



Archaeological test excavations at the Stone Age site Kunda Lammasmägi in 2013–2014

Kristjan Sander

Tallinna Ülikooli humanitaarteaduste instituut (Tallinn University, Institute of Humanities),
Uus-Sadama 5, 10120 Tallinn, Estonia

Aivar Kriiska

Tartu Ülikool, ajaloo ja arheoloogia instituut, arheoloogia osakond (University of Tartu, Institute of History and Archaeology, Department of Archaeology), Jakobi 2, 51014 Tartu, Estonia; aivar.kriiska@ut.ee

INTRODUCTION

The settlement site of Kunda Lammasmägi is one of the extensively studied Stone Age sites in Estonia. Discovered as early as 1886 by the founder of Estonian scientific archaeology, Professor of Mineralogy at the University of Tartu, Constantin Caspar Andreas Grewingk, (1819–1887) the site has been excavated a number of times (Kriiska 2006, 54). The first test excavations were performed by Grewingk, and in 1933–37, Richard Indreko conducted archaeological studies at a considerably larger scale. During these years, over 500 m² were excavated (Indreko 1936; 1948). In 1949 and 1961, the site was excavated by Lembit Jaanits (1965) and in 1981 by Kaarel Jaanits and Tanel Moora (Jaanits 1989; Moora 1998). In 1992, a part of the excavation of 1981 was reopened to gather samples for radiocarbon dating and other analyses (Åkerlund *et al.* 1996).

The surroundings of Kunda are one of the few parts of Estonia that have been subject to geological research and paleogeographic reconstructions (Orviku 1948; Karukäpp *et al.* 1996; Moora & Moora 1996; Moora 1998). Since the geological conditions are favourable for bone preservation, the area has yielded valuable material for zooarchaeological research (Grewingk 1882, 29–34; Paaver 1965; Lõugas 1996).

The results of previous investigations make it clear that the site was used repeatedly and over a very long period. In addition to Mesolithic finds, both Indreko and L. Jaanits noted sherds of Neolithic comb ware and other finds characteristic to that period (Indreko 1948, 51; Jaanits 1965, 43). The mean values of radiocarbon datings (Table 1) of charcoal and animal bones range from 8700 cal BC to 1900 cal BC (see also Åkerlund *et al.* 1996). Most of the cultural layer has been disturbed and mixed already in the Stone Age and the upper part of the layer has also been influenced by long-term agricultural use. However, the scale of disturbance of the archaeological deposits remained unclear.

It must be noted that in spite of the impressive scale of the earlier excavations, the finds had been collected and registered selectively. For these reasons, the material collected from the site after which the ‘Kunda culture’ was named is of only secondary importance in the current research into the Mesolithic of the eastern part of the Baltic Sea region.

Considering the reasons stated above, new fieldwork was carried out by the authors of the present article in 2013 and 2014. The main goals of the expedition were to document the find density and stratigraphy by modern standards and to resolve contradictions of earlier stratigraphical descriptions.

Table 1. Radiocarbon datings of Kunda Lammasmägi Stone Age settlement site. Calibrated by OxCal v4.2 (Bronk Ramsey 2009); r5; IntCal13 atmospheric curve (Reimer et al. 2013).

Tabel 1. Kunda Lammasmäe kiviaja asulakohalt kogutud radiosüsniku dateeringud. Kalibreeritud arvutiprogrammiga OxCal v4.2 r5, kasutades IntCal13 kalibreerimiskõverat.
Compiled by / Koostanud: Aivar Kriiska, Kristjan Sander

No. / nr	Layer (excavation year, name of the layer, corresponding layer in the profile of the test excavation of 2014) / Kiht (kaevamisaasta, kihi nimetus, vastava ladestuse nimetus 2014. a proovikaevandi profiilis)	¹⁴ C age (BP) / Radiosüsniikuvanus (BP)	Age calibrated by 95,4% probability (cal BC) / Kalibreeritud vanus 95,4% tõenäosusega (cal ekt)	δ13C ‰	Sample no. / Proovi number	Sample material / Proovi materjal	Publication / Kirjandusviide
1.	1992, silt, humic (2) (2014 layer no. 1)	3805±130	2619–1887	-21.00	Ua-3004	Animal bone	Åkerlund et al. 1996
2.	1961, mixed upper layer (2014 layer no. 1)	6015±210	5463–4458	–	TA-12	Elk bone	Liiva et al. 1965
3.	1992, silt, stratified (3) (2014 layer no. 3)	8485±90	7713–7331	-21.60	Ua-3001	Elk bone	Åkerlund et al. 1996
4.	1992, silt, stratified (3) (2014 layer no. 3)	8515±100	7792–7324	-20.74	Ua-3002	Elk bone	Åkerlund et al. 1996
5.	1992, silt, stratified (3) (2014 layer no. 3)	9085±100	8568–7968	-20.77	Ua-3003	Elk bone	Åkerlund et al. 1996
6.	1992, silt, sandy, humic (4) (2014 layer no. 4)	3555±55	2036–1703	-26.62	Ua-3053	White-tailed eagle bone	Åkerlund et al. 1996
7.	1992, silt, sandy, humic (4) (2014 layer no. 4)	8040±75	7179–6693	-21.89	Ua-3052	Elk bone	Åkerlund et al. 1996
8.	1992, silt, sandy, humic (4) (2014 layer no. 4)	8260±90	7501–7075	-22.26	Ua-3000	Elk bone	Åkerlund et al. 1996
9.	1961, undisturbed Mesolithic layer (2014 layer no. 4)	8340±280	8196–6646	–	TA-14	Charcoal	Liiva et al. 1965
10.	1992, silt, sandy, humic (4) (2014 layer no. 4)	9330±120	9120–8288	-20.77	Ua-3005	Elk bone	Åkerlund et al. 1996
11.	2013, surface of the natural moraine	3425±35	1876–1633	–	Poz-64419	Elk tooth	in this publication
12.	Unclear	7385±35	6381–6106	–	KIA-35735	Wild horse bone	Sommer et al. 2011

TEST EXCAVATIONS OF 2013 AND 2014

In 2013, a small test excavation (4 m²) was opened on the western slope of the Lammasmägi hillock between the excavations of 1961 and 1937 (Fig. 1). Four layers of different colour and composition were observed (Fig. 2):

1. dark blackish brown plough layer, 25–30 cm thick (containing a small number of modern finds intermixed with Stone Age artefacts), with a relatively large amount of randomly positioned stones in its lowest part;

2. brown humic and sandy layer, 15–30 cm thick (containing only Stone Age artefacts and in the eastern part of the excavation, large quantities of natural stone);
3. brownish yellow or ochre-coloured sandy layer, 15–20 cm thick (containing Stone Age artefacts and very few natural stones);
4. natural moraine / sand.



Fig. 1. The excavations of Kunda Lammasmägi.

Jn 1. Kaevandite paiknemine Kunda Lammasmäe asukohal.

Map / Kaart: Estonian Land Board / Maa-amet, Kristjan Sander, Kristel Roog

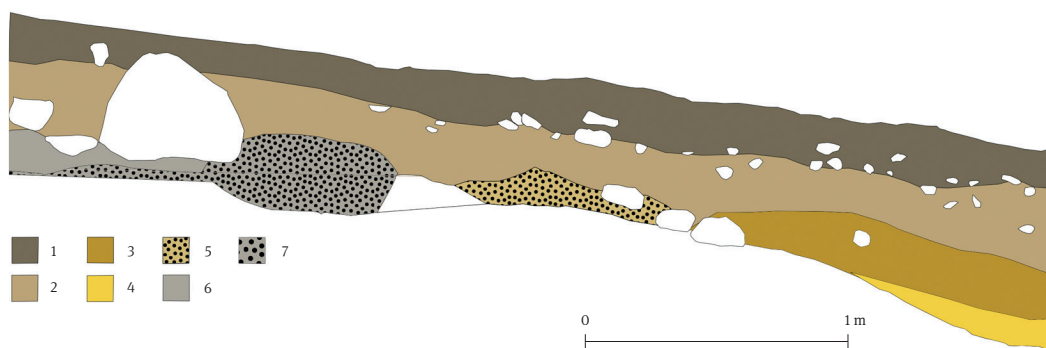


Fig. 2. Stratigraphy of the test excavation of 2013. 1 – dark blackish brown plough layer, 2 – brown humic and sandy layer, 3 – brownish yellow or ochre-coloured sandy layer, 4 – natural yellow sand, 5 – natural sandy scree moraine, 6 – natural silty moraine, 7 – natural silty scree moraine.

Jn 2. 2013. aasta proovikaevandi stratigraafia. 1 – mustjaspruun künniga segatud huumusekiht, 2 – pruun huumusekiht, 3 – pruunikaskollane liivakas huumusekiht proovikaevandi läänepoolses osas, 4 – looduslik liiv, 5 – liivane rähkjas moreen, 6 – savine moreen, 7 – savine rähkjas moreen.

Drawing / Joonis: Evelyn Fridolin, Kristjan Sander

The cultural layer as a whole was 35–70 cm thick. No clear signs of man-made constructions were discovered.

As the results of 2013 were limited and did not provide new information about the deeper layers observed in 1937 and 1961, the investigations were continued in 2014. Namely, a part of the southern profile of the excavation of 1961 was re-opened and to the south of it, 1.2 m² of previously unstudied area were excavated.

Five different layers were observed by colour and composition (Fig. 3):

1. dark brown humic layer, disturbed by ploughing in its upper part, altogether 50–60 cm thick (no plough layer was discernible by colour, in contrast to the excavation of 2013, but stone density was higher at roughly the same depth);
2. blackish brown layer, rich in charcoal and natural iron concentrations, up to 30 cm thick;
3. grey layer of sandy silt (3a) with patches of almost pure sand in its lower part (3b), containing some Stone Age finds, 4–5 cm thick;
4. black sandy silt, rich in charcoal, up to 5 cm thick;
5. natural sandy moraine.

All layers contained many Stone Age artefacts and fragments of unworked animal bone, but the find density of the third layer was clearly the lowest. In the eastern end of the excavation, the upper humic layer became increasingly mixed with sand down to the natural moraine (layers 2, 3 and 4 were missing). The stratigraphy of this part of the excavation is very similar to that of the excavation of 2013, with the dark plough layer missing.

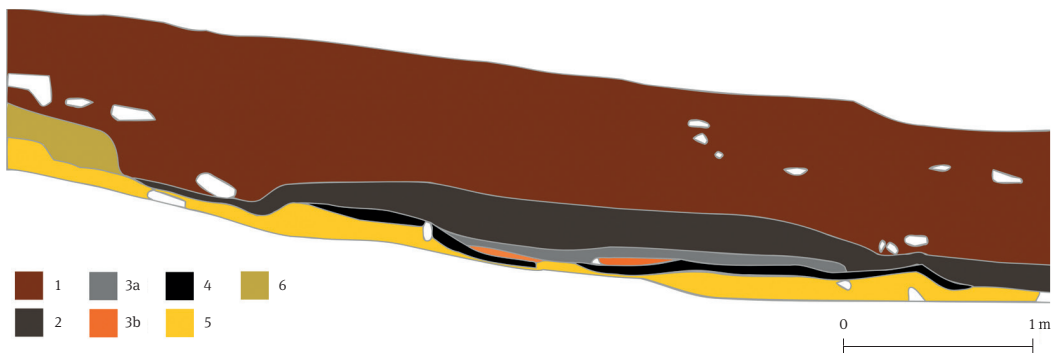


Fig. 3. Stratigraphy of the test excavation of 2014. 1 – dark brown humic layer, 2 – humic layer rich in charcoal, 3a – grey layer of sandy silt, 3b – sandy patches, 4 – black layer of sandy silt rich in charcoal, 5 – natural sand, 6 – sandy humic layer.

Jn 3. 2014. aasta proovikaevandi stratigraafia. 1 – mustjaspruun huumuserikas kiht, 2 – söerohke huumusekiht, 3a – hallikas liivsave kiht, 3b – liivasegune kiht, 4 – must söene liivsave kiht, 5 – looduslik liiv, 6 – liivasegune huumusekiht.

Drawing / Joonis: Kristjan Sander

FINDS AND THEIR CONTEXTS

In 2013 and 2014, 846 (686 in 2013 and 160 in 2014) flint, quartz and bone or antler artefacts (including the part of an arrowhead – Fig. 5: 1 and parts of harpoons – Fig. 5: 2) were collected together with some sherds of pottery, artefacts made of other kinds of stone, and an amber button (Fig. 5: 4). In addition to these, 3602 fragments of unworked animal bone (3413 in 2013 and 189 in 2014) were found. A number of flint and animal bone finds were collected by sieving some of the soil used to fill up the excavation in 1961.

The number of flint pieces from both excavations is 613 (84.3% of flint or quartz finds). 48 flint artefacts had been burnt (7.8%). In addition, 114 quartz finds (15.7% of flint and quartz finds) were collected.

A part of the worked flint originates from Estonia and has been brought to Kunda from at least 50 km to the south, where Silurian flint can be found in Quaternary deposits. A large amount of the flint originates from areas situated hundreds of kilometres east or south of the present Estonian border. The major part of it can be associated with Carboniferous deposits by the characteristic brown and violet colours but some of the finds are of black Cretaceous flint.

The flint has been knapped by various methods, including soft and hard hammer percussion knapping, pressure knapping and combinations of these. Mostly platform technique has been used, less often bipolar reduction. During primary treatment, both blades (Fig. 4: 2, 3) and flakes were knapped off from the cores (Fig. 4: 1). The majority of the discernible tools or their fragments are scrapers, but some inserts and a single burin have been found as well.

23 pottery sherds were unearthed, belonging to two types: the Narva type (Fig. 5: 3) and the Comb Ceramics type. Several of the Narva-type sherds display the U-shaped contact surface of clay bands. An amber 'button' (Fig. 5: 4) and a bifacial flint arrowhead of sharp oval shape (Fig. 4: 4) belong to the Comb Ceramic period.

In the excavation of 2013, pottery sherds were found as deep as 50 cm. The sherds of the Narva type were situated higher than the Comb Ceramic sherds, indicating a mixed cultural layer. As a bone sample collected from the natural moraine was dated to 1876–1633 cal BC by 95.4% probability (Table 1: 11), the whole cultural layer must have been mixed.

In 2014, pottery sherds were found from the three upper layers and only the deepest black cultural layer (number 4) did not

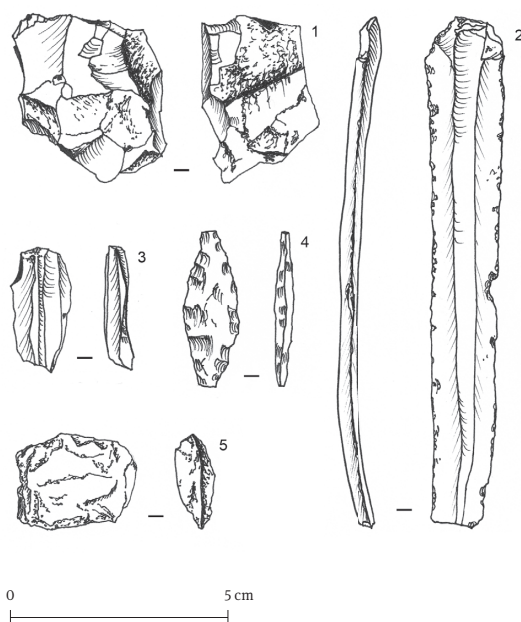


Fig. 4. Flint (1–4) and quartz (5) finds of 2013 and 2014 excavations in Kunda Lammasmägi. 1 – core, 2 – blade fragment, 3 – blade, 4 – arrowhead, 5 – scraper.

Jn 4. Kunda Lammasmäelt 2013 ja 2104 leitud tulekivist (1–4) ja kvartsist (5) esemed. 1 – nukleus, 2 – laastu katke, 3 – laast, 4 – nooleots, 5 – kõõvits.

(TÜ 2268: 786, 337, 435, 676, 400.)

Drawing / Joonis: Kristel Roog



Fig. 5. Finds from 2013 and 2014 excavations in Kunda Lammasmägi: 1 – fragment of bone arrowhead, 2 – fragment of harpoon, 3 – pottery sherd of Narva type, 4 – amber 'button' with V-shaped hole.

Jn 5. Kunda Lammasmäe 2013. ja 2014. a kaevamiste leiud. 1 – luust nooleotsa katke, 2 – ahinguotsa katke, 3 – Narva tüüpi savinõu kild, 4 – merevaigust V-kujulise auguga "nööp".

(TÜ 2268: 295, 678, 25, 675.)

Photos / Fotod: Aivar Kriiska, Kristel Roog

contain Neolithic finds. This is the only layer providing reliable information about Mesolithic use of lithics. The lithic finds of this layer (145) are dominated by flint (115). A little more than half of the flints (59) originate from Silurian deposits (presumably from Estonia) and the rest consist of Carboniferous (48) and Cretaceous (8) flint (no natural deposits in Estonia). 10 pieces of flint had been burnt. 23 quartz artefacts were found.

DISCUSSION AND CONCLUSIONS

The results of the 2013–2014 excavations demonstrate that the actual find density of the site exceeds that of earlier excavations by two orders of magnitude. As the site had been repeatedly inhabited and abandoned and the cultural layers extensively mixed, dating of lithic artefacts is possible only in exceptional cases. The datable finds include the long and wide, presumably Early Mesolithic blade (Fig. 4: 2) and the bifacial arrowhead, typical of the Comb Ceramic complex (Fig. 4: 4).

The presence of Narva-type ceramic sherds had not been observed earlier, although a previous radiocarbon dating hints at this possibility (Table 1).

The presence of Carboniferous flint, most probably originating from the Valdai area east of Estonia (Jussila *et al.* 2012 and references therein), is noteworthy. This makes Kunda Lammasmägi exceptional among Estonian Mesolithic sites (where Silurian flint usually dominates in the lithic material), including the Pulli site (lithic material dominated by Cretaceous flint, Jaanits 1989). However, the presence of Carboniferous flint fits well with archaeological data of the Eastern Baltics where it has been observed in Early Mesolithic and Comb Ceramic sites. This kind of flint is dominant in the lithic material of early Finnish settlements (e.g. Saarenoja 2, Lahti Ristola, Muilamäki) and the Sūļagals settlement site in Latvia, it has been documented to be present in the Pulli site and some other Estonian Mesolithic sites (Loze 1988, 13–17; Jussila *et al.* 2012, 15, 18–19). However, in a number of cases, the archaeological record is disturbed to an extent that makes it impossible to tell whether or not the lithic material in question might have been brought to the site in the Comb Ceramic period (Kriiska & Tvauri 2002, 64). If the deepest cultural layer of Kunda Lammasmägi is undisturbed, then it can be considered the only known site of Estonian Mesolithic with a relatively large percentage (42% in 2014) of Carboniferous flint artefacts in the lithic material.

In the excavation of 2013, the sherds of the Narva type pottery were situated higher than the Comb Ceramic sherds, indicating a mixed cultural layer. As a bone sample collected from moraine (Table 1: 11) was dated to about 1750 cal BC (median age), the whole cultural layer must have been mixed and the artefacts moved from their original places of deposition. If the dated bone can be associated with the Comb Ceramic complex, then it represents the latest dating to that complex in their whole distribution area of Comb Ceramics. Archaeological finds typical of later complexes (e.g. Corded Ware) are completely missing so far.

In 2014, five different layers were discerned. Of these, the two upper layers (number 1 and 2) and the deepest cultural layer (number 4) were rich in finds. The second and fourth layer were rich in charcoal as well. As indicated by pottery sherds and other Neolithic finds, the two upper layers were extensively mixed, and their thickness makes it probable that a significant part of the content of these layers was eroded from the upper slope of the hillock. The extensive disturbance is verified by two radiocarbon datings, both post-dating the introduction of ceramics (median ages 5000 cal BC and 1900 cal BC – Table 1: 1, 2).

Dark layers rich in charcoal were separated by a layer of grey sandy silt (number 3). From this layer, Indreko gathered only a few exceptional finds and L. Jaanits considered it sterile (Jaanits 1965, 42). The fieldwork of 1992 demonstrated the presence of unworked animal bone fragments (Åkerlund *et al.* 1996, 158) and in 2014, both unworked animal bone fragments and Stone Age artefacts were found. However, the considerably lower find density and charcoal presence than seen in other layers hint at lower or missing human activity during the formation of this layer. It was probably formed as a result of extensive natural erosion of silt particles from the higher slope of the hillock. It is still difficult to date this process. The median values of radiocarbon datings range from 8300 cal BC to 7500 cal BC (Table 1: 3–5). These values overlap with some of the datings obtained from layers above and beneath the third layer, indicating that artefacts may have been trampled into the layer later. This is especially true about two Comb Ceramic sherds originating from a considerably later period than presently covered with radiocarbon datings.

Beneath the layer of grey sandy silt, a blackish layer of sandy silt was observed (number 4). This layer has been considered an undisturbed Mesolithic layer (Jaanits 1965, 42). During the excavations of 2014, no signs of later mixing of the soil were observed. Median values of the radiocarbon datings range approximately from 8700 cal BC to 6900 cal BC (Table 1: 7–10). A bird bone obtained from this layer in 1992 was dated to approximately 1900 cal BC (median value; Table 1: 6), leaving open the possibility of later disturbance. However, it is probable that this sample was contaminated (Åkerlund *et al.* 1996, 265–266 discuss the low $\delta^{13}\text{C}$ value, carbon content and physical properties of collagen different from other samples) and the deepest cultural layer formed *in situ*.

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ARHEOLOOGILISED PROOVIKAEVAMISED KUNDA LAMMASMÄE KIVIAJA ASULAKOHAL 2013–2014

Kristjan Sander ja Aivar Kriiska

2013. ja 2014. aastal toimusid Kunda Lammasmäe kiviaegsel asulakohal proovikaevamised eesmärgiga täpsustada muistise stratigraafiat ning leidude hulka ja kooslust erinevates kihtides.

2013. aastal avati 1961. ja 1937. aasta kaevandite vahel Lammasmäe künka läänenõlval proovikaevand kogupindalaga 4 m² (jn 1). Uuringute alal oli võimalik eristada nelja kihti (jn 2): 1) mustjaspruun u 25–30 cm paksune künniga segatud huumusekiht, 2) pruun 15–30 cm paksune liivakas huumusekiht, 3) pruunikaskollane 15–20 cm paksune liivakas huumusekiht proovikaevandi läänepoolses osas, 4) loodulik moreen / liiv. Kogu kultuurikiht oli 35–70 cm paksune. Mingeid selgemaid konstruktsioone ei avastatud.

2014. aastal avati osa 1961. aasta kaevandi lõunaseinast ning uuriti läbi 1,2 m² puutumatu pinnast sellest lõuna poole, jälgides omaaegse kaevandi seinas näha olevaid kihte. Eristati viit kihti (jn 3): 1) mustjaspruun 50–60 cm paksune huumuserikas kiht, 2) söerohke kuni 30 cm paksune huumuserikas kiht, 3) 4–5 cm paksune hallikas liivsavi kiht (3a), mille alaosa oli liivsem (3b), 4) söerikas musta värvi kuni 5 cm paksune liivsavi kiht ja 5) looduslik liiv. Kõik kihid sisaldasid kiviaegseid leide ja rohkesti töötlemata loomaluude katkeid, kuid 3. kihi leiutihedus oli teistest väiksem. Proovikaevandi idaosas paiknes vahetult ülemise huumuserikka kihi all liivasegune pruun huumusekiht ja selle all omakorda looduslik liiv. Stratigraafia oli proovikaevandi selles osas sarnane 2013. aasta proovikaevandile, selgelt ei eristunud vaid künnikihti.

2013. ja 2014. aasta proovikaevanditest koguti 846 tulekivist, kvartsist ning luust ja sarvest esemeleidu (sh nooleotsa katke – jn 5: 1 ja mitmed ahinguotste katked – jn 5: 2), lisaks mõned savinõukillud ja muudest kivi- mitest tööriistad ning 3602 töötlemata loomalu fragmenti. Tulekivileidude koguarv on 613 (84,3% tulekivi ja kvartsileidude koguarvust) ja kvartsileide on 114 (15,7% tulekivi ja kvartsileidude koguarvust).

Mõlemal aastal leitud tulekivist pärineb osa Eesti alalt ning on toodud Kunda Lammasmäe asulasse mõne- kümne kilomeetri kauguselt lõuna poolt, kus paiknevad lähimad siluri lubjakivilademetest pärit tulekivi looduslikud leiukohad. Suur hulk tulekivi pärineb väljastpoolt Eestit. Enamik sellest on tõenäoliselt karboni ladestu kivim, kuid mõnevõrra esineb ka kriidi ladestute tulekivi, mis pärinevad sadade kilomeetrite kauguselt vastavalt kagust või lõunast. Tähelepanuväärne on Valdai kõrgustikul ja selle lähialadel looduslikult esineva karboni ajastu tulekivi rohkus, mille poolest eristub Kunda Lammasmägi uute kaevamiste leiuainese valguses selgelt muudest Eesti mesoliitilistest asulakohtadest. Samas ei ole aga võimalik segatud kihtide puhul eristada erinevate tulekivide hulgalisi erinevusi mesoliitilises materjalis, sest karboni tulekivi oli laialdaselt kasutusel ka neoliitilises kammkeraamika kompleksis ja osa Kunda Lammasmäe tulekivileidudest seondub selle etapiga.

Tulekivi lõhestamisel on kasutatud erinevaid tehnikaid (lööklõhestus, surutehnika, labatehnika) ja neid on ka kombineeritud. Esmase töötlemise käigus on eraldatud nii laaste (jn 4: 2, 3) kui ka kilde. Leiti ka mõned nukleused (jn 4: 1). Kasutatud on nii pehmet kui ka kõva lõhestustehnikat. Tööriistadest esineb leiuaineses enim kõõvitsaid. Leiti samuti üksikuid pistikterasid ja uurits. Savinõukilde leiti 23 ja need kuuluvad kahte tüüpi: Narva tüüpi keraamika (jn 5: 3) ja kammkeraamika. Kammkeraamika kompleksiga seonduvad samuti üks merevaigust V-kujulise auguga „nööp“ (jn 5: 4) ja labatehnikas tulekivist nooleots (jn 4: 4).

Kuivõrd Kunda Lammasmäel on elatud korduvalt ning kihte eri aegadel tugevasti segatud, siis on eri vanusega kivist ja luust esemete ja veelgi vähem tootmisjäakide sidumine erinevate asustusetaappidega võimalik vaid üksikujuhtudel. Narva keraamika aegne asustusetaapp eristati Kunda Lammasmäe asulakohal esmakordselt, kuigi sellele viitas juba üks varasem radiosüsiniku dateering (tabel 1).

2013. aasta proovikaevandis leiti savinõukilde kuni 50 cm sügavusel. Sealjuures paiknesid Narva tüüpi savinõude killud kõrgemal kui kammkeraamika killud, osutades pinnase ulatuslikule segunemisele. Moreenist leitud põdrahambast tehtud dateering, mis andis keskmistatud vanuseks 1750 eKr (tabel 1: 11), näitab, et sellel kohal on segatud kogu kultuurikiht.

2014. aasta proovikaevandis osutavad savinõukillud ja muud neoliitilised leiud, et sellel alal on ulatuslikult segatud kaks ülemist kihti. Nende kogupaksus annab põhjust arvata, et kihtide kujunemisel etendas olulist osa erosioon künka kõrgematest osadest. Seda kinnitavad ka neist kihtidest varem saadud radiosüsiniku dateeringud (tabel 1). Kirjeldatud kihtide all lasunud heledast liivsavist, mida varem on peetud kas väga leiuvaeseks või steriilseks leidudeta saviks, leiti nii loomaluud kui kiviaegseid esemeid. Väiksem leiutihedus ning söesisaldus kui teistes Kunda Lammasmäe kihtides viitavad võimalusele, et selle kihi tekkimise ajal oli inimtegevus tagasihoidlikum või puudus hoopis. Tõenäoliselt on see kujunenud ulatusliku erosiooni tulemusena, mille käigus uhuti kõrgemalt künka laelt moreenist alla peenemat materjali. Selle kihi kujunemise aeg ei ole siiski selge. Radiosüsiniku dateeringud jäävad keskmistatult vanusevahemikku 8300 kuni 7500 eKr (tabel 1). Need kattuvad järgmisest kihist saadud vanusemäärangutega ning osutavad sellele, et esemed ja loomaluud on sattunud

liivsavisse valdavalt erosiooni käigus. Samast leiti ka kaks kammkeraamika kildu, mis näitavad, et ka seda kihti on osaliselt segatud või sellesse leide trambitud neoliitikumis. Heleda liivsavi all paiknenud õhukest tumedat kiviaegsete leidudega liivsavi on seni käsitletud kui puutumatu mesoliitilist kultuurikihti ja ka 2014. aasta kaevamistel ei leitud sealt olulisele segamisele osutavaid märke. Radiosüsiniku dateeringute järgi on alumine kiht kujunenud suhteliselt pika perioodi jooksul vahemikus u 8700 kuni 6900 eKr. Probleemideta ei ole aga ka seegi horisont, sest üks 1992. aasta välitöödel leitud linnuluu on dateeritud aega u 1900 eKr (tabel 1). Suure tõenäosusega on see proov siiski reostunud, millele näib osutavat muuhulgas $\delta^{13}\text{C}$ väärtus ning seega võib arvata, et alumine kultuurikiht on mesoliitiline ja paikneb *in situ*.