



Finds from the northern shore of Lake Võrtsjärv

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INTRODUCTION

From the bottom of Lake Võrtsjärv, various items (a stone axe, fragments of clay vessels, iron spearheads, coins, etc.) of different ages (starting from around 1300 BC¹) have repeatedly been found. This has mostly occurred during times when the water level of the lake has been lower than usual. The majority of the finds were collected in the summer of 1996 and in November 2015 on the northern shore of Lake Võrtsjärv, close to Vaibla village (Kriiska 1998b; 2016). A significant part of these items has been published already (Kriiska 1998a; Kriiska & Dreving 2016; Tvauri 2014, 206).

In this article, we provide a brief overview of the artefacts which were also obtained from the vicinity of Vaibla in November 2022. Additionally, a wooden object which was found there in 2015 (Fig. 1) is published now as well. This was excluded from the article that compiled the contemporary finds (Kriiska & Dreving 2016) because at the time of its writing, the wooden sample was still undergoing dating. Now, there is a suitable opportunity to publish this find along with the result of the radiocarbon dating.

WOODEN POLE FOUND IN 2015

Wood is an important material in the context of the finds collected from Lake Võrtsjärv. It has been preserved as handles or parts of handles of several tools (Kriiska & Dreving 2016), and as a rare occurrence, a piece of ash tree had even survived inside the socket of a Middle Bronze Age stone axe (Kriiska 1998a).

During fieldwork conducted in 2015, among other finds, a likely 2.35 m long pole, presumably made of spruce, was discovered in shallow water on the sand (Fig. 1: 1; Fig. 2: 3). One end of the pole is carved and has a rounded heading (Fig. 2: 1–2). A wood sample taken from the pole was dated using the conventional radiocarbon method at the Laboratory of Isotopic

¹ The oldest dated object is a stone axe, with a wooden shaft fragment found in its socket, the dating obtained from wood was 3060±85 BP (Ua-12770) (Kriiska 1998a, 154).

Research of the Herzen State Pedagogical University of Russia, resulting in 454 ± 30 BP, which corresponds with 95.4% probability to 1415–1476 cal AD.²

The purpose of the pole remains speculative for us, but considering the ethnographic descriptions of fishing methods (Ränk 1934, 158–159), there is a high probability that it was used as a stake to anchor a net to the lake bottom during nearshore fishing or to mark a line of nets.

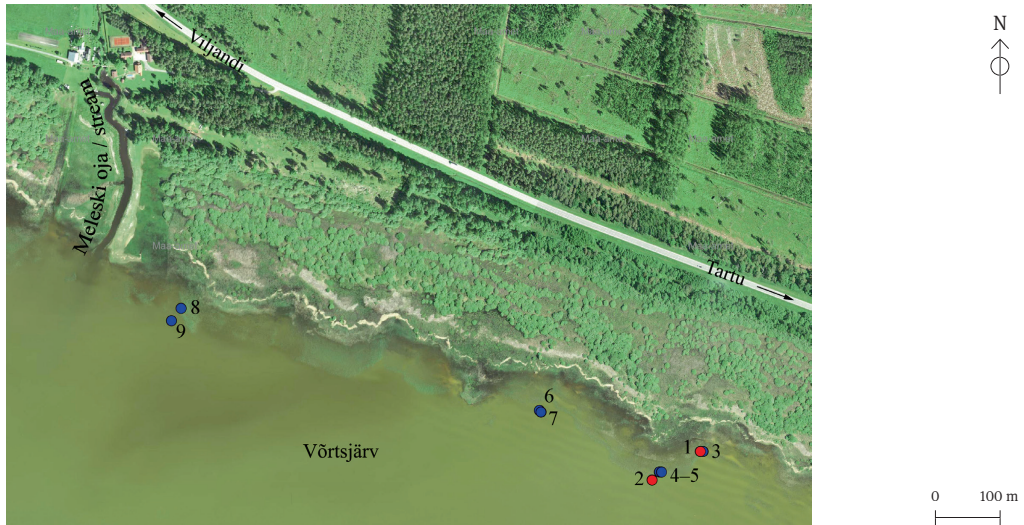


Fig. 1. The find locations of 2015 and 2022 on the northern shore of Lake Võrtsjärv. Locations discussed in this article are marked in red. 1 – a wooden pole (fishing net stake), 2 – finds discovered in 2022, 3 – a knife-shaped javelin head (11th to 13th century AD), 4–5 a three-pronged iron point and an iron ring, 6 – an iron axe, 7 – an Aspelin 1651 type spearhead (8th to 11th century AD), 8 – a Petersen E-type spearhead (9th to 10th century AD), 9 – two Roman coins (4th century AD), a bronze plate, a silver coin (modern era), two iron rings, a bronze ring with an iron fastener, a knife, and a fragment of a knife.

Jn 1. 2015. ja 2022. aasta leiukohad Võrtsjärve põhjakalda lähedal. Punasega on markeeritud käesolevas artiklis käsitletud kohad. 1 – puuvai (kalavõrgu teivas), 2 – 2022. aastal avastatud leiud, 3 – noakujulise lehega viskeodaots (11.–13. sajand), 4–5 kolmeharuline raudotsik ja raudrõngas, 6 – raudkirves, 7 – Aspelin 1651 tüüpi odaots (8.–11. sajand), 8 – Peterseni E-tüüpi odaots (9.–10. sajand), 9 – kaks Rooma münti (4. sajand), pronksplaat, hõbemünt (uusaeg), kaks raudrõngast, rauast kinnitiga pronksrõngas, nuga ja noa katke.

Base map / Aluskaart: Estonian Land Board / Maa-amet; tehniline teostus / technical implementation Ragi-Martin Moon; basic data of finds from the year 2015 / 2015. aasta leidude alusandmed Kriiska 2016; Kriiska & Dreving 2016

FINDS FROM THE YEAR 2022

In November 2022, the water level of Lake Võrtsjärv was low once again, and close to the place where previous finds were made (Fig. 1: 2), a new set of artefacts emerged: lead bullets, lead pieces, a piece of lead ingot, a spearhead, a grinding stone, and sherds of clay vessel. These were collected from the fine grey sand on an area measuring 60×40 cm and the depth of 10 cm.

41 round **lead bullets** (Fig. 2: 10) were found. Out of these, 40 have a diameter of 11.11–12.92 mm, weighing 7.4–11.5 g, and one has a diameter of 9.9 mm and weighs 4.3 g. The bullets have been cast in a two-sided mould. This can be observed from the small ridges present on them, caused by the mould halves that did not fully meet. Some of the bullets also have sprues and marks left from their removal (including cutting marks) as well as cavities formed

² SPb-3037, calibrated using OxCal 4.4.4 programme (Bronk Ramsey 2021) with IntCal20 atmosphere curve (Reimer *et al.* 2020).



Fig. 2. Finds collected from the northern shore of Lake Võrtsjärv in Vaibla. 1 – a wooden pole, 2 – carved heading of a wooden pole, 3 – the wooden pole in situ in shallow water, 4–5 – fragments of a clay vessel, 6 – a grinding stone (five fragments from the same item), 7 – piece of a lead ingot, 8–9 – lead pieces (scrap metal), 10 – round lead bullets, 11 – an iron spearhead.

Jn 2. Võrtsjärve põhjakalda lähedalt kogutud leiude. 1 – puuvai, 2 – puuvaia voolitud ots, 3 – puuvai in situ madalal vees, 4–5 – savinõukillud, 6 – lihvimiskivi (viis fragmenti samast esemest), 7 – pliikangi tükk, 8–9 – pliitükid (vanametall), 10 – ümmargused pliikuulid, 11 – odaots.

(Finds of the year 2022 / 2022. aasta leiud TÜ 3139: 46, 48, 50, 44, 43, 1–41, 51.)

Photos / Fotod: Irina Khrustaleva, Aivar Kriiska

on the surface of the bullet during the casting process.³ The bullets are quite similar, which suggests that they might have been cast in the same mould. For the smaller-sized bullets, casting defects seem to occur. The bullets originate from the late Middle Ages or the Early Modern Period, somewhere within the range of the 16th to the 18th centuries AD.

From the same area, a lead stockpile was also found: (1) a **piece of lead ingot with trapezoidal cross-section** measuring $57.8 \times 51.02 \times 42.36$ mm and weighing 1.26 kg (Fig. 2: 7), and (2) three **amorphous pieces of lead** (Fig. 2: 8–9; TÜ 3139: 45). There are no reference points for dating these finds individually, just like for the sandstone **grinding stone** fragmented into five pieces ($14.9 \times 5.2 \times 4.3$ cm; Fig. 2: 6).

³ For comparison see database 'Shot (including musket balls, cannon balls and bullet moulds)'.

Nine **fragments of pottery** found there originate from a single vessel. The vessel with a slightly outward-turning rim and a bit thickening edge was made of clay mixed with rock debris, combining coil technique and finishing on a hand-rotated wheel. The maximum wall thickness of the vessel is 10.8 mm, and the maximum rim thickness is 9.9 mm. The rim shape of the vessel resembles mainly the upright rims of Late Iron Age hand-made pots (which probably imitate wheel-thrown pottery) found in Western and Northwestern Estonia (Kivimäe *et al.* 1998, 40–41; Tvauri 2005, 72–79). Considering the shape of the pot rim and the knowledge that the use of hand-rotated wheel for pottery making began in Estonia in the early 11th century (Tvauri 2005, 39), the Vaibla vessel can be dated to the Final Iron Age, from the beginning of the 11th century to the beginning of the 13th century.

The **iron socketed spearhead** with a pointed-oval-shaped blade (Fig. 2: 11) is 29 cm long (with the blade measuring 16 cm and the socket is 13 cm), the socket's diameter is 4 cm, and the blade's maximum width is 3.7 cm. The socket has a nail hole. Similar-shaped spearheads have been dated in Estonia from the late Pre-Roman Iron Age (250 BC – 50 AD) to the pre-Viking Age (550–800 AD) (Tvauri 2014, 173, fig. 158; Tvauri *et al.* 2018), but individual specimens have been found even within the context of historical times (Kree 2011, 11).

DISCUSSION AND CONCLUSION

In November 2022, 41 lead bullets, a piece of lead ingot, three amorphous lead pieces, nine sherds of a clay vessel, a grinding stone (fragmented into five pieces), and an iron spearhead were found on the shore of Lake Võrtsjärv. Although the items were found in a very small area, they have not remained at the lake bottom simultaneously. A single assemblage could include lead bullets and probably a piece of lead ingot, amorphous lead pieces (likely present as scrap metal), which have sunk to the lake bottom in the late Middle Ages or Early Modern Period, sometime between the 16th and the 18th centuries AD. For making the bullets, lead as raw material was transported in chunks to the forces and garrisons (e.g. Dvurechensky 2005), and the connection between the bullets and lead pieces has been observed in various archaeological contexts (e.g. Menshikov 2018, 40). Thus, it can be assumed that the Vaibla finds constitute a stockpile of lead intended for firearm⁴ ammunition and bullet production, which has likely been lost in the lake. However, it is impossible to determine whether it belonged to a soldier or a hunter.

Round lead bullets have remained in ground over the centuries as they were extensively used on Estonian lands. Such bullets have been found in various contexts during archaeological excavations, especially in fortification structures and in their vicinity (e.g. Valk 2022, 212; Valk *et al.* 2022, 123). However, they have also been discovered in graves, both as remnants within human bodies (Malve *et al.* 2022, 252) and as grave goods (Malve & Tvauri 2022, 241).

A considerable number of lead bullets are found during metal detector searches, and often these end up in private collections, and/or the find locations are inadequately (if at all) documented. Although this constitutes a substantial category of finds, it is essential, particularly for bullets, to consider their find context, abundance, the manufacturing and usage marks present (or absent) on the bullets. This type of finds, especially when combined with other historical and archaeological sources, can contribute significantly to the study of military conflicts (battlefields, troop positions, armament of the troops, firepower, etc.) as well as regional histories. Therefore, lead bullets should be treated with the same scrutiny as any

⁴ Based on the diameter and weight, it is clear that it is not a musket, but the firearm cannot be determined more precisely based on the bullets (Nurmi 2011, 162; Miller *et al.* 2019).

other archaeological material. Their discovery locations must be accurately documented, and the bullets should be stored in the collections of museums and research institutions. The value of lead bullets as a historical source has been highlighted in various publications (e.g., Parkman 2019; Adamov 2022 among many others) as well as on the websites of archaeological and military history related companies and organizations (e.g., Foard 2009). The need for their documentation and collection is clearly and unequivocally expressed in a relevant article by the Irish archaeology company Rubicon Heritage Services Ltd: ‘One of the most important aspects of lead bullet analysis is knowing where the ball has come from. If the exact find spot of each bullet is not carefully recorded archaeologically, a valuable piece of information is destroyed. The location of bullets on a battlefield provides us with a unique plan of how a fight progressed; it can reveal who fought where, what type of soldiers they were, and where the fighting was hardest. Often this information can completely re-write previous interpretations, which were based solely on historical accounts. If the lead bullets are removed from their context without proper recording all this information is lost.’ (*Biting the Bullet: The Archaeology of ‘Musketballs’*).

Slightly older than the described collection of lead finds is a spruce wooden pole with a carved end, likely used for securing or marking fishing nets, which was discovered near the same location in 2015. It dates back to the Middle Ages, to the 15th century AD.

Fragments from a clay vessel originate probable from the end of the Iron Age, somewhere in the range from the beginning of the 11th century to the beginning of the 13th century. The iron spearhead is tentatively dateable. It has analogues from the latter part of the Pre-Roman Iron Age to the pre-Viking Age, approximately from around 250 BC to 800 AD. However, the historical era is not ruled out either.

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Databases

Shot (including musket balls, cannon balls and bullet moulds). Created on 25th May 2016 by Thomas Flynn, last edited on 21st November 2019 by Robert Webley. <https://finds.org.uk/counties/findsrecord-ingguides/shot/> (last accessed 11.08.2023.)

LEIUD VÕRTSJÄRVE PÕHJAKALDALT

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Võrtsjärve põhjast on korduvalt leitud erinevaid ja eriaegseid esemeid. Enamasti juhtub see aegadel, mil järve veetase on tavalisest madalam. Arvukamalt koguti leide 1996. aasta suvel ja 2015. aasta novembris Võrtsjärve põhjakaldalt Vaiblast. 2022. aasta novembris oli veetase taas madal ning seegi kord tehti Vaiblast uusi avastusi. Käesolevas artiklis antakse lühike ülevaade ühest varem avastatud puuesemest ning hulgas hiljuti päevavalgele tulnud asjadest.

2015. aastal leiti Vaiblast (jn 1) tõenäoliselt kalavõrgu kinnitamiseks või tähistamiseks kasutatud voolitud otsaga kuusepuust vai (jn 2: 1–3). Radiosüsiniku dateeringu kohaselt pärineb see 15. sajandist.

2022. aastal koguti eelneva leiu naabrusest Võrtsjärvest kalda lähedalt järve põhja hallikast liivast (jn 1) 41 pliikuuli (läbimõõt 9,9–12,92 mm, kaal 4,3–11,5 g), 1,26 kg raskune pliikangi tükk, 3 pliitükki, 9 savinõukildu, lihvimiskivi (lagunenud viieks tükiks) ja rauast odaots (jn 2: 4–11). Kuigi leiud koguti väikeselt alal (60 × 40 cm, sügavus 10 cm) ei ole need kõik jäänud järve põhja arvatavasti siiski üheaegselt.

Ühte kogumisse võiksid kuuluda pliikuulid, pliikangi tükk ja ilmselt vanametallina kaasas olnud pliitükid, mis on järve põhja uppunud keskaja lõpul või varausajal, millalgi 16.–18. sajandil. Tegemist oli tõenäoliselt järve kaotatud tulirelva laskemoona ja kuulide valmistamiseks vajamineva pliitagavaraga.

Üheksa savinõukildu pärinevad kombineeritud linttehnikas ja käsikedral valmistatud savipotist. Vaibla nõu on sarnane hilisrauaaja püstise võrikuga (ja arvatavasti kedrakeraamikast jäljendavate) käsitsi valmistatud pottidele ning dateeritav rauaaja lõppu, vahemikku 11. sajandi algusest kuni 13. sajandi alguseni.

Teravovaalse lehega putkega odaots omab Eestis analooge rooma rauaaja lõpuosast kuni viikingiajani kasutatud otsikutes ja on nende järgi dateeritav pikka vahemikku, u 250 eKr kuni 800 AD, kuid üksikuid eksemplare on leitud ka ajaloolise aja kontekstist.