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## A PRE-ROMAN BURIAL SITE IN PUIJONSARVENNENÄ, KUOPIO, EASTERN FINLAND: PRELIMINARY RESULTS AND INTERPRETATIONS

### Abstract

In 2019, a metal detector hobbyist found an iron spearhead, a knife, and some burnt bones from an ambiguous stone structure situated on the scenic cape of Puijonsarvennenä in Kuopio. Archaeological excavation and subsequent analyses of the find material confirmed that the site was a single cremation burial, which was radiocarbon dated to 410–355 calBC, in the Pre-Roman Iron Age. The find material included several fragments of bone artefacts and a small amount of asbestos-tempered ceramics. The burial and its finds seem to indicate that the deceased person engaged in hunting and possibly fur trading, setting Puijonsarvennenä into a continuum with similar burial sites known from interior and northern Finland from the Early Bronze Age to the Late Iron Age. Currently, Puijonsarvennenä is the only Iron Age burial site to have been excavated in the North Savo province.

Keywords: cremation burial, Early Metal Period, Iron Age, Pre-Roman Period, osteology, cairn

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### INTRODUCTION

Puijonsarvennenä is a cape protruding into the Lake Kallavesi in the outskirts of the city of Kuopio, situated in the province of North Savo in Eastern Finland (Fig. 1). The Puijonsarvennenä cape is the northernmost point of Puijo, a recreational area and nature park visited for centuries by travellers, artists, and local people due to its beautiful scenery and nature. The cape is also

mentioned in the lyrics of the well-known song “Kallavesj”<sup>1</sup>. Well-trodden trails in addition to metal detecting finds from the area indicate that camping and picnic activities have been carried out regularly at the cape. Although the point of the Puijonsarvennenä cape has been spared from construction work, summer cottages and villas have been built on the surrounding shores

since the early 20th century. An engraving on a smooth waterfront rock surface resembling a coat of arms with the inscription “Sylvester 1904” acts as a memento of life at the villa closest to the cape.

Despite prevalent human activity at the cape for at least the last couple of centuries, a previously unknown prehistoric cairn existed there relatively undisturbed (Fig. 3). In the spring of 2019, a local metal detector hobbyist found an iron spearhead, a knife, and some fragments of burnt bone from a ground-level stone structure situated under the turf. He informed the Finnish Heritage Agency and Kuopio Museum. The site was considered a possible Iron Age burial after a piece of human skull was identified among the bones by osteologist Kati Salo. During negotiations with the National Heritage Agency and Kuopio Museum, it was decided that further research on the site would be incorporated into the present authors’ research project (Knuutinen & Kunnas-Pusa *forthcoming*; see also Kunnas-Pusa & Knuutinen 2020). The excavation of the cairn was conducted in 2020, with further analyses of the find material completed during 2021–2022.

The main aims of the excavation were to determine whether the structure was indeed an Iron Age grave, and whether any other prehistoric human activity could be detected at Puijonsarvenenä. The excavation and further analyses confirmed the existence of a burial, which also seemed to be an isolated phenomenon at the cape. According to radiocarbon-dating results from a fragment of bone, the burial was dated to the Pre-Roman Iron Age, 410–355 calBC. The early Iron Age as a transition period of cultural change can be observed in the find material: bone artefacts and asbestos-tempered ceramics represent old and enduring material traditions of interior Finland, while iron objects are new technology.

Besides Puijonsarvenenä, there are no other confirmed Iron Age burials known from the province of North Savo, though there has been a certain amount of speculation that some artefacts might originate from burial contexts. For example, an iron knife and a barbed spearhead were found in 1940 in Autiorinne, Joroinen (see Fig. 2 for the places mentioned in the text). However, the artefacts were found while digging a well at a depth of 2–3 metres, and the only indication of a burial were stones laid in a deliberate pattern.

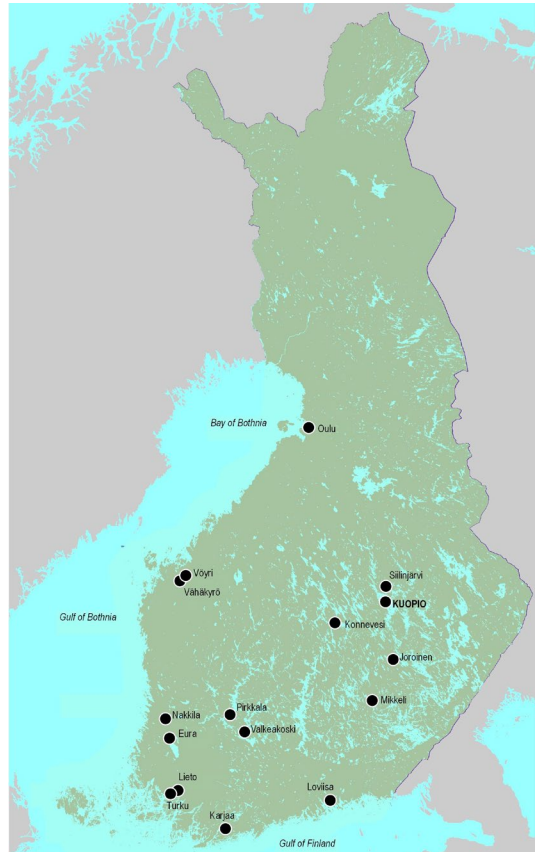


Figure 1. Location of Kuopio and other municipalities mentioned in the text. (Map: Tarja Knuutinen. Base map: National Land Survey of Finland 2022.)

The site was never archaeologically examined (Lehtosalo-Hilander 1988: 155; Ancient Relics Register).

As early as 1874, several artefacts, including a bracelet and a round brooch made of bronze, were found under a cairn near the Haminalahti mansion in Kuopio. Only the bronze artefacts found their way into museum collections, while other artefacts were lost. There are no mentions of any osteological material (Wegelius 1878: 123–4; Artefact Register: KM 1644–1648). Later, the location of the find could no longer be located, and the nearby structures turned out to be remains of a pre-modern stove or hearth (Meinander 1938). According to Pirkko-Liisa Lehtosalo-Hilander (1988: 162–3), molten glass, possibly from a bead, appears to be attached on

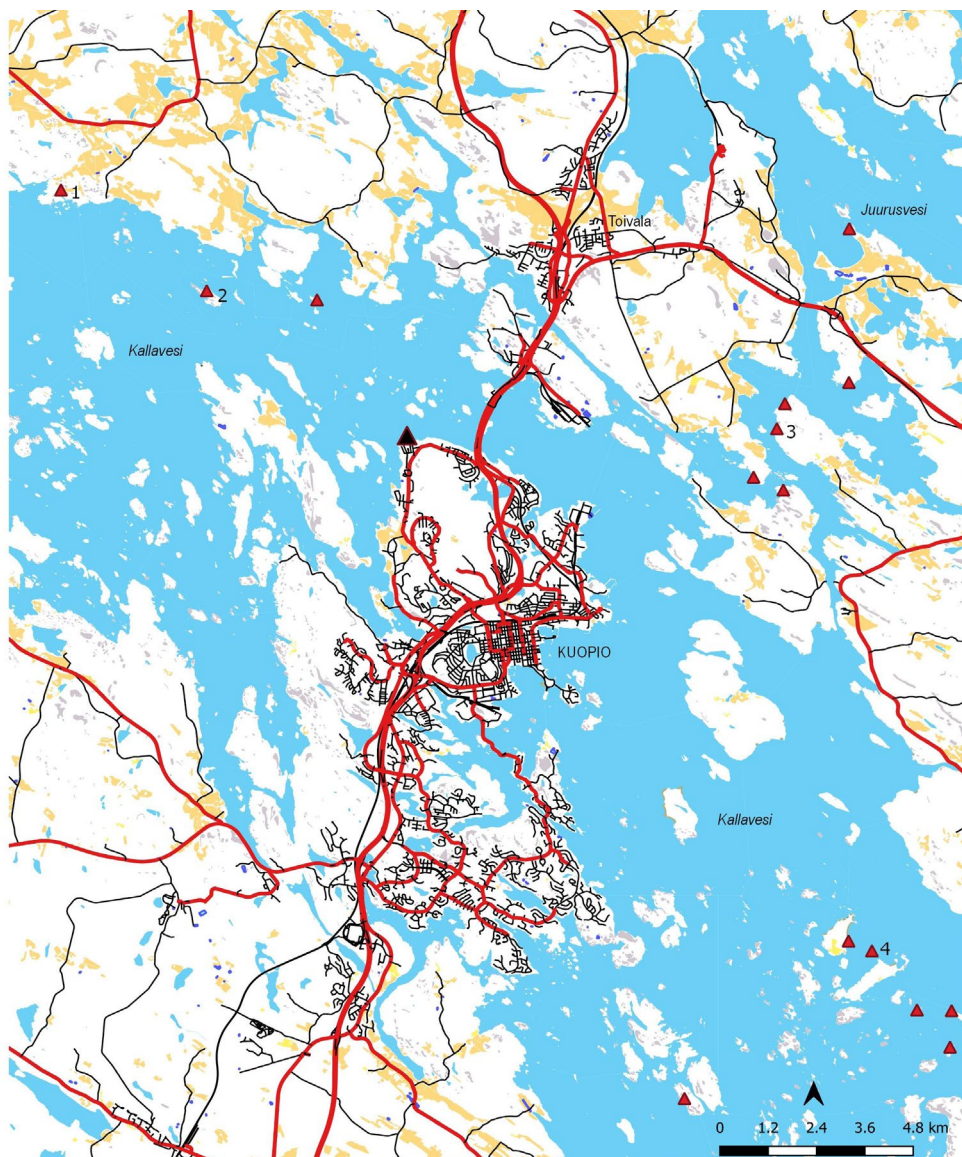


Figure 2 . Location of Puijonsarvennä site (black triangle) and other Early Metal Age burial and settlement sites nearby (red triangles). Numbered sites mentioned in the text: 1. Saunalahti, 2. Honkasaari, 3. Kuusikkolahdenniemi, 4 . Luukonsaari. (Map: Tarja Knuutinen. Base map: National Land Survey of Finland 2022.)

one of the objects, possibly indicating that they originated from a Viking Age cremation burial.

Since these previous examples of possible Iron Age burials had evaded archaeological examination, the Puijonsarvennä site and its excavation offered new insights into the past in North Savo. This article presents the preliminary results of the excavation and subsequent

analyses of the find material, and aims to discuss the following questions: What new information does this site contribute to the current picture of the Pre-Roman Period of interior Finland when compared to some other excavated Iron Age burials of interior and northern Finland? What does the burial and its find material tell us about Early Iron Age North Savo?



Figure 2. Panoramic view of the site before excavation. (Photo: Tarja Knutinen.)

### PRE-ROMAN IRON-AGE IN NORTH SAVO

The Pre-Roman Period of the Finnish Iron Age refers to the first centuries of the Iron Age in c. 500 BCE–0, followed by the Early and Late Roman Period (0–200 CE and 200–400 CE, respectively). The term was used early on in Alfred Hackman’s study of the Early Iron Age in 1905, where periodization is based on Oscar Montelius’s earlier work (Hackman 1905: 4–5). Since the archaeological research conducted in early 20th-century Finland was mostly aimed at finding out the origins of ethnic Finns as a part of constructing national identity, the arrival of Finns to Finland and their colonization of the land was considered the most important event of the Iron Age (Salminen 2003; 2006; Fewster 2006; Immonen & Taavitsainen 2011; Marila 2018). Assumingly, the ancestors of Finns arrived during the Roman Period, which left the Pre-Roman Period as a less interesting prologue to the ethnically Finnish prehistory (Hackman 1905: 9–17).

The cultural change and the importance of the Roman Iron Age as a turning point in the Finnish past was even more emphasized in A. M. Tallgren’s overview of Finnish prehistory in 1931. He described the Pre-Roman Iron Age as an intermission between the earlier, already perished Bronze Age culture and the event of Finns arriving to coastal areas of Finland in 200 CE. Even though Tallgren did not consider the area of Pre-Roman Period Finland to be totally devoid of population, he assumed there was a major disconnection in cultural traditions: only the “nomadic hunters and reindeer herders” of

the interior and northern Finland continued their lifestyle unchanged (Tallgren 1931: 95–6, 121). Explicitly, he states: “Surely, the Pre-Roman Period was not of any interest in Finland. The following time period marks a crucial new phase: the beginning of sedentary peasant communities, the gradual fading of the hunter-fisher stage, and the eventual colonization of the whole land”<sup>2</sup> (Tallgren 1931: 98).

This interpretation of the Pre-Roman Period as an uninteresting intermittent phase in which “nothing was happening” in an almost deserted land was partly based on the small number of archaeological finds known at the time, but it also partly arose out of the need to archaeologically pinpoint the arrival of the Finns. New finds began to change this picture, but even more important was the overall change of focus away from ethnonationalistic interpretations of the past during the period between the 1960s and 1990s. Often considered a seminal work, C. F. Meinander’s (1969) essay on the Pre-Roman Period provided evidence to assert the so-called continuation theory about prehistoric settlement, which argued that the area of Finland had been continuously inhabited since the retreat of the glaciers. Nowadays even more Pre-Roman than Bronze Age sites are known on the coastal areas. The situation of Northern and Eastern Finland is obviously different: for example, there are no results of pollen analyses that would confirm agriculture in interior Finland. There are, however, Pre-Roman finds and sites that suggest cultural connections between the interior and coastal regions (Raninen & Wessman 2015: 220–1, 224–5; Lavento 2015a: 164).

In archaeological tradition, North Savo during the Iron Age has often been described as virtually a wilderness, without permanent settlement, and frequented only by itinerant hunters and merchants (e.g., Rinne 1947: 1–2, 17–20; Kivikoski 1961: 260; Pohjakallio 1974b: 16; see also Jääskeläinen 2020). Although this description has often been used for the Late Iron Age, there are some issues related to the Early Iron Age. In interior Finland, the boundary between the Bronze Age and the early Iron Age is somewhat blurred, and the two are often merged under the term Early Metal Period, ending in the fourth century AD (Raninen & Wessman 2015; Lavento 2015a).

Only a few iron artefacts dated to the Pre-Roman Period are known from interior Finland, even though it seems that the practice of iron-working was adapted in Northern and Eastern Finland relatively early, ca. 300–200 BC. Then again, the oldest iron artefacts in Finland have been found in Savukoski, Lapland, namely two dagger-like swords originating from the Caucasus region and dated to 900–600 BCE (Lavento 1999; 2015a: 208–9; 2015b: 229; see also Hakamäki & Kuusela 2013 about Iron Age stray finds from northern Finland). Most of the Iron Age stray finds from North Savo are dated to the Late Iron Age (Lehtosalo-Hilander 1988; 155–7; Jääskeläinen 2020, Appendix 1; Ancient Relics Register).

As noted by Ville Hakamäki (2018), earlier research on the Iron Age of interior Finland has emphasized the traces of agriculture-based “peasant” communities associated with the Iron Age culture of the southern and western coastal regions of Finland, leading to the hunter-gatherer cultures of the inland regions being overlooked. Even though Hakamäki’s observations relate to the Late Iron Age of Northern Ostrobothnia and Kainuu (neighbouring provinces of North Savo), there are many similarities in the interpretations of the Early Iron Age as well. Views such as Hakamäki’s are entangled with notions of colonialism and “Finnish” or “Scandinavian” peasant culture expanding into the “wilderness” of nomad hunter-gatherers (Hakamäki 2018: 79–82; Saipio 2018: 47; Jääskeläinen 2020; see also Kirkinen 2012).

This interpretative model is often visible when prehistoric archaeological records are

categorized according to the concept of two Iron Age Finlands: the indigenous population of interior Finland exhibiting a cultural continuation from the Stone Age versus the “new” population of agricultural, more organized people connected with the ancestors of the ethnic Finns. This approach is still prevalent in Lehtosalo-Hilander’s (1988: 155, 162–70) speculations about fur hunters and traders from coastal Finland arriving to the wilderness of Savo and establishing outposts.

Critiques aimed at these interpretations of the Iron Age occupied early on by ethnic and cultural spheres have pointed out that some features related to interactions between social groups, and the internal diversity of cultural spheres, have been omitted. Burials and artefacts can represent many things about the identity of the deceased or the community, besides belonging to a certain cultural group (e.g., Pihlman 1992; 2004; Raninen 2005; see also Ikäheimo 2019: 37).

## THE EXCAVATION IN 2020 AND OBSERVATIONS ON THE STRUCTURES

The excavation of the Puijonsarvennenä site was carried out in May 2020 (17–22 May 2020), predated by a survey of the site and its vicinity carried out in September 2019 (see the excavation report in Knuutinen & Kunnas-Pusa 2022 for a detailed description of the fieldwork).<sup>3</sup> Two metal detector hobbyists (one being the finder of the cairn) assisted in the fieldwork. In addition, several local people and history enthusiasts visited the site during the excavation, and it also drew some media attention (e.g., Hiltunen 2020; Nykänen 2020).

Apparently, the Puijonsarvennenä cape has been within the scope of some previous archaeological surveys (e.g., Pohjakallio 1974a; Jussila 2002), but the cairn had remained undiscovered. The cape of Puijonsarvennenä belonged to the grounds of Julkula vicarage until the 1930s, then to the city of Kuopio, and nowadays to a private landowner. There are some wooden villas on the western and southern sides of the cape. One large villa was situated close to the point, but it was destroyed in a fire and demolished during the first decade of the 21st century. Access to the point still goes through the yard of the demolished house, and some of its structural remains are visible on the southern side of the cape (for

example, parts of the foundations and a concrete cellar vault).

Based on the observations made during the preliminary survey, as well as the results of a metal-detecting survey made at the same time, several areas holding potential archaeological interest were mapped out (Fig. 4). In addition to excavating the cairn, some test pits were dug on places where metal signals were detected the most. However, no other Iron Age finds were obtained, and the test pits only revealed the remains of fairly recent activity. The other stone structure detected nearby the burial cairn turned out to be the foundation of a modern outdoor cooking facility or some other light structure. In addition, a large number of modern nails was found.

The excavation of the cairn was carried out as a combination of stratigraphic excavation and removing layers of 5 cm. Clearly distinguishable stratigraphic contexts and features, like the burial, were excavated as a single context unit, but the layers of soil surrounding the burial and the test pits were dug out in layers of 5 or 10 cm. All the removed soil, when possible, was sieved. All of the soil from the context of the burial was collected to be sieved later in the laboratory, when the wet soil was dried. Without this method, it would never have been possible to retrieve such large number of burnt bone, and probably the smallest fragments of bone artefacts would not have been found at all.

The excavation area (measuring 3.5 x 4 m) was established around the find locations of the spearhead and the knife fragment, discovered in 2019. It encompassed the small, almost ground-level stone structure, which was almost invisible on the surface before the removal of the turf and topsoil. After the removal of the topsoil, the structure was revealed as an oblong-shaped cairn or stone setting built on the bedrock surface. The north-west end of the stone setting continued beyond the excavation area and remained unexcavated.

The stone setting was south-east–north-west-oriented and consisted of rocks and soil. In some parts, the soil was very sooty. As the excavation proceeded, two concentrations of rocks were observed at the setting, revealing an area between them containing less and smaller stones. The southern edge of the setting followed the rim of a shallow depression in the bedrock. Towards the

bottom of the depression, the size of the stones grew smaller, and the amount of soil increased. At the bottom of the depression the soil became increasingly wet and sooty, possibly due to the enrichment caused by the water running along the bottom. No bones or artefacts were found in the stone setting or the soil in the depression.

The actual burial, approximately 0.6 x 0.8 m in size, was situated at the eastern end of the whole stone setting, on the highest point of the bedrock sloping gently towards the north and west. Surprisingly, the burial context was not covered with stones; the black and sooty soil with a large number of small fragments of burnt bone lay directly under the topsoil. Only the western and southern edges of the burial context were confined by somewhat larger stones, forming a possible structure. Consequently, it seems that the burial, comprised of cremated human remains and artefacts, had been laid on top of bare bedrock. The stone setting consisting of soil and rocks was not constructed on top of the burial as a traditional cairn but was instead gathered to fill the depression in the bedrock, running north-west from the burial (Fig. 5). It seems that this setting and the actual burial context could be connected to each other, although no archaeological finds related to the burial were found from the stone setting.

Some spare rocks also lay on the north-east side of the burial, but they had no straight contextual connection to the burial, as the soil including fragments of bone did not continue in this direction. Based on these few odd stones, it is possible that the burial was also originally covered by a stone setting or cairn, but became levelled out at some point. During the excavation, it was speculated whether the stones from the cairn could have been used to construct the nearby modern rectangular stone structure used as a fireplace or cooking facility. However, considering the fact that the burial was only found in 2019, it seems unlikely that there would have been a distinguishable cairn at the site. In addition, the existence of a clearly visible cairn would be unlikely given the nature of the burial practices of the Early Metal Period–Iron Age interior Finland (see below).

In some Early Iron Age burial sites there have been clear indications that cremations were also performed on the same spot (e.g., Vanhatalo

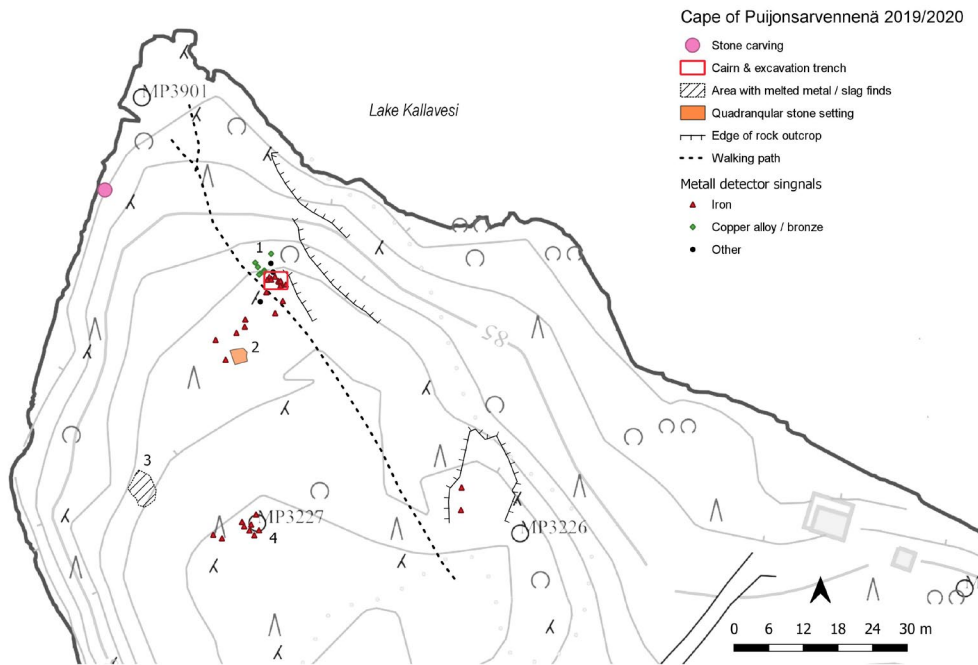


Figure 4. A map showing 1. Location of the burial and its vicinity showing metal detector signals indicating possible iron and metal alloy/bronze artefacts. 2. Rectangular stone structure and metal detecting signals situated approximately 20 m to southwest from the burial. 3. Area including a lot of metal detecting signals, situated approximately 30 m southwest from the rectangular structure. 4. Area with a lot of metal detecting signals, which was later confirmed to be an old fixed reference point for elevation. (Map: Tarja Knuutinen. Base map: City of Kuopio.)



Figure 5. The burial and related stone setting from S-SW. Burial is located on the eastern end of the stone setting, on the area not covered by stones. (Photo: Tarja Knuutinen.)

2005: 100–1). Some Iron Age burial sites from later periods with assumed funeral pyres have also been excavated, including Ylipää in Lieto, Moisio (Latokallio) in Mikkeli, Kokkomäki in Valkeakoski, Pörnnullbacken in Vöyri, and Virusmäki in Turku, but with somewhat controversial interpretations (Wessman 2010: 51–2). In Puijonsarvennenä, there were certain features that could indicate the act of cremation. Based on the sooty soil and heat-cracked stones packed in the depression of the bedrock, the pyre could have been on the small rock terrace on the western and south-western sides of the excavated area. Since there were several metal detector signals from this area, referring to possible iron and bronze or copper alloy objects, the area was studied with a small auger to detect concentrations of soot or charcoal and a few small test pits were excavated. The results remained slim, as instead of a cultural layer or artefacts, only shells of a small-bore rifle were obtained. Further archaeological research on the site would be required to determine the existence of a funeral pyre.

## DESCRIPTION OF FINDS AND OSTEOLOGICAL MATERIAL

### *Iron artefacts*

The iron artefacts included a spearhead and a fragment of a knife (KM 41974:1–2; Fig. 6), found in 2019 while metal detecting, as well as finds obtained during the excavation: two small, rectangular objects resembling rivets or studs (KM 42642:1), two plate-like fragments (KM 42642:2–3), and one small drop-shaped piece of iron (KM 42642:4). All metal objects were X-rayed and some of them subsequently went through conservation (see the conservation report attached in Knuutinen & Kunnas-Pusa 2022). The conservation was conducted by Löytö Oy.

The spearhead is socketed, with a long shafting socket, resembling Type II b3 in Unto Salo's typology (Salo 1968: 131, Abb. 92). Such spearheads have been found, for example, from Malmsby Blombacka, Loviisa, in South-east Finland, where altogether eight spearheads, eight knobbed axes, one socketed axe, four sickles, and a scythe were found, all concealed in the

same hoard. Based on the artefacts, the hoard has been dated to the end of the Pre-Roman Period and the Roman Period (Salmo 1953). A similar spearhead has also been found in a Roman Period cemetery in Penttala, Nakkila, in South-west Finland (Salo 1968: 130–41, T48–T49). Most of the known Pre-Roman spearheads from Finland resemble differently shaped types than the Puijonsarvennenä spearhead, usually with a longer blade in relation to the shaft socket. For example, the fragmented spearhead from Cairn 422 in Luistari cemetery in Eura, South-west Finland, belongs to a longer type (Lehtosalohilander 1986; for a typology of Pre-Roman spearheads, see Salo 1968).

A few socketed spearheads (KM 1400: 482–488) are also included in the assemblage of artefacts from the Early Metal Period–Pre-Roman Iron Age burial ground in Anan'ino, Russia, deposited in the collections of the Finnish National Museum. J. R. Aspelin visited Anan'ino in the 1870s and brought these artefacts to Finland. They were mostly bought from the local people (see Salminen 2003: 53–7). The size and form of these socketed spearheads from Anan'ino vary considerably, and since the assemblage mostly originated from disturbed burial contexts, the variation is understandable. There have been some later attempts to date the artefacts typologically (Salminen 2003: 55). The so-called Anan'ino culture (c. 800–200 BC) is considered to have been an important transmitter of iron-working technology and iron artefacts in the areas of northern Russia and eastern and northern Fennoscandia (e.g., Raninen & Wessman 2015: 217–8).

According to Jonas Wikborg (2005b: 146), a single spear set in a Pre-Roman burial can be considered a symbolic token representing the equipment of a soldier, since in an actual battle situation a combatant would also need other weapons and a shield. If the person buried in Puijonsarvennenä had other such weaponry, they were not placed in the burial. However, the spearhead could also be related to hunting big game, or fur trading. Pirkko-Liisa Lehtosalohilander (1988: 155–6) suggested that iron objects like arrowheads, knives, and axes, which are commonly unearched as stray finds in interior Finland, would have been used as a payment for furs during the Early Iron Age, then being





Figure 6. Socketed spearhead (KM 41974:1) and a fragment of knife (KM 41974:2) found from Puijonsarvennenä in 2019. (Photos: Sari Poutanen / Löytö Oy.)



Figure 7. A knife from Anan'ino burial site (KM1400:526), brought for the collections of Finnish National Museum by J. R. Aspelin in 1870's. (Photo: Finnish National Museum, open picture collection (Finna), CC BY 4.0.)

substituted with coins from the Viking Age onwards.

Similar-looking iron knives have been used from the Iron Age until historical times, making them difficult to date (Lehtosalo-Hilander 1988: 155). However, iron knives have been found from Pre-Roman and Roman period contexts in Finland earlier, and e.g. Raninen and Wessman (2015: 218) mention them among the most usual iron objects from the era. Iron knives with a similar composition of a straight shaft set on the same line as the back of the knife have also been found in the Pre-Roman Period contexts in the Baltic region (Nylén 1979: 182; Arnberg 2007: 214, Fig. 103).

From Finnish inland areas, iron knives have been found from the aforementioned sites of Joroinen Autiorinne (KM 11267:1) and Konnevesi Siimarinsaari (KM 39149:6).

Although the find context of Autiorinne has been somewhat unclear, the barbed iron spearhead (KM 11267:2), found seemingly in the same context, suggests an Iron Age origin (Lehtosalo-Hilander 1988: 155). The Siimarinsaari knife, resembling the knife from Puijonsarvennenä, was also found by a metal detectorist from a low cremation burial cairn together with other artefacts including an iron shaft-hole axe, bronze belt fittings and iron wedges (Ancient Relics Register). The site has not been further studied archaeologically, but based on the available information, it has some similar features as the Puijonsarvennenä burial.

There is also a knife (KM 1400:526) (Fig. 7) in the Finnish National Museum assemblage of objects from Anan'ino with a very close resemblance to the one from Puijonsarvennenä. In addition, the batch of artefacts from Anan'ino

includes more than 30 different iron knives or their fragments (e.g., KM 1400: 523–555), showing that they were a rather common type of artefact during the Early Iron Age. The knife from Puijonsarvennenä could also have an east-ern origin.

There was a piece missing from the socket of the Puijonsarvennenä spearhead. In addition, the point end was missing from both the spearhead and the knife. The two plate-like iron fragments (KM 42642: 2–3) found during the excavation were gauged to belong to the spearhead or the knife but could not be attached to the artefacts during the conservation. However, since they were obtained from the same context, they probably relate to the burial.

Both the spearhead and the knife had very uneven, bubbly, and corroded surfaces, which, according to conservator Anna Lehtinen, could have resulted from exposure to fire or high temperatures (Knuutinen & Kunnas-Pusa 2022, Appendix 5). Traces of fire were also observed on the inner surface of the socket. Microscopic analysis of the soil collected from the inside of the socket revealed small fragments of burnt bone and iron, but no wooden residue from the shaft of the spear. However, these observations indicate that the iron objects would have been on the funerary pyre with the deceased.

When excavated, the burial context seemed intact, but as there was no actual stone setting on top of the burial, the knife and the spearhead had been dug up immediately beneath the turf. Based on both the information gained from the finder of the site and the observations during the excavation, it would seem that the iron objects had been on top of the burial context. The extraction of the objects from the ground had not significantly disturbed the burial. Although the exact find location of the objects could not be pointed out during the excavation, their approximate location was on the southern edge of the burial context.

### *Ceramics*

During the post-excavation phase, while detaching osseous material from the soil, a small number of asbestos-tempered ceramics were discovered amidst the soil collected from the centre part of the burial context. The sherds were

in poor shape, very small, and fragmented, and possibly crumbled in fire. There was one slightly larger sherd, from the wall of a vessel, in which a pattern of stamped decoration could be observed (Fig. 8). In addition, one sherd possibly originated from the base of a vessel.

Due to the sherds being so small and crumbled, it is difficult to recognize the type of ceramics, but based on the asbestos temper, the appearance of the largest sherds, and the find context, they probably belong to the so-called Luukonsaari type, considered together with the Simihta type to be a subgroup of Säräisniemi 2 ceramic ware, dated ca. 1000 BC–400 AD) (Lavento 2015a: 194–7; see also Carpelan 1979). The sherds also bear some resemblance to earlier asbestos-tempered wares (for example Pöljä and Kierikki ware) used during the Stone Age and Early Metal Period. Most likely this is due to the difficulty of telling different asbestos-tempered wares apart from crumbled and worn sherds. Even with the Stone Age wares, there is a great deal of variation in decoration and the shape of the vessels, the use of asbestos and organic substances as temper being the common feature (Pesonen 2021: 34–6). While widespread in northern Fennoscandia, the tradition of asbestos-tempered ceramic wares is characteristic of the area of North Savo, beginning in the Stone Age in c. 3500 BC and lasting until the first centuries AD (Nordqvist & Mökkönen 2021).

Luukonsaari ware is known from several sites near Puijonsarvennenä (for example, the eponymous settlement site of Luukonsaari, see Fig. 2). The “Luukonsaari group” is one of the four cultural spheres C. F. Meinander proposed to have existed in the area of Finland during the Early Iron Age. He considered that the Luukonsaari group represented a continuous inhabitation of interior Finland through the Bronze and Iron Ages (Meinander 1969; Lehtosalo-Hilander 1988: 118–20; 143).

### *Human and animal bones in the burial*

The osteological analysis of the Puijonsarvennenä bone material was conducted by PhD Kati Salo. The bone material consisted of 407.7 g of small fragments of burnt bone, with the total number of fragments being ca. 2,500. The fragments were first identified with the help of osteological



Figure 8. A sherd of asbestos-tempered ceramics showing stamped decoration (KM 42642:5). (Photo: Tarja Knuutinen.)

reference collections at the University of Helsinki (see list of all identified bone fragments in the osteological report, attached in Knuutinen & Kunnas-Pusa 2022). Due to the high number of very small bone fragments, only a part of the whole bone material could be identified to a species. Most of the identified bones were human: 249 fragments (73.4 g) were identified as human with certainty and 222 fragments (54.8 g) probably. The uncertain ones were fragments of long bones that could not be morphologically identified as human with certainty and could also belong to some other mammal. However, they were not as dense as animal bones tend to be and within the size range of human bones. One animal bone could be identified to a species, namely a fragment of right ulna from a mustelid (*Mustelidae* sp.). Based on its size, it most likely belonged to a pine marten (*Martes martes*), a European mink (*Mustela lutreola*), or a polecat (*Mustela putorius*).

Standard osteological methods (Buikstra & Ubelaker 1994) were applied to estimate sex as well as the age at time of death. In order to estimate the age, suture closure (Ruengdit et al. 2020), the width of the dental root canals (Kvaal et al. 1995), and the thickness of the cranial layers (Gejvall 1947) were observed. A cremation temperature estimation was based on visual

observation of the colour of the bones (Walker et al. 2008). Most of the bones were white; thus, they were cremated at a high (above 800°C) temperature. The bone surfaces had a brownish tint due to the soil, and the fragile material could not be thoroughly cleaned before analysis.

The human bones are from an adult individual. The cranial sutures are open, but the diploë, or the internal layer of the cranium, is thick. The outer and inner tables are thin, as are the root canals. Therefore, the adult is likely to be a mature adult. One feminine trait could be observed in the orbital rim of the frontal bone (Fig. 9a). However, sex estimation is not very reliable when based on one trait alone, since many individuals carry both masculine and feminine traits in their skeleton. Woven bone formation was observed in one long bone fragment (Fig. 9b). Woven bone in adults is always pathological. It could be a sign of infection, trauma, or disease (see e.g., Salo 2016: 169–70).

Two human bones were selected for radiocarbon (AMS) dating, a fragment of skull (KM 24642:15, HELA-4884) and a fragment of long bone (KM 24642:25, HELA-4885). The dating of the samples was conducted by the University of Helsinki Laboratory of Chronology. Only the latter sample was successfully dated, resulting in a radiocarbon age of 2300±24 BP, and a



Figure 9. a) Sharp orbital rim on the frontal bone (KM 42642:16) b) Woven bone in a long bone fragment. (KM 42642: 15). (Photos: Kati Salo.)

calibrated date of 405–365 calBC (68.3% probability), 410–355 calBC (79.1% probability) and 285–230 calBC (16.3% probability)<sup>4</sup> (Fig. 10). Since there are some issues related to radiocarbon dating of burnt bone (e.g., Olsen et al. 2013), and only one of the samples could be dated, the authors will discuss further questions related to radiocarbon dating of cremation burials, including Puijonsarvennenä, in a separate study published later.

### Bone artefacts

A total of 21 fragments of bone artefacts were identified (Fig. 11). Some of the fragments could be pieced together so that it was possible to speculate on the nature and purpose of the objects they originated from. The best-preserved bone artefact is a needle or awl, 46.5 mm long and 1.5–2.55 mm in diameter, with only a small fragment missing (KM 42642:27) (Fig. 11a). Three fragments belonging to a bone arrowhead (KM 42642:30) were also identified. Both ends of the arrowhead with a rhomb-shaped cross-section are missing, but one of the remaining pieces has an interesting detail, a distinct curved cut indicating an effort to reshape the artefact by cutting a barb into it (Fig. 11b). Either the arrowhead was not finished by the time it was placed in the cremation with the deceased or it was broken and taken into reuse.

Six barbed arrowhead fragments (KM 41974: 4 and KM 42642: 29) (Fig. 11c) were also found amongst the bone material. Three of the fragments have distinctive barbs and one is possibly the base of a snapped barb. Two of the fragments could be fitted together, forming an approximately 2.5 cm long and 0.5 cm wide piece with a rounded rectangular cross-section and one barb. No tip or base fragments were identified from the collected bone material. As not all the pieces could be fitted together, and some of the fragments clearly have a different, triangular, or more flattened cross-section, it is possible that the deceased was cremated with more than one barbed arrowhead.

In addition, seven flat fragments of bone decorated with etched lines were recognized. Three of the fragments could be pieced together, forming a fragment of a plate-like piece decorated with incised ornamental feature consisting of three parallel lines. Two fragments had two incised decorative lines, and two only single line (KM42642:31; Fig. 11d).

Similar types of arrowheads with a rhomb-shaped cross-section have been found in the Viking Age Tursiannotko dwelling site in Pirkkala (Raninen 2013: 16) and the Kirstinmäki cairn burial site in Vähäkylä (Kivikoski 1947, Tafel 37: 318). A very similar arrowhead was also found at the Lieto Kotokallio Bronze Age burial cairn (Edgren 1969; Ikäheimo et al. 2004).

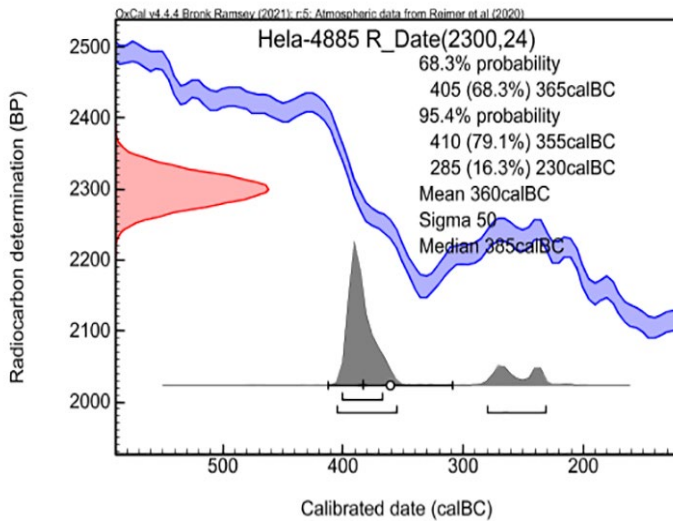


Figure 10. The dating results of the sample HELA-4885 (human long bone, KM 24642:25).

The arrowhead from Kotokallio is almost complete, with a total length of 55 mm, a greatest breadth of 10 mm, and a greatest thickness of 4 mm (Edgren 1969: 76–7, Abb. 2b.). The more fragmented arrowhead from Puijonsarvennenä, with both the tip and part of the butt missing, measures only slightly less, with a total length of 30.4 mm, a greatest width of 7.7 mm, and a greatest thickness of 4.3 mm.

A barbed bone arrowhead is known, for example, from the Välikangas burial site in Oulu, dated to the Roman period, ca. 150–500 CE (Mäki vuoti 1988; Ikäheimo et al. 2004). The Välikangas arrowhead (KM 24597:7) has a triangular cross-section and a slightly curved point, and the barb is located on the shoulder of the point. In addition, the point has been decorated with an incised longitudinal line (Ikäheimo et al. 2004). Very similar barbed points are also known from the St. Vikers Bronze Age cremation burial in Lärbo, Gotland (Rydh 1968; Ikäheimo et al. 2004), but also from the Migration period–Merovingian cremation burial of Karjaa Hönsäkerskullen (KM 11138:120; af Hällström 1939). In fact, barbed arrowheads in varying forms were used for hunting throughout the Stone Age from the Paleolithic onwards (e.g., Langley et al. 2016; Lozovskaja & Lozovski 2019). Small, barbed arrowheads were probably also used for shooting fish (Zhilin 2020). Luik (2006) has suggested that during the Late Bronze Age, barbed bone arrowheads were manufactured in Estonia as weapons of warfare as well.

Besides the Välikangas burials, the assembly of finds from the Bronze Age burial at Hangaskangas in Oulu also represents an interesting parallel with the Puijonsarvennenä burial site (Forss & Tuovinen 2001; Ikäheimo et al. 2004; see also Ikäheimo 2019). The finds from Hangaskangas included fragments of at least twelve bone arrowheads, fragments of osseous spearheads or harpoons, awl-like objects, and perforated and decorated pieces of thin plate made of horn. The latter were speculated to have been sewn onto the deceased person’s clothes or other belongings like a hunting case or a quiver. Unfortunately, the decorated plate-like bone pieces from Puijonsarvennenä are too fragmentary to definitely identify their function. It is possible that the pieces originate from, for example, the handle or sheath of a knife, or a decorative feature of the outfit or accessories worn by the deceased, such as the decorative bone inlays of Hangaskangas. The fragments of awl-like objects from Hangaskangas and the needle or awl from Puijonsarvennenä could both be related to sewing or modifying pelts.

Due to Finland’s acidic soil, bone artefacts are rarely preserved in the ground unless they are burnt. Therefore, cremation burials are a common context for finding them. In other areas of northern Fennoscandia, bone arrowheads and other objects are quite common in Early Metal Period–Iron Age contexts, and they have probably also been used in northern Finland more than is archaeologically visible (Ikäheimo et



Figure 11. Fragments of bone objects from Puijonsarvennenä: a) A bone needle or awl (KM 42642:27), b) Three fragments from an arrowhead (KM 42642:30) with a distinctive curved cut visible in the middle fragment, c) Fragments of barbed object(s) (KM 42642:29 , 41974:4), d) Flat fragments of bone decorated with etched lines (KM 42642:31). (Photos: Tarja Knuutinen.)

al. 2004). Most of the bone artefacts from later Iron Age contexts in Finland are combs, spoons, and spindle whorls (e.g., Kivikoski 1947; Raninen 2013), but artefacts like the ones from Puijonsarvennenä are more related to hunting and fishing. Based on Kati Salo's preliminary observations, bone artefacts seem to be more common in Early Metal Period and Iron Age cremation burials in Northern Finland, especially when the fact that fewer burials have been excavated there than in southern and western Finland is taken into consideration. For example, in a large and richly furnished Roman Iron Age burial ground in Käsämäki, Turku, Southwestern Finland, there have been no bone points in the graves, leading to speculations that only iron weapons have been considered important, or magical, enough to be laid in burials (Raninen 2005: 53–5; see also Wikborg 2005b: 150–2).

#### Hairs

The microarchaeological analysis was conducted by PhD Tuija Kirkinen. The studied material consisted of two soil samples (sample 1, 224 g and sample 2, 319 g) taken from the burial and three small samples taken from under the iron rivets (KM 42642:1) and inside the spearhead socket (KM 41974:1). The samples were prepared by sieving the soil in a 0.125 mm sieve to remove the smallest particles. The washed material was floated and centrifuged and the extracted material was studied by a transmitting light microscope and documented by photographing. The detected animal hairs were studied by a scanning electronic microscope at Aalto University Nanomicroscopy Center. The hairs were identified by their morphology following Teerink (2003) and Tóth (2017), and by

Table 1. Results of the fibre analysis.

| Sample id:<br>Fibre id | Species identification   | Diagnostic features   | Identification references |
|------------------------|--|---|---------------------------|
| K1                     | Unidentified mammal (Mammalian) / small rodent e.g. <i>Clethrionomys glareolus</i> | Underhair, medulla amorphous, scale structure elongate petal. Width 12.6 $\mu\text{m}$ , length 0.5 cm.   |                           |
| K2                     | Unidentified mammal (Mammalian)  | Underhair, medulla uniserial regular, scale structure coronal mosaic. Width 17.4 $\mu\text{m}$ , length 0.7 cm.   |                           |
| K3                     | <i>Ursus arctos</i>  | Guard hair, brown pigmentation. Medulla tubular, hollowed out, medullary index 0.25. Scale structure figureless waved/sketched. Width 65.2 $\mu\text{m}$ , length 1.4 cm.                             | Tóth 2017, 182-183        |
| K4                     | Mustelidae ( <i>Mustela erminea</i> / <i>nivalis</i> )                             | Guard hair, white. Medulla multiserial chambered, medullary index 0.84. Scale structure rhomboidal near the root section and mosaic irregular on the shaft. Width 65.4 $\mu\text{m}$ , length 0.7 cm. | Teerink 2003, 188-191     |

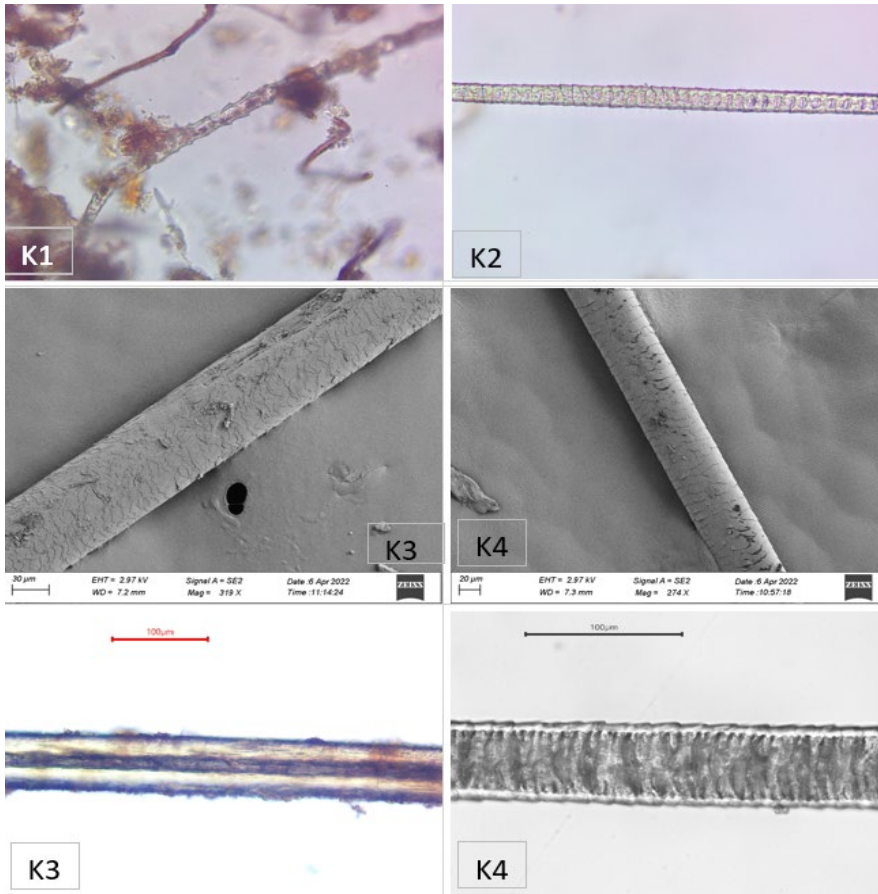


Figure 12. Hairs detected in microscopic analysis, fibre ID K1-K4 (see Table 1). (Photos: Tuija Kirkinen.)

comparing the hairs with a reference collection of Fennoscandian species.

As a result, four mammalian hairs were recovered in sample 1, two of which were identified as brown bear (*Ursus arctos*) and Mustelid coarse hairs. The Mustelid hair was white in colour, so it is most likely from the winter coat of a stoat (*Mustela erminea*) or weasel (*Mustela nivalis*). Two hairs were fine hairs, probably from small rodents such as a bank vole (*Myodes glareolus*). Their excellent preservation speaks for their recent origin. In the other soil samples, no animal hairs were detected (Table 1; Fig. 12).

## COMPARISONS AND DISCUSSION

In the coastal areas of Finland, the Pre-Roman and Early Roman Periods brought forth changes in the burial traditions: instead of singular cairns, there began to be fields of cairns. New stone structures like rectangular settings and dry-stacked pavings emerged. Red sandstone slabs are a distinctive feature in Pre-Roman and Early Roman burials in Ostrobothnia, as are cooking pits in the vicinity of cairns. Besides cremation, inhumation burial was also practised (about the Pre-Roman–Roman Period burial practices, see e.g., Edgren 1992; 1999; Forsén & Moisanen 1993; Wikborg 1996; Raninen 2005; Kuusela et al. 2010; Soikkeli-Jalonen & Oksanen 2015).

However, several burials considered as Pre-Roman do not include any finds: either objects were not placed with the deceased, or they were made of materials that have been destroyed by fire or have decomposed. Tahkokangas in Oulu, for example, is considered a Pre-Roman burial site with several stone structures, even though there are no finds. The burials are implicated by the nature of the structures, while the dating is based on shoreline displacement chronology (Kuusela 2011; Väänänen 2012).

When Puijonsarvennenä is examined in the context of Pre-Roman burial practices, it seems that some features of the burial resemble Lapp cairns, but also “discrete” Late Iron Age burials, which are both typical for the interior and northern parts of Finland (Kuusela et al. 2016; see also Moilanen & Raninen 2022). According to Ville Hakamäki (2018: 94), there is a continuum of these similar burial practices throughout the Early Metal Period and Iron Age in interior

Finland, with common features being cremation (with only some of the burnt bones placed in the burial), stone settings and low cairns usually quite unnoticeable above the ground. Besides interior and northern Finland, there is also a similar tradition of “hunting-ground graves” in northern Scandinavia.

The burial of Puijonsarvennenä seems to fit into this tradition. Even though there are no other known Iron Age burials in North Savo, there are more than twenty Early Metal Period cairn sites around the Kuopio region. Most of them have not been excavated. Even the excavated ones have yielded barely any finds. For example, a cairn in Honkasaari, Kuopio had already been dismantled before excavation, so besides the mention of an outlining paved structure, there is very little information available (Pohjakallio 1978b; Lehtosalo-Hilander 1988: 131).

The Siilinjärvi Saunalahti cairn had fragments of flint arrow heads, but no remains of cremated bone, even though some traces of fire were observed. Several human-made small pits, or “cups”, were found from the bedrock surface underneath and around the cairn (Pohjakallio 1978c). At least in the area of Finland, the Saunalahti cairn is apparently still the only known Lapp cairn situated on top of such cups, although during the Late Iron Age cup-marked stones are often situated near burial grounds and even in cairns (Lehtosalo-Hilander 1988: 131). They are connected to sacrificial practices, and therefore the Saunalahti cairn has also been considered a sacrificial cairn (Lavento 2015a: 169; for sacrificial cairns and the problems of categorization, see e.g., Muhonen 2009).

The cairn site of Kuusikkolahdenniemi in Kuopio is dated to the Bronze Age based on its finds, namely Luukonsaari ware ceramics and two bronze objects (Pohjakallio 1978a: 23; Salo 1984; Meinander 1985; Lehtosalo-Hilander 1988: 130; Soikkeli-Jalonen 2021). During the authors’ research project, a bone from Kuusikkolahdenniemi was also sent to be radiocarbon dated; the results of this will be published later in a separate study about the site (for the most recent osteological analysis of Kuusikkolahdenniemi, see Salo 2021).

Until the discovery of Puijonsarvennenä, this tradition of burial customs in interior Finland seemed to come to a halt in North Savo at the beginning of the Iron Age. Even though



Puijonsarvennenä is dated to the very early Iron Age, there could also be similar sites from the later periods, since they are known from the neighbouring areas of North Savo. For example, the site of Konnevesi Majakangas in Central Finland, dated to the Late Roman or Migration Period, the Siimarinsaari site, also in Konnevesi, and one burial in the Early Roman–Migration Period cemetery in Välikangas, Oulu, bear some resemblance to Puijonsarvennenä.

Majakangas was originally found during metal detecting in 1998 and excavated in 2003 (Ukkonen 2003; Vanhatalo 2005). Several iron artefacts were found from the burial including a spearhead, an arrowhead, a seax or dagger, a knife, and an axe as well as a bronze ring and fragments of bronze. In addition, the finds included several fragments of arrowheads made of bone, which resemble those from Puijonsarvennenä. Like Puijonsarvennenä, the burial was not visible before the removal of the topsoil, and there was no distinct stone setting placed on top of the burial.

According to Vanhatalo (2005: 97, 99), the bone arrows could have been used for hunting birds or animals for fur, and the knife would have been suitable for handling animal pelts. The connection of the burial with fur hunting is further supported by the osteological material of the site, which differs from Puijonsarvennenä by being more numerous and by including more animal bones identified to a species. Most remarkably, the burial seemed to have included a dog and a pine marten (*Martes martes*) pelt. The only bones identified as being from a pine marten were from the skull, the lower parts of the legs and from the tail, interpreted as originating from a pelt with the skull, paws, and tail left intact (Ukkonen 2003).

Also, in Puijonsarvennenä, a fragment of bone belonging to an animal of the family Mustelidae, possibly a pine marten, was identified. In addition, a hair belonging to an animal of the Mustelidae family was detected in the soil from the burial context. There was also a bear hair, which could indicate a bear pelt, even though no osteological remains of a bear were identified. The third phalanges of a bear paw, i.e., the remains of claws, have commonly been found in Iron Age cremation cemeteries under level ground in Finland and in burials in

northern Europe in general, indicating the cremating of bear pelts in the pyre (e.g., Kirkinen 2017, with references; see also Wikborg 2005a: 171; 2005b: 141–4).

Välikangas includes nine inhumation burials, in addition to three cremations, and only in one cremation burial were there bone artefacts (two combs and at least five arrowheads). The cremation burial seemed to be a double burial of two women (at least one woman was confirmed in the osteological analysis), with an iron knife and asbestos-tempered ceramics as grave goods (Mäkivuoti 1987; 1988; 1996; Ikäheimo et al. 2004). There has been some speculation about bone arrowheads often being found especially in women's graves during the Migration Period (Ikäheimo et al. 2004). Since the sex of the person buried in Puijonsarvennenä could not be confirmed in osteological analysis, there is insufficient data to contribute to this discussion. However, issues related to different identities, and their relation to the livelihoods and agency of the people in their local communities will most likely be addressed in future archaeological research of Early Metal Period–Iron Age interior Finland.

As Janne Ikäheimo (2019: 37) has remarked, archaeological interpretation should be more about what happened in the local community, and what did they do with the things they had, rather than focusing on the mobility and origins of objects. Most probably, the iron objects in the Puijonsarvennenä burial were obtained through trade or exchange, since the dating of the site predates known ironworking sites in the vicinity. Precise proof cannot be provided if it was furs that were traded, but a lot of evidence seem to indicate that. Hunting for furs is evidenced by the bones and hair of a Mustelid animal, bone arrowheads suitable for hunting, and a knife which could be used for skinning and working on pelts. Possibly the iron spearhead was a token received in trading pelts, or was somehow an important personal object, and was therefore included in the burial.

While the archaeological material does not provide a great deal of information about the identity of the person buried in Puijonsarvennenä, that individual's death clearly meant something for the surrounding community, since someone took the time to cremate the body, perform the

burial with (presumably) the usual rites, and construct the stone structures in a stunningly beautiful place on a cape visible from one of the most important waterways in the Kuopio area.

## CONCLUSIONS

Archaeological excavations confirmed that the site of Puijonsarvennenä was a single cremation burial, with objects, set inside a stone structure, but not actually covered by stones, situated immediately under the turf. Based on the results of osteological analysis, radiocarbon dating, analysis of the finds, and microscopic analysis of the soil samples, as well as observations made during the excavation about the features of the structure, it can be concluded that the deceased person was most likely a member of a local hunter-gatherer population who engaged in hunting and possibly in trading furs.

The burial structure represents a tradition typical of the Early Metal Period–Iron Age population of interior and northern Finland. Similar low cairns and stone structures with cremation as the preferred burial ritual are known from a large area, from the Bronze Age until the Late Iron Age. The presence of asbestos-tempered ceramics also connects the burial to the local cultural traditions of interior Finland.

Since the cairn was totally undetectable in the landscape before the excavation, it is likely that it would not have been found, or excavated, without the coincidence of the metal detector hobbyist and the authors' survey project happening to be in Kuopio at the same time. Archaeological sites like Puijonsarvennenä are hard to find while surveying, nor are they necessarily noticed during construction work or forestry performed with heavy machinery. It is likely that there are more burials resembling Puijonsarvennenä that are still undiscovered, as well as similar sites already destroyed by the increasing building activities on the shores of Kallavesi.

In addition, there are several instances of stray finds from the areas of interior and northern Finland that could have belonged to a burial context, but the finding spot has never been archaeologically examined. If anything, the Puijonsarvennenä burial site is a reminder that a lot of undiscovered archaeological potential

regarding the Early Iron Age exists in North Savo and the whole interior part of Finland.

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## NOTES

<sup>1</sup> The lyrics of the song “Kallavesj” were written in the local North Savo dialect by diplomat and lawyer Aaro Jalkanen (1875–1960) in 1916. The words were set to the melody of an Estonian song composed by Johannes Kappel (Juntunen 2015).

<sup>2</sup> “Näyttää varmalta, ettei esiroomalainen rautakausi ole ollut Suomessa mitenkään merkittävä. Sen jälkeinen aika merkitsee ratkaisevasti uutta: kiinteän talonpoikaisväestön alkua, metsästäjä-kalastaja-asteen vähittäistä häviämistä ja maan lopullista kolonisaatiota.” Translated by L. Kunnas-Pusa.

<sup>3</sup> The mapping and measuring were done with University of Helsinki GPS equipment (measuring accuracy of < 5 cm, coordinate system ETRS GK27, and elevation system N2000).

<sup>4</sup> The dating report is included in the research report of the excavation (Knuutinen & Kunnas-Pusa 2022).

<sup>5</sup> A Lapp cairn is a term used in Finnish archaeology to designate Early Metal Period–Iron Age cairns situated in the interior and northern part of Finland. In comparison to the “real” Bronze Age cairns of coastal Finland, the Lapp cairns are often considered to be smaller and more ambiguous. The term has been used from the 18th century onwards. Since it seems to connect the cairns with the Sámi, previously referred to as Lapps (now considered derogatory), the discussion about the ethnicity of the builders of these structures, as well as the conceptualization and categorization of them has a long and winding history (see e.g., Okkonen 2003: 44–50; Saipio 2015; 2018).