Interpretations of animal bones found in Finnish inhumation graves

Hanna Kivikero

This study aims to interpret animal remains in inhumation graves from late Iron Age to the 18th century through six case studies. During this time the religious tradition was in the process of change; the Swedish crusades started to convert the Finns and later on the religion changed from Catholicism to Lutheran. Although, the sample size is limited, the study shows the importance of animal bones in interpreting human mortuary behaviour. The remains from the sites showed that they could be interpreted in multiple ways compared to what was previously done. Animals could be eaten as ritual meals or they could be part of a food offering or sacrifice (also cited as companions). Previous usage of these sites could also bring animal remains into burials, and animals could also be disposed of in separate pits. The difference between the eastern and western burial traditions may not have been as significant as previously thought.

Introduction

Animal bones in inhumation graves are a neglected area of study in Finnish archaeology. To shed a light on the mortuary behavior involving animal bones, I studied six Finnish sites from the time period of late Iron Age (AD ca 800-1200) to the 18th century (Kivikero 2011). The late Iron Age especially is an interesting time period because according to legends, the Swedish started to convert the Finns to Christianity by crusades during that time. The burial tradition also changed from cremation to inhumation. The literate evidence concerning this period is from canonical laws, which were often introduced when problems occurred in the conversion process (Ersgård 1996, s.9). The funeral behavior probably changed also in the 16th century when Lutheranism became the main religion.

There are also regional differences in burial practice regarding the treatment of animals. The western part of

Downloaded by 216.73.216.168 2026-11-10 15:12:15

Finland is thought to have given up the Iron Age way of placing animal remains to the graves when adapting to Christianity (e.g. Pirinen 1991, s.31). In the eastern parts of Finland and Karelia people would be eating meat and meals on graves as late as in the 20th century (Pentikäinen 1990, s.26). The research on Finnish graves from medieval time to the 18th century has relied a long time on the laws written during that time and too little studies based on the archaeological material has been done.

The past research on inhumation graves has mainly focused on material remains and grave orientation (e.g. Cleve 1943; Lehtosalo-Hilander 1982a-c; Purhonen 1998), also in some rare occasions, on the physical anthropology of the deceased (e.g. Formisto 1993). The bottom of the grave is most often the emphasis of the study, although, also the filling and top soil is part of the burial moment and therefore also ritualistic. The osteological material is in a key role when understanding mortuary behavior involving animals.

Material

The material chosen for this study consists of six sites: Luistari, the Church of the Holy Spirit, Finno, the Cathedral of Porvoo, Visulahti and Suotniemi. The location of the sites can be seen in figure 1.

Luistari is located in Eura which is ca 80 km north of Turku (fig. 1). The site has burials dated to late Iron Age and possible medieval burials. There is also a Bronze Age dwelling place and cairns nearby. The burial site was excavated during 1969-1992 and over 1300 inhumation graves were uncovered (Lehtosalo-Hilander 1982a, s.13, 1997, s.389-390). The material from the graves studied during 1969-1979 is published (Lehtosalo-Hilander 1982a-c, 2000), and is used for this study. The material consists of 421 inhumation graves, from those graves 182 were furnished and 239 were unfurnished. The orientation of the graves varied, though the most popular being SW-NE (Lehtosalo-Hilander 1982a, s.19). The bone material was often preserved in the vicinity of bronze. The animal bones seem to have been in better condition than the human bones (Lehtosalo-Hilander 1997, s.392). Out of the 421 studied graves, 91 contained animal remains. Dog (Canis familiaris) bones were found in 13 graves, possibly in one more. The bones found were mostly teeth (dentes) and skull (cranium) parts, in two occasions long bones (ossa longa) were found. Cattle (Bos taurus) was often identified from teeth and skull parts. All in all cattle bones were found in 36 graves. Horse (Equus caballus) remains were most often parts of long bones. Domestic pig (Sus domesticus) is solely identified by the teeth. Goat antelopes (Caprinae sp.), probably sheep (Ovis aries) or goat (Capra hircus), are also mainly represented

Downloaded by 216.73.216.168 2026-11-10 15:12:15

by teeth. In one occasion there are skeletal parts from at least two goat antelopes in one grave. Bovid (Bovidae sp.) teeth were found in nine graves (Lehtosalo-Hilander 1982a, s.39, 309-310).

The Church of the Holy Spirit is situated in the centre of Turku (fig. 1). The church was built in the 16th century for the Finnish speaking part of the parish. The Cathedral of Turku was reserved for the Swedish speakers. The place was studied first time as a trial excavation in 1964 (Laaksonen 1965, s.27) and later on during the years 1983-85 (Laaksonen 1984, 1985; Kykyri 1985). There were over 1100 individuals counted to be buried in the 200 m² area in SW-NE, NE-SW and E-W orientation (Laaksonen 1965, 1984; Kykyri 1987, s.25). Only a sample of the animal bones from the excavation of 1985 was analysed: in total 260 fragments. The bones are mainly from graves, but some are stray finds from the area. Cattle bones were the most frequently found animals in the graves. The anatomical representation of the cattle is emphasized by teeth, forelegs and phalanges. Sheep and/or goat are anatomically evenly distributed with a light increase on vertebra and limb bones. Pig bones are also anatomically evenly distributed. Bones from the feet were found of the mountain hare (Lepus timidus). Northern pike (Esox lucius) and Perciformes (Percidae) were found in two graves, although in few numbers, fowl (Galliformes sp.) in one grave. Carnivore (Carnivora sp.) was identified by hind legs. Cut marks could also be recorded in ten bones (Kivikero 2010c).



Figure 1. Location of the studied sites.

Finno lies in Espoo, some 15 km northwest of Helsinki (fig. 1). During an excavation of a medieval hamlet in 2006, outlines of graves started to appear. Most of the graves were E-W oriented. Only in 12 of the total 43 documented graves bone substance was found (Haggrén et al. 2007, s.11-12, 21, 24). The poor condition of the bones is often explained by the acidity of the soil.

Downloaded by 216.73.216.168 2026-11-10 15:12:15

The bones were decomposed to the degree that they were not identifiable even to class. Animal bones seemed to be in slightly better condition than the two preserved human bones. Animal bones were identified in four graves, cattle being the only species found (Kivikero 2007). The teeth, mandible, humerus and a scapula of cattle could clearly be identified as part of the graves filling (Haggrén et al. 2007; Kivikero 2007).

The churchyard of the Cathedral of Porvoo (fig. 1) lies in the middle of the town of Porvoo. The churchyard was in use of the whole parish and after the war of Gustavus III (1788-1790) the churchyard was extended to prevent overcrowding (Mäntylä 1994, s.438 and literature cited). The last burials to the churchyard were probably done in the 18th century. The excavations conducted on the site in 2007 revealed some 60 graves whereof 53 were investigated (Lagersted 2008). Only the bones found in identified graves were analysed. Pharyngeal bones (os pharyngeum inferior) of the carp family (Cyprinidae) were found in three graves, in two of the graves the deceased was an infant (Salo 2007). Also four graves proved to have bones and scales (squama) of northern pike and perch (Perca fluviatilis) (Kati Salo personal communication 30.10.2010). Animal bones found in the filling were reburied without analysis.

Visulahti lies in Mikkeli which is part of eastern Finland (fig. 1). Excavations were conducted in 1954 and 1955. There are some 30 inhumation burials and five cremations dating to the Iron Age. One of the graves was interpreted to be a probably 1-year old "sacrifice bull" (Leppäaho 1957). Osteological analysis was not conducted on the bones before the spring of 2010. Only the upper torso and skull was preserved. The animal turned out to be over 8-years. In the same burial a human humerus was found and identified during the analysis. The human bone was roughly in the same condition as the animal bones. Animal bones were also mentioned on two other occasions the documentation. One of them was a cattle heel bone (calcaneus) near a stone setting of a grave, and the other horse premolars in the filling of the burial of the "sacrifice bull" (Kivikero 2010b).

Suotniemi and the parish of Käkisalmi was part of Finland before the Second World War. Nowadays the site is part of Russia (fig. 1). From the site four inhumation burials could be identified and one cremation, all probably dating to the Iron Age (Schwindt 1893). Animal remains were found in two, what could be identified as, burial contexts. These included horse teeth, cattle humerus, mammal long bones, zander (Sander lucioperca) and perciform bones, and a merganser (Mergus sp.) bone. The earth surrounding these graves had also

Downloaded by 216.73.216.168 2026-11-10 15:12:15

animal bones, mostly fish in variable species: Zander, perch, roach (Rutilus rutilus), northern pike and salmonids (Salmonidae). From an anatomical point of view, scales were found frequently, as was skull parts, fin bones and vertebra (Kivikero 2010a, 2011).

Methods

The sampling of the sites was done by making a table of all known burial sites in Finland and then consentrating on the sites where osteological studies were made and which showed potential for animal bones. I studied both excavation reports and osteological reports covering late Iron Age to 17th century. Most energy was put to the sites where animal bones were already mentioned in the reports. In other sites the knowledge of animal bones came with analyzing human bones (e.g. in Turku) or by own experience from excavation. Some of sites were excavated in the late 19th century so the standards for reports can vary quite much. This has resulted to the fact that some of the context descriptions are insufficient in modern standards.

From three of the sites no osteological analysis was done before. These three sites were analyzed by the author. After that the bone material was compared with context descriptions to find out the possible interpretations.

Interpretations to date

There are some interpretations already made of the animal bones from some of the sites. The dog bones from Luistari, for example, were interpreted to be followers to the deceased by the basis of their placing in the grave. The dogs were found near the dead: on the foot end of the grave, near the femur or near the shoulder. In one case dog bones were in the filling. The dog was in all these cases thought to be part of the burial ritual. The reason for this interpretation is that in Iron Age religion the grave goods are placed near the deceased to guarantee their passage to the ancestor world where the person continues his/her life as it was when living (e.g. Gräslund, B. 1994, s.17-18).

In Luistari meat production animals, such as cattle, sheep and goat were thought to be part of the burial when discovered near the deceased. They were suggested to be food offerings to the dead. The bones, mostly teeth, found in the top soil and in the filling of graves were explained to be from a nearby dwelling site or from destroyed burials (Lehtosalo-Hilander 1982a, s.39). The teeth were also suggested to have end up in the graves by chance due to later ploughing (Tupala 1999, s.40).

The animal bones from the church of the Holy Spirit were not previously recognised so there are no previous interpretations (Kivikero

Downloaded by 216.73.216.168 2026-11-10 15:12:15

2011, s.47). The cattle and large ungulate bones in Finno were considered to be food offerings to the deceased by their intentional placing in the graves (Haggrén et al. 2007, s.25-26). Some fish bones were found in infant graves in Porvoo but based on the context they were probably not consumed (Salo 2007).

The upper torso of the cattle found in Visulahti was interpreted to be a "sacrifice bull" used in an Iron Age ritual, according the excavation leader. The interpretation is based on the fact that the shoulder blades and the pelvic bones were missing from the individual. On top of that a piece of human cheek bone and teeth was recovered during the lifting of the cattle skeleton. Graves underneath the "sacrifice bull" were destroyed due to digging of the burial (Leppäaho 1957). The interpretation was criticized during the 1990's and proposed that the ritual activity was instead a much later disturbance of the site. Apparently people used to bury their dead animals to the same field as late as the beginning of the 20th century because the soil was suitable. Also the animal bones were suggested to be in much better condition compared with the human bones (Taavitsainen 1990, s.328-330).

In Suotniemi the potsherds and the animal bones recovered near the graves were interpreted to be part of meals on graves (Schwindt 1893, s.151, 153, 188). Eating meals on graves is a well documented action in Karelia from as late as the begin-

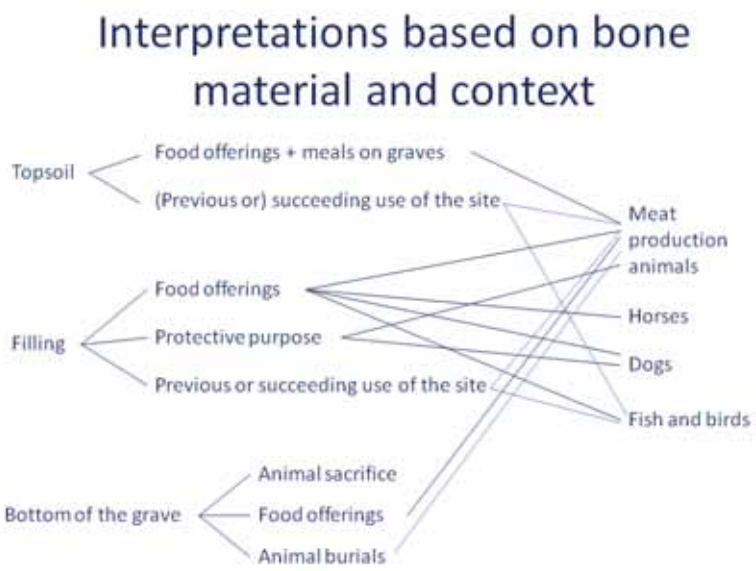


Figure 2.The interpretations made of the animal bones based on the osteological material and context descriptions.

Downloaded by 216.73.216.168 2026-11-10 15:12:15

ning of 20th century. The purpose of the meals is to guarantee a passage for the dead to the afterlife and to communicate with the dead. Meals could be eaten on the graves on funeral days and on special commemoration days (e.g. Honko et al. 1993, s.572; Valk 2001, s.81, 2007, s.142; Vilkuna 1989, s.34-35, 67-68, 71, 77, 261, Pentikäinen 1990, s.26-29).

The occurrence of skull parts and teeth was thought to be evidence of slaughter on site, otherwise only meatier parts would be found. Fish and bird was also thought to be consumed on the graves. (Schwindt 1893, s.151, 153, 188). It is also suggested that the bones found i Suotniemi have no relationship with meals on graves because people would not consume parts of animal head (Taavitsainen 1990, s.330).

Interpretations based on the bone material and contexts

The most logical interpretation, when finding traces of food production animals in graves, is to think of them as food for the deceased. However, these animals might have other functions in funeral rituals. Depending on the context of the bones, the interpretations of the same material are infinitive.

In this chapter I will discuss the interpretations made of the animal bones found in the studied six sites. The interpretations are discussed according to their stratigraphical location in the grave context (fig. 2).

Topsoil: In Luistari there is one radius and several teeth found alongside potsherds in the topsoil of some graves. Also in Finno there was a cattle mandible found in the top layers of one of the graves. In Suotniemi there are teeth and pieces of clay vessels found on top of grave number 4. These could be remains of food offerings or meals on graves. The grave would already be filled and the remains of a feast or offering left on top of the grave.

Most of the bones found in Suotniemi were described to be near graves and scattered around the burial area. The anatomical distribution of the found fish bones depicts fish handling on the site. It is probable that the animal remains found on the site were already in the soil before any burials were made.

Filling: The animal bones and pieces of pottery found in Luistari and Finno could have functioned as food offering to the deceased or as a funeral meal eaten directly at the funeral before the grave is wholly filled. At least in Finno the parts of animals were intentionally placed either on top of a coffin or somewhere in the middle of the grave.

In Finno the bones found in the filling can be regarded as rich of meat from meat production animals, as

Downloaded by 216.73.216.168 2026-11-10 15:12:15

well as in four graves from Luistari. In Luistari most bones found in the filing are teeth, which have not been earlier regarded as suitable for eating purposes (e.g. Tupala 1999). Skulls, however, appear as ingredient for food in cook books from the 17th century onwards (e.g. Sartorio 1616; Winsnes 1845; Östman 1911). Even today sheep and goat cheeks are regarded as a delicacy in the Middle East, so the teeth in the fillings might originate from skulls prepared as food for the funeral. Because of the decomposition processes are the teeth the only bones left. In Luistari some of the graves were dug on top of each other so it is unclear if they are from the filling.

There is also some horse long bones found in the filling of three unfurnished graves in Luistari. The bones are regarded to have high meat percentage and in that case could be interpreted as meals or food offerings. The treatment of horses as food can be debated, especially with graves which are thought to have Christian influences. Eating horse meat is forbidden in the 3rd book of Moses because they are not ruminants or cloven footed (King James Bible). It is, however, unknown if these guidelines were followed in Finland or if the people burying their deceased regarded horse meat as being no different from other meat production animals.

Dogs are often thought to be domesticated for hunting assistance but they could also be domesticated for the reason of easy access food. The dog bones in the filling of the Luistari grave could also be from a food offering.

The long bones, skull parts (also teeth) and whole animals found in the filling could also be interpreted as having a protective use in the grave. The meatier parts of the animals, skulls and whole animals found building deposits have been thought of being offerings to drive away bad spirits, to gain luck, fertility or protection (Carlie 2004, s.206; Falk 2006, s.200-201; Hukantaival 2007b, s.70). Skulls and whole animals were especially used during the medieval period (Falk 2006, s.201). Jaws and skulls placed under the houses were perhaps regarded to preserve life force (Carlie 2004, s.115-116, 135-136; Hukantaival 2007a, s.8-10). These kind of superstitious acts were accepted because they were so called “legal magic” which was performed by everyone (Hukantaival 2007b, s.70).

The bones found in the filling of medieval graves in Finno and Luistari resemble the ones described by Ann-Britt Falk as being typically used in building deposits, that is, teeth from meat production animals. The teeth are probably in this case the only thing left from placing skulls to the graves.

The anatomical representation of the animal bones and crossed tile

Downloaded by 216.73.216.168 2026-11-10 15:12:15

found in the probable grave filling in Turku suggests that the bones were already in the soil before the graves were dug. The bones and the other founds are probably depositions from a time when the site was used for everyday purposes, such as housing. Also the bone material from Porvoo combined with the information of dogs scattering bones in the graveyard could suggest that the bones were household waste from prior utilization stages of the site. The animal bones were scattered around the surrounding soil of the graves in a similar manner to the stray human bones from older graves. It is of course possible that the animals were originally deposited to the older graves.

The fish and bird bones found in Suotniemi were mostly scattered around the site and the anatomical representation of the bones suggests some sort of fish handling. It is therefore possible that the bones derive from a dwelling site. The studies made in Stone Age Zveinieki, Latvia have shown that the people living in there were consciously filling their graves with dwelling place soil (Zagorskis 2004, s.79; Larsson 2010). This kind of action is possible in Suotniemi, although the documentation is not good enough to confirm this interpretation.

In Luistari there is a Bronze Age dwelling place near the inhumation graves. The graves in the outskirts of the burial area are filled with a darker, coal filled soil and it is possible that the soil originates from the dwelling site. The cattle teeth found in the soil are, however, in a similar condition as the bones found in Iron Age and Medieval graves. This interpretation should be thought with some reservation.

Bottom of the grave: The dog bones found in the bottom of the graves in Luistari could be a sacrifice or a companion to the deceased as suggested before. They are often teeth and skull bones with some occasional long bones found in the vicinity of the deceased. As discussed before during the medieval period also whole animals, as well as skulls could be deposited in buildings. Although the dogs in Luistari probably date to late Iron Age, it is possible they too had a protective purpose in the grave. The dogs could have a third purpose in the grave as a food offering to the deceased. There is some, although insufficient, evidence of ritual treatment of dogs and consumption of its flesh in prehistorical sites in Central and Eastern Europe (Simoons 1994, s.200, 232-241 and literature cited).

The bones from food production animals in graves from Luistari are probably food offerings for the deceased, as was interpreted before. The bones could also be for protective purposes. One of the pharyngeal bones found in Porvoo could have been consumed. The bone was found in an adult male grave. The

Downloaded by 216.73.216.168 2026-11-10 15:12:15

rest of the fish bones were from infant graves. Instead of consumption they could be intentionally buried with the child or from the filling soil which had stray animal bones. However, the burials were in most cases in coffins and the soil inside the coffins, where the fish bones would have been found, had no stray bones.

The almost whole animal skeletons found in the outskirts of Luistari were dug in unevenly graves. They are probably deliberately buried animals. The bones were in much better condition than the bones in the Iron Age and Medieval burials which suggests that they were buried in a later date. To solve how much later date, ^{14}C dates should be conducted. The same stands for the "sacrifice bull" found in Visulahti. The pit was unevenly dug but the animal bones were in similar kind of condition than the human humerus from the same context. The human bone is probably from a burial which was disturbed by the digging of the animal burial. Based on the condition of the bones they might be buried almost simultaneously. To solve the matter radiocarbon dating should be conducted on the bones.

Conclusions

Animal bones are as important information source for mortuary behavior as human bones are. That is why more interest should be taken into animal bones in inhumation graves. The animal bones from the whole grave should be documented to find out the purpose of the bones in the graves. Comparing the osteological material to the context descriptions could give a light on the interpretation. The interpretations depend on where in the grave the bones are found.

Even if the sample size is small, this study suggests that animals were integrated to mortuary rituals in western Finland as late as the 16th century. From eastern Finland, where eating meals on graves were recorded as late as the 20th century, the relation between animals and mortuary behavior could not be confirmed. This might be due to the bad preservation conditions of bone in Finland. Because in most of the cases only teeth, the hardest substance of the bone, is preserved, it is impossible to know what parts of the animal was deposited in the grave. Also the poor context descriptions and documentation in some of the sites may have influenced the interpretations.

Many of the conclusions of this study remain speculative. Future research should be directed to proper documentation of animal bones in graves. Although the sample size in this study is small the many possibilities of interpreting animal bones could be presented.

Hanna Kivikero ia a PhD student at the University of Helsinki.
E-mail: hanna.kivikero@helsinki.fi

Downloaded by 216.73.216.168 2026-11-10 15:12:15

Referenser

• Carlie, A. 2004. Forntida byggnadskult. Tradition och regionalitetet i södra Skandinavien. Riksantikvarieämbetet. Arkeologiska undersökningar. Skifter no 57. Malmö.

• Cleve, N. 1943. Skelettgravfälten på Kjuloholm i Kjulo. Del 1, Den yngre folkvandringstiden. Suomen Muinaismuistoyhdistyksen Aikakauskirja 44. Helsinki.

• Ersgård 1996. Religinsskiftet som social förändring. Om tidigmedeltida gravskick i Dalarna och Östergötland. Engdahl, K. & Kaliff, A. (eds). Religion från stenåldern till medeltid. Artiklar baserade på Religionsarkeologiska nätverksgruppens konferens på Lövstadbruk den 1-3 december 1995. Riksantikvareiämbetet. Arkeologiska undersökningar. Skrifter nr. 19. 9-17.

• Falk 2006. My home is my castle. Protection against evil in medieval times. Andrén, A., Jennbert, K. & Raudvere, C. (eds). Old Norse Religion in long-term perspectives. Origins, Changes and Interactions. Vägar till Midgård 8. Lund. 200-205.

• Formisto, T. 1993. An Osteological Analysis of Human and Animal Bones from Levänluhta. Vammala.

• Gräslund, B. 1994. Prehistoric Soul Beliefs in Northern Europe. Proceedings of the Prehistoric Society 60. 15-26.

• Haggrén, G., Rosendahl, U., Holappa, M., Knuutinen, T., Kunnas, O., Salonen, A-M., Tevali, R. 2007. Espoo, Suomenoja, Finnon kylätontti. Kaivaus 11.9.-13.10.2006. Excavation report. The Archives of the National Board of Antiquities. Helsinki.

• Honko, L., Timonen, S., Branch, M. & Bosley, K. 1993. The Great Bear. A Thematic Anthology of Oral Poetry in the Finno-Ugrian Languages. Suomalaisen Kirjallisuuden Seura. Peiksämäki.

• Hukantaival, S. 2007a. Jäniksenkäpäliä, teräkaluja ja elohopeaa. Rakennusten ”oudot” kätköt ja niiden merkitykset historiallisella ajalla. Arkeologia nyt! Arkeologi nu! 1/2007. 8-10.

• Hukantaival, S. 2007b. Hare's feet under a hearth. Discussing ´ritual´ deposits in buildings. Immonen, V., Lempiäinen, M. & Rosendahl, U. (ed.). Hortus Novus. Fresh approaches to medieval archaeology in Finland. Archeologia Medii Aevi Finlandiae XIV. SKAS. Saarijärvi. 66-75.

• Kivikero, H. 2007. Espoo, Suomenoja, Finnon kylätontti. Osteologinen raportti. Osteological report. In Haggrén et al. 2006. The Archives of the National Board of Antiquities. Helsinki.

• Kivikero, H. 2010a. Kurkijoki Kuuppala KM 8784 & KM 8885, Kexholm Suotniemi KM 2487 och S:t Michels Visulahti KM 13441 & KM 13769. Osteologisk analys av obrända djurben. Osteological report. The archives of the National Board of Antiquities. Helsinki.

• Kivikero, H. 2010b. Mikkeli Visulahti hauta 30 (KM 13679:181). Osteologinen raportti. Osteological report. The archives of the National Board of Antiquities. Helsinki.

Downloaded by 216.73.216.168 2026-11-10 15:12:15

• Kivikero, H. 2010c. Turku Julinin tontti, Pyhän Hengen kirkko. Osteologinen analyysi vuoden 1985 eläinluulöydöistä. Otos. Osteological report. The Archives of the Castle of Turku. Turku.

• Kivikero, H. 2011. Cattle Teeth in Graves. Interpretations of animal bones found in Finnish inhumation graves (Ca AD 550-1700). Master's thesis. Department of archaeology. University of Helsinki. >https://helda.helsinki.fi/bitstream/handle/10138/26349/cattlete.pdf? sequence=1<

• Kykyri, M. 1985. Kaivauskertomus, Julinin tontti 1985. Kaivausraportti. Excavation report. The archives of the National Board of Antiquities. Helsinki.

• Lagerstedt, J. 2008. Porvoon tuomiokirkon kirkkomaa. Arkeologinen kaivaus. Excavation report. The National Board of Antiquities. Helsinki.

• Laaksonen, L. 1984. Turku ns. Julinin tontin arkeologiset tutkimukset 1983-1984. Kaivausraportti. Preliminary excavation report. The archives of the National Board of Antiquities. Helsinki.

• Laaksonen, L. 1985. Turun ns. Julinin tontin arkeologiset tutkimukset vuonna 1985. Väliaikaisraportti tutkimustilanteesta. Preliminary excavation report. The National Board of Antiquities. Helsinki.

• Laaksonen, L. 1965. Turun Pyhän Hengen kirkon hautakerroksista. Vanhalinna I. 27-34.

• Lehtosalo-Hilander, P-L. 1982a: Luistari I. The Graves. Suomen muinaismuistoyhdistyksen aikakauskirja 82:1. Vammalan Kirjapaino Oy:Vammala.

• Lehtosalo-Hilander, P-L. 1982b. Luistari II. The Artefacts. Suomen muinaismuistoyhdistyksen aikakauskirja 82:2. Vammalan Kirjapaino Oy:Vammala.

• Lehtosalo-Hilander, P-L. 1982c. Luistari III. A Burial Ground Reflecting the Finnish Iron Age Society. Suomen muinaismuistoyhdistyksen aikakauskirja 82:3. Vammalan Kirjapaino Oy:Vammala.

• Lehtosalo-Hilander, P-L. 1997: Luistari in Eura. From Pagan Burial-Ground to Christian Cemetery. Müller-Wille, M. (ed.). Rom und Byzana im Norden. Mission und Glaubenswechsel im Ostseeraum während des 8.-14. Jahrhundraderts. Band II. Abhandlungen der Geistes- und Sozialwissenschaftlichen Klasse, Jahrgang 1997. Nr 3, II. Mainz. 389-404.

• Leppäaho, J. 1957. Mikkeli, Visulahti. Kaivaus 1954-55. Kaivausraportti. Excavation report. The Archives of the National Board of Antiquities. Helsinki.

• Salo, K. 2007. Osteologinen raportti. Porvoo, Porvoon kirkko 2007. Osteological report. The National Board of Antiquities. Helsinki.

• Sartorio, A.S. 1616. Koge-Bog. Indeholdendis et hundrede fornødene stycker etc. [www-document] Read 25.9.2010. <http://www.notaker.com/onlitxts/kogebog.htm>

• Tupala, U. 1999. Eläinuhreja vai teurasjätteitä – Euran Luistarin rautakautisen kalmiston eläinluu-materiaalin lähdekriittistä tarkastelua. Master's thesis. Department of archaeology. University of Turku.

• Winsnes, H. 1845. Lærebog i de forskjellige Grene af Husholdningen. [www-document] Read 25.9.2010. <http://www.dokpro.uio.no/litteratur/winsnes/frames.htm>

• Östman, E. 1911. Iduns kokbok. [www-document] Read 26.9.2010. <http://runeberg.org/idunskok/>

Downloaded by 216.73.216.168 2026-11-10 15:12:15