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RITUAL DEPOSITION OF ANIMALS IN LATE IRON AGE FINLAND: A CASE-STUDY OF THE MULLI SETTLEMENT SITE IN RAISIO

The paper discusses the remains of domestic animals showing signs of ritual deposition at the settlement site of Mulli at Raisio in south-western Finland, dating to the Late Iron Age and Early Medieval period. Initially, a singly deposited sheep found under the wall of a building had been interpreted as ritually buried. While selecting samples for another study the curious nature of other deposits of domestic animals at the site became apparent and a re-analysis was conducted. This paper presents the results of the osteological re-examination and discusses indicators of ritual activity at the site. In fact, the site exhibits evidence of repeated rituals involving sheep cut to small chunks and bones buried at the homestead. Since organic material seldom preserves in the local soil, Mulli offers a unique glimpse into the ritual practices involving animal remains in Late Iron Age Finland. Although previous studies suggest that Christian beliefs were already changing the burial practices of the Mulli dwellers, domestic rituals remained important in their worldview.

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Introduction

This paper considers ritually deposited animals at the Late Iron Age to Early Medieval (ca AD 900–1200) settlement site of Mulli at Raisio in SW-Finland (Fig. 1). Previous discussions on the remains of ritually handled animals during this period are rare in Finland (e.g. Tupala 1999; Bläuer & Hukantaival 2013; Kivikero 2015), mainly since the acidic soil causes organic material to decompose quickly, thus destroying the evidence of such activities. However, the site discussed here displays unusually well preserved bone materials for study.

Mulli is a small settlement site with three excavated building complexes, each including several phases of use. Excavations were conducted in the 1990s by the Department of Archaeology at the University of Turku (Pietikäinen 1994; 1995; 1996; 1997) and Juha-Matti Vuorinen (2009) published the results as a PhD-thesis.



Fig. 1. The Mulli site situates in Raisio town in south-western Finland.

Ulla Tupala (1998a; 1998b) carried out an initial bone analysis on the material of the site. Later, aDNA analysis, $\delta^{15}\text{N}$ and $\delta^{13}\text{C}$ isotope analysis, and radiocarbon dating were carried out on five sheep and four cattle bones during the FinnARCH-project¹ (Niemi et al. 2013; 2015; Bläuer et al. 2016). The radiocarbon dating placed these bones in the Late Iron Age (10th to 12th century).

The purpose of this paper is to thoroughly analyse and interpret animal remains that point toward ritual activities at the Mulli site. The results of an osteological re-examination are presented and the indicators of ritual activity are discussed. Some comparisons to contemporary Iron Age traditions and evidence from neighbouring areas are explored while practices of animal sacrifice in Finland during historical times known from textual or folkloric sources are treated as ethnographic reference material in the discussion.

Animal remains on the Mulli site

The entire bone material from Mulli includes 15 270 bones and bone fragments from domestic animals (sheep², goat³, cattle⁴, pig⁵, horse⁶, domestic chicken⁷, and dog⁸), wild mammals (seal⁹, European elk¹⁰, arctic hare¹¹, red fox¹², brown

¹ Finnish Archaeogenetics. Joint project of Luke (MTT Agrifood Research Finland) and the Department of Archaeology at the University of Turku, funded by the Academy of Finland (SA 128451).

² *Ovis aries*.

³ *Capra hircus*.

⁴ *Bos Taurus*.

⁵ *Sus scrofa*.

⁶ *Equus caballus*.

⁷ *Gallus domesticus*.

⁸ *Canis familiaris*.

⁹ Phocidae.

¹⁰ *Alces alces*.

¹¹ *Lepus timidus*.

¹² *Vulpes vulpes*.

bear¹³, red squirrel¹⁴, lynx¹⁵, otter¹⁶, house mouse¹⁷, and rat¹⁸), a variety of wild birds (e.g. whooper swan¹⁹, common mallard²⁰, black grouse²¹, and western capercaillie²²) and fish (northern pike²³, perch²⁴, and cyprinidae family) (Tupala 1999, 46 ff.). According to Vuorinen (2009, 175; based on data in Tupala 1998a; 1998b) the bone material in the north-east and east part of the site is dominated by cattle (in the north-east 41.8% and in the east 24.2% of all identified fragments), pig (18.5% and 26.2%), and sheep and goat bones (18.5% and 18.2%). However, in the western and central part of the site sheep and goat bones dominate the assemblage (67.6% and 47.5% of the identified fragments).

Initially, one sheep bone deposit in the central part of the site was interpreted as the remains of ritual activity: a complete ewe skeleton (Fig. 2) that was found



Fig. 2. The complete sheep skeleton (TYA 642: 2316, deposit No. 11) found under the wall of a log building has been interpreted as a ritual building deposit. The animal has been radiocarbon dated to AD 1018–1155 (2-sigma, Hela-2325; Niemi et al. 2013). Photo by Taina Pietikäinen.

¹³ *Ursus arctos*.

¹⁴ *Squirus vulgaris*.

¹⁵ *Lynx lynx*.

¹⁶ *Lutra lutra*.

¹⁷ *Mus musculus*.

¹⁸ *Rattus* sp.

¹⁹ *Cygnus Cygnus*.

²⁰ *Anas platyrhynchos*.

²¹ *Lyrurus tetrix*.

²² *Tetrao urogallus*.

²³ *Esox Lucius*.

²⁴ *Perca fluviatilis*.

under a log-building wall is published as a ritual building deposit (TYA 642: 2316; Pietikäinen 1997; Tupala 1999, 48; Pihlman 2005, 209 f.; Vuorinen 2009, 76, 153). Tupala notices other contexts in the western part of the site with plenty of sheep or goat bones and counts the MNI (Minimum Number of Individuals) for some of these, but does not interpret them further (Tupala 1998b; 1999). Vuorinen (2009, 150 ff.) interprets the abundant sheep or goat bones as household waste.

While working with the aDNA-bone samples from the Mulli site for the FinnARCH-project Auli Bläuer noticed these sheep and goat deposits, and realized that a new analysis and interpretation were needed (Bläuer 2016). Tupala's bone reports do not include systematic recording of the element side, which hampered the possibility to estimate the number of elements and individuals in each sample. Moreover, cut marks were noted only sporadically and no bones were measured or tooth wear recorded.

The wider context of Mulli

The Mulli material belongs in a transitional period between prehistory and protohistory, pre-Christian and Christian beliefs. In Finland the historical period is seen as beginning in the mid-12th century with the activities of the Swedish kingdom resulting in the adoption of institutionalized Christianity and a political infrastructure (see e.g. Fewster 2000; Hiekkänen 2002). However, contacts with the Christian religion predate this process somewhat (see e.g. Ruohonen 2013). These early contacts are also visible in the find material at Mulli, since a piece of polished green Greek porphyry interpreted as a fragment of a portable altar was found concealed in the hearth of the easternmost building (Pihlman 2005, 215; Vuorinen 2009, 73, 164, 212 f.). Similar finds have been unearthed in the Swedish town of Sigtuna in layers dated to the 11th and 12th centuries; these have been interpreted as signs of the initial adoption of the new religion, predating official church organization in the area (Tesch 2007). Other exceptional finds from Mulli, such as a lead-bronze ingot and a ball from a flail weapon (*kisten*), also suggest vivid contacts with both western and eastern cultures (Suhonen 1998; Taavitsainen 2004; Vuorinen 2009, 157 ff.).

Unlike in neighbouring Scandinavia, pre-Christian rituals and beliefs have not been comprehensively studied in Finland due to local archaeologists' carefulness to discuss the often meagre evidence of these customs. At Mulli, signs of earlier beliefs are present at the nearby Viking Age (ca 800–1000) cremation cemetery under flat ground (Siiri 1) typical to the area (about this cemetery type, see e.g. Wickholm 2005; Wessman 2010). Vuorinen suggests that this was where the immediate ancestors of the inhabitants of Mulli were buried, and that the inhumation cemetery of Kansakoulunmäki was the most likely burial place of the Mulli dwellers (Vuorinen 2009, 63, figs 3.2, 65; 3.3, 191). Here the dead were buried orientated east–west in their best clothes but mostly without other grave goods than those belonging to the dress. Thus, Vuorinen argues that the Mulli dwellers were more strongly associated with Christianity than their close neighbours

who continued to place tools in graves oriented north–south or north–east–south–west in their inhumation cemetery (Vuorinen 2009, 201, 212). Still, evidence from later historical times show that the adoption of Christianity had less prominent effects on rituals conducted in the domestic sphere than on the cult of the Afterlife. This is visible for example in traditions involving ritual deposition of animal remains or other objects in buildings practiced in Finland up to the early 20th century (Hukantaival 2007; 2016).

Theoretical framework and ethnographic reference material

A ritual is an act that has been distinguished from mundane action by the use of different emphasizing techniques: e.g. set repetitive movement, arcane language, or special paraphernalia (see e.g. Bell 1997, 138–170). Since many of these ritualizing techniques are unobservable in an archaeological setting, special attention must be directed towards the context of the object suspected to be the remains of ritual activity. For the same reason archaeologists discussing ritual must often rely on signs of unnecessary effort in treatment and disposing of an object, even though the dichotomy of practical vs. ritual action is widely accepted as too simplifying (e.g. Bradley 2003; Brück 1999; Chadwick 2012; Hukantaival 2015).

Generally, ritual burial of animals is understood as the disposal of animal remains that is not merely done as waste treatment, but includes symbolic expression and/or spiritual intention (cf. the definition of ritual in Kyriakidis 2007, 294; see also e.g. Morris 2012; Pluskowski 2012). Still, scholars have realized that in fact neither ritual burial nor waste treatment are straightforward concepts (e.g. Brück 1999; Chadwick 2012). Instead, they must be seen as two extremes on a continuum that has many fluid stages in between. However, in practice the relevant question often still is how to distinguish ritual deposits from common refuse.

Even though it would be misleading to draw parallel lines between Late Iron Age and more recent practices, comparison still offer fruitful insights of differences and similarities in practices of different periods (see also Hukantaival 2016). Evidence on the Finnish historical animal sacrifice practices was mostly recorded as oral history (folklore) in the late 19th and early 20th century, but some earlier written records from the 17th and 18th century also exist (Sarmela 2009, 120 ff.). These earlier documents include St. Olav sheep sacrifices that had a more western distribution than the later information on Michaelmas and Kekri²⁵ lambs (Sarmela 2009, 120, 122). Moreover, Matti Sarmela (2009, 122) suggests that the St. Olav sheep belongs to the oldest layer of Finnish agricultural and cattle farming rites, and it may be founded on a pre-Christian (thermal) midsummer sacrificial feast.

The known sheep sacrifices would begin with choosing a perfect lamb that would be fed better than the other sheep and is left unshorn. This lamb would be

²⁵ The traditional Finnish autumn harvest festival (similar to Halloween).

slaughtered on the eve of the holiday and cooked whole. It was not allowed to break the bones of the animal, and these were collected after the meal to be buried at the homestead, taken to an offering tree, or the forest. The purpose of the rite was to ensure good sheep fortune and to protect the livestock from predators by reinforcing the bond between the people and otherworldly guardians of the land (Varonen 1898, 147–148, 156–163, 169–171, 337–341; Sarmela 2009, 120 ff.; see also e.g. Lencqvist 1782, 73 f.).

The taboo against breaking the bones of an animal is also known in the local folklore about bear hunting. In this connection, it has been explained that the bear can only be resurrected if the bones have been treated in the proper way (Haavio 1959, 310; Sarmela & Poom 1982; Sarmela 2009, 79–106). The same notion is inferable from folklore that explains that to ensure the continuity of the livestock no bones must be missing from the remains of an annual feast (e.g. SKMT IV, 2, 1933, XII 433 §). Accounts explaining that the bones of a sacrificial sheep are buried in the sheep house in order to ensure the fertility of the animals also belong to a similar mental structure (SKMT IV, 2, 1933, XII 13 §, 20 §, 144 §). Moreover, this theme is found in the Norse story about Thor's goats in the Edda: since one bone was broken during the feast, the goat became lame when resurrected (The Prose Edda 1916, 58 f.; Jennbert 2004, 161 f.). However, this notion is not universal. For example, one Siberian Samoyed explanation for breaking game animal bones was that each fragment will spawn a new animal (Haavio 1959, 309 f.).

Since the idea of resurrection has appeared in narratives in connection to the ritually handled animal remains, a mental connection with the Christian idea of the bodily resurrection of the dead at Judgement Day is possible (see also Haavio 1959, 302 ff.; Broadbent 2010, 180; Jonuks et al. 2017).²⁶ Even though this last mentioned belief has not been exclusive and consistent through time (see Setzer 2009), it has been (in the Baltic Sea region) traditionally presented as the main reason why the Christian burial rite favoured inhumation (e.g. Gräslund 1994, 202; Fewster 2000, 99; Urbańczyk 2010, 90 f.; Jonuks & Kurisoo 2013, 79 f.; see also Gilchrist 2015). As opposed to the Christian belief, it has been argued that the pre-Christian understanding was that the spirit or life-agency would be released when the body was broken (e.g. Karvonen 1998, 5). Folk beliefs are dynamic and thus adopting a Christian understanding of bodily resurrection where bones should preferably be intact into practices of ritual animal consumption is not a contradiction. These kinds of domestic rituals co-existed together with Christianity. Moreover, similarities between the Finnish sheep sacrifices and the Jewish Passover lamb have caused suspicion that the Finnish practices were influenced by Biblical stories (Haavio 1959, 25–30, 301–302; Sarmela 2009, 125). In any case, the Christian faith influenced the meaning of the practices by associating them with

²⁶ It is possible that Christianity had influenced the Norse story about Thor's goats in the Edda, but still a chance that this idea had pre-Christian origins in the Nordic area cannot be completely disregarded.

the veneration of saints. Nevertheless, the purpose of the practices was to preserve the wealth of the household by ensuring good luck with the livestock.

Though chronologically separate from the Mulli site, the kind of analogical thinking present in the beliefs concerning preservation of the life force of the flock is very simple and natural for human cognition (e.g. Pyysiäinen 2004; Rozin et al. 1986). Still, even though ritual forms may persist over long periods of time, it is important to remember that people interpret their practices in the context of their own time and society and both ritual forms and especially their meanings are thus dynamic (Hukantaival 2016; see also Jonuks & Kurisoo 2013).

Material and methods

The original reports show that most of the bone material recovered from the Mulli site consists of typical household waste including fragmented pieces of bones from several species mixed in the layers (Tupala 1998a; 1998b; Vuorinen 2009, 175). However, 24 samples from the central and western part of the site clearly differed from this pattern (Tupala 1998a; 1998b). These comprised of predominantly complete or semi-complete bones from only one or a few species (mostly sheep, goat, and pig) and all bones in these samples were re-analysed (see Table 1, Bläuer 2016).

The re-analysis of the 24 samples confirmed many of the initial results by Tupala (1998a; 1998b), however in several cases more accurate identifications were presented. New information was also gathered about butchery marks, bone side and size, tooth wear stages in mandibles, and the sex of the animals based on pelvises. The re-analysis provided information about species, bone element, epiphyseal fusion, teeth eruption and wear, pathological changes, size, and cut marks. It was also noticed that these samples derived predominantly from a certain, limited area near one of the buildings in the western area (see Fig. 4 below).

Criteria given by Boessneck (1969) and Prummel & Frisch (1986) were used for differentiating sheep and goat bones, with criticism given by Zeder & Lapham (2010) in mind. The material was quantified by using NISP (Number of Identified Specimens) during the recording phase. During further analysis, MNE (Minimum Number of Elements) were counted and used to estimate MNI (Minimum Number of Individuals). For MNI estimation, element side, epiphyseal fusion and apparent differences in size were utilized.

Mandibular tooth wear was recorded as suggested by Grant (1982) and O'Connor's (2003, 160) method was used in classifying mandibles in age groups. Bones were measured according to guidelines presented by von den Driesch (1976), except for medial edge of acetabulum where Vretemark's (1997) guidelines were used. Tupala (1998b) used talus, atlas, and axis when sexing sheep bones. In this study the shape and size of the pelvis is used, as well as the shape and size of horn cores. Fusing of epiphyses was recorded as unfused, fusing (with the gap between epiphysis and metaphysis open in over 50% of the diameter), and fused.

Table 1. Raisio Mulli: bones from the re-analysed samples (NISP). * Chicken and 33 other bird bones were not available for re-analysis, so figures for these are based on Tupala's (1998b) analysis. Small ungulate bones (mostly ribs and long bone fragments) are likely to belong to sheep or goat

Sample/ species	TYA 642: 215-221	TYA 642: 244-246	TYA 642: 371	TYA 642: 2316-2319	TYA 631: 1030-1155	TYA 619: 428, 758-760	TYA 619: 780-781	TYA 619: 427	TYA 619: 753	TYA 619: 767, 429-430	TYA 619: 432, 771	TYA 619: 965	Total
Sheep	24	15	140	39		42	16	2	10	12	4		304
Goat			1		49								50
Sheep/goat	126	78	534	153	164	141	79	2	12	41	15	1	1346
Small ungulate	74	50	445	84	130	81	55	1	15	8	10		953
Pig		1	120		1		1	1				80	204
Cattle					1	1			1				3
Dog/wolf			1										1
Large mammal	1	1	2		3	1	1	1				1	11
Domestic chicken			2*		2					2			6
Galliformes					1					2			3
Duck species	1									1		1	3
Bird	2		33*		7					1			43
Perch	3												3
Pike			1										1
Fish	2												2
Unidentified	127	43	720	284	242	107	97		4	11	2	3	1640
Total	360	188	1999	560	600	373	249	7	41	79	31	86	4573

In addition to osteological analysis, indicators of ritual activity are relevant for the current study. The starting point in the interpretation is to identify an associated bone group (ABG), a group of bones that have been deposited together (Hill 1995, 27; Morris 2008; 2011). Still, the recognition of an ABG does not yet infer a ritual interpretation. In this study, signs of intentional effort in the disposal of the animal remains are the main factors used in recognizing ritual activity. This can be noted in the context, assemblage, or treatment of the animal remains. Association with artefacts or other objects is also remarked; an aspect that is easily forgotten when discussing animal remains from a zooarchaeological perspective.

Unfortunately, the initial excavation procedure causes some problems when identifying deposits. In the first excavation year (1994, archived as TYA 619) documentation was carried out using grid squares (1 × 1 m) and technical layers (5–10 cm thick). Thus, the stratigraphic relationships of the first excavated deposits are very difficult to interpret. Later a stratigraphic method was applied as a pioneer project (see Suhonen 2000; in 1995–1997, archived as TYA 631, 642, 667). Both the change in method and the inexperience in stratigraphic documentation cause some confusion when interpreting contexts. Moreover, during the excavations, cultural layers belonging to the same event were in some cases recorded as different units. Thus, bones belonging to the same individual animal have in some cases received different archive numbers. When fragments of one single bone element are found in two different stratigraphic units, the bones are treated as one deposit in this study. Also bones from the same grid square but from different layers are combined if there are no overlapping bone elements and, after visual inspection, it seemed reasonable to assume that the bones derive from the same individual.

Results of the osteological analysis

During the analysis, it was noticed that the material is fairly fragmented and many fragments remained unidentified (Table 1). Most of the identified material derives from sheep or goats. Also pigs are well represented and some bones of domestic chicken, unidentified duck, cattle, dog or wolf, perch, and pike were also identified. The samples often include bones belonging to the same sheep or goat individual. For example, a sheep talus and calcaneus from sample TYA 619: 760 exhibit knife marks that continue from one bone to the next. There are also several samples with bones that have been cut through, and yet both fragments of the bone are present. The clearest example is the sheep remains from TYA 642: 2316, which includes e.g. the complete spine that has been cut into sections (Fig. 3). When left and right elements are present, they are often virtually identical and thus likely to belong to the same individual. Loose epiphyses with fitting metaphyses are also often present, which is a good indicator of the integrity of the depositions. Only one bone shows gnawing marks: a cattle pelvis fragment (TYA 619: 767, deposit No. 4).



Fig. 3. The sheep remains from sample TYA 642: 2316 (deposit No. 11) includes e.g. the complete spine that has been cut into sections. Photo by Auli Bläuer.

During the re-analysis several butchery marks were noticed on the sheep and goat bones. As a rule, sheep and goat skulls are split in the middle in the sagittal plane. Often the head has been separated from the body by cutting through the atlas or axis. Cervical, thoracic, and lumbar vertebrae are recurrently cut through the body in the transverse plane, dividing the spine into smaller sections. Ribs are separated from the spine either by cutting through the side of the thoracic vertebrae in the sagittal plane or by cutting through the rib near the spine. Ribs are also often cut through the mid-shaft. Cervical and thoracic vertebrae are rarely split through the longitudinal axis. However, the sacrum is often treated this way (split symmetrically in the middle or from the right or left side), and sometimes lumbar vertebrae as well. Some sacra show evidence of removal of the tail by cutting through the lower part of the sacrum. The head of the scapula is in some cases separated from the body, and proximal humeri often bear cut marks through the epiphyses. Sometimes the distal humerus or proximal radius and ulna have been cut as well, and in some cases the radius in mid-shaft. The pelvis is commonly cut into several pieces both in a longitudinal way through the pubis and/or acetabulum and in the transverse plane through the ilium. Cut marks can be found in the proximal femoral head and in the distal end. Some metatarsals have been split by cutting in between the distal condyles. Light cuts or knife marks are not common on the bones, but found in a few examples (e.g. the above mentioned talus and calcaneus and the proximal femur of the sheep in TYA 642: 2316, deposit No. 11).

The bone material included adult, juvenile, and infant sheep and/or goats, with adult bones dominating the sample. All the pelvises (five right, three left) that were possible to sex derive from female sheep or goats based on the shape of the

pubis. A total of six medial edges of acetabulum were measured (three right and three left), all of which were under 2.8 mm also indicating female sex (Vretemark 1997; Tourunen 2008). No certain horned sheep skulls were found but the material includes a few horn fragments that could derive from sheep or goat (one of them polycerated with a tiny additional stump present in the horn core base). At least six sheep skulls were polled.

Most of the pig bones derive from two skeletons, an infant piglet in TYA 619: 965 (deposit No. 7) and a somewhat larger infant or juvenile individual in TYA 642: 371 (deposit No. 10). The bird bones are isolated finds or small assemblages deriving from domestic chicken or unidentified duck species. Perch bones are found in one sample. Adult pig, cattle, dog or wolf, and pike are isolated finds.

Contexts and interpretation of the bone material

In order to gain understanding of the ritual or mundane aspects of bone deposits, they need to be interpreted in their archaeological context. The re-analysed Mulli bone material consists mostly of complete or partial remains of sheep, goats, and piglets, possibly also domestic chicken, that have been deposited in a fairly limited area on the settlement (Table 2; Fig. 4; see Vuorinen 2009, 151 for the overall distribution of bones at the site).

Two of the deposits were found from the area of the central building with clay floor layers and a hearth (Fig. 4). Vuorinen has interpreted three building phases of this structure dating from c. AD 1000–1150. All the other bone assemblages discussed here derive from the area of the western building, mostly by the NE-wall. This building did not show any signs of hearths or clay floors. Vuorinen (2009, 89, 94 f.) has interpreted three or four building phases for this complex: The first phase was a log building built around the early 11th century. The second log building phase is dated to the late 11th or early 12th century. Above these were more vague remains of wooden structures (floors or other planes) belonging to the third and possibly fourth phase of the complex dated to the late 12th or early 13th century. As is visible in Fig. 4, the find-contexts by the western building are situated in the same area. However, it should be noted that the exact location of the bones within the stratigraphic unit or grid square has not been documented in most cases.

The complete (only missing atlas and axis) singly buried ewe (deposit No. 11) situated directly under the NE-wall of the middle building's oldest phase estimated to have been built between AD 1000–1050 (Vuorinen 2009, 185). Another deposit of bones (No. 2) possibly deriving from a single adult female sheep was discovered in connection to the clay floor layers of this building. These bones were found in the same grid square close to the middle of the room, but not all bones are present. A mandible in this assembly displays pathological changes. There is a hole through the bone (Fig. 5) which is likely to be the remnant of an infection and abscess in the bone. It seems that the lesion was almost healed at the time of

Table 2. MNE (Minimum Number of Elements) counts from the re-analysed deposits of Mulli at Raisio. MNE is shown only from selected species (for total number of species in each deposit see Table 1). # = metacarpale (Mc) and metatarsale (Mt) present but recorded only as metapodials, * = in addition 43 unidentified vertebra fragments. In deposit 10 the only identified goat bone is shown as 'and 1'.

Element/ deposit	1 TYA 619: 427	2 TYA 619: 753	3 TYA 619: 428, 758-760	4 TYA 619: 767, 429-430	5 TYA 619: 432, 771, 244-246	6 TYA 619: 780- 781	7 TYA 619: 965	8 TYA 631: 1030, 1155	9 TYA 642: 215- 221	10 TYA 642: 371	10 TYA 642: 371	11 TYA 642: 2316- 2319
Species	Sheep	Sheep	Sheep	Sheep	Sheep	Sheep	Pig	Goat	Sheep	Sheep and/or goat	Pig	Sheep
Skull	1	1	1	1	1	2	1	2	2	5	1	1
Mandible	1	1	2	2	2	1	1	2	6	6	1	2
Atlas			1	1	1			3	1	7	1	
Axis			1	1	1		1	3		7		
Vert cerv	1		5	5	6	1	1	9	2	23		5
Vert thor	1	2	9	8	9	7	4	11	3	51		13
Vert lumb			5	2	3	5		3	3	20	1*	6
Sacrum			1	1	1	1		2	2	4		1
Tail			2			3		1		8		9
Ribs	1	2	16	2	10	4	5	5	4	67	1	17
Scapula			2	1	2	1	1	2	2	10	1	2
Humerus		1	2	1	2	2	1	2	3	10	2	2
Radius		1	2	2	1	2	2	4	6	9	3	2
Ulna		1	2	1	1	2	2	3	4	6	1	2
Mc		1	3	2	2	2	#	3	4	7	2	2
Pelvis		2	2	2	2	3	2	4	2	8	2	2
Femur	1	1	2	1	2	3		4	4	7	1	2
Tibia			2	1	2	1	1	5	6	11	2	2
Mt	1		2	1	2	3	#	3	4	7 and 1	3	2
Calcaneus			2	1	1	2		2	4	10	2	2
Talus			2	1	1	2		3	3	7	2	2
Phal 1		4	8	2	4	6		6	7	34	7	5
Phal 2			7	1	3	2		7	5	31	5	6
Phal 3		2	7	2	3	1		5		29	4	7

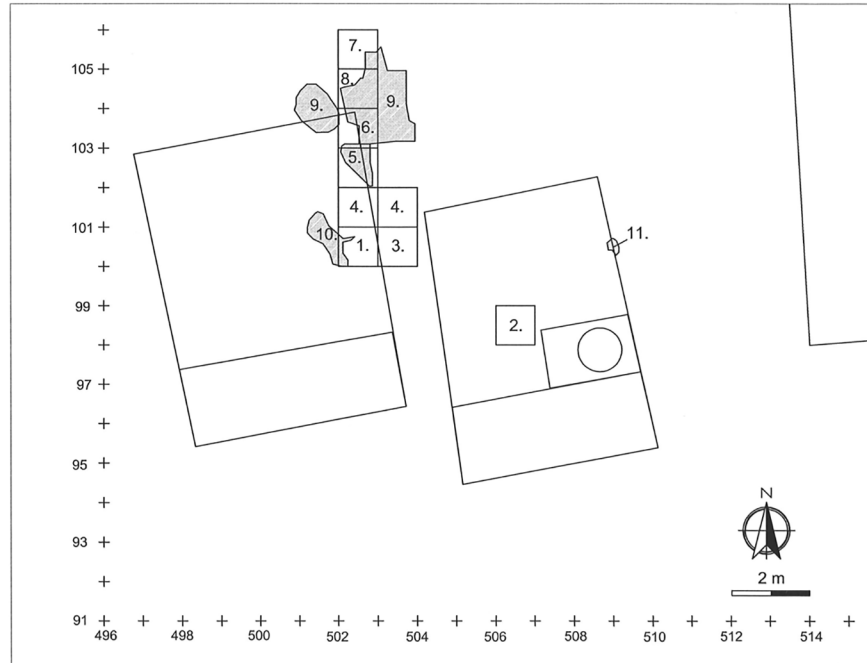


Fig. 4. The re-studied bone assemblages from the Mulli site have been found in connection to the western and central building complexes. The numbers refer to the order in which the deposits are listed in Tables 2–3. The hatched regions indicate units excavated stratigraphically and the blank squares indicate grid squares excavated as technical layers. The outlines of the buildings are drawn according to Vuorinen 2009.



Fig. 5. The mandible in sample TYA 619: 753 (deposit No. 2) exhibit pathological changes. There is a hole through the bone, where the bone is also bulging outwards, on the lateral surface of the bone below M1 and M2. The edges of the hole are smooth with little visible active bone tissue. Photo by Auli Bläuer.

the animal's death. The floor layer in this square has not been mentioned to show any signs of a pit cutting it (Pietikäinen 1994, 16; Vuorinen 2009, 75), so the deposit predates at least the youngest clay floor. This floor belonged to the third and final phase of the building (dating to after the early 12th century), and had been laid in connection with a change in the function of the room since the hearth had been covered (Vuorinen 2009, 89). However, it is difficult to assess if this deposit belongs to the second or third building phase since the documentation of the context of the bones is not detailed enough.

In addition to the singly deposited ewe (deposit No. 11) another practically complete sheep skeleton was recovered from the material. Deposit number 3 consists of one almost complete adult female sheep that was found as three separate bone clusters. Both of the animals in deposits 3 and 11 had been cut into smaller pieces. It is noticeable that the carcasses were often hacked through the bone even when dismembering could have been easily done by cutting the soft membranes with a knife (e.g. by separating the scapula and humerus, the pelvis and femur, and the femur and tibia). The necks of both complete sheep skeletons have been cut into very small slices (Fig. 6, see also

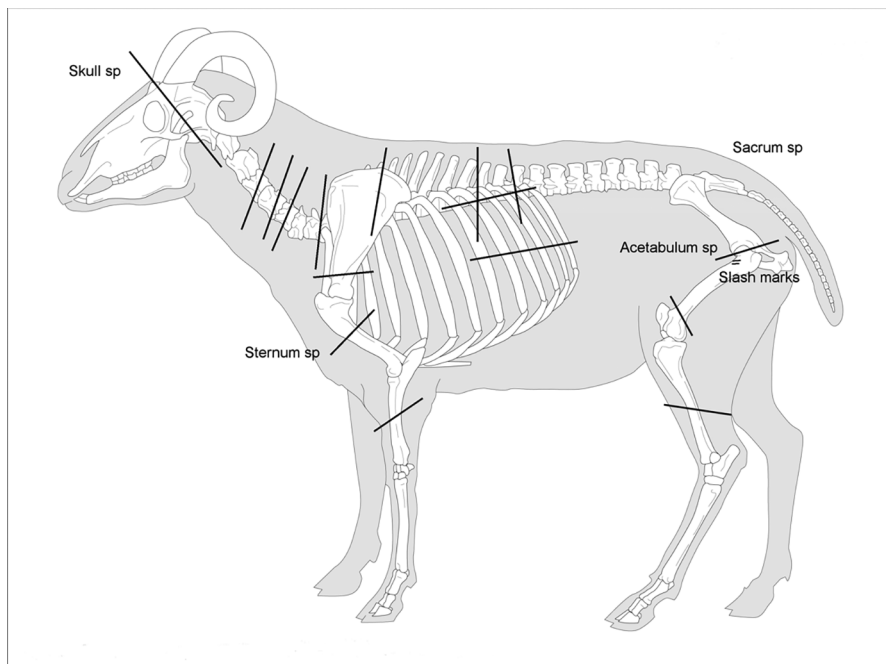


Fig. 6. Cut marks on the singly deposited sheep skeleton (deposit No. 11, Figs 2 and 3; TYA 642: 2316, 2319). The spine has been cut through the cervical vertebrae 3, 4, and 5 (the body is cut into two or three sections), between thoracic vertebrae 3 and 4, 8 and 9, and 12 and 13. The sacrum, skull, sternum, and acetabulum have been split in the sagittal plane (sp) (background image by Michel Coutureau with Vianney Forest, © 1996 ArchéoZoo.org, according to Barone 1976, 23).

Fig. 3 above). These two undisturbed deposits are likely to mirror the treatment of the animal remains in the rest of the assemblage: sheep and goats were cut into pieces, deposited in a pit (completely or partially) or as separate clusters, into the same area of the settlement site during several hundreds of years, probably disturbing earlier deposits while doing so. In contrast, the two piglets in the samples were probably buried as whole as no cut marks were visible on their skeletons.

Stratigraphically, the youngest contexts include deposits number 5, 8, and 9. These contexts are pits that became visible already when the top soil (modern field layer) or the sooty sand layer under it was removed. The latter was interpreted as a prehistoric layer. The units in which deposit number 9 belonged filled a deep pit that cut through all the older cultural layers on the site. Unfortunately, there are no radiocarbon datings from the bones of numbers 8 and 9 but the layers include finds of ceramics and clay loom weight fragments (and burnt clay) that suggest a Late Iron Age date. One metacarpal sheep bone from number 5 has been radiocarbon dated to 1081 ± 32 BP (Hela-2329; 2-sigma AD 894–1018; Niemi et al. 2013).

Deposit number 5 contains one semicomplete polled adult female sheep (and some extra bones) that was found as one recognized cluster in 1994 containing part of its bones while the other bones were found in 1996 in adjacent context units. The find material included abundant ceramic and clay loom weight fragments, burnt clay, a rusty piece of iron, and a couple of flint fragments (Vuorinen 2009, 151 f.). Number 8 includes the remains of two young goats and one young sheep/goat, bones possibly from one chicken, and some extra bones that were found as two separate bone clusters in 1995. Abundant ceramic and clay loom weight fragments and burnt clay were found in connection with the bone clusters (Vuorinen 2009, 150). Number 9 includes the remains of at least three partial sheep, some fish bones, a duck bone, and a fragment of a large mammal's tibia. In addition to the bones, this deep pit contained a rusty piece of iron, and some fragments of ceramics and burnt clay (Pietikäinen 1996, 9 f.; Vuorinen 2009, 100, 150 f.). Deposit number 8 was found in the same area as number 9, but there is no evidence of their belonging to the same event. Since the excavation team was not experienced in the stratigraphic method, it might be that the large and deep pit in this area was actually the result of repeated deposition events. Deposit number 7, including a piglet and some other bones, was found in the next grid square to the north of number 8, but their stratigraphic relationship is undocumented.

In addition to the above discussed deposits number 2 and 3, numbers 1, 4, 6, and 7 were unearthed during the first excavation year and recorded by grid squares and technical layers. Number 1, containing only a few bones, is likely to be part of some of the other deposits (Nos 3, 4, or 10), but this is undetermined. Number 4 was found as separate clusters containing bones from the same two sheep.

The deposit might consist of one adult and one juvenile sheep, but not all bones are present. There are also some bones from birds (chicken and duck) and a fragment of a cattle pelvis in this assemblage. *In situ* photographs of the squares and layers of deposits number 3 and 4 (TYA D 260: 46–49) show bone clusters together with fragments of ceramics and clay loom weights inside a hollow left by the remains of a log or plank. It appears that the bones have been deliberately placed in clusters on top of some wooden structure. Number 6 includes remains of at least four individuals, but most of the bones are likely to belong to one adult sheep. Some bones belong to another adult sheep and to one juvenile and one infant sheep or goat. The relationship of this deposit to deposit number 9 found partly in the same grid square is undetermined.

Deposit number 10 is stratigraphically oldest of the contexts by the western building complex. The context unit filled a pit that Vuorinen estimated to have been dug in the 10th or early 11th century. The pit situated under the remains of a wooden floor of the western building's oldest phase. However, according to Vuorinen it might also cut the oldest building phase (Pietikäinen 1996, 17 f.; Vuorinen 2009, 100, 152). Two metacarpal sheep bones of this deposit have been radiocarbon dated to 1040 ± 31 BP and 955 ± 30 BP (Hela-2326: 2-sigma AD 898–920 or 945–1033, and Hela-2327: 2-sigma AD 1022–1155; Niemi et al. 2013). The dates suggest depositions made at different times. According to the initial report (Tupala 1998b, 46) this feature contains bones from eight sheep. The re-analysis revealed bones from at least seven sheep or goats and one piglet. Most bones could be identified as belonging to sheep but one of the bones derives certainly from a goat. The bone sample is thus likely to consist of one goat and six sheep or seven sheep with one loose goat bone included in the sample. Both adult and juvenile sheep are present in the material and all the bones of which sex could be determined derive from females.

In addition to complete or semi-complete animals, the deposits include some more arbitrary bones of adult pig, cattle, and fish. These may represent refuse fauna mixed in with the deposits as a result of the method of documentation during the excavation. According to the original bone report, domestic refuse is present in the central and western areas (Tupala 1998a; 1998b; also Vuorinen 2009, 175) so unintentional mixing of some loose bones into the deposits is possible. Alternatively, they may have had some undetermined significance. If the Mulli bone material is considered as one entity, a minimum of 12 sheep (left metacarpal) and two goats (left metacarpal) can be identified. However, the number of individuals can be estimated even higher when the material is divided according to contexts. The interpretation of the possible clusters is presented in Table 3. This interpretation results in a total of 19 sheep, four goats, two pigs, and possibly two chickens present in the material. The sheep and goats were not deposited as intact carcasses since the bodies have been cut into sections.

Table 3. The Mulli material divided and interpreted according to samples. (x) = species is present, but bones are likely to be part of another deposit. Completeness: *** = virtually complete skeleton, only some elements missing, ** = partial skeleton with all anatomical regions represented, * = from small collection of bones to single element. Radiocarbon dates from Niemi et al. 2013, see text for full information

Deposit No.	Archive No.	Sample(s)	Sheep	Goat	Pig	Chicken	Completeness	Radiocarbon date (2 sigma)
1	TYA 619	427	(x)				*	
2	TYA 619	753	1				*	
3	TYA 619	428, 758, 760	1				***	
4	TYA 619	429, 430, 767	2				**/*	986–1053 AD or 1080–1154 AD
5	TYA 619, 642	432, 771; 244, 246	1				**	894–1018 AD
6	TYA 619	780, 781	4				**/*	
7	TYA 619	965			1		**	
8	TYA 631	1030, 1155		3		1	**/*	
9	TYA 642	215, 221	3				**/*	
10	TYA 642	371	6	1	1	1	**/*	898–920 or 945– 1033 and 1022– 1155AD
11	TYA 642	2316, 2319	1				***	1018–1155 AD

Discussion: Remains of ritual

The bones of 19 sheep represent repeated depositional practices over a long period of time (ca AD 900–1150). When determinable, the animals were mostly adult females. The practices include handling of the animals/or parts of them before deposition. The evidence of cutting the animal into chunks could indicate that the pieces were supposed to fit in a cooking pot. It is also possible that some bones were broken to get access to the marrow. However, even if the animals have been consumed, the bones, including the not typically eaten parts (such as the tail), have been carefully collected to be deposited in a pit after the meal at least in some of the cases.

No articulation of the bones was observed during the excavations, and also the *in situ* photograph of deposit number 11 (Fig. 2) shows that the bones have not been placed in an anatomic order in the pit. However, the photograph also reveals that some of the bones have remained together, as if they have been still connected by soft tissue when placed in the pit. The three vertebrae both to the left and right on the picture suggest this. The fact that no signs of gnawing on the bones are visible suggests that the bones were buried well and immediately. The reason why the animals were not dismembered the easy way instead of cutting through the thickest parts of the bones is likely to bear some significance. In some cases it is possible that the bones have been placed into separate clusters, unless this pattern is a result of disturbed deposits. Moreover, some of the deposits included shards of ceramic vessels, fragments of clay loom weights, burnt clay, and some

iron objects. These kind of fragmented objects have evidently been used in later ritual practices (Hukantaival 2016, 198). The treatment of the two piglets buried whole differs from that of the sheep. They may be part of a different practice, but since there are only two cases, interpretation of these remains is difficult.

As discussed above, the known local historical annual sheep sacrifice-feasts included special treatment for the remains of the meal. However, the folklore often specifies a taboo against breaking the bones of the sacrificial animal. Two things should be kept in mind when discussing this taboo: first, these kinds of folk practices are not dogmatic, and traditions may vary regionally. Secondly, as mentioned, the information on the annual sacrifice feasts derive from a period between the 17th and late 19th century, which is more than 500 years later than the Mulli finds. It is notable that no similar pattern in sheep bones has been reported in studies of neighbouring Scandinavian areas contemporary to Mulli (Carlie 2004, 120 f.). However, archaeological evidence from Norway and Sweden show that, in contradiction to narratives, ritually buried bear bones have often been chopped and split (Zachrisson & Iregren 1974, 84; Broadbent 2010, 180; Magnell 2013). It has been noticed that complete bear skeletons date mostly to the 18th and 19th century (Broadbent 2010, 180), which could point to a later development in the beliefs. It seems likely that the taboo against breaking the bones of the sacrificial animal has not been a rule, at least not in all regions and periods.

From the perspective of the wider societal context, one major change happened approximately at the time of the Mulli sheep: the adoption of Christianity. Among other things, new beliefs affected the way people were buried: the traditional cremation cemeteries where the remains of the funeral pyre were mixed and scattered (see e.g. Karvonen 1998; Wickholm 2005; Wessman 2010), were gradually replaced by east–west-oriented inhumation burials (e.g. Hiekkänen 2002, 490). The Late Iron Age cremation cemeteries included scattered burnt and unburnt animal bones and sometimes grave-goods were deliberately broken (e.g. Karvonen 1998; Wessman 2010, 54, 93). Thus, there is evidence of breaking as a part of local Late Iron Age ritual practices (e.g. Karvonen 1998; see also Oras 2013, 135 ff.). The treatment of the Mulli sheep could be connected to a similar idea. The fragmented domestic objects sometimes included in the deposits agree with this hypothesis, even though it is undeterminable if they were in fact deliberately broken.

In narratives, the sacrificial animals are usually specified as chosen when new-born in spring and slaughtered the same autumn.²⁷ The Mulli sheep, however, were mostly adult animals. This also points to a difference in the traditions. Still, it is likely that the Late Iron Age rituals performed in the domestic sphere had a purpose closely connected to the everyday concerns of the people; similarly as the equivalent rituals in historical folk religion (e.g. Sarmela 2009, 18 ff.; see also

²⁷ However, the St. Olav lamb was slaughtered in summer (Sarmela 2009, 122).

Hukantaival 2013; 2016). Some of the sheep remains at Mulli were associated with finds of clay loom weights. This could give an additional hint of the significance of the sheep at the site. As Vuorinen (2009, 176) has noted, textile production was evidently important at Mulli. If the sheep rituals were aimed to ensure good wool luck, it is possible that an animal with outstandingly high-quality wool would be chosen for ritual treatment in order to ensure the recurrence of this trait in the herd. Ancient-DNA studied of some of these sheep reveals that they mostly belonged to the same maternal lineage, so they are likely to have belonged to the local herd (Niemi et al. 2013). The tenderness of the meat may have had a lesser role in these rituals than in the later ones.

As revealed, in later folklore the sacrificed sheep is sometimes mentioned as buried under the sheep house, where it would ensure the continued fertility and overall luck with the herd (SKMT IV, 2, 1933, XII 13 §, 20 §, 144 §). Since most of the Mulli sheep (and other animals) are found by the western building(s), which did not show signs of a hearth, it would be tempting to interpret this building as an animal shelter. However, since stratigraphy is only partly documented, it is not obvious that all the deposits belong together with the building(s). Moreover, some folklore accounts do specify a special connection between annual sheep sacrifices and good relations with the guardian spirit of the house (Varonen 1898, 158), so in this light, deposits in connection with a dwelling building are also possible. This seems to be the case with deposit number 11 at Mulli as well.

In addition to animal remains, the Mulli site exhibit signs of other domestic depositional practices. As mentioned, a piece of polished green Greek porphyry interpreted as a fragment of a portable altar was found concealed by the hearth of the eastern building dated to after AD 1050 (Pihlman 2005, 215; Vuorinen 2009, 73, 164, 182, 212 f.). None of the re-analysed animal remains derive from contexts by this building, which might point to a difference in ritual activity areas. Moreover, a lead-bronze ingot with eastern provenance was found concealed under the south-eastern corner of the same building where most of the animal remains were situated (in the north-eastern area). The ingot has been interpreted as a wealth deposit, but the evidence of plant remains inside it and a bird's egg under it (Suhonen 1998, 73) gives reason to consider a ritual significance for this deposit as well.

Even though the new religion affected burial practices quite prominently, changes in domestic rituals may have been subtler and proceeding at a slower pace. In the light of domestic rituals practiced as late as the early 20th century in Finland, this is not surprising. Still, the Mulli site offers valuable evidence of this aspect in this earlier period in the area of Finland. Since the Mulli sheep at least partly predate the canonization of St. Olav,²⁸ it is unlikely that the ritual has been introduced as St. Olav sheep. However, an existing custom of cutting the sacrificial

²⁸ King Olav was sanctioned in Norway already in AD 1031 (Knuutila 2003, 79).

animal to small chunks could have brought the saint's violent death in mind, which might have contributed to later assimilating the practice with the cult of this particular saint (cf. Sarmela 2009, 122). The later taboo against breaking the bones might have become popular when ideas of the resurrection of a complete body were more widely adopted.

Conclusion

This article is the result of a re-analysis of a previously analysed bone material from Mulli at Raisio. The need for a re-analysis was realized since this bone material is not a case of typical refuse fauna; a fact that has not been discussed previously. Only one complete sheep skeleton deposited singly was initially interpreted as the remains of ritual activity at the site. This sheep burial was originally published as if it was an animal that had been buried as an intact carcass. However, re-analysis confirmed that the animal was cut into small chunks before carefully depositing all bones in the pit. The treatment of the body in this evident deposition, and another one recognized during the re-analysis, proved to be the element that enabled further discussion since similarly treated bones are included in the more mixed contexts as well.

In fact, the Mulli site exhibits evidence of repeated rituals involving sheep cut to small pieces and bones buried at the homestead. It is possible that annual sheep sacrifices known from historical times are a later development of similar practices as the ones visible at Mulli. In addition, some ritually handled goats are present as well as piglets deposited as whole carcasses. It also seems that some bird bones belong to the depositions. Moreover, some of the animal remains were connected with fragmented domestic artefacts such as shards of ceramic vessels, fragments of clay loom weights, burnt clay, and iron objects.

The Late Iron Age site of Raisio Mulli is exceptional in Finland since organic material has preserved on this site unlike in most prehistoric contexts. Thus it offers a unique glimpse into the ritual practices involving animal remains in Late Iron Age Finland. It seems that though Christian beliefs had already changed the burial practices of the Mulli dwellers, domestic rituals remained in an older form involving fragmentation as ritual treatment.

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Sonja Hukantaival ja Auli Bläuer

RITUAALSED LOOMAOHVRIID HILISRAUAAJA SOOMES RAISIO MULLI ASULAKOHA NÄITEL

Resümee

On uuritud rituaalselt maetud loomi hilisrauaaja ja varakeskaja (900–1200 AD) Raisio Mulli asulakohast Edela-Soomes. Algselt, kui asulakohta uuriti 1990. aastail, tõlgendati üht hoone seina alt leitud lammast rituaalselt peidetuna. Valides proove ühe teise uurimuse jaoks, pälvis autorite tähelepanu koduloomade kummaline matmine selles asulakohas ja loomaluid analüüsiti uuesti. Selles artiklis on esitatud osteoloogilise analüüsi uued tulemused ja arutletud rituaalse tegevuse üle.

Kui Mulli luumaterjali ühtse tervikuna vaadata, võib eristada vähemalt 12 lammas (vasak kämbaluu) ja 2 kitse (vasak kämbaluu). Kuid leiukontekstide järgi otsustades oli üksikute loomade arv ilmselt märksa suurem. Nii võib asulakoha leiumaterjalist eristada 19 lammas, 4 kitse, 2 siga ja ilmselt 2 kana. Lambad ja kitsed ei olnud maetud tervete loomadena, vaid kehad olid osadeks lõigatud.

Kaks looma leiti tervena: ütt kontekstis nr 11 ja peaaegu terve lammas kontekstis nr 3. Mõlemad loomad olid väiksemateks tükkideks lõigatud. Need kaks puutumatu säilinud konteksti peegeldavad tõenäoliselt ka ülejäänud loomade käsitsemist selles asulakohas: loomad lõigati väiksemateks tükkideks, maeti auku (tervena või osaliselt) või eraldi kogumina samale alale, kus asulakoht oli sadu aastaid olnud. Ilmselt segati selliste matmistega käigus varasemaid luude ladestusi.

Mulli asulakoht pakub näiteid korduvatest rituaalidest, mille käigus on lambaid raiutud väiksemateks osadeks ja maetud majapidamiste ümbrusse. On võimalik, et iga-aastased lammaste ohverdamisest, mille kohta on viiteid ajaloolistes allikates, on hilisemad arengud sellistest tegevustest, mida saame Mulli asulakohal jälgida. Lisaks lammastele on rituaalselt käideldud ka kitsi ja põrsaid on maetud tervikliku kehana. Samuti näib, et ka linde on sellistesse rituaalidesse kaasatud. Veel enam, mõne loomaluude kogumiga seonduvad ka purustatud majapidamisesemed, näiteks savinõude killud, kangastelgede raskuste katked, põlenud savi ja raudesemed.

Raisio Mulli hilisrauaaegne asula on Soomes erakordne, kuna erinevalt teistest esiajaloolistest paikadest on seal säilinud orgaaniline materjal. Seega pakub see harukordse võimaluse jälgida Soome hilisrauaaegseid rituaalseid praktikaid, mis muuhulgas hõlmavad ka loomi. Näib, et ehkki kristlikud uskumused olid juba muutnud Mulli elanike matmiskombeid, olid kodused rituaalid säilitanud oma varasema vormi, muuhulgas ka tükeldamise kui rituaalse tegevuse.