Journal of Archaeological Science: Reports 1 (2015) 38–52

Contents lists available at ScienceDirect

Journal of Archaeological Science: Reports

journal homepage: http://ees.elsevier.com/jasrep

# Pre-Roman Iron Age settlement continuity and cereal cultivation in coastal Finland as shown by multiproxy evidence at Bäljars 2 site in SW Finland

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ARTICLE INFO

*Article history:*
Received 15 August 2014
Received in revised form 4 October 2014
Accepted 11 October 2014
Available online 25 October 2014

*Keywords:*
Pre-Roman Iron Age
Coastal Finland
Settlement archaeology
Cereal cultivation
Geochemistry
Archaeobotany
Charcoal analysis

ABSTRACT

Pre-Roman Iron Age (ca. 500–1 BC) occupation was revealed at the site of Bäljars 2 in SW Finland. Archaeobotany, charcoal analysis, and geochemistry were applied to the samples gathered at the site. The results suggest habitation, storage, agriculture, fire-keeping, and plant gathering at the site during the Pre-Roman Iron Age. By that time, the Lepinjärvi basin was surrounded by rich local flora and served as an excellent node of communication with both overseas regions and the interior of Finland. Eight new sites were discovered around the lake, thus disproving the previously suggested hiatus of habitation around the lake. The light soils were suitable for early cultivation methods. The results point towards cultivation of ard-ploughed, fire-managed, and manured fields, where summer-annual barley, speltoid wheats, and possibly oat were grown. Other contemporary sites in Finland reveal that barley was the most important cereal during the first millennium BC.



## 1. Introduction

The small number of datable artefacts connected with the Pre-Roman Iron Age in Finland (500–1 BC) had led to the conclusion that Coastal Finland was desolate during this period (Hackman, 1905; see also Meinander, 1969, 52). However, a shift in this long-lasting paradigm occurred in the late 1960s, when settlement sites came to light through the identification of pottery known as Morby Ware (Meinander, 1969). According to conventional radiocarbon dating, the use of Morby Ware commenced already during the Late Bronze Age (Edgren, 1999), but the group of combined AMS-dates of Morby pottery crusts suggest that the chronological range lies between 650–430 cal BC and 140 cal BC–cal AD 140 (1 σ) (Asplund, 2004, 2008, 220). Today, settlement history in Finland is considered continuous (Asplund, 2008, 201–202).

There are only a few studies which have approached the settlement archaeology of the Finnish Pre-Roman Iron Age as a central theme, and concentrated on the archaeological features and materials produced by different activities of everyday life. Few environmental archaeological and archaeobotanical studies have been carried out, and as of this writing no charcoal studies have been conducted for the Finnish materials. In particular, the earliest phases of the agricultural history of Finland are extremely poorly known. However, the current knowledge of early cultivation methods, plant usage, and subsistence as a whole calls for multidisciplinary research.

Pre-Roman Iron Age settlement in the coastal areas of Finland has been considered primarily agricultural (Meinander, 1969, 67). Various lines of evidence prove this. Osteological studies have shown that signs of animal husbandry become clearly visible for the first time during this period (Bläuer and Kantanen, 2013). Lipids from Morby ceramics indicate milk exploitation (Cramp et al., 2014). Metal implements were used in agricultural tasks, as shown by the introduction of iron sickles and scythes (Asplund, 2008; Salo, 1984). Plant foods were ground with small quern stones, which were probably introduced already during the Late Stone Age Kiukainen Culture (Asplund, 2008, 251–252). That agricultural practices were already carried out in the Pre-Roman coastal settlements is evidenced by Cerealia pollen connected with forest clearances (Alenius, 2011; Tolonen et al., 1979; Sarmaja-Korjonen, 1992; see also critique by Lahtinen and Rowley-Conwy, 2013). However, the earliest fossil ard-marks in Finland have been dated to the Late Iron Age (Asplund, 2008, 295; Mikkola, 2009, 41), and the amount of archaeobotanical evidence is sparse and lacks a recent review.

A Pre-Roman Iron Age settlement site, Bäljars 2 was excavated under land-use pressure in Raasepori, SW Finland in 2008. Various features containing pottery, burned bones, and lithics were found after removing a modern plough-zone layer with an excavator. The site is situated on a sandy slope near Lake Lepinjärvi, an area rich in burial sites from the

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http://dx.doi.org/10.1016/j.jasrep.2014.10.003
2352-409X/

Late Roman Iron Age to the Viking era (ca. AD 200–900), but which has long lacked an associated Pre-Roman settlement phase. Soil samples were gathered from nearly all structural features unearthed during the excavations. These samples were studied using archaeobotany, charcoal analysis, and geochemistry. These multidisciplinary methods provided the possibility to interpret activities related to cultivation, the gathering of wild plants, firewood acquisition, and field management.

By drawing conclusions from the Bäljars 2 material, and comparing it with contemporaneous sites around Lake Lepinjärvi and dated cereal grains from elsewhere in Finland, we aim to answer the following questions: How has the identification of Pre-Roman Iron Age settlement sites in the research area changed the current state of research? What plants were cultivated in Finland during the Pre-Roman Iron Age? How were the agricultural fields managed? How was firewood chosen? What kind of vegetation surrounded the site?

## 2. Study area

Bäljars 2, in the City of Raasepori (prev. Karjaa), is a Pre-Roman Iron Age settlement site in the southernmost coastal district of Finland (E 23°39′ N 60°03′) (Fig. 1). The site lies on a shallow terrace on top of a sandy ridge, facing southeast towards the small dystrophic Lake Lepinjärvi (Swe. *Läppträsket*). The Lohjanharju ridge, crossing Karjaa from east to west, is part of a large end moraine, The First Salpausselkä Ridge, stretching hundreds of kilometres from Hanko in the south to eastern Finland, thus forming a major watershed in the region (Nordberg, 1970, 7). At the end of the last deglaciation Karjaa was still an archipelago, and became gradually more enclosed and sheltered due to isostatic land uplift. The sandy slopes of the Lohjanharju Ridge and the muddy clayey soils closer by the lake (the former shallow bay of the Mesolithic), were later taken under cultivation. Due to land uplift, the old bodies of water became isolated and were transformed into smaller basins (Nordberg, 1970, 8; Seppälä, 1996, 41–59). The vegetation type on the sandy Lohjanharju Ridge is coniferous forest with Scots pine as the main species. On lower elevations, some mixed forests dominate. Most of the deciduous forests were cleared during the process of converting the fertile lake-shores into arable land. The areas surrounding the fields have preserved mosaics of old groves, with Norway maple, lime tree, bird cherry and hazel (Nordberg, 1970, 10–11).

Radiocarbon dating samples (Su-429 and Su-432) taken from the lake show that the shallow Lepinjärvi basin gradually became isolated from the Baltic Sea after ca. 300 BC (Nordberg, 1970, 14; Tolonen et al., 1979, 22; Hatakka and Glückert, 2000, 11, Fig. 6), which implies an altitude of 9–10 m asl. However, some smaller waterways leading to the Baltic Sea, SW from the lake, remained open. The Mustionjoki River, ca. 1.5 km north from Bäljars 2, has been one of the most important waterways from the coastal zone to the interior of Finland, transmitting technical and cultural influences between the regions throughout millennia (Meinander, 1969, 63). In the later phases of the Iron Age, the Kilamossen mire, northeast from Bäljars 2, constituted the northernmost extension of the lake. Even in historical times, the gateway from the lake to the Mustionjoki River has been sustained with an artificial channel for pulling ships from the coastal waters to the interior routes of Finland (Forsén and Moisanen, 1995).

## 3. Material and methods

Due to construction planned by the city of Karjaa in the area, trial excavations were carried out at Bäljars 2 by one of the authors in the Fall of 2008 (Kelola and Koivisto, 2008). The fieldwork was restricted to the arable land, mostly overlapping with the protection area assessed for the site by the National Board of Antiquities in the 1970s. Because of the


**Fig. 1.** Map of Finland, showing Bäljars 2 and sites with cereal grains dated to the first millennium BC. For the dating see Fig. 11. The shaded area on the map represents the distribution of Morby Ware and pottery resembling Morby Ware (after Asplund, 2008, 211, Fig. 101).