Postglacial pioneer settlement in the Sarvinki area, Eastern Finland

Environmental and economical setting

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Introduction

The earliest known postglacial pioneer settlement in southern and eastern Finland, *c*. 8900-8600 calBC, concentrates in three specific areas: 1) the Lake Sarvinki area in North Karelia, 2) the Kuurmanpohja region in South Karelia, and 3) the Orimattila-Lahti area in Päijänne Tavastia (Fig. 1).

In the Sarvinki area, early dates and flint blades point strongly towards eastern Post-Swiderian cultures, e.g., Veretye and Butovo in northwestern Russia. A probable house-pit and an inhumation grave of a child or a juvenile with red ochre were discovered at the Rahakangas 1 site. The house-pit and the grave possibly indicate a reasonably stable mode of life in the area already at an early stage, thus suggesting a possibility of even older sites in the area. In this presentation the paleoenvironment of the Sarvinki area is reconstructed and the relationship between ecological succession and human settlement in the area is discussed.

Fig. 1. The location of three early postglacial site-clusters in Finland: 1) Sarvinki, 2) Kuurmanpohja, and 3) Orimattila-Lahti. Some roughly contemporary Late Preboreal – Early Boreal cultures/ technocomplexes are indicated for reference.

The chronological position

The radiocarbon dates from Sarvinki are currently among the earliest in Finland. Together with the dates from the Orimattila-Lahti region and the Kuurmanpohja region, the Sarvinki dates have pushed back in time the earliest postglacial occupation of Finland, with the earliest dates extending now to the Late Preboreal period (Fig. 2; Table 1).

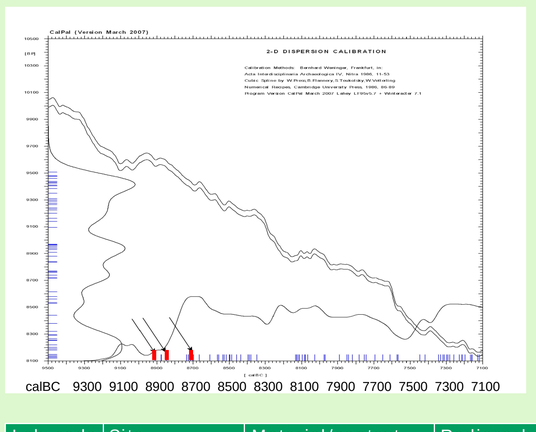

Fig. 2. The position of the Sarvinki radiocarbon dates among the oldest radiocarbon dates from archaeological contexts in Finland.

Lab. code	Site	Material/context	Radiocarbon age BP	$\delta^{13}C$ (‰)	Cal BC*
Ua-41027	Jokivarsi 1	burnt bone (mammal)	9507±85	-27,3	9181-8626
Hela-2380	Rahakangas 1	burnt bone (elk)	9461±61	-28,3	9125-8575
Hela-882	Rahakangas 1	burnt bone (elk)	9405±80	-28,1	9122-8458
Hela-2379	Rahakangas 1	charcoal (grave)	7726±58	-27,0	6651-6459
Ua-41028	Kaiskunsärkkä 1	burnt bone (fish)	8055±64	-29,0	7182-6701

Table 1. The radiocarbon dates from the Sarvinki area. *Calibration with 95.4 % confidence level, OxCal v. 4.17 (Bronk Ramsey 2009), IntCal09 calibration curve (Reimer *et al.* 2009).

Paleogeography and vegetation in the Sarvinki area

The deglaciation of Eastern Fennoscandia took several thousand years and major changes in the landscape, vegetation and wildlife occurred during these millennia. The Baltic Sea basin was covered by successive sea and lake phases (Figs. 3–5). Lakes formed in front of the melting ice, and some of them remained. Lake Sarvinki was originally an ice lake formed during the retreat of the Scandinavian Ice Sheet from Salpausselkä II terminal moraine after *c*. 9600 calBC.

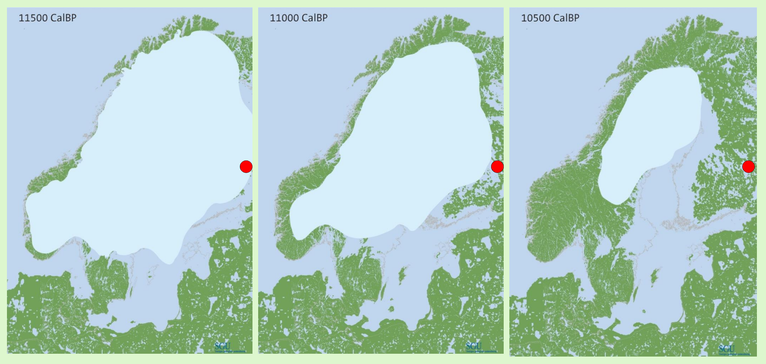

Fig. 3. Paleogeography of the Baltic Sea region according to Daniels (*unpubl. digital atlas*, 2010). The glacier and 1) the Yoldia Sea phase at 9500 calBC, 2) the Yoldia Sea phase at 9000 calBC, and 3) the Ancylus Lake phase at 8500 calBC. The Sarvinki area is marked with a red dot.

The vegetation zones were metachronic and connected to the advance of the deglacation. After the retreat of the Ice Sheet, the first vegetation consisted of grasses and shrubs. In a matter of decades this tundra-like environment turned into heaths dominated by small shrub-like willow-species. According to current knowledge, the Sarvinki area was first occupied during the Late Preboreal, with birch as the dominant tree species. The shift from birch- to pine-dominant forest and to the Boreal climatic zone took place in the course of a few centuries.

Fig. 4. Paleogeography in North Karelia approximately 9000–8900 calBC. First radiocarbon evidence of human activity in the Sarvinki area (red dot) coincides with the final Yoldia phase of the Baltic Sea basin. Lake Sarvinki was connected to the Yoldia Sea and the Pielinen Ice Lake via a narrow outlet in the northwest. The shorelines and the position of the ice-margin according to Tikkanen & Oksanen (in *Fennia*, 2002).

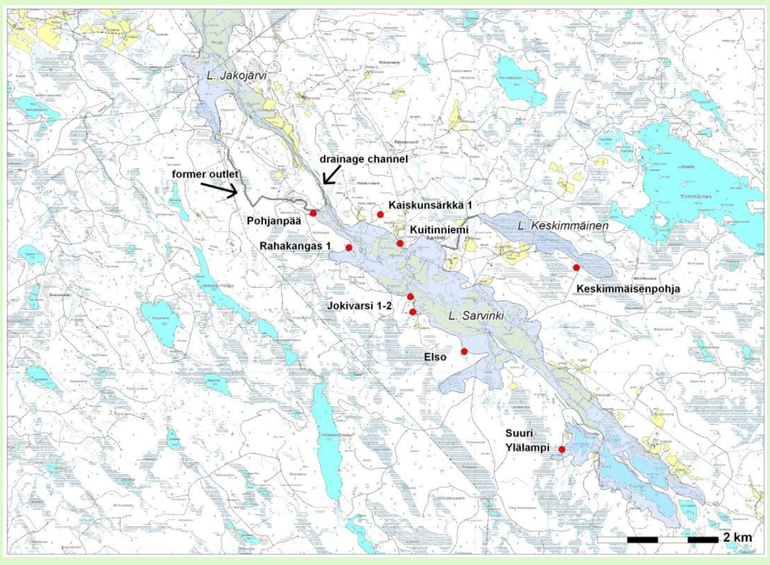

Fig. 5. Paleogeography and Stone Age sites in the Sarvinki area. Jokivarsi 1 and Rahakangas 1 have yielded Early Mesolithic dates (*c*. 9000–8500 calBC) and Kaiskunsärkkä 1 as well as Rahakangas 1 later Mesolithic dates (*c.* 7000–6500 calBC). Lake Sarvinki was drained in 1743 and Lake Jakojärvi was silted in the same event. Lake Keskimmäinen was drained later in 19th century.

Paleoeconomy as reflected by refuse fauna

Deglaciation created an opportunity for animals to re-colonise Eastern Fennoscandia. The immigration of mammals most probably took place directly from the east, from Siberia and through eastern Karelia. The fish species in the inland lakes probably derive from former marine connections of the lakes or later colonisation. The osteological assemblage of the Rahakangas 1 site is diverse and contains aquatic and terrestrial species (Table 2). The mammalian fauna includes both the species associated with young deciduous forests (e.g., elk and beaver) and coniferous or mixed forests (pine marten). It is highly likely that material from several hunting seasons, and possibly multiple occupations during the Stone Age, are presented in the material.

Table 2. The species identified, Rahakangas 1	NISP	Weight (g)
Alces alces (Eurasian elk)	27	49,18
Castor fiber (Eurasian beaver)	55	23,78
Canidae cf. Vulpes vulpes (dog family, cf. Red fox)	1	0,03
Martes martes (European pine marten)	10	0,8
Ruminantia (ruminants)	58	17,79
Mammalia (Indet. mammals)	> 2251	588,11
Aves/Mammalia (birds/mammals)	22	2,47
Gavia sp. (Indet. diver)	2	0,25
Lagopus lagopus (Willow grouse) or Lagopus muta (Rock ptarmigan)	1	0,14
Anatidae (anas family)	1	0,09
Aves (birds)	3	0,15
Esox lucius (Northern pike)	270	16,48
Perca fluviatilis (European perch)	4	0,11
Coregonus lavaretus (Common whitefish)	6	0,06
Cyprinidae (Cyprinid fish)	75	3,23
Teleostei (Bony fish)	1250	20,55
Indeterminata	5537	183,06
Total	>9573	906,28

The dynamics of the early colonisation in the Sarvinki area

After the cold Younger Dryas climatic episode, deglaciation gained speed and new land emerged rapidly. During the first occupation of the Sarvinki area, the River Pielisjoki valley and Lake Pielinen formed a northeastern projection of the Yoldia Sea for a short time. Later on, the Yoldia Sea retreated and present lakes Pielinen and Saimaa were formed with River Pielisjoki as a connecting waterway between them.

Lake Sarvinki remained stable through the times. It is plausible, that the conditions in the open shores of the Yoldia Sea were not attractive to the pioneers entering from the Post-Swiderian sphere of hunters for several reasons: 1) the Yoldia Sea was not very productive, 2) cold winds from the glacier made the unsheltered shores of the sea hostile, and 3) the hunters were not adapted to the marine environment because they came from a region where hunting of terrestrial mammals was favoured. The conditions by Lake Sarvinki would therefore have better fitted the requirements of pioneer settlement.

A second Mesolithic occupation phase in the area took place some 1500 years later in the Boreal period but after this period the signs of prehistoric activities are rather vague. We therefore suggest that after the Early Mesolithic phase, the Lake Sarvinki area was not as attractive as it was before, although still suitable for later Mesolithic fishing-based economies. The large water bodies of Lake Saimaa and Lake Pielinen were probably preferred during later periods as the shores stabilised and the climate warmed up.

Note: For further information, see posters:
- Postglacial pioneer settlement in Sarvinki area, E. Finland – a red ochre grave in Rahakangas 1 site by Simponen *et al.*
- Postglacial pioneer settlement in Sarvinki area, E. Finland – lithic perspective by Hertell & Pesonen
- Radiocarbon dates and postglacial colonisation dynamics in eastern Fennoscandia by Tallavaara *et al*.

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