on water routes. With this background it seems strange, that no Stone Age sites are known in the close vicinity of the Tiuri rapids. Maybe this is a product of research situation or maybe later human activities have covered the

signs of Stone Age habitation – in any case the number of stray finds from the area of former Tiuri village is considerable (Nordqvist 2005)

In general there was the tendency to use sheltered locations for habitation. Backgrounds of the sites are usually well protected and waters in front of them relatively narrow and shallow, although at some locations, e.g. in Riukjärvi the actual shore terraces are quite steep. Southerly directions are preferred, although varying local topography makes the question of the orientation less clear-cut: the local topography and circumstances have had more importance than a particular compass point. The selection of location for the sites seems to have been affected by several factors acting simultaneously. This does not rule out the possibility that at times some factor – whether economic, social, religious or aesthetic – was regarded important enough to result in deviatory location; such cases are just not visible in the current material.

Soils on the sites are usually sand, but loam is also quite normal in Kaukola, and in some cases dwelling sites are situated on clay or clayey loam. All but one of these locations on clay are extended activity sites (Kaukola 15 Kankaanmäki, Kaukola 17 Nököpelto, parts of Kaukola 18 Kyöstälänharju and Kaukola 25 Lavamäki) from where numerous artefact finds as well as observations of thick cultural layers and some dwelling remains are reported (Pälsi 1915: 102–109). One explanation is that environmental settings and the topsoil conditions today are not the same as they were during the Stone Age. For example, the above mentioned sites in the Riukjärvi-Piiskunsalmi area are found on fields located on low eskers covered by clayey soils (Figs. 7.1 and 7.8). In this case agriculture over the last 150 years has partly changed the environment and soil conditions.

Also local hydrological development can have changed the topography and for example

the surface soils of the sites. Even though the wide lines of the hydrological history are known, the knowledge of local conditions and small-scale development is not highly detailed. For example, the local effects of the Ladoga transgression are not known. Only the site Räsälä 25 Teperinaho seems to have been inundated (Saarnisto & Siiriäinen 1970) but one could assume that short term effects or thin transgression sediments might have been destroyed, e.g. just by ploughing. In other parts of the Karelian Isthmus there are illustrative examples of transgressions (e.g. Takala & Sirviö 2003; Seitsonen *et al. in prep.*). An important challenge for the further archaeological research in the Karelian Isthmus and the study area is to get a better and a more detailed understanding of the hydrological history of Lake Ladoga as well as the local bodies of water.

Dating of the sites is another complicated issue. Dating and the general chronology have been built basically on typological grounds, according to the artefacts found on the sites. However, because the material of several sites found in the 1999 survey consists only of quartz, dating on typological grounds is not possible. Only a few radiocarbon dates exist and apart from the dates connected to the excavations at Räsälä 4 Juoksemajärvi Westend (see Halinen *et al.* 2008, this volume), these are only solitary dates from large multi-period dwelling sites.

The shore displacement chronology can be and has been used in dating the sites but only to a certain extent. Using shore displacement chronology is complicated by the fact that the information of the elevations of the sites is not accurate enough because actual levellings have been rarely carried out. Another problem is that even if it were possible to distinguish different phases in the hydrological development after the *Ancylus* maximum, only the outburst of the River Neva seems to have radically changed the situation,

after which sites can be found at lower elevations. Consequently, the more or less stable water level for thousands of years means that from the elevations of 20–25 m asl everything from the Mesolithic all the way to the initial Early Metal Period can be found, often but not always, on the same sites (e.g. Huurre 2003: 154–156). The relative steepness of the local micro-topography observed at many of the sites, e.g. around Lake Riukjärvi, would practically have prevented the inhabitants from following the lowering water level, especially if the fluctuations in water level were small (Fig. 7.1).

On the basis of the available information it seems that the Stone Age populations in the study area preferred the same site locations through the millennia and used the same locations continuously or repeatedly<sup>6</sup>. One of the factors attracting activity was perhaps the favorable circumstances for fishing. The locations are generally close to shallow waters and this, in addition to abundant fishing implements found in many of the sites (see Pälsi 1915: 99–110), indicates the importance of fishing in the Stone Age subsistence. Osteological material was not paid much attention to before World War II but, for example in the find material from more recent studies, fish bones are numerous. The importance of water resources is further shown, and may be even more emphasized, by the dominating position of seal bones in the osteological material analyzed from the Kaukola-Räisälä materials. (Seitsonen 2008, this volume.)

## 7.9 Concluding remarks

In this paper the research history and the results of the 1999 survey as well as a tentative analysis of the environmental settings of the Stone Age dwelling sites of the study area are presented. The study of the environmental vari-

ables revealed that in general sheltered locations along the shores of bays and fjords were preferred. The areas on and near eskers, on the mainland coast and on the nearby islands along the tangled coastal waterways were the most intensively used. Also junctions of several traffic routes were intensively utilized. The main water routes also affected the directions towards which the sites opened. The current data does not point to intensive utilization of areas located in the archipelago outside the immediate coastline but stray finds give evidence of human presence also there. According to the osteological material, aquatic resources formed the main subsistence, which supports also the location of many of the sites.

Apart from the information the environment of the sites can give us, rather scanty data exists about the structures, find material or other features at many of the sites. This is largely related to the sites found in the 1999 survey. The old, pre-World War II material on its behalf represents large, multi-period dwelling sites or dwelling site areas; there is no detailed information of how the intensity of the use of these sites changed during the millennia, nor about the seasonality or the specific functions of the individual sites. The details regarding the transgressions and regressions and their influence on human settlement and individual sites are also largely open. Further fieldwork, and equally further analysis of the previously gathered find material, is needed before new information concerning the nature and patterns of the Stone Age habitation in the study area can be obtained.

Acknowledging that the present distribution map of Stone Age habitation is still distorted by the focus of fieldwork, much new information was obtained in the 1999 survey. Although superficial, the two week survey concretely proved that the unequal targeting of the fieldwork c. 100 years ago has severely skewed the view of

the Stone Age habitation. The results showed that it is possible to find clusters of sites also in regions other than the Riukjärvi-Piiskunsalmi area. While expanding the spatial distribution of the Stone Age dwelling sites, the survey in 1999 also showed that the ostensible affluence of the study area in Stone Age remains is real and not just a product of research history.

The results of the 1999 survey also made evident that the survey methodology employed, at the time still under development, was successful and useful. This resulted in gaining information about the types of sites previously unknown in the area, above all by revealing the first dwelling depressions in the Karelian Isthmus, but also e.g. small-scale quartz sites. Furthermore, the survey was the first fieldwork to yield material for comparing the results of the University's previous projects on the Finnish side of the present Russian-Finnish border (Ancient Saimaa and continuation of the project in the 1990s; see Lavento 2008a, this volume).

All in all, the 1999 studies, as well as the excavations in 2002, resulted in first impressions of a new kind of archaeological data and allowed drawing rough guidelines for the future refinement of views of the prehistoric hunter-gatherer habitation in the area. These studies form a good basis for a further and a more detailed analysis of the Stone Age settlement – as has actually already been proven on field.

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## Sources and printed references

### *Unpublished sources*

- National Board of Antiquities, Department of Archaeology, Helsinki
- Ailio, J., 1902:** Teperinahon kivikautinen asuinpaikka Haaparannan kylässä Räisälässä. Research report.
- Ailio, J., 1906a:** Papinkankaan kivikautinen asuinpaikka Räisälässä. Research report.
- Ailio, J., 1906b:** Kivikautisen asuinpaikan löytöjä Kaukolassa, Kaukolan ja Kankaanmäen kylissä, Riukjärven rantueilla. Research report.
- Ailio, J., 1906c:** Kivikautisia asuinpaikkalöytöjä Kaukolassa, Piiskunsalmen kylän maalla. Research report.
- Ailio, J., 1909b:** Kaivaus Kaukolassa, Piiksuon kivikautisella asuinpaikalla. Research report.
- Meinander, C. F., 1939:** Räisälän Hovin Kalmistonmäki. Research report.
- Pälsi, S., 1911:** Kaivaus Tiitunmäen kupeessa v. 1911. Research report.
- Pälsi, S., 1912:** Kaivaus Tiitunmäen kallionvieressä kesällä 1912. Research report.
- Pälsi, S., 1935:** Räisälän Hovin Kalmistonmäki. Research report.
- Pälsi, S., 1937:** Kivikauden asuinpaikka Vi.I. Pyhäjärven Konnitsassa Antti Äijön ja Tyynelän mailla. Research report.
- Pälsi, S., 1911:** Kaivaus Tiitunmäen kupeessa v. 1911. Research report.
- Pälsi, S., 1912:** Kaivaus Tiitunmäen kallionvieressä kesällä 1912. Research report.
- Pälsi, S., 1935:** Räisälän Hovin Kalmistonmäki. Research report.
- Pälsi, S., 1937:** Kivikauden asuinpaikka Vi.I. Pyhäjärven Konnitsassa Antti Äijön ja Tyynelän mailla. Research report.
- Tallgren, A. M., 1907a:** Räisälä, Papinkankaan hietakuoppa. Research report.
- Tallgren, A. M., 1907b:** Kaukola, Piiksuonkangas. Research report.
- Tallgren, A. M., 1914a:** Kertomus tutkimuksista Räisälän Hovin n.s. Kalmistomäellä. Research report.
- University of Helsinki, Institute for Cultural Studies, Department of Archaeology, Helsinki
- Halinen, P., 2003:** Räisälä Juoksemajärvi W, the Karelian Isthmus, Russia – Excavations at a Stone Age Dwelling Site 30.05.–19.06.2002. Research report.
- Halinen, P., Timofeev, V., Saksa, A., & Lavento, M., 1999:** The Archaeological Survey of Kaukola and Räisälä in Karelian Isthmus – The 1999 report. Research report.
- Halinen, P., & Mökkönen, T., 2004:** The Archaeological Survey in Kaukola and Räisälä in the Karelian Isthmus. Kaukola-Räisälä -project. Report 2004. Research report.
- Mökkönen, T., 2000:** Saimaan vesistöalueen pyyntikulttuurien toimeentulo ja asutusmallit – Kerimäen tapaustutkimus. Unpublished M.A. thesis.
- Mökkönen, T., 2005:** Kaukola Rupunkangas 1A. Excavation report 5th-16th July 2005. Research report.
- Mökkönen, T., Seitsonen, O., Nordqvist, K., & Seitsonen, S., 2006:** The Archaeological Survey in Kaukola and Räisälä in the Karelian Isthmus. Kaukola-Räisälä

- project. Report 2005. Research report.
- Nordqvist, K., 2004:** Asutuksen paikka maisemassa – Kaukolan ja Räisälän kivikautisten kohteiden sijaintianalyysi. Unpublished seminar paper.
- Nordqvist, K., 2005:** Picked up on the Fields. A study on the history, contents and representativity of Stone Age finds from Kaukola and Räisälä parishes. Unpublished M.A. thesis.
- Seitsonen, O., Nordqvist, K., Seitsonen, S., Kunnas, O., & Gerasimov, D. V., 2005:** Archaeological survey in Lake Pyhäjärvi area, on Karelian Isthmus, 05.–12.08.2005. Pyhäjärvi-project, report no. 1. Research report.
- Seitsonen, O., Nordqvist, K., & Gerasimov, D. V., in prep.:** Excavations at the multiperiod site Pyhäjärvi Kunnanniemi in 20.–28.7.2006. Research report.
- Timofeev, V., Uino, P., Lavento, M., Gerasimov, D., & Halinen, P., 2002:** The Kurkijoki Survey (21–28 May 2001) – The 2001 report. Research report.
- Russian Academy of Sciences, Institute for the History of Material Culture, St. Petersburg
- Timofeev 2002** --- Тимофеев, В. И., 2002: Исследования стоянок каменного века на озере Большое Заветное в 2002 г. Research report.
- Russian Academy of Sciences, Peter the Great Museum of Anthropology and Ethnography, Kunstkamera, St. Petersburg
- Gerasimov 2004** --- Герасимов, Д. В., 2004: Отчёт об археологических изысканиях в Приозерском районе Ленинградской области в 2004 году. Research report.
- Published sources*
- WWW-sources*
- Jussila T., 2001:** *Antreaan-Jääsken muinaisjäänne* *expenditio 2001*. Timo Jussila / Mikroliitti oy, <http://www.dlc.fi/~microliit/antrea/2001/antrea01.htm> [read 22.12.2003].
- Printed maps*
- Finnish Topographic Map Sheet 4113 07 Oravankytö, scale 1:20 000, Helsinki 1938, Military Topographic Survey.
- Finnish Topographic Map Sheet 4113 08 Räisälä, scale 1:20 000, Helsinki 1939, Military Topographic Survey.
- Finnish Topographic Map Sheet 4113 09 Hytinlahti, scale 1:20 000, Helsinki 1939, Military Topographic Survey.
- Finnish Topographic Map Sheet 4113 10 Humalainen, scale 1:20 000, Helsinki 1938, Military Topographic Survey.
- Finnish Topographic Map Sheet 4113 11 Särkisalo, scale 1:20 000, Helsinki 1939, Military Topographic Survey.
- Finnish Topographic Map Sheet 4113 12 Unnonkoski, scale 1:20 000, Helsinki 1939, Military Topographic Survey.
- Finnish Topographic Map Sheet 4114 07 Kaukola, scale 1:20 000, Helsinki 1939, Military Topographic Survey.
- Finnish Topographic Map Sheet 4114 10 Kaarlahti, scale 1:20 000, Helsinki 1939, Military Topographic Survey.
- Printed references*
- Ailio, J., 1909a:** *Die steinzeitlichen Wohnplatzfunde in Finland I–II*. Helsingfors: Finnische Altertumsgesellschaft.
- Äyräpää, A., 1935:** Etelä-Karjalan esihistorian pääpiirteet. *Suomen museoliiton julkaisuja* 5 (Neljännet museopäivät Viipurissa 1934, ed. by A. Äyräpää, E. Aaltonen & O.-I. Meurman): 37–63.
- Äyräpää, A., 1953:** Kulturförhållandena i Finland före finnarnas invandring. *Suomen Muinaismuistoyhdistyksen Aikakauskirja* LII-1. Helsinki.
- Bel'skij & Gerasimov 2005** --- Бельский, С. В., & Герасимов, Д. В., 2005: Об археологических изысканиях на Карельском перешейке. *Археологические открытия 2004 года*: 18–19. Москва: Наука.
- Binford, L. R., 1980:** Willow smoke and dogs' tails: Hunter-gatherer settlement systems and archaeological site formation. *American Antiquity* vol. 45 n:o 1: 4–20.
- Bradley, R., 2000:** *An Archaeology of Natural Places*. London: Routledge.
- Carpelan, C., 1997:** KM 2672:1 – Keramiikkaa Räisälän Tiurinlinnasta. In: Uino, P., (1997): Ancient Karelia. Archaeological Studies – Muinais-Karjala. Arkeologisia tutkimuksia. *Suomen Muinaismuistoyhdistyksen Aikakauskirja* 104: 401–402. Helsinki.
- Edgren, T., 1992:** Den förhistoriska tiden. In: *Finlands historia* 1 (ed. by M. Norrback): 9–270. Esbo: Schildts.
- Europaesus, A., 1923:** Muinaistutkimuksen tehtäviä Karjalassa. *Kalevalaseuran vuosikirja* 3: 61–75.
- Gerasimov et al. 2003** --- Герасимов, Д. В., Лисицын, С. Н., Тимофеев, В. И., 2003: *Материалы к археологической карте Карельского перешейка (Ленинградская область). Памятники каменного века и периода раннего металла*. Санкт-Петербург: Российская академия наук, Институт истории материальной культуры.
- Gerasimov et al. 2004** --- Герасимов, Д. В., Бельский, С. В., & Лисицын, С. Н., 2004: Работы Карельского Археологического отряда. *Археологические открытия 2003 года*: 25–26. Москва: Наука.
- Gurina 1961** --- Гурина, Н. Н., 1961: Древняя история Северо-Запада Европейской части СССР. *Материалы и исследования по археологии СССР* 87. Москва.
- Hackman, A., 1917:** Om Nylands kolonisation under järnåldern och andra därmed sammanhängande frågor. *Historisk Tidskrift för Finland* 1917: 241–283.
- Halinen, P., Seitsonen, O., Seitsonen, S., & Nordqvist, K., 2008:** Excavations at the Juoksemajärvi Westend Stone Age dwelling site in 2002. *Iskos* 16 (this volume).
- Heikkurinen, T., 1980:** Itäkarjalaiset tasa- ja kourutaltat. *Helsingin yliopiston arkeologian laitos, Moniste* n:o 21. Helsinki.
- Huurre, M., 1998:** *Kivikauden Suomi*. Helsinki: Otava.
- Huurre, M., 2003:** Viipurin läänin kivikausi. In: *Karjalan synty. Viipurin läänin historia* 1 (ed. by M. Saarnisto): 151–244. *Sine loco*: Karjalaisen Kulttuurin Edistämisseätiö, Karjalan Kirjapaino Oy/Karjala-lehti.
- Jussila, T., & Matiskainen, H., 2003:** Mesolithic settlement during the Preboreal period in Finland. In: *Mesolithic on the move. International Conference on the Mesolithic in Europe* (ed. by L. Larson, H. Kindgren, K. Knutsson, D. Loeffler & A. Åkerlund): 664–670. Oxford: Oxbow Books.
- Kähäri, M., 1952:** Katsaus varhaisempaan aikaan. In: *Räisälän historia. Piirteitä Räisälän vaiheista 1865–1944*: 9–34. Kokemäki: Tiurinlinna säätiö. Second Edition.
- Kelly, R. L., 1983:** Hunter-gatherer mobility strategies. *Journal of Anthropological Research*, vol. 39, n:o 3: 277–306.

- Kvamme, K. L., 1985:** Determining empirical relationships between the natural environment and prehistoric site locations: A hunter-gatherer example. In: *For concordance in archaeological analysis: bridging data structure, quantitative technique, and theory* (ed. by C. Carr): 208–238. Kansas City: Westport Publishers.
- Kvamme, K. L., & Jochim, M. A., 1989:** The environmental basis of Mesolithic settlement. *The Mesolithic in Europe. Papers presented at the 3. international (Mesolithic) symposium, Edinburgh 1985* (ed. by C. Bonsall): 1–12. Edinburgh: John Donald.
- Lavento, M., 2001:** Textile Ceramics in Finland and on the Karelian Isthmus – Nine variations and fuge on a theme of C. F. Meinander. *Suomen Muinaismuistoyhdistyksen Aikakauskirja* 109. Helsinki.
- Lavento, M., 2008a:** Archaeological research in the Saimaa district and in the Karelian Isthmus in 1992–1999. *Iskos* 16 (this volume).
- Lavento, M., 2008b:** The Saimaa-Ladoga project – question framing and strategies. *Iskos* 16 (this volume).
- Lavento, M., Halinen, P., & Mökkönen, T., 2006:** Subsistence strategies and changes of communities between 9000–1 calBC: an archaeological intensive-investigation in the western part of Lake Ladoga, Karelian Isthmus, Russia. *Studia humaniora ouluensia* I (People, Material Culture and Environment in the North. Proceedings of the 22<sup>nd</sup> Nordic Archaeological Conference, University of Oulu, 18–23 August 2004. ed. by V.-P. Herva): 120–130. Oulu.
- Lavento, M., Halinen, P., Timofeev, V., Gerasimov, D., & Saksa, A., 2001:** An archaeological survey of Stone Age and Early Metal Period settlement at Kaukola (Sevastyanovo) and Räisälä (Melnikovo) on the Karelian Isthmus in 1999. *Fennoscandia archaeologica* XVII: 3–25, and ERRATA in *Fennoscandia archaeologica* XIX (2002): 67–73.
- Luhov, V., 1948:** *Suomen kivikauden pääpiirteet*. Helsinki: Otava.
- Luhov, V., 1953:** Kaukolan muinaisuutta. In: *Kaukola*: 10–38. Lahti: Kauko-Säätiö.
- Matiskainen, H., 1989:** The palaeoenvironment of Askola, southern Finland. Mesolithic settlement and subsistence 10 000–6 000 b.p. *Iskos* 8-V (Studies on the Chronology, material Culture and Subsistence Economy of the Finnish Mesolithic 10 000–6 000 b.p.).
- Meinander, C. F., 1954:** Die Bronzezeit in Finnland. *Suomen Muinaismuistoyhdistyksen Aikakauskirja* 54. Helsinki.
- Meinander, C. F., 1969:** Dämits. En essä om förromersk järnålder. *Finskt Museum* 76 (1969): 27–69.
- Mökkönen, T., & Nordqvist, K., 2006:** Opettaja Sokolovin kivikauden kokoelma Karjalankannakselta. *Muinaistutkija* 2/2006: 7–18.
- Mökkönen, T., Nordqvist, K., & Bel'skij, S., 2008:** The Rupunkangas 1A Site in the Archipelago of the Ancient Lake Ladoga: a Housepit with Several Rebuilding Phases. *Fennoscandia archaeologica* XXIV: 3–28.
- Nordqvist, K., 2006:** Konnitsan kylän kivikausi. In: *Kotikylämme Konnitsa 2* (ed. by T. Luukkanen & E. Näriäinen): 190–198. Vaasa: Ykkös-Offset.
- Nuñez, M., 1990:** On Subneolithic pottery and its adoption in late Mesolithic Finland. *Fennoscandia archaeologica* VII: 27–52.
- Pälsi, S., 1915:** Riukjärven ja Piiskunsalmen kivikautiset asuinpaikat Kaukolassa. *Suomen Muinaismuistoyhdistyksen Aikakauskirja* XXVIII-1. Helsinki.
- Pälsi, S., 1916:** Tekstiilikeraamiikka. *Suomen Museo* XXIII (1916): 66–72.
- Pälsi, S., 1918:** Kaivaus Pitkäljärven kivikautisella asuinpaikalla Räisälässä v. 1915. *Suomen Museo* XXV (1918): 25–34.
- Saarnisto, M., 2003:** Karjalan geologia; Karjalan luonnonmaiseman synty. In: *Karjalan synty. Viipurin läänin historia* 1 (ed. by M. Saarnisto): 21–80. *Sine loco*: Karjalaisen Kulttuurin Edistämissäätiö, Karjalan Kirjapaino Oy/Karjala-lehti.
- Saarnisto, M., 2008:** Emergence history of the Karelian Isthmus. *Iskos* 16 (this volume).
- Saarnisto, M., & Grönlund, T., 1996:** Shoreline displacement of Lake Ladoga – new data from Kilpolansaari. *Hydrobiologia* 322 (The First International Ladoga Symposium, ed. by H. Simola, M. Viljanen, T. Slepukhina & R. Murthy): 205–215.
- Saarnisto, M., & Siiriäinen, A., 1970:** Laatokan transgressioraja. *Suomen Museo* 77 (1970): 10–22.
- Schwindt, Th., 1893:** Tietoja Karjalan rautakaudesta ja sitä seuraavilta ajoilta. *Suomen Muinaismuistoyhdistyksen Aikakauskirja* XIII. Helsinki.
- Seitonen, O., 2004:** Esihistoriallisen ihmisen liikkeitä – tapaustutkimus Kurkijoelta. *Muinaistutkija* 3/2004: 26–40.
- Seitonen, O., 2006:** Räisälä Pitkäljärvi revisited – new interpretations of the dwelling remains. *Arkeologipäivät* 2005 (ed. by P. Pesonen & T. Mökkönen): 138–145.
- Seitonen, O., & Gerasimov, D., 2008:** Archaeological research in the Kurkijoki area in 2001 and 2003: A preliminary study of the Stone Age settlement patterns in southern Ladoga Karelia. *Iskos* 16 (this volume).
- Seitonen, S., 2008:** Osteological material from the Stone Age and Early Metal Period sites in Karelian Isthmus and Ladoga Karelia. *Iskos* 16 (this volume).
- Siiriäinen, A., 1981:** On the Cultural Ecology of the Finnish Stone Age. *Suomen Museo* 87 (1980): 5–40.
- Siiriäinen, A., 1987:** On Archaeology and Land Uplift in Finland. *Geological Survey of Finland, Special Paper* 2: 43–45.
- Siiriäinen, A., Halinen, P., Carpelan, C., Uino, P., Lavento, M., & Kirkinen, T., 2008:** An archaeological reconnaissance trip to the Karelian Isthmus; Excursion diary 28 September – 2 October 1998. *Iskos* 16 (this volume).
- Takala, H., 2004:** Archaeological research in the former Jurisdictional district of Äyräpää and excavations at the Telkkälä site in Muolaa, Russia. *Museoviraston arkeologian osaston julkaisuja* 10 (Fenno-Ugri et Slavi 2002, Dating and Chronology, ed. by P. Uino): 117–123.
- Takala, H., & Sirviö, T., 2003:** Telkkälä, Muolaa – a multi-period dwelling site on the Karelian Isthmus. *Fennoscandia archaeologica* XX: 55–77.
- Tallgren, A. M., 1914b:** Den östeuropeiska bronsålderskulturen i Finland. *Finskt Museum* XXI (1914): 11–22.
- Tallgren, A. M., 1935:** Eräitä epäselviä muinaislöytöjä. *Suomen Museo* XLI (1934): 41–48.
- Tilley, C., 1994:** *A Phenomenology of Landscape*. Oxford: Berg Publishers.
- Timofeev 1986** --- Тимофеев, В. И., 1986: Исследования памятников каменного века в Ленинградской области. *Археологические открытия 1984 года*: 29–30. Москва: Наука.

- Timofeev et al. 2003** --- Тимофеев, В. И., Герасимов, Д. В., Лисицын, С. Н., Халинин, П., Лавенто, М., 2003: Исследования стоянок каменного века на оз. Большое Заветное. *Археологические открытия 2002 года*: 64–66. Москва: Наука.
- Timofeev, V. I., Zaitseva, G. I., Lavento, M., Dolukhanov, P., & Halinen, P., 2004**: The radiocarbon datings of the Stone Age – Early Metal Period on the Karelian Isthmus. *Geochronometria*, vol. 23; 93–99.
- Uino, P., 2003**: Karjalan arkeologiaa 150 vuotta. In: *Karjalan syntyy. Viipurin läänin historia 1* (ed. by M. Saarnisto): 117–150. *Sine loco*: Karjalaisen Kulttuurin Edistämisseätiö, Karjalan Kirjapaino Oy/Karjala-lehti.
- Vikkula, A., 1994**: Ecological approaches to the Stone Age of ancient Lake Saimaa. *Museoviraston arkeologian osaston julkaisuja 5* (Fenno-Ugri et slavi 1992. Papers presented by the participants in the Finnish–Russian Archaeological Symposium “Prehistoric economy and means of livelihood”, 11–15 May 1992 in the National Museum of Finland, ed. by P. Purhonen): 167–179.
- Zvelebil, M., 1981**: From forager to farmer in the Boreal Zone. *British Archaeological Reports, International Series* 115.
- general properties of the study area and most of all to the 1999 studies have not changed since.
- 2 All the datings of geological and hydrological events are given as calendar years and follow the ones given by Saarnisto (2008, this volume).
  - 3 Archaeologists participating in the survey of 1999: from IIMK/RAN and *Kunstkamera* Dr. Vladimir I. Timofeev, PhD Aleksandr I. Saksa, Dr. Vladimir A. Nazarenko, Dr. Sergej N. Astahov and M.A. Dmitrij V. Gerasimov; from University of Helsinki Petri Halinen, Lic. Phil., and Mika Lavento Lic. Phil. Students participating in the field school: Viivi Deckwirth, Minna Haapanen, Karin Hinkkanen, Mikael A. Manninen, Susanna Nieminen, Ninni Närväinen, Jaana Pietilä, Hanna Pyy, Mari Salminen, Lauri Skantsi, Niina Turri and Merja Uotila.
  - 4 The new finds made by the end of 2005 total 129 Stone Age and Early Metal Period sites in the study area; of these 121 are located in Kaukola and Räisälä, the rest being situated in the neighbouring areas of Vuoksenranta and Pyhäjärvi (see Halinen & Mökkönen 2004; Mökkönen et al. 2006; Seitsonen et al. 2005). This clearly illustrates the limitations of the discussion presented below.
  - 5 The studies in 2004 and 2005 have proven this to be the case: the Pontuksenhauta area and the adjacent Rupunkangas barren are dotted with sites, which is evidence for substantial activities in the archipelago. Small, apparently limited activity sites have also been found more to the south, in the archipelago in Räisälä. (Halinen & Mökkönen 2004; Mökkönen 2005; Mökkönen et al. 2006; 2008.) This indicates that the material used in the present study is skewed towards certain landscape areas – namely the mainland coast, bay and fjord areas and coastal archipelago – consequently also affecting the types of sites present in the material.
  - 6 However, many of these multi-period sites found in the early 20<sup>th</sup> century are actually very poorly known when it comes to their internal chronology, the intra-site distribution of artefacts from different periods, as well as the inter-site patterns. Further, the material used in this study is assumedly biased towards large, extended activity sites with strong cultural deposits and numerous finds. Sites with less prominent find material, often small limited activity sites, are not well represented. Unfortunately the nature and exact dating of several of the sites found in 1999 is not known, either.

## Endnotes

- 1 The manuscript of this paper was finished during the winter of 2003–2004 (the study of the location of the sites is based on Nordqvist 2004), and further, the data presented in it represents the situation right after the 1999 survey. However, since 1999 a considerable amount of fieldwork has been done in the study area, mostly within the project ‘*Subsistence strategies and changes of communities between 900–1 BC: an archaeological intensive-survey in the western part of Lake Ladoga, Karelian Isthmus*’, Department of Archaeology, University of Helsinki. These studies have for example more than doubled the amount of known dwelling sites in the region (see Halinen & Mökkönen 2004; Mökkönen et al. 2006; Lavento et al. 2006). Therefore the information presented in this paper is not equal to the present knowledge, being too simplistic and general in many respects, biased and one-sided in others, but still gives a rough overall picture. Of course the matters related to the research history, the