



Kõrtsikraavi Stone Age settlement site

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INTRODUCTION

Alutaguse Lowland, north from Lake Peipsi, belongs to a region in Estonia where Stone Age is essentially unexplored compared to the southern and northern parts of the country. The exceptions are two Corded Ware culture settlement sites discovered by chance during the excavation of Iron Age barrows in Jõuga (Lõugas & Selirand 1989, 241) and Lemmaku (Aun & Ligi 1986, 358), and relatively recently found Stone Age settlement sites below the waterline of modern Lake Peipsi (Roio *et al.* 2016). However, even these sites have been studied only briefly and sporadically. No pre-pottery Stone Age sites are known from the area (Fig. 1A).

The fieldwork carried out in autumn 2019 yielded the first results to fill this gap in research. With the words ‘the chances of finding a Stone Age settlement here are zero’, flint artefacts, which at first glance could be dated to the pre-pottery period of the Stone Age, were found from the edge of the wetlands of the Alliku village. Only surface finds were collected at the site and no ground works were applied. In the following, we present the preliminary results of the research, which add new knowledge not only on local, but also on the wider Baltic Sea region level.

LOCATION AND GEOLOGICAL BACKGROUND

The Kõrtsikraavi Stone Age settlement site, situated on the right bank of the Kõrtsikraav ditch, flowing to the Rannapungerja River, is located on the part of the small road connecting Alliku (in 4.5 km to the northeast from the settlement) and Jõeääre (in 1.3 km to the west from the settlement) villages (Fig. 1B). Kõrtsikraav is an artificial ditch made to straighten a small river which was situated there. The altitude of the area where the site was found is ca. 43–44 m a.s.l. Its northern edge follows an elongated hummock with the maximum altitude of 49.9 m a.s.l. that stretches from the northwest to the southeast (Fig. 1C). This hummock must be the southernmost point of one of the systems of kames, which form a curved ridge from southwest to northeast for about 1200 m. The southern part of this area is boarded by a wetland jutting into it by a small promontory of about 20 m. The length of the promontory from northwest to southeast is about 110 m.

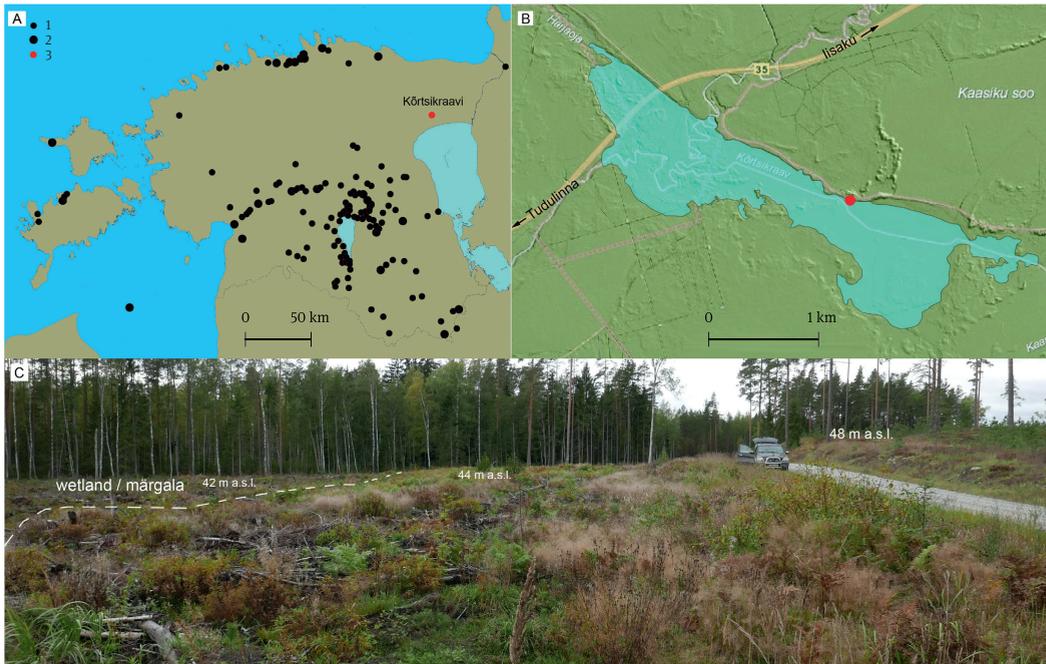


Fig. 1. Location of the Kõrtsikraavi settlement site. A – Distribution of pre-pottery Stone Age sites in Estonia: 1 – one site, 2 – several sites, 3 – Kõrtsikraavi settlement site. B – Simple paleoreconstruction of the lake showing the location of Kõrtsikraavi (red point). C – View of the Kõrtsikraavi settlement site from the east.

Jn 1. Kõrtsikraavi asulakoht. A – Eesti keraamikaelse kiviaja asulakohad: 1 – üks asulakoht, 2 – mitu asulakohta, 3 – Kõrtsikraavi asulakoht. B – Lihtne paleorekonstruktsioon järvest, mille kaldal paiknes Kõrtsikraavi asulakoht (punane punkt). C – Vaade Kõrtsikraavi asulakohale idast.

Map with pre-pottery Stone Age sites / Keraamikaelse kiviaja asulakohtade kaart: Sikk et al. 2020

Base map for paleoreconstruction / Paleorekonstruktsiooni aluskaart: Estonian Land Board / Maa-amet

Drawing / Joonis: Irina Khrustaleva; Photo / Foto: Aivar Kriiska

The Alutaguse Lowland has the highest proportion of forested lands in the entire Lake Peipsi region with prevailing pine forests on sandy and loamy soil (Jaani & Raukas 1999, 10). About 50% of the area is occupied by mires and bogs, with their highest proportion in the drainage area of the Rannapungerja River (Karukäpp & Raukas 1999, 14). A number of small lakes belonging to the Lake Peipsi basin are situated in Alutaguse as well and most of them are less than 1 km² in area. Post-glacial relief characterizes this territory: end moraine and esker system, kame fields and continental dunes, drumlins and ancient coastal ridges (Karukäpp & Raukas 1999, 14).

Glacial Lake Peipsi started to form after the retreat of the continental ice from the Haanja-Luga marginal deposits in the southern part of the lake depression about 12700 calBC (Rosentau *et al.* 2004, 299; Rosentau *et al.* 2007, 211). Its level and area gradually increased in the process of the continental ice melting and opening new territories. The studied area to the north from modern Lake Peipsi became ice-free during the Pandivere-Neva stage about 11300 calBC (Rosentau *et al.* 2007, 211), and Glacial Lake Peipsi occupied all the territory until the Baltic Ice Lake. However, the history of the lake water regime is difficult to reconstruct because of its lack of open connection to the Baltic Ice Lake and due to uneven glacial rebound in different areas (Rosentau *et al.* 2004, 299). It was only detected that after the beginning of

the decrease in the water levels, its minimal value in Lake Peipsi established ca. 9000–8400 calBC (Hang *et al.* 2008, 13). Despite a long research period, much of the history of the Lake Peipsi region, formation of the modern relief and transformation of the water system remains unresolved (Rosentau *et al.* 2004, 300). Obviously, there may have been residual lakes on the territory that was freed from the glacial lake. However, the data about their number, location, or time of existence is absent. Based on the positioning of the Kõrtsikraavi site, we suppose that it was situated on the bank of one of such lakes.

According to the altitude position of the Kõrtsikraavi site as well as the location of wetland on its southern border, we tried to reconstruct the water body that had possibly existed there (Fig. 1B). The maximum level of the water surface is defined at 43 m a.s.l. In the result, based on the elevation data and modern forms of the relief, a lake elongating from northeast to southwest was outlined. Its size seems to be around 4×1 km. The proposed reconstruction is preliminary and schematic. The glacial rebound, but also peat growth were not taken into account. The southwestern and western borders of the lake reconstructed by us may have, in reality, other outlines, as they are quite difficult to determine due to the lack of pronounced landforms. It is possible that the lake may not have been isolated, but was instead one of the elements in the lake system now replaced by the Kaasiku Swamp. However, more accurate data can only be obtained by special research.

FINDS

A lot of flint debris and small fragments of burnt bones were found in a sandy area with a disturbed soil layer located at the place of the felled forest. Finds were mainly collected from the territory to the south from the road and only two were found to the north of it. According to the distribution of surface finds, the supposed area of the site can be about 3200 m².

Whilst collecting surface material, an artificial selection of finds took place to some extent as there was a desire to collect 'representative' items of different types as well as raw materials. For this reason, the statistics data below is not fully objective, but the distortion is not very significant. Altogether, 116 finds were collected, among which burnt bones (31) and stone tools and debris (85) were present. Stone artefacts (73% of the finds) are represented by objects of flint (69% of the finds), quartz (1%) and other types of stone (3%). The ratio of flint to quartz finds is 99% and 1%. Based on the comparison with flint raw material of different origin, two types of it can be visually determined among the Kõrtsikraavi site finds: Carboniferous grey (65), rare grey-pink (5), brown-pink (1) or brown (3), and Silurian light-grey (6). Silurian flint originates from the Central-Estonian Silurian limestone system with closest sources situated about 30–35 km to the southwest from the site, while the closest sources of Carboniferous flint are known now in the Quaternary moraine sediments located 250–300 km to southeast, on the territory of Russia. Visual determination of flint raw material may contain (minor) mistakes, as some samples are very close to both flint types.

Silurian flint is represented by one small (2.4×2 cm) proto-core and five small (max 2.6 cm) flakes. The collection of Carboniferous flint finds consists of 45 flakes (Fig. 2: 10–11), 22 blades and their fragments (Fig. 2: 6–9), 6 tools (Fig. 2: 1–5) and one core. The ratio of flakes to blades is 69% to 31%. In seven cases (for 2 flakes, 1 blade and 4 fragments of blades) the reduction technique with organic or soft-stone hammer can be determined, and the bipolar knapping method for two other flakes (Fig. 2: 11). One multiple-platform core for producing flakes and blades was found on the site (Fig. 2: 12). Flint tools are represented by three end-scrapers produced from flakes (Fig. 2: 1–3), a point produced from a blade (Fig. 2: 4), a retouched

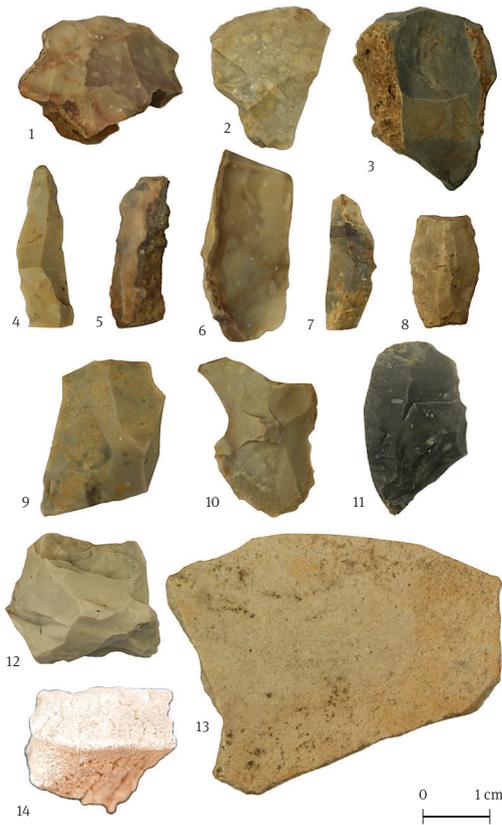


Fig. 2. Assemblage of finds from the Kõrtsikraavi site: 1–3 – flint scrapers, 4 – flint point, 5 – flint retouched blade, 6–9 – flint blade and fragments of blades, 10–11 – flint flakes, 12 – flint multiple-platform core, 13 – stone fragment of polished tool edge, 14 – fragment of radiocarbon dated burnt bone.

Jn 2. Kõrtsikraavi asulakoha leiud: 1–3 – tulekivist kōõvits, 4 – tulekivist teravik, 5 – tulekivist retušeeritud laast, 6–9 – tulekivist laast ja laastu katke, 10–11 – tulekivikild, 12 – tulekivist mitmeplatvormiline nukleus, 13 – lihvitud kivieseme teraosa, 14 – luutükk, millest tehti radiosüsiniku dateering.

(TÜ 2783: 5, 4, 3, 7, 11, 12, 14, 13, 29, 32, 31, 9, 1, 81.)

Photo / Foto: Irina Khrustaleva, Aivar Kriiska

flake and a retouched blade (Fig. 2: 5). One quartz flake was found on the site as well. Three flakes, a fragment of split stone and a fragment of a polished tool edge (Fig. 2: 13) represent objects from other types of stone, mainly quartzite and sandstone.

Alongside processed stones, quite a lot of burnt and crushed granite stones are located in the cultural layer of the site. Future research with documentation of their exact position will help to understand if they form any concentrations or constructions.

DISCUSSION AND SUMMARY

Lithic material of the settlement site seems to be homogenous without any inclusions from other time periods. According to flint finds, the site was preliminary dated to the pre-pottery Stone Age, and AMS radiocarbon dating of a burnt bone of terrestrial mammal (Fig. 2: 14) confirmed this assumption with the date 8610 ± 35 BP¹, 7715–7577 cal BC with a 95.4% probability.²

The dominance of Carboniferous flint in the lithic material of the Kõrtsikraavi settlement site is somewhat surprising. According to previous knowledge, flint from outside Estonia (including Carboniferous and Cretaceous) prevailed only in the early stage of habitation (e.g. Kriiska *et al.* 2017, 9). After that, local Silurian flint has been used more extensively here, both in areas of its natural deposition and in northern Estonia, on sites located in some cases more than in 100 km from its sources (Kriiska & Tvaauri 2002, 30, 44; Kriiska & Sikk 2014, 49). The flow of foreign flint to the inhabitants of the Estonian territory was never interrupted completely

during the Stone Age, and its individual specimens have been found in several Estonian settlements (e.g. Kriiska 2001; Jussila *et al.* 2012, 19; Johanson *et al.* 2014). The higher proportion of Carboniferous flint among other studied pre-pottery Stone Age settlement sites was detected in Kunda Lammasmägi, but since the site has been inhabited repeatedly, the possibilities of interpreting this material are very limited (Sander & Kriiska 2018, 75–76). This kind of flint is also relatively numerous in the Narva culture settlement sites in the eastern part of Estonia,

¹ Poz-117795.

² OxCal v4.3.2 Bronk Ramsay (2017); r5; IntCal13 atmospheric curve (Reimer *et al.* 2013).

dating more than two thousand years later than the Kõrtsikraavi site. It is too early for broad interpretations now, but we can clearly see another network of contacts on this site, not the same as is general for other Estonian sites.

In conclusion, it should be emphasized that the discovery of the Kõrtsikraavi settlement site, first of all, opens a new region in Estonia for further research of the Stone Age. The site was connected to a relatively small post-glacial lake. It once again shows the importance of researching small lakes in Estonia, not only Lake Peipsi or Lake Võrtsjärv. Such successful, but rare examples are illustrated by works on Kunda (e.g. Sander & Kriiska 2018) and Kloostriisaar (Johanson *et al.* 2014). The location of Kõrtsikraavi on the edge of the wetland gives us hope that organic materials, too, may have been preserved there.

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KÕRTSIKRAAVI KIVIAJA ASULAKOHT

Aivar Kriiska ja Irina Hrustaljova

2019. aasta sügisel leidsime kiviaegse asulakoha Alutaguselt Alliku külast Kõrtsikraavi paremal kaldal paikneva soo servast (jn 1). Põlenud loomaluust (jn 2: 14) tehtud AMS dateering andis vanuseks 8610 ± 35 ¹⁴C aastat, 95,4% tõenäosusega 7715–7577 eKr. Arvatavasti paiknes asulakoht praeguseks soostunud väikese järve kaldal (jn 1B).

Metsaraie järel avatud liivapinnasel näha olevad leiud katsid u 3200 m² suuruse ala kõrgusel 43–44 m ü.m.p. (jn 1B, 1C). Kokku koguti 116 leidu: 85 kivist artefakti (73%) ja 31 põlenud loomaluu kildu. 69% kõigist leidudest on tulekivist, 1% kvartsisist ja 3% muudest kivimitest. Kasutatud tulekivist enamik on Karboni, kuid üksikud ka Siluri ajastu ladestutes tekkinud tulekivid. Kõrtsikraavi asub piirkonnas, kus looduslik tulekivi puudub; Siluri tulekivi leviala algab asulakohast u 30–35 km kaugusel edelas ja Karboni tulekivi leviala 250–300 km kaugusel kagus – Lääne-Venemaal.

Leidudest saadi kilde (55; jn 2: 10–11), laaste ja nende katked (22; jn 2: 6–9), nukleusi (2; jn 2: 12) ja üksikuid teisese töötõlusega esemeid (6; jn 2: 1–5). Kohati oli eristatav lõhestustehnika: 7 juhul on kivi töödeldud pehme ja kahel juhul bipolaarse lõök-lõhestusega. Tööriistade hulgas on kolm kõõvitsat (jn 2: 1–3), üks teravik (jn 2: 4) ja üks retušitud laast (jn 2: 5). Muudest kivileidudest on tähelepanuväärselt lihvitud kivieseme teraosa (jn 2: 13).

Vaatamata sellele, et tulekivi visuaalsel eristamisel võib üksikjuhtudel eksida, on Karboni tulekivi osakaal Kõrtsikraavi asulakoha leiuaaineses tähelepanuväärselt suur. Väljastpoolt Eestit pärinevat (Karboni ja Kriidi) tulekivi on senise teadmise kohaselt arvukalt kasutatud ainult varasel asustuse etapil, seejärel on need olnud väiksema tähtsusega materjalid Siluri tulekivi kõrval. Kõrtsikraavi tulekivi on erandlik ja osutab tõsiasjale, et keraamikaelses kiviajal eksisteeris erinevaid kontaktvõrgustikke.