



ARCHAEOLOGICAL INVESTIGATIONS OF PRE-VIKING AGE BURIAL BOAT IN SALME VILLAGE AT SAAREMAA

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INTRODUCTION

In autumn 2008 remains of human skeletons and ancient artefacts, including some deformed sword fragments, boat rivets and two antler dice, were brought to light while digging an electrical cable trench for the lighting of a cycling track in the Salme village at Saaremaa. Considering the shape of the weapons they were dated to the Vendel Period or to the beginning of the Viking Age (7th–8th cc.) (Konsa *et al.* 2009a, fig. 9; Peets & Maldre 2010, 57; see Table 1). All weapon fragments bore traces of fire. In the course of archaeological rescue excavations some more weapon fragments, human and animal bones and 75 gaming pieces (the difference in the number of gaming pieces in comparison with earlier data (Peets & Maldre 2010) is due to the fragments found amongst the bone material recently) made from whale bone or from bovine *femur*-heads were found from the soil removed from the trench. Five of the gaming pieces were decorated with an engraved ornament (Peets & Maldre 2010). The finds were of Scandinavian types. Some of them, including gaming pieces and single-edged swords, had not been previously found in Estonia. Artefacts characteristic to Estonia or particularly Saaremaa were absent. Human and animal bones and gaming pieces were dated by ¹⁴C method (Table 1).

Table 1. ¹⁴C datings of bone material from Salme I and II boats (after Konsa *et al.* 2009a, fig. 9; Peets & Maldre 2010, 57).

Tabel 1. Radiosüsinikudateeringud Salme I ja II laeva luumaterjalist (Konsa *et al.* 2009a, jn 9; Peets & Maldre 2010, 57 järgi).

Lab. No./ Lab. nr	Material/ Materjal	Radiocarbon Age/ Radiosüsinikuaastad	¹⁴ C 68.2%	¹⁴ C 95.4%	δ ¹³ C
Hela-1914	Human skull (SI)	1285±30BP	670AD (41.4%) 720AD 740AD (26.8%) 770AD	660AD–780AD	-20.8
Hela-1915	Human skull (SI)	1320±30BP	650AD (51.8%) 710AD 740AD (16.4%) 770AD	650AD–780AD	-20.2
Poz-31834	Human (SII)	1320±30BP	-	-	-
Hela-1916	Bovine <i>tibia</i> (SI)	1310±30BP	660AD (49.3%) 710AD 740AD (18.9%) 770AD	650AD–780AD	-20.9
Hela-2169	Bovine <i>femur</i> head (SI)	1154±30BP	780AD (1.9%) 790AD 810AD (10.8%) 850AD 860AD (26.8%) 900AD 910AD (28.7%) 970AD	770AD–980AD	-21.4
Hela-2495	Bovine <i>femur</i> head (SI)	1287±30BP	675AD (42.0%) 718AD 743AD (26.2%) 769AD	663AD–776AD	-21.9
Hela-2170	Whalebone (SI)	1671±30BP	590AD (68.2%) 700AD	530AD–780AD	-16.1
Hela-2171	Whalebone (SI)	1607±30BP	650AD (68.2%) 770AD	590AD–840AD	-16.2

SI – Salme's I boat, SII – Salme's II boat / SI – Salme I paat, SII – Salme II paat

The most significant find beside the ancient artefacts and seven male skeletons was the discovery of the remains of the first prehistoric boat in Estonia. The boat could have been originally about 11.5 m long, moved by the force of oars (Mäss 2009). Unfortunately, only rivet contours of the boat were preserved for about half of the bottom part of the boat (Konsa *et al.* 2009a). Evidently the boat remains had been for a long time covered by the causeway of the old Kuressaare – Sõrve road, which had protected it until the construction of the cycling track.

EXCAVATIONS IN 2010

The excavations of the site were resumed in 2010 to examine the connection of the weapon fragments and human bones discovered in late autumn of 2008 in the new cable trench with the whole complex (Fig. 1). The site is located in the yard of the former Kalda farm, which was completely demolished by a Soviet destroyer battalion of the Red Army in autumn 1941. Some of the excavated area lies also under an age-old village lane. After preliminary landscape surveys and the study of various maps including the cable maps of the electric company, it was clear that the surroundings of the site, particularly the section chosen for excavations, were heavily disturbed by human activities. Three cable trenches traversed the 4 m wide area of the excavation plot in the east–west-direction. Although finds came to light close to the surface, not a single stray find or piece of information on a presumable archaeological site had reached the Saaremaa Museum from the neighbourhood of the Salme complex before 2008. Very profound landscape surveys performed in the neighbourhood by Vello Lõugas before and after the excavations of the nearby Bronze Age ship settings in 1967 (Jaamits *et al.* 1982, 150) did not hint to a possible site either.

The work started at the beginning of July with the removal of the sod layer from an area of 4 × 8 m, parallel to the asphalt road running more or less in east–west-direction between houses and partly coinciding with an age-old village lane. The excavations were continued by 5 cm thick horizontal layers. The first finds *in situ* – hilt parts of two swords – came to light immediately beneath the sod layer (Fig. 2: a). Scattered boat rivets and other finds including shield rivets, 2 arrowheads, 2 whalebone gaming pieces, were found all over the excavation area. Besides these, various modern material (whole bricks, nails, tar paper, etc.) came to light, occurring partly on the same level or even deeper than the *in situ* prehistoric finds. At a depth of about 15–20 cm



Fig. 1. Aerial photograph of the surroundings of Salme. I – excavation plot of 2008, II – excavation plot of 2010.

Jn 1. Aerofoto Salme ümbrusest. I – 2008. a kaevand, II – 2010. a kaevand.

Photo / Foto: Ants Kraut

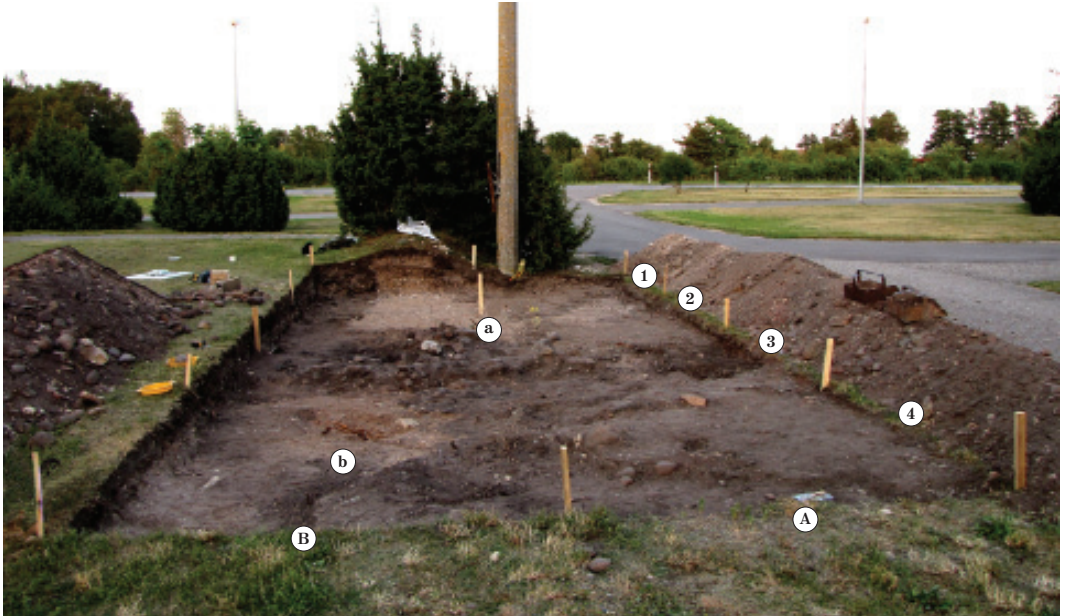


Fig. 2. The excavation with the first finds and a dog skeleton in an early phase of the work. a – 2 swords near the eastern board of the boat, b – the shield boss and dog remains near the western board of the boat.

Jn 2. Kaevand koos esimeste leidude ja koeraluustikuga tööde algfaasis. a – 2 mõõka paadi idapoolse parda servas, b – kilbikupal ja koeraluustik paadi läänepoolse parda servas.

Photo / Foto: Liina Maldre

from the present ground (layer I and II) the contours of a second Vendel Era boat lying more or less in the north-east / south-west direction came to light, with rivets *in situ* here and there. Surprisingly the site, lying so close to the ground and tattered by cable trenches, was quite well preserved. In view of the size of the rivets and the distance between the board contours (3.20 m at first) it became clear that these remains belong to a vessel considerably larger than the first one. Near the western board two shield bosses also appeared at this depth. One of them leaned at an angle of 40° against the inner side of the board contour. At the same place two well-preserved skeletons, a whole dog skeleton and sword fragments were discovered (Fig. 2: b).

In early August the excavation plot was expanded northwards to find the continuation of the formerly discovered boat contours. A 1 m wide dividing strip was left between the new plot and the part opened in July, which was removed only when the new plot reached the same depth as the former one. Then work was resumed also in the southern part of the excavation. Beneath the dividing strip the third, widest cable trench came to light. The northern part of the excavation was relatively poor in finds. Most of them came to light near the surface – boat rivets, an arrowhead resembling a three-forked fishing spear (Fig. 3: 1), a small cylindrical padlock (Fig. 3: 2), antler comb fragments, etc.

Since the presumable boat contour seemed to proceed towards north-east in the undisturbed layer, the excavation was expanded by 2 m eastwards. There a human skeleton was discovered at a depth of 50 cm. It was located higher than the humus vein

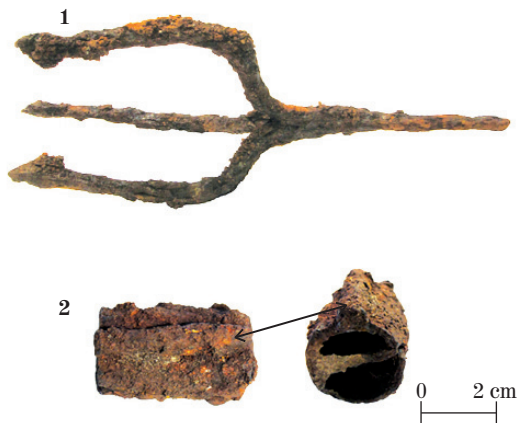


Fig. 3. 1 – three-forked harpoon-like arrowhead,
2 – small padlock.

Jn 3. 1 – kolmeharuline harpuunitaoline nooleots,
2 – väike surulukk.

(SM 10602.)

Photo / Foto: Liina Maldre

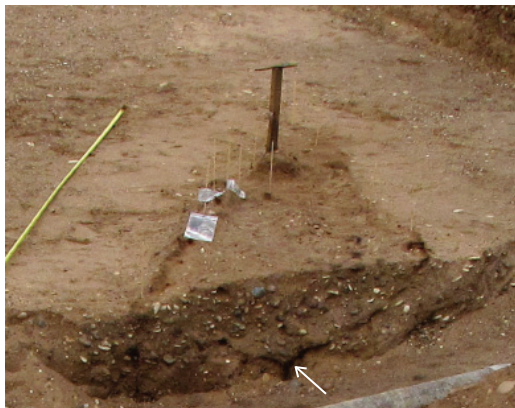


Fig. 4. The humus contour of the boat in the northern side of the cable trench. The arrow points at the humus contour of the keel.

Jn 4. Paadist säilinud huumuskontuur kaabli-kraavi põhjaseinas. Nool osutab kiilu huumusjäljendile.

Photo / Foto: Liina Maldre

side of the cable trench a humus image of a keel-like detail (Fig. 4) and boat rivets could be detected. That guided us to continue the search for boat contours in the northern part of the excavation plot.

At this stage of work we had foreign experts visiting the excavations: Prof. Jussi-Pekka Taavitsainen, professor of archaeology at the University of Turku, and professor of geology, authority on quarternary sediments and genesis of coastal formations,

observable along the whole wall profile of the excavation and hence it could not belong to the prehistoric period. Since only the foot bones and *tibia* were located within the excavation, the plot was extended northwards in this part, to clear the rest of the skeleton. The only finds recovered were a knife of a type known mainly in farm equipment of Saaremaa and West Estonia in the 19th–20th centuries, and an iron buckle. Most likely the skeleton belongs to a local inhabitant killed by the Soviet destroyer battalion and buried on the crime scene, unknown to the family. The remains were handed over to the officials and buried in the Anseküla graveyard. In other nearby quadrates various human bones, including articulated bones of a single left foot, came to light quite close to the ground. These, too, may be connected with the World War II. Since the presumable boat contour became vague in the north-eastern part of the excavation plot, this part was abandoned.

After clearing out a 1 m wide and about 70 cm deep cable trench located in the gridline B, sections of the boat's contour could be observed in each of its sides. It is possible that its western board had been deliberately lowered by chopping through the bows; therefore the original width of the boat may be somewhat smaller than the result obtained by preliminary measuring of the distance between the boards. The specification of the measurements of the boat was postponed until the final clearance of the area with board contours. In the middle of the lower part of the section of the boat in the northern



Fig. 5. Skeletons and weapons of the II and III layers. The I layer has been removed.

Jn 5. II ja III kihi luustikud ja relvad. I kiht on eemaldatud.

Photo / Foto: Liina Maldre

Academic Matti Saarnisto from the same university. According to the opinion prof. Saarnisto the formation, which we had originally regarded as boat contour, had emerged as a result of waves breaking against an obstruction higher than the shore level. In this process sand, gravel and smaller pebbles stratified slightly further of the obstruction, thus forming a low ridge consisting of different layers. The waves reverberating from an obstruction can form a cavity in sediments, which will fill up with organic matter, including plant remains, shells, etc. Such patch, about 15–20 cm deep, containing humus remains was discovered on the central axle of the presumable boat contour, about 2 m north-east of the tip of the contour of rivets marking the prow or stern of the boat. According to Saarnisto the boat had not been buried, i.e. the soil had not been piled upon it by man, but the boat had been buried under natural marine sediments in the course of time.¹ This confirmed our theory of the natural origin of the soil covering the boat. The same could be seen in the case of Salme I boat also (Konsa *et al.* 2009b, 72). Hence the boats had not been buried, as it had been the custom with boat burials, but they had been used as sarcophagi where only the central part, with dead bodies placed one upon another and grave goods, was filled with stones and sand.

¹ Matti Saarnisto pers. comm., Salme 23.08.2010.

Further excavation of the western part of the plot revealed a conically tapering cavity, about 170–190 cm deep, filled with the surrounding soil. Since the fill did not contain wastage typical to farm life (modern glazed pottery, glass, scrap metal, etc.) we had to reject the idea that the place was a farm dump hole. Since shell and bomb splinters were found all over the plot, it seems plausible that the cavity was a result of the explosion of a large-calibre shell or a bomb. In view of the fierce battles that took place near Salme in autumn 1944 this version seems highly likely. Archaeological finds may have fallen into the cavity, when it was filled up, from boat remains which were slightly damaged by the explosion. The few finds from the shell crater included boat rivets and two sword fragments, also four gaming pieces, one of which was turned from walrus tusk.

It became evident that the number of skeletons within the boat contour is considerably larger than we had expected (Fig. 5) and therefore we continued work with methods used in the excavations of inhumation burials: at first a skeleton is connected with the finds belonging to it and later the investigated area with separate burials, thereafter the finds will be connected with the general plan of the excavation. Since in Salme the skeletons and grave goods were located in several layers in a very small area in the central part of the boat contours – in principle a closely packed multi-layered mass grave –, the determination of find assemblages belonging to certain skeletons was sometimes problematic. Therefore the final results can be obtained only after the completion of field work and exhaustive analysis of the find material.

ARTEFACTS

At the moment the number of finds recovered from the second boat and taken to the conservation laboratory of the Institute of History of Tallinn University exceeds 500. These include about a hundred gaming pieces turned from whale bone and walrus tusk, 2 dice of antler and ivory (Fig. 6), about 30 sword fragments and whole swords (Fig. 7), about 50 arrowheads (Fig. 8), 6 shield bosses (Figs 2, 5, 7), fragments of at least ten antler combs (Fig. 9), about ten knives, shears, rectangular whetstones, beads of different materials, and many more.

Gaming pieces

The turned whale bone gaming pieces resembled those found in 2008 by shape, material and measurements, but some exceptions were also found. At the skull of the skeleton XIV (N) an assemblage of eleven gaming pieces together with a 'king' with a possible bronze ornament and an iron tack on the top (Fig. 10) was

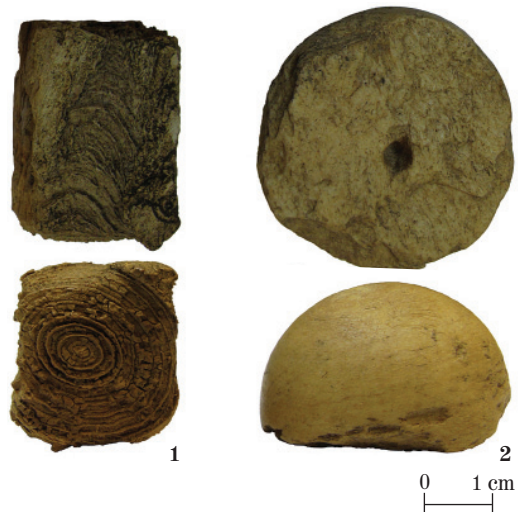


Fig. 6. Dice and gaming piece of walrus ivory (?).

Jn 6. Morsaluust(?) täring ja mängunupp.

(SM 10602.)

Photo / Foto: Liina Maldre

discovered. While the gaming king found in 2008 was larger than the other pieces and covered with an intricate plaited ornament, the 'king' of 2010 rested on an iron tack. Weirdly, it was found in the mouth region of the richly furnished skeleton XII (L) with fragments of a double-edged sword with a ringed hilt of gilt bronze, antler comb, etc. on the central axle of the boat. The gaming piece was in a position suggesting its original location in the mouth of the body (Fig. 11). Since dozens of gaming pieces and an antler die were scattered in that part of the grave, such random falling of a gaming 'king' into the mouth (or even the mouth region) of the dead does not seem very likely. It would rather seem to be a deliberate act with a specific meaning. Two pieces evidently turned from walrus tusk and two dice made from a tusk or tooth of a currently undetermined animal (walrus?) (Fig. 6) were found from different parts of the excavation. Since the second dice was found in the middle of a very tightly placed assemblage of gaming pieces at the left shoulder of the skeleton XXIV (Õ), it was left in its place until further investigations.



Fig. 7. Swords with tips pointing at skulls of skeletons.

Jn 7. Teravikuga luustike kolju suunas paiknevad mõõgad.

Photo / Foto: Jaanus Valt



Fig. 8. An assemblage of arrowheads at the left hip of skeleton VI (E).

Jn 8. Kogum nooleotsi VI (E) luustiku vasaku puusa juurest.

Photo / Foto: Liina Maldre



Fig. 9. An antler comb.

Jn 9. Sarvkamm.
(SM 10602.)

Photo / Foto: Liina Maldre

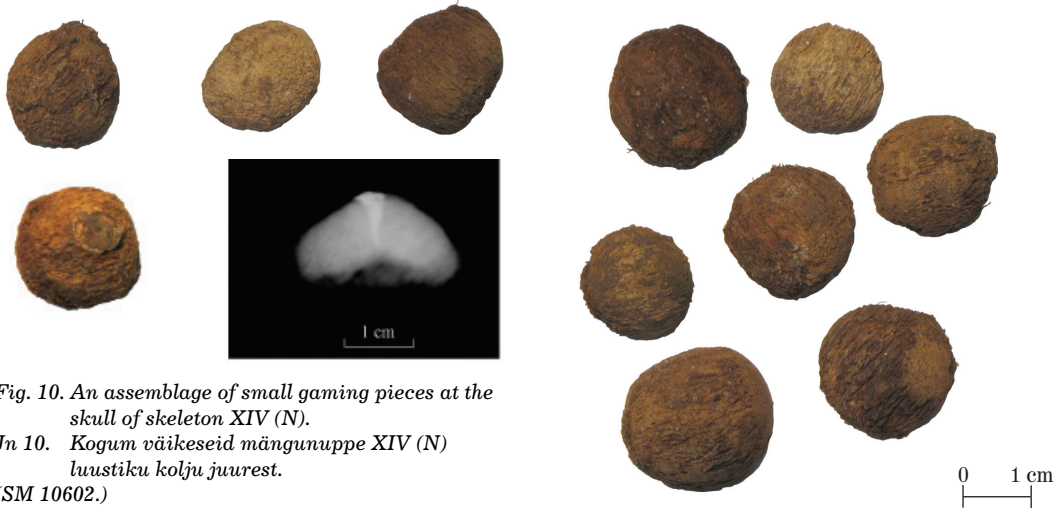


Fig. 10. An assemblage of small gaming pieces at the skull of skeleton XIV (N).

Jn 10. Kogum väikeseid mängunuppe XIV (N) luustiku kolju juurest.

(SM 10602.)

Photo / Foto: Liina Maldre



Fig. 11. The 'king' piece with an iron tack by the skull of skeleton XII (L).

Jn 11. Raudtihvtiga „kuninganupp“ XII (L) luustiku kolju juures.

Photo / Foto: Ragnar Saage

Swords

A large part of the swords consisted of broken and bended fragments of single-edged swords (scramasax), which could be mostly connected with skeletons located higher, i.e. nearer to the ground. As six single-edged swords were wholly preserved and located undoubtedly *in situ* at the skeletons, their unusual position could be observed. Most of them had been placed at the deceased with their tip towards the head, in several cases the sword had been placed on the thorax so that the tip was under the mandible (Fig. 7). The single-edged swords can be dated to period V of the Vendel Period, i.e. about 730–760 AD. All double-edged swords (spatha) had been broken and therefore their exact number



Fig. 12. A sword hilt of gilt bronze and sword pommel with precious stones.

Jn 12. Kullatud pronksist möögapide ja vääriskividega pidemenupp.

Photo / Foto: Ragnar Saage

is not known yet. Particularly outstanding were at least four sword hilts of gilt bronze with an intricate Scandinavian-style ornament (Fig. 12). One pommel with rich ornament is additionally decorated with three red gems – most likely garnets (almandines) (Fig. 12). All swords and hilt parts bear traces of fire.

Arrowheads

All arrowheads belong to Scandinavian types. They are mostly tanged, with leaf-shaped or lozenge blades. There are specimens with narrow blades of a lozenge cross-section and socketed arrowheads as well (Fig. 8). An arrowhead resembling a three-barbed fishing-spear was also found in the disturbed part of the excavated site. This one has some analogues in the contemporaneous Scandinavian material: a similar arrowhead from the ship burial of Storhaug in North Norway has been discovered (Opedal 1998, 53–55). Such arrowheads could have been used for fowling or fishing, but it would suit well also for incendiary arrows, since its barbs would hold a quite large and compact clot of incendiary material (Nørgård Jørgensen 1999, 291). Some arrowheads have pierced the sides of the boat and remained in the original position in the humus vein left by the rotting of the wooden board. Some arrowheads have remained in their original



Fig. 13. Trace of an arrow in the left femur head of skeleton VI (E) and an arrowhead.

Jn 13. Noolejalg VI (E) luustiku vasakus reieluupes ja nooleots.

Photo / Foto: Liina Maldre

positions also in humus from the wooden and leather parts of shields. Probable injuries inflicted by arrows could be observed also on skeletons (Fig. 13).

Shield bosses

At the moment 12 deliberately flattened shield bosses, which, like the swords, can be dated to the period V of the Vendel Period, have been found with the skeletons. Half of them were left in their places until the work will be resumed. Deciding by the partly preserved humus veins around the bosses, originating from the organic matter of the shields, the diameter of shield was about 90–110 cm. Since the humus images of shields were mostly incompletely preserved, the distance between the centre of the boss and the edge of the shield (i.e. *radius*) was measured, which was 45–55 cm on different shields. Regarding the width of the numerous shields we may say that the bodies were literally covered with shields (Figs 2, 5, 7). With most of the shields and bosses the iron plaques and shield rivets that were used to attach them to the wooden parts were also preserved. Beneath some of the bosses remains of shield handles were preserved.

Beads

Beads are generally rare in burials of the period, but from Salme II boat some beads and pendants of different material were found. At the right hip of skeleton XIX (S) a light cylindrical bead with a russet patch ornament, resembling stoneware, and a dark blue bead with rounded sides and a red enamel stripe came to light (Fig. 14: 1, 2). A little southward from these two bear canine pendants fell out of the mixed layer in the side of the cable trench. The connection of the pendants with skeletons was not clear. There were different beads near the wrist of skeleton XIX (S): a bi-conical one turned from amber, a dark blue faceted specimen of glass, a yellow bead of glassy pulp or enamel and a flat specimen of bone plate, with rounded sides and angles (Fig. 14: 3–6). These may originate from Helgö (see Lundström 1981; Jørgensen 1990). They could have served as amulets or decorations. Two small blue glass beads with rounded sides and one faceted bead of greenish-yellow opaque enamel-like pulp were found at the left wrist of skeleton XXII (V) (Fig. 14: 7–9).

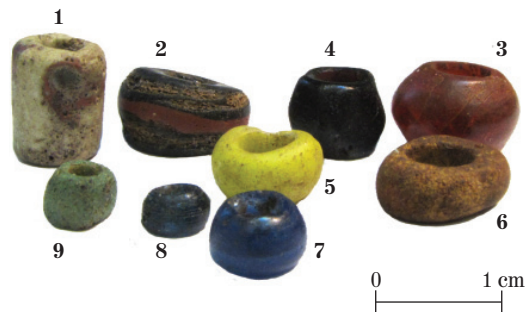


Fig. 14. Beads of different material.
Jn 14. Erinevast materjalist helmed.
(SM 10602.)
Photo / Foto: Liina Maldre

They could have served as amulets or decorations. Two small blue glass beads with rounded sides and one faceted bead of greenish-yellow opaque enamel-like pulp were found at the left wrist of skeleton XXII (V) (Fig. 14: 7–9).

Rivets

Iron boat rivets form the majority of the finds. They are considerably more massive than those of the I boat. By the shaft length they can be divided into three groups: small (length up to 50 mm), medium (majority, length about 60 mm), and long (70–75 mm). The shafts have disc-shaped or rectangular cross-sections, with a diameter of 7–9 mm. Besides these, four rivets were found with considerably longer and thicker

shafts (length 140–150 mm, diameter 12–13 mm). Considering the measurements of the rivets as well as other characteristics of the boat it is likely that the find may be an early sailing ship.

OSTEOLOGICAL MATERIAL

Human remains in the boat

28 human skeletons were found in at least 4 layers inside the burial-ship during archaeological investigations in summer 2010 (Fig. 5). Three layers of bodies were buried along the ship and the deepest one perpendicularly. The bodies were placed into the burial vessel in an orderly way and with obvious care. This pattern differentiates the burial technique used in Salme II boat-grave from the one used in Salme I boat-grave.

After the skeleton of the dog was found in 2010 we started digging towards east and one by one three human skeletons in the extended supine positions (I(A), II(B), III(C)) were exposed. Each skeleton found was laying deeper in comparison with the former one following the shape of the burial vessel. Fourth skeleton (F) lying on its right side was found couple of meters farther in eastern directions. At this moment the first row of the skeletons and an approximate width of the burial vessel were actually exposed.

A second row of burials has not been found in the first layer and it is quite plausible that it does not exist. Still, we should keep in mind that the burial-ship is not completely opened. The number of rows of skeletons in the ship is therefore not entirely clear, and the number of burial layers is not final until the excavations are finished. Most of the skeletons were left inside the Salme II boat in autumn 2010, because their placement, postures and relations to each other are crucial to understand the burial technique used in military funeral and the inner construction of the burial vessel. Only the first layer of skeletons was recovered and deposited at the Institute of History, Tallinn University. A description of this part of the military mass-grave is given below (Fig. 15).

Description of the first row in the first layer of skeletons

I (A). Male skeleton lying in supine position (Fig. 15) shoulders straight, arms next to the body, palms upward. Head turned left, facing the east. Lower extremities were straight



Fig. 15. I row of skeletons.

Jn 15. Luustike I rida.

Photo / Foto: Raili Allmäe

from the hips. His right upper arm (humeral bone) had been brutally chopped with many strokes (Fig. 16). Therefore the right arm has been 'flexible' and its position is unnatural, but placed carefully next to the body. Later dig into the grave has removed parts of left *ulna* and *radius* (forearm). On his right hip there was a shield boss; under the shield a folded sword was placed on his right forearm, palm and femoral bone, the sword's tip reaching the knee (pointed towards toes).

II (B). Male skeleton lying in supine position, left arm slightly bent from elbow, palm on left hip; right forearm missing, but according to the placement of hand bones his right arm had been straight next to the body; lower extremities were straight from hips (Fig. 15). Right shoulder is nearly straight; left one is slightly up; head turned right facing the west. I (A) and II (B) are buried with shoulders on the same line. Later dig into the grave has destroyed right innominate, *ulna*, *radius* and some lower vertebral bones. The skull indicated serious injury on frontal and parietal bones – a cut by an edged tool (Fig. 17). There are two shield bosses on his left hip and a folded sword next to left femoral bone, its jag pointing towards the head.

III (C). Male skeleton lying on his back, head turned slightly right; shoulders up; spine bent backwards due to the structure of the grave (or burial vessel), head was slightly lower in comparison with chest (Fig. 15). The vertebral bodies were dissociated due to the strain in the body, caused by the position of the body. Hips were remarkably deeper in comparison with other skeletons in the row. III (C) was more in the sitting position than lying, probably due to the structure of the burial vessel. His right lower extremity was straight, left one was bent from the knee, but from the ankles the extremities were together – left ankle under the right. His left arm was straight next to the body, palm on left hip. His right arm was bent from the elbow, hand placed in the middle of the spine, *humerus* and bones of forearm were shifted further from the body and bent (as if akimbo). His right elbow was on II (B), and left arm on V (D) arm, it indicates that III (C) was buried last in the row. There was a bent sword right of his skull and on right upper arm. An arrowhead was in his pelvic area on left innominate.



Fig. 16. Right humerus of skeleton I (A) with chop marks.

Jn 16. Luustiku I (A) raiejälgedega parem õlavarreuu.

Photo / Foto: Raili Allmäe



Fig. 17. Chop marks on the skull of skeleton II (B).

Jn 17. Raiejäljed luustiku II (B) koljul.

Photo / Foto: Raili Allmäe

IV (F). Male skeleton, lying on his right hip. Head turned right, face down. The cable trench had cut the skeleton from the neck to the innominate bones (Fig. 15). The cranium has two cuts in the occipital region, caused by an edged tool. Next to the cranium (east) of IV (F) two swords had been thrust into the ground (Fig. 2).

V (D). Male skeleton lying on his back, head turned right and resting on the right shoulder; thorax slightly turned right, shoulders up (Fig. 15). Right forearm with hand is disarticulated from the elbow and has slipped down as whole distal segment of upper extremity. The hand was bent at wrist towards right femoral bone and was partly under it. It may indicate the subsiding of the whole body right and down. The upper body was bent backwards from the middle of the spine; at the same time the lower part of the body had slipped down, as indicated by the dissociated vertebral bodies. Lower extremities were turned right from hips, left one on top and knees together. Turned position and subsiding of lower body was due to the structure of the grave. The head and thorax area had been rested on something, and at the same time the lower part of the body had slipped down and right from the middle of the spine. It is noteworthy that under the left hipbone of V (D) a shield boss was found. The shield itself had covered the burials of VI (E) and IV (F), and caused the position of skeleton V (D). In the left side of V (D) pelvic area an arrowhead was found. The cable trench has cut through his left forearm, left innominate and left femoral head.

VI (E). Male skeleton, lying on his back; shoulders nearly straight; head turned right. Head has slipped down (the distances between cervical bodies were increased) and was relatively lower in comparison with chest area (Fig. 15). Right upper arm was under the left arm of V (D). The spine was bent right from the middle. The cable trench has cut the skeleton from the *sternum* to femoral heads. Lower extremities are straight from hips. There was a shield boss on his left foot and two arrowheads on his left femoral head. Some animal bones were found upon the thorax of the skeleton.

It seems that at first the bodies were placed in couples at the boards and each couple was covered by one shield. The right elbow of III (C) is on II's (B) arm; the left arm of V (D) is on the upper arm of VI (E). This indicates that bodies III (C) and V (D) in the middle of the row were buried last in the row, but it is not possible to say which pair was placed first: I (A) and II (B) or VI (E) and IV (F).

Animal bones in the grave

The first bones, including animal bones, came to light immediately beneath the sod layer. Evidently the majority of them come from the boat, which is suggested by the fact that the topmost mixed layers also contained human bones. Nevertheless the occurrence of later material – e.g. animal teeth (excluding dogs), which were few among faunal remains and came to light mostly in the fill of the cable trenches and shell crater – cannot be precluded. It must be mentioned that animal teeth and mandible fragments were few also in the Salme I boat, where only a kid's skull together with mandible and one sow's canine were found.

From the material collected during the excavations of 2010 altogether 230 animal bones and their fragments could be determined. 95 of these belonged to dogs. Besides these fragments a more or less whole dog skeleton, about 10 bird and 2 fish bones should be mentioned. Quite predictably bones belonged to domestic animals; game

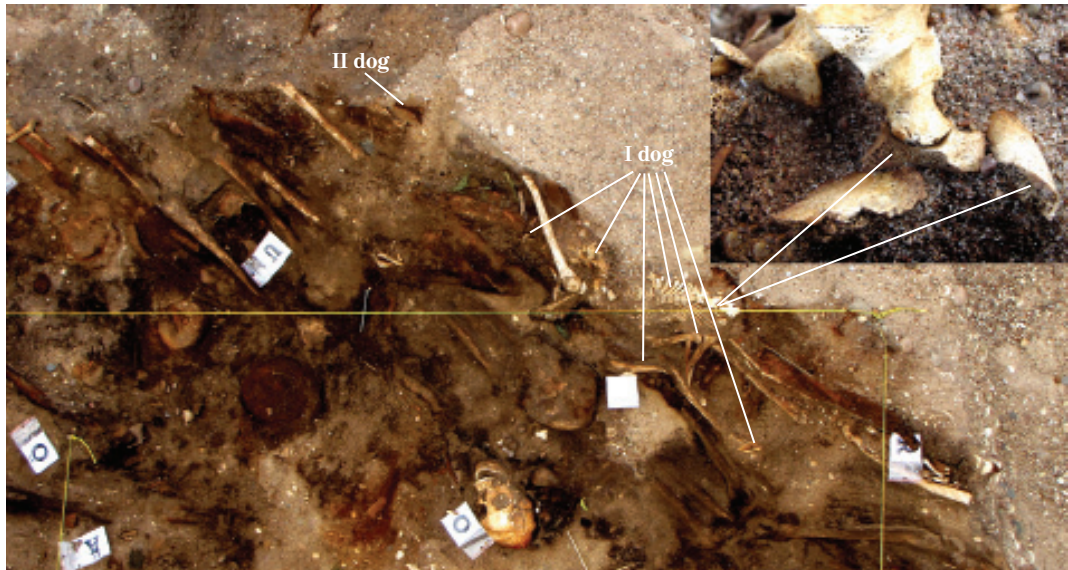


Fig. 18. Remains of dog skeletons in situ.
 Jn 18. Koeraluustike jäänused in situ.
 Photo / Foto: Jaanus Valt, Liina Maldre

was represented by a single claw of bear. Unfortunately this was found in the mixed layer from the cable trench and hence it cannot be firmly connected with any skeleton. Near the claw, however, two bear canine pendants were found, which may come from the same artefact (e.g. necklace). Bear claws have been found in burials also in other places: from the Viking Age boat burial II of Tuna in Alsike (Arne 1934, 9) and the I boat burial of Gamla Uppsala (Nordahl 2001, 16). In small numbers they occur in Iron Age cremation burials in Sweden, whereas they are slightly more numerous in the graves of the earlier phases of the Iron Age than in those dated to the end of the period (Iregren 1972, 89–90; Sigvallius 1994, 76). In Estonia bear claws dating from the Iron Age have been found from the Maidla II inhumation grave (Maldre 2003, 272).

In Vendel and Viking Age burial rites one or more dogs often occurred as grave goods alongside with other domestic animals, including a horse (e.g. Stolpe & Arne 1912; Fridell 1930, 235; Arne 1934; Arbman 1936, 249; Arwidsson 1942, 119–113; 1954, 121–122; Molnar 2001, 94; Nordahl 2001). In Salme I boat no dog bones were found, but in Salme II boat remains of at least three dogs have been found so far. The first dog had been placed on the right side, along the western board of the boat, with its head towards south. The skull of this dog is fragmentary and crumbled apart, but the fragments of jaw bones indicate that it had lain under the right *humerus* of the skeleton XIV (N), its muzzle reaching the fragments of a bronze sword hilt and whetstone (Fig. 18). Possibly the dog's head had rested upon the sword fragments placed against the inside of the board. The skeleton's occipital condyles have preserved *in situ* in facets of the atlas, the axis is also preserved more or less whole. Although the neck may be bent backwards, severing cannot be precluded either. Since the rest of the cervical vertebrae and a part of the thoracic vertebrae are nearly completely destroyed, this

question cannot be definitely answered. The left *humerus* is slightly shifted, the ends are destroyed. The thoracic vertebrae and costae in the preserved part are in their correct anatomical position; the dog's thorax lies upon the tarsus and leg of the skeleton XVIII (R). The dog's vertebral column has been slashed through at the first lumbar vertebra with an edged tool or weapon, and the blow has hit also the last rib (Fig. 18). A similar burial on the bank of the Volga River was described in 921 by Ibn Fadlan, the envoy of the khalif of Baghdad, on his way to Volga Bolgar. He also describes chopping animals in halves and sacrifice of a girl (Kovalevskii 1956, 131–132, 141). Slashing trace could be observed also on the vertebrae of the dog beside the burial boat of Årby, Sweden (Arbman 1936, 249).

The rump of the dog had been placed upon a shield rested against the board, its rear end at the shield boss and haunches on the shield boss, the tail was probably stretched over the boss. A slashing trace could be observed also on the inside of the right *femur* bone, but this blow had not gone through the bone. The hind legs were slightly stretched backwards, but in a rather natural position. It had been an adult dog, quite large; since its *penis* bone was not found, it was probably female. From the II dog, unfortunately only skull fragments and mandibles have preserved *in situ* (Fig. 18). It was also located at the western board of the boat, slightly southwards from the first one, and had been placed with its muzzle northwards, apparently on its left side. Deciding by the size of the jaws it had been smaller than the first one. Other parts of this skeleton did not come to light at the side of the boat in the excavation of 2010, but numerous dog bones were found in the fill of the shell crater, which had damaged the boat at this place.

At least two more dogs were recovered from the fill of the shell crater, including costae and thoracic vertebra with slashing traces. In the upper layers single dog bones occurred all over the plot, among them also a *penis* bone. Hence the gender of at least two dogs can be determined. The number of dogs will hopefully become clear after the excavations in 2011. As the site was once a farmyard, the connection of dog bones with farm life cannot be completely precluded and so the possibility remains that all found dog bones are not related to the boat. We hope to find an answer to this question after the study of the whole material.

Besides dog bones the faunal remains included also bones of cattle, sheep/goats and pigs. Most of these were found in the upper layers and disturbed soil. Within the boat, among the skeletons, animal bones were few. Upon the thorax of skeleton VI (E) a distal end of pig *ulna* and *radius*, a fragment of *scapula* with chopping traces and some indeterminable animal bone fragments were found. At skeleton XI (K), between the gaming pieces, 3 fragments of sheep or goat ribs, with chop marks on dorsal ends, came to light. Near the right *femur* of skeleton XXVI (Ö) fragments of sheep *radius* and *ulna* and one fragment of sheep rib were found. The largest number of animal bones came to light at the left side of the skeleton XV (O): deciding by the find situation we may assume that these bones were originally located upon the shields. The number of determinable bones here was 34, which belonged to sheep/goat and pig, and two fragments also to calf. Several bones bear chopping traces and on one pig *femur* a cutting trace can be observed. Sheep and goat bones are ribs and front and rear extremities, pig bones are ribs and fragments of *femur* and *tibia*, and calf is represented by a fragment of *humerus* and another of *sternum*.

Since the excavations in 2011 will surely unearth more animal bones, it is too early to analyze thoroughly the species, age and anatomical composition of animal bones at the moment. Preliminary study, however, leaves an impression that at least the anatomical structure of animal bones from the Salme I and II boats is similar: few teeth and skull fragments and nearly complete absence of distal parts of extremities.

DISCUSSION

Considering the rich find material and the sacrificed dogs and hawks it seems quite likely that the buried people were important noblemen of Scandinavian origin and their attendants. From which part of Scandinavia they came – Jutland, Gotland, or perhaps Curonia, where there was also a Scandinavian community – is not clear yet. It seems that taking dogs and hawks on a sea voyage, including the so-called ‘armed diplomatic missions’, was quite common with noblemen of Germanic-Scandinavian origin. But the undertaking, originally designed to be more or less pacific, could easily turn into a military conflict with tragic results, brought about by underestimation of the adversary, artless diplomacy and overestimation of their own martial abilities. Such examples are numerous in chronicles and sagas. One of such well-known stories is the conquest of England by the Normans in the 11th century, which has been depicted in great detail also on the famous Bayeaux’ tapestry (Grape 1994, 95). Its starting scenes visualize the noblemen’s undying passion for hunting, but also the failure of the so-called ‘armed diplomacy’. The future King of England prince Harold, being deputed on a special mission, has taken along a strong cohort as well as hounds and hawks. The peacefully started expedition ended in an encounter with the Normans, imprisonment of Harold and his taking an oath of vassalage to Duke William, which, incidentally, was the prologue of the conquering of England in 1066. At least as well known is the story of the failure of the ‘armed diplomatic mission’ of Prince Igor of Kiev, member of Scandinavian nobility, at the dutiable Drevlyans, which ended with the execution of the prince by the rebels, and the triple retribution of the widowed Princess Olga on the guilty Drevlyans (Aleksandrov 1995). It is possible that the background and reason for the Salme event was also an unsuccessful taxing raid against the inhabitants of Saaremaa. However, the possibility of mutual reckoning of Scandinavians cannot be precluded either.

SUMMARY

The beginning and end of the excavations in 2010 at Salme differed from the expected and anticipated results in almost every aspect. The discovery of the contours of the second boat quite close to the ground was unexpected. Surprisingly the site, cut through by three cable trenches, was quite well preserved. Predictions formed after the landscape survey in spring and after the study of maps and charts in various institutions considerably differed from the final result. The proposed excavation strategy was based on the analyses’ results and the facts that the area in question was heavily damaged by human activities, and that before the road construction in 2008 no reports or finds indicating the presence of a monument had been recorded. Hence the discovery of another, larger burial site seemed most unlikely. Since the remains of the I boat were mostly located under the embankment of an age-old road, its discovery was not so

surprising, after all, the road with relatively heavy traffic was good protection against chance diggings. The finds recovered in late autumn of 2008 were very similar to the finds connected with the I boat and could be dated to the same period – to the end of the Vendel Period or the beginning of the Viking Age. Moreover, very well-matched sword fragments came to light from two different places standing apart by about 50 m (blade part from the first and hilt part from the second site). Therefore the opinion was formed that the whole material comes from the I boat and has been shifted to the second site either by human activities (e.g. digging of cable trench during the war or immediately after it) or by ice hummock and storm waves. Since the discovery of another boat seemed unlikely, the time planned for the excavations was 3–4 weeks maximum. Although boat contours came to light immediately after the removal of the topmost layers, nobody could anticipate the real extent even then.

At this moment it is quite certain that both boats and the skeletons in them, with weapons and other finds date from the same event – funeral of warriors after a battle that took place in about 750 AD (see Table 1). The finds and the manner of burial indicate that the remains belong to seafarers of Scandinavian origin. Boat burials were spread mainly in Scandinavia, but they occur also in regions that knew Nordic expansion, including Germany, Poland and elsewhere in the deltas and on the banks of the large rivers of the eastern, central and western Europe (Müller-Wille 1974; Duczko 2004; Gerds 2006). Unlike the Salme boats, burial boats usually contain one or two dead bodies. Quite often the boats were cremated together with the deceased and the sacrificial animals. There is evidence also about human sacrifices (e.g. Kovalevskii 1956, 131–132, 141). The Salme complex of two boat graves with its large number of burials (up to now remains of 35 individuals have been determined) is unique in the European context.

At the moment 28 skeletons have been found from the II boat and further excavations will probably discover more. Although the find material is unilateral – mainly boat rivets, whale bone gaming pieces and weapons, whereas the numerous single-edged swords, gaming pieces and early padlocks are unparalleled in Estonia – it is an extremely rich assemblage regarding the small size of the area with skeletons being slightly over 4 m². The total investigated area was 92 m². Nearly fifty arrowheads form almost a quarter of the total of the earlier finds from Estonia. The well-matching sword fragments, which before the excavations seemed to indicate the presence of only one find complex now provide an additional proof that both boat complexes date from a single rather well-dated event (about 750 AD). The rich find complex will be evidently instrumental in future for specifying the chronology of the finds of the Late Vendel Period.

As mentioned above, the excavations in 2010 appeared to be considerably more complicated and time-consuming than was anticipated and therefore they were discontinued. We intend to resume excavations in 2011. To get answers to all questions, researchers of human and animal bones, seafaring experts and specialists of various other professions in Estonia and abroad will be involved in the project.

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EELVIIKINGIAEGNE PAATMATUS SALME ALEVIKUS SAAREMAAL

Jüri Peets, Liina Maldre ja Raili Allmäe

Sügisel 2008 tuli Saaremaal Salme alevikus kergliiklustee valgustuskaabli paigaldamisel päevavalgele inimluid ja muinasesemeid, mis põlemisjälgedega relvakatket põhjal otsustades pärinesid eelviikingi- või viikingiaja algusest (7.–8. saj). Liaks leiti kaevetöödega teiselaldatud pinnasest veel mõned relvakatted, inim- ja loomaluud ning vaalaluust treitud ja veise reieluuepeast valmistatud mängunuppe. Leiud olid skandinaaviapärased. Osa esimest, sh mängunupud ja üheteralised mõõgad olid Eesti arheoloogiliste leidude seas esmakordsed. Luid ning mängunuppe analüüsiti ¹⁴C-meetodil (Tabel 1). Edasiste kaevamiste käigus leiti jäänused muinasegsest paadist koos esemete ja loomaluudega.

Samal sügisel avastati esimesest leiukohast u 50 m lõuna pool teise elektritrassi kaevamisel (jn 1) veel inim- ja loomaluud ning muinasesemeid. Kahe leiukoha omavahelise seose tuvastamiseks korraldati 2010. a arheoloogilised kaevamised. Kaevamistele eelnenud maastikuinspeksioonide ja kaardimaterjali alusel oli selge, et muistise piirkond on hilisemast inimtegevusest tugevasti kahjustatud. Muuhulgas läbivad kaevandit kolm kaablikraavi, samuti on lähiümbruse tasandamiseks kasutatud naabruses asuva Salme põhikooli ehitusjääke. Kuigi muistis paljandus maapinna lähedal, ei olnud enne 2008. a Salme kompleksi ümbrusest teada ühtegi muinaseset ega leiuteadet.

Tööd algasid mättakihi eemaldamisega 4 × 8 m suurusel alal, kaevandi kogusuuruseks kujunes välitööde lõpuks 92 m². Kaevati 5 cm paksuste horisontaalkorristega. Esimeste leidudena avastati kahe mõõga pidemeosad. Kogu kaevandi alal esines hajusalt paadineete ja teisi leide, sh kilbineete, kaks nooleotsa, mõned vaalaluust mängunupud jms. U 15–20 cm sügavusel maapinnast paljandusid teise vendeliaegse paadi mõlema parda kontuurid, koos kohati *in situ* paiknevate neetidega. Neetide mõõtmeid ja pardakontuuride omavahelist kaugust arvestades oli selge, et jäänused on pärit esimesest paadist märksa suuremast alusest. Läänepoolse parda läheduses tulid samal sügavusel nähtavale kaks kilbikupalt, kaks hästi säilinud skeletti, terve koeraluustik ning mõõgakatkeid (jn 2).

Algset kaevandit laiendati põhja suunas lootusega leida jätk paljandunud paadikontuuridele. Uus kaevandiosa oli suhteliselt leiuvaene. Enamik ese-

metest, sh kolmeharulist ahingut meenutav nooleots (jn 3: 1), väike suruluk (jn 3: 2), sarvkammide tükk jms leiti maapinna lähedalt. Ka põhjapoolseima kaablikraavi põhjaseinas tuli nähtavale paadi ida-lääne-suunaline lõige, mille alumises osas oli jälgitav kiilutaolise detaili huumusjälgend (jn 4) ja laevaneete. Kuna luustikud ja hauapanused paiknesid väga kitsal alal ning mitmes kihis sarkofaagina kasutatud paadi pardakontuuride vahel tekkis mõnikord probleeme esemete ja luustike seostamisel (jn 5). Seetõttu saavad lõplikult tulemused selguda alles pärast väliuuringute lõpetamist ja leiumaterjali põhjalikku analüüsimist.

Mõlemat paati ja nendes olevaid luustikke ühes esemetega saab siduda ühe sündmusega. Leiuaines ja matmisviis osutavad, et tegemist on skandinaavia päritolu meresõitjatega. Paadis matmise komme oli levinud peamiselt Skandinaavias, kuid neid esineb mujalgi. Erinevalt Salme laevaleidudest on tavaliselt matusepaatidesse või laevadesse paigutatud üks või kaks surnut. Salme suure arvu matustega paatkalmete kompleks (praeguseks on tuvastatud kokku 35 inimese säilmed) on Euroopa kontekstis mõneti ainulaadne. Praeguseks on teisest paadist üles võetud üle 500 muinasleiu, mh sadakond vaalaluust ja morsakihvast treitud mängunuppu, 2 sarvest ja vandlist täringut, u 30 mõõgakatket ja tervet mõõka, ligi poolsada nooleotsa, 6 kilbikupalt, vähemalt kümne sarvkammi katkeid (jn 9), nuge, kääririd, neljakandilisi ihumiskive, erinevast materjalist helmeid jms.

Mõõkadest paljud olid pooleks murtud ja sälgitud üheteraliste mõõkade katked, mis olid enamasti seostatavad maapinnale lähemal paiknevate luustikega. Mitu üheteralist mõõka oli säilinud tervena ja asusid luustike suhtes *in situ*. Enamasti asetses mõök surnu juures teravikuga luustiku pea suunas, mitmel juhul oli mõök paigutatud maetu rindkerele nii, et mõõgaots ulatus alalõualuu alla (jn 7). Seda tüüpi üheteralised mõõgad on dateeritavad hilisesse eelviikingiaega (u 730–760 pKr). Kõik kaheteralised mõõgad olid katki murtud. Esiletoomist vääri- vad neli skandinaaviapärase ornamendiga kullatud pronksist mõõgapidet. Neist ühe pidemenuppu kaudistavad 3 punast väärisikivi – tõenäoliselt almandiiniid (jn 12). Kõik mõõgad ja mõõgapidemete osad on tulesoleku jälgedega.

Nooleotsad on enamikus rootsuga ja pajulehe- või rombikujulise teraosaga (jn 8). Leiti ka üks kolmeharulist ahingut meenutav nooleots (jn 3: 1), mida Skandinaavia sarnaste leidude põhjal võidi kasutada linnujahil või kalapüügil, kuid sobis ka süütenooleks. Mõned nooleotsad on läbistanud paadikülje ja asusid oma esialgsel kohal pardapuu kõdunemisel tekkinud huumuseviirus. Ka kilpide puit- ja nahkosadest tekkinud huumusekiht sisaldas nooleotsi.

Luustike juurest on seni leitud 12 tahtlikult mõlgitud eelviikingiaegset kilbikupalt. Kilpide laiust (u 90–110 cm) arvestades olid matusetalitse ajal koolnud kilpidest vaibaga kaetud (jn 5), erinevalt I paadikompleksist, milles esines küll üksikuid kilbinete, kuid mitte kilbikuplaid.

Eelviikingiaegsetes paadismatustes suhteliselt harvaesinevateks leidudeks olid 9 erinevat värvi klaasist, merevaigust ja luust helmest (jn 14).

Enamiku kogutud leidudest moodustavad rauast laevaneedid, mis on massiivsemad I paadi omadest. Neetide mõõtmeid ja paadi muid parameetreid arvesse võttes pole välistatud varase purjelaeva võimalus.

2010. a juulis avastati esmalt kolm inimluustiku paadi läänepoolses ja üks luustik idapoolses pardas (jn 2). Kokku tuvastati paadis 28 inimese säilmed, mis olid maetud vähemalt 4 kihis (jn 5) u 4 m² suurusele alale. Kolm kihti luustikke paiknesid laevaga pikisuunas, sügavaim kiht tundub olevat maetud paadi kerega risti. Esialgu näib, et esimese matusekihi moodustab ainult üks rida (jn 15). Kuna enamik luustikke konserveeriti koos paadisäilmetega välitööde lõpus, siis võib uuringute jätkumisel muutuda nii maetute arv kui ka ilmne da uued luustike kihid ja read. Luustike korrapärase asetus Salme II paadis viitab, et matmisel on langenute suhtes üles näidatud hoolt ja lugupidamist. Salme II paadis kasutatud matmistehnika erineb selgelt I paadi omast luustike paiknemise ja asendite osas.

2010. aastal võeti tervikuna üles Salme II paati maetud I rida luustikke (jn 15). Kõik surnud olid maetud selili, välja arvatud IV (F), mis näis lamavat pigem paremal küljel. Surnukehad olid paati asetatud paarikaupa, alustades parrastest. Mõnel luustikul olid jälgitavad väga selged vägivalla tunnused. Näiteks luustik I (A) paremal õlavarreluul olid mitmed raiejäljed (jn 16); II (B) koljul olid otsmiku- ja kiirluudel tõsised löike- või raiejäljed (jn 17); skeleti IV (F) kolju kuklapiirkonnas oli 2 löike- või raiejälge. Luustiku III (C) vasaku puusaluu peal oli nooleots, nagu ka VI (E) vasakul reieluul (jn 13). Nooleotste puhul ei saa kindel olla, et nende

asukoht luustiku juures on seotud surmaeelsel ajal tekkinud kehalise vigastusega.

2010. a arheozooloogilises materjalis oli üks enam-vähem tervelt säilinud koeraluustik, õnnestus määrata ka u 230 imetajaluud ja luufragmenti, millest 95 kuulusid koertele. Lisaks tuvastati kümme linnu- ja 2 kalaluud. Ootuspäraselt koosnes luumaterjal valdavalt koduloomadest – ulukitest leiti üks karu küüniseluu ning kaks ripatsiteks töödeldud kihva.

Salme II paadist on praeguseks tuvastatud kolme koera jäänused. Esimesena leitud koer (I) oli asetatud paremale küljele piki paadi läänepoolset parrast, peaga lõuna poole. Teisest koerast (II) oli *in situ* säilinud ainult koljufragmendid ja alalõualuu. See koer paiknes esimesest veidi lõuna pool ning oli asetatud koonuga põhja poole, ilmselt vasakule küljele. Ülejäänud luustikuosi 2010. a kaevamistel paadi servas tuvastada ei õnnestunud, küll on aga arvuvalt koeraluid paati lõhkunud oletatava mürsulehtri täites. Sealt kogutud luude seas eristati vähemalt kaht isendit, sh löögijälgedega koeraroideid ja rinnaluuli. Lisaks koeraluudele sisaldas arheozooloogiline materjal veiste, lammaste/kitsede ja sigade luud. Neist enamik leiti pealmistest korrimest ja segatud kihtidest. Paadis oli loomaluud vähe. Nn „lihaloomade“ luude anatoomilise struktuuri poolest on Salme I ja II paadi materjal sarnane – vähe on hammaste- ja koljufragmente ning iseloomulik on jäsemete distaalsete osade luude peaaegu täielik puudumine.

Arvestades Salme kompleksi leiurikkust, ohverdatud koeri ning jahikulle, on tõenäoline, et tegemist on Skandinaavia päritolu ülikute ja nende kaaskonna ühismatusega. Millisest piirkonnast – kas Jüüti-, Oja- või hoopis Kuramaalt? – maetud pärinevad, jääb hetkel vastuseta. Tundub, et koerte ja jahilindude kaasavõtmine mereretkele, sh nn „relvastatud diplomaatiletele“ missioonidele oli germaani-skandinaavia päritolu ülikute juures üsna tavaline. Seevastu algselt ilmselt rahumeelsena kavandatud üritus võis aga vastase alahindamise, kohmaka diplomaatia ja oma sõjalise jõu ülehindamise korral muutuda kergesti traagiliste tagajärgedega sõjaliseks konfliktiks. Sellekohaseid näiteid on ajalookroonikates ja saagades-pärimustes rohkesti. Võimalik, et ka Salme sündmuse taustaks ja põhjuseks oli ebaõnnestunud maksustamisretk saarlaste vastu, kuid välistatud ei ole ka skandinaavlaste omavaheline arveteklaarimine.

Kuna välitööd osutusid oodatust keerukamaks ja aeganõudvamateks, jätkatakse neid 2011. a suvel.