The Mosfell Archaeological Project
Report of Hulduhóll Cremation Grave Excavation 2012

By

Jesse Byock[1] and Davide Zori[2]

With additional contributions by

Sigrid Juel Hansen[3], Per Holck[4], Elín Hreiðarsdóttir[5], Lísabet Guðmundssdóttir[6,] Liam Lanigan[7], Rúnar Leifsson[6]

[1] Cotsen Institute of Archaeology & Scandinavian Section, University of California, Los Angeles

[2] UCLA Center for Medieval and Renaissance Studies

[3] Mosfell Archaeological Project and the Reykjavík Academy

[4]Anatomical Institute, Anthropological Department, University of Oslo

[5] Fornleifastofnun Íslands (Institute of Archaeology, Iceland)

[6]Archaeology at the Department of History and Philosophy, University of Iceland

[7]Archaeology Department, University College London

HULDUHÓLL CREMATION GRAVE EXCVATION

The uncovering of a cremation grave on the Hulduhóll hillock from 2001 to 2003 at Hrísbrú yielded a charcoal rich deposit containing human skull fragments, burned earth, and artifacts of bronze and iron. This appears to have been the location of a cremation event rather than the place where the burned bones resulting from cremation were collected for final burial. Carbon dating of this deposit, located on the top and center of the knoll, yielded a calibrated intercept date of AD 990 with a 2σ range of AD 900-1020 (see Table 1). In Iceland where conversion to Christianity is said to have taken place in AD 999/1000, this is a rather late date for a pagan burial ritual. It may speak of the continuation of the old practices, a period of hybridization and coexistence, or a pagan backlash to the conversion. Hulduhóll, translated as "Elfin Hill," is located about 20 m west/south-west of Kirkjuhóll, where we have excavated the Viking Age church (Figure 2).[1] Humans modified this very prominent knoll to give it a shape that we believe approximates a ship with the prow pointing west towards the sea. The "prow" of this ship-shaped mound had been lined with large flat stones along the southern and northern margins and the space in-between filled with gravels from the southern slope of the Mosfell Mountain. Although we have not been able to date the construction of the fill layer, we believe the hillock's modification must have been contemporary with or in reference to the cremation grave. No other significant of human activity on the knoll has been identified archaeologically.

In 2012 we revisited the Hulduhóll cremation site in order to extend the excavation area and excavate the remainder of the disperse cremation deposit (see Figures 3-5 for excavation planning, view of the previous exaction area, and the final 2012 excavation extent). Review of the results from the 2001-2003 seasons suggested that revisiting this site would be fruitful. Particularly interesting was a charcoal layer observed extending to the east of the excavation area. We hoped that opening a wider excavation exposure on the knoll would reveal the full extent of the cremation layers and solidify stratigraphical relationships with any surrounding archaeological deposits. The wider excavation area would also show the connection between the cremation deposit in the center of the knoll and any possible modifications of the knoll along the slopes to the north and south. We sought also to recover additional pieces of cremated human bone scattered further than the center of the feature excavated in 2001-2003. This proved very successful with the recovery of five additional human bone fragments: 1 tooth, 3 vertebral fragments, and 1 piece of a skull. Significant here is the recovery of a deciduous tooth, which shows that at least 2 individuals were cremated. This data has significant implications for our understanding of pre-Christian religion and burial practices, particularly since this is the first cremation discovered in Iceland.

[1] For the desription of the church excvation see particularly Byock, Jesse, Phillip Walker, Jon Erlandson, Per Holck, and Davide Zori (2004) *The Kirkjuhóll and Hulduhóll Excavations at Hrísbrú in the Mosfell Valley, Iceland: The Mosfell Archaeological Project, 2004*. Unpublished Report Submitted to Fornleifavernd Ríkisins, Reykjavík. For the excavation of a grave underneath the place of the altar see Byock, Jesse, Phillip Walker, Jon Erlandson, and Davide Zori (2005) *Excavations and Survey at Hrísbrú, Tjaldanes, and Borg in Mosfellsveit, Iceland: Mosfell Archaeological Project, 2005*. Unpublished Report Submitted to Fornleifavernd Ríkisins, Reykjavík.

Our extended excavation also sought to recover artifacts related to the cremation that might reveal more about the cremated individual. We hoped that the possible recovery of typologically datable finds would help further the chronology achieved from carbon-dating of birch twigs. A diagnostic Viking Age bead was recovered within the cremation deposit, providing a corroborating date to the ca. AD 1000 date achieved from carbon-dating (see Appendix A). Our 2012 re-excavation of the cremation deposit also allowed new samples to be taken for renewed macrobotanical analysis. Twenty liters of cremation deposit was sampled, floated, and sent for analysis by Steven Martin at UCLA.

1.1 Summary of Previous Excavations 2001-2003

We first tested the Hulduhóll knoll in 1999 as part of our initial sub-surface survey of the Hrísbrú farmstead. The 1999 Trench 9184/21010 showed limited human activity at the eastern margins of the knoll, yielding small fragments of bone and relatively undifferentiated sediments overlying solid bedrock. We also tested the knoll in 1999 with geophysical methods (ground conductivity), but this failed to produce any useful results.

During the 2001 field season, we returned to Hulduhóll with significant results. The closer examination of the mound was spurred by Jon Erlandson's identification of 3-4 angular, elongated and flattened cobbles about 70-75 cm below the surface eroding out of the northwest tip of the knoll (Figures 6 and 7). These stones, which had sediment underneath them, were clearly laid by humans and looked like "curbstones" of some man-made feature centered on the knoll. These curbstones differ lithologically from the bedrock foundation of Hulduhóll. The curbstones are a vesicular welded tuff of dense blue-gray basalt, the closest source of which appears to be an outcrop, about 150 m to the northwest of Hulduhóll. In contrast, the bedrock is a vesicular basalt regolith.

To document the stratigraphy of the knoll, we excavated a long and slightly curving trench (designated Trench EH-2001-1; Figures 6 and 8) in an east-west direction across the high point of the knoll. The trench extended 2-3 m from the west end of the knoll almost to the high point, a distance of 9-10 m. At the west end of Trench 1, for a distance of 1-2 m, non-local gravels and small cobbles overlay the "curbstones" visible on the eroding northwest side of the knoll tip. Like the curbstones, the gravels were brought in as fill, probably from the scree slope to the northwest. The gravels have soil underneath them, a further indication of their cultural placement. The gravel fill disappears about a meter and a half toward the east and then only soil and sediment are encountered until the broken top of the basalt bedrock appears.

In 2001, we excavated a second trench, designated EH-2001-2, across the knoll near its high point and perpendicular to Trench EH-2001-1 (Figure 6). The final trench was 2.15 m long trench, with a maximum depth of about 50 cm, and cultural deposits up to about 45 cm thick. At 25 cm below the surface we found a calcined fragment of a human cranial vault (Figure 9). The open condition of the cranial sutures suggests that this was probably a younger person, hardly over 30 years of age at the time of death. The soil in the area of this find contained abundant charcoal and additional fragments of calcined bone. A birch twig from this layer, ca. 40-45 cm below the surface and close to the base of cultural deposits and the find location of the cremated skull fragment was used for carbon-dating and yielded a calibrated intercept of AD 990 (see Table 1).[2] A sizeable piece of heavily rusted iron with two layers of flat metal joined together with a rivet was also uncovered in the same area, as was a strip of copper alloy, probably bronze

[2] The sample was sent to Woods Hole Laboratory (OS-35415) and yielded a 1σ range of AD 980 to 1015 and a 2σ range of AD 900 to 1020.

(Figures 10 and 11). The bedrock exposed at the base of trench EH-2001-2 is relatively smooth and flat with a few angular cobbles of natural origin (Figure 12).

We returned to Hulduhóll in 2002 to learn more about the stratigraphy of the cultural deposits and open a wider exposure of the cremation deposit. This was accomplished through the excavation of a 2 x 2 meter wide test unit designated as Unit EH-2 (Unit 2, Figure 12). This test unit, laid out adjacent to Trench EH-2001-02, was excavated in four quadrants designated Unit 2A (northwest), 2B (northeast), 2C (southeast), and 2D (southwest). Unit 2D included the northern end of Trench EH-2001-2. The unit was excavated in horizontal 10 cm levels and all excavated sediments were screened over 1/8-inch mesh.

The excavations of Unit 2 confirmed the presence throughout the unit of a relatively dense deposit of charcoal and calcined bone concentrated near the base of the cultural deposit. Associated with this charcoal and bone deposit were discontinuous patches of oxidized soil and a pinkish ash, probably mixed peat and wood ash. In the southern portion of Unit 2B and the northern portion of Unit 2C, we identified dense concentrations of charcoal and wood ash that contained two highly calcined human skull fragments that articulated with each other along a fractured edge (Figure 13). These skull fragments were exposed in situ near the southern edge of Unit 2B, approximately 1.3 meters northeast of the skull fragment found in 2001 in Trench 2. These new skull fragments appear to be from the same individual as the skull fragment found in 2001. All three pieces fit together along fracture lines and are similar in thickness and appearance, share the same intensity of burning, and the presence of a cranial suture.

Also mapped in situ in the cremation level were several small metal fragments, at least three basalt cobbles that appear to have been placed near the cremation, a rounded cobble manuport of burned pumice found just north of the skull fragment, and numerous chunks and concentrations of charcoal. Screening of the sediments from the cremation feature also produced large amounts of charcoal and calcined bone. A small number of metal artifacts were also recovered and include two probable iron nails and several small pieces of a bronze. Examination of several small fragments of copper alloy revealed that they were part of a thin bronze sheet that was worked and annealed to shape (Figure 14). The metal artifacts recovered in 2001 and 2002 within the cremation feature represent the densest concentration of artifacts encountered at Hrísbrú.

The bottom of the Unit 2 supported the conclusion that cremation feature on top of Hulduhóll rests on a generally flat natural basalt outcrop. In places within the 2 x 2 m unit excavated in 2002, the surface of the dense bedrock is relatively uneven, particularly along the eastern edge of the unit. Several turfs containing landnám tephra were laid in the cremation area. Traces of turf containing *landnám* tephra were found in some of the lower areas and depressions in the bedrock, suggesting that turfs may have been used to level the surface of the rock outcrop prior to cremation.

In 2002 we obtained two additional AMS ^{14}C dates on small, burned twigs found within the concentration of charcoal and calcined bone in which the in situ human cranial fragments were found (see Table 1).[3] The three dates from the cremation deposit can be averaged to attain a more accurate age that minimizes the statistical errors associated with radiocarbon dating. Averaging all three dates using CALIB 4.3 produced an estimated age of 1028 $\pm$ 20 RYBP, calibrated intercepts of AD 1005 and 1015, and a calendar age range of AD 995 to 1020. This

[3] all dates determined via AMS at National Oceanic Sciences, Woods Hole. Calendar ages derived from Calib 4.3, the latest version of the Calib program

average age provides a relatively narrow window of time— just 25 years at one sigma and 40 years at two sigma (96% probability).

In 2003, our goals were to further document the nature and contents of the cremation feature on the center of the Hulduhóll and the stone-lined gravel fill at the western end of the knoll Feature EH-1. In the center of Hulduhóll we excavated six additional 1 x 1 meter units, two on the west (2E and 2F), two to the north (2G and 2 H), and two to the east (2I and 2J) sides of the 2002 excavation block (see Figures 3-5 and especially Figure 17). We also excavated a 50 x 100 cm wide unit (2E South) adjacent to the west wall of a backhoe trench (EH-2001-2) excavated in 2001 (see Figures 3-5, 17).

In the northern units (2G and 2H) densities of charcoal were considerably higher in the southern half of the units, suggesting that we had reached the northern extent of the cremation concentration. To the west also in 2E and 2F there were comparatively low concentrations of charcoal and ash, indicating that we had reached the cremation extent there as well. However to the east in Units 2I and 2J, we encountered very high concentrations of large charcoal chunks and calcined bone in the basal soil layers, along with a complex intermingling of pockets of pinkish wood ash, discolored soil patches, scattered metal artifacts and burned rock. In the northwest corner of Unit 2I we also recovered another fragment of calcined human cranium from the cremation layer (Figure 15). The extremely high densities of charcoal and in Units 2I and 2J—considerably higher than any densities encountered in the other excavated units—suggested that significant portions of the cremation feature may still exist along the southern, eastern, and northeastern margins of our excavation block.

We explored the nature and structure of the constructed fill deposit at the western end of Hulduhóll by uncovering more than half of Feature EH-1 (Figure 16). This work documented the differential placement of large curbstones vs. the gravel and cobble fill. Geoarchaeological study showed that the western end of Hulduhóll contains a soil and sedimentary cover less than a meter thick, underlain by a relatively flat ridge of vesicular basalt. This basalt bedrock—grayish-green in color, dense, competent, and erosion resistant—is markedly different from the relatively soft pillow basalts and pyroclastic conglomerates that dominate the slopes of Mosfell Mountain just north of the site. Several of the curbstones are of the type found on the slopes of the Mosfell Mountain. Of the nine curbstones documented—all found in situ in either 2001 or 2003—eight consisted of pyroclastic conglomerate and one of stream-rolled vesicular basalt.

The curbstones ranged from 60 cm to 23 cm long, with an average length of 39.2 cm. Their weight ranged from 33.96 kg to 2.08 kg, with a mean of 12.91 kg. To contrast these stones with the gravel fill we collected all stones from a 50 x 50 cm test unit in the center of the feature. All stones above 2.5 cm long were collected and measured. A total of 212 stones were collected and all but one consisted of angular pyroclastic pebbles or cobbles. They all ranged from 2.5 to 17 cm long. Only 13 of the 212 clasts (6.1%) were 10 cm long or more and none were as large as any of the curbstones. The total weight of these 212 rocks was just 15.71 kg, with a mean weight of 0.074 kg (74 g) per clast.

The proximity of this cremation feature to the triangular-shaped and culturally constructed fill on the western tip of the knoll—a feature apparently built to resemble the prow of a symbolic ship—suggests that they are functionally related to one another. Together they are culturally related to a well-documented Viking practice of placing cremation burials in either real or symbolic ships. All four calcined skull fragments from the Hulduhóll cremation feature recovered from 2001 to 2003 were analyzed by Per Holck at the University of Oslo, School of Medicine where they were determined to be from a single individual. The cranial sutures show

that the person was between 30 and 40 years old at death. The calcined human skull fragments associated with dense concentrations of charcoal, wood ash, burned bone fragments, metallic artifacts, and other materials—all found within a localized area atop the prominent mound at Hulduhóll—appear to be the remains of the first Viking Age cremation feature documented in Iceland. Radiocarbon dates on small burned twigs from this feature place the age of the cremation between about AD 990 and 1020. By the end of our 2003 season these were our conclusions. These have not changed, but we now have a much wider exposure on the cremation site, new evidence of the cultural modification of the Hulduhóll mound, a diagnostic Viking Age artifact, and several additional fragments of cremated human bone.

1.2 The 2012 Hulduhóll Excavation

The Mosfell Archaeological Project's 2012 excavation campaign at the Hulduhóll cremation site substantially extended the excavation area and documented a series of finds and features related to the cremation site at Hrísbrú (Figures 5 and 17). The decision to revisit this site proved very fruitful. Our 2012 excavations opened an additional 18.86 m^2 and documented the extent of the disperse cremation layer as it extended to the east and south of the previous excavation area. We found clear evidence of turf modification of the Hulduhóll mound on the north and south slopes, apparently to level the center of the knoll. The wider excavation area showed the stratigraphical connection between the cremation deposit in the center of the knoll and these turf modifications along the knoll's margins. The campaign recovered a suite of finds related to the cremation event including burnt iron, a Viking Age blown bead, and five additional cremated human bones.

The five additional human bone fragments recovered during the 2012 season included one tooth, three vertebral fragments, and one skull fragment. The recovery of a deciduous tooth shows that at least 2 individuals were cremated. This data has significant implications for our understanding of pre-Christian religion and burial practices, particularly since this is the first cremation discovered in Iceland.

Our extended excavation recovered artifacts related to the cremation. A diagnostic Viking Age bead was recovered within the cremation deposit, providing a date range that corroborates the ca. AD 1000 date averaged from our earlier carbon-dating of three birch twigs from within the cremation layer (see Table 1).The renewed excavations of the cremation deposit also allowed for the recovery of a large sample of the burned animal bones that appeared within the cremation deposit. These were analyzed by Rúnar Leifsson at the Univeristy of Iceland. Additionally, twenty liters of cremation deposit was sampled, floated, and sent for macrobotanical analysis by Steven Martin at UCLA.

The extension of the excavation exposure on the knoll clarified the stratigraphy and helped to confirm that no other substantial activities had taken place on the knoll before or after the deposition of the cremation-related layers. Subsequently only windblown soil accumulated on the knoll with intermixing of very sparse domestic refuse in the pre-modern period. In the top layers we found occasional ceramics, glass, and iron fragments, but no coherent anthropogenic soils, midden deposits, or structural features.

The Hulduhóll excavations in 2012 began on August 6th with the mapping on laying out of the local grid and finished on August 28th with the backfilling of the site. We established a grid on top of the knoll following our excavation plan that was designed to reopen Trenches 2003N and 2003E to check the location of the 2012 work in relationship to the previous excavations (see Figures 3 and 4). Excavation proceeded in the single context method. An

additional aim of this year's work was establish the precise location of the old excavations in relation to our current GIS database based on the ISNET 1993 coordinate system. In 2001-2003 we used a local grid system (100x100y) and had measured finds in relationship to the walls of the excavation area. The translation of these coordinate systems will allow us to combine the finds from previous excavations with this year's finds into one relational database. The finds will then be viewable together in maps generated in ArcGIS. All planned units were excavated and towards the end of the season we further extended the excavation area in the northwest corner to follow a turf feature that extended beyond the excavation extent. At the end of the season all layers containing any cultural material had been excavated and all units had been excavated down to natural soil or bedrock.

1.2.1 Post-cremation Layers

The layers between the sod and the top of the mixed cremation layer consisted of windblown sediment with low densities of cultural material from the nearby farm. During the removal of the sod (Figure 18) we identified patches and stingers of Katla 1500 tephra adhering to the bottom of the grass mat and in the top of the A-horizon. This suggests that not much soil has accumulated on this knoll since AD 1500. Nevertheless the topsoil surely has been subject to mixing from the surface by natural processes and grazing animals. This is supported by the recovery of glass and ceramics in the topsoil during previous seasons and by the recovery of white glazed ceramics in the underlying context 5 ([5], see Harrix Matrix in Figure 20 for stratigraphical relationships). However the lack of any of such post-medieval finds below the topsoil also suggests that the mixed post-medieval deposits on Hulduhóll knoll give way quickly to medieval and Viking Age layers.

Topsoil: Context 1

Underneath the sod a topsoil of about 10-15 cm in depth was removed with shovels and trowels. The dark brown soil matrix surrounding the root mat consisted of loose silty sand. The only finds in this layer consisted of one iron fragment (F-2012-044) and two horseshoe nails (F-2012-045). Low densities of charcoal were identified throughout the layer. Patches and stingers of Katla found in this layer suggest that not much soil has accumulated on the knoll since AD 1500. Some mixing has occurred, as discussed above, since materials dating from the modern period were recovered in lower levels.

Archaeological Trenches 2002-2003: Contexts 2, 3, 4, 7, 8, 19

As the topsoil was removed, the archaeological trenches from 2001, 2002, and 2003 became clearly visible (see Figure 22 for photo of excavated trenches and Figure 17 for their location on the 2012 excavation map). We remapped these trenches with our current system and re-excavated Trenches 2003N (fill [4], cut [8]) and 2003E (fill [3], cut [7]). The exposure of Trench 2002 (fill [2], cut [19]) was too narrow to allow for easy re-excavation, so we removed this trench fill gradually as we progressed through the season. The backfill of these trenches was easily recognized and removed. Almost the entirety of Trench 2003N was within our excavation area, while about 70% of the Trench 2003E was re-exposed (see Figure 17). The emptied trenches from 2003 allowed a view of the stratigraphy and aided interpretation as excavation progressed.

Windblown and Mixed Deposits above the Cremation Layers: Context 5 and 10

Below the topsoil and cut by the previous archaeological trenches lies a mixed mostly aeolian soil layer designated Context 5. This layer stretches across the entire excavation area and consists of relatively homogeneous yellowish brown to grayish brown sandy silt with ambient charcoal and burnt bone. The presence – but low density – of ambient charcoal and bone are consistent with the proximity of Kirkjuhóll to the historic Hrísbrú farm. Every 4th bucket of excavated soil was dry-screened over ¼ inch mesh. The finds recovered both in situ and during screening indicate that portions of this layer accumulated in the post-medieval period. Specifically, two glazed industrial whiteware ceramic fragments, probably dating from the 19th to 20th century, were recovered in the northeast corner of the excavation area (Sample Grid N5E4; see Figure 23). The location of these fragments below the spots and stringers of Katla tephra AD 1500 identified in the A-horizon indicate that the top layers of Hulduhóll have seen at least partial intermixing from post-depositional processes. Five copper alloy (most likely bronze) finds were also recorded in Context 5: 3 fragments, a sheet piece, and a rivet head.

Context 10, a compacted deposit of medium brown fine sandy silt, lay beneath Context 5 in the southwest corner of the excavation area. This context was very small measuring no more than 50 x 50 cm, but extended south and east beyond the excavation area. The layer was characterized by its compaction and its position stratigraphically between contexts 5 and 11. Finds were very limited and include only fragments of animal bone and one fragment of iron. The deposit containing small amounts of charcoal was only 1-5 cm thick and was disturbed by less bioturbation than the either context 5 or 11. This area marks the beginning of the northern slope of the knoll and it is possible that the compaction evident here is related to the slope and the turf fill used to level the top of the slope.

Mixed Deposit Containing Evidence of Cremated Bone: Context 6

Context 6 lay beneath Context 5 in the northern half of the excavation area (see Figure 24 and 25). To the south, Context 5 gave way immediately to Context 11 (see below). Context 6 consisted of a homogenous soft grayish brown sandy silt with ambient charcoal and burnt bone that increased with depth. Larger patches of charcoal also increased with depth. The total thickness of the deposit ranged from ca. 10 to ca. 15 cm. The boundary transitions with the overlying Context 5 were diffuse and gradual. The boundary with Context 11, which lay underneath the southern portion of [6], was also gradual although clearer than the transition from [5]. The removal of Context 6 revealed a turf fill along the northern margins of the excavation area, but between the turf fill in the north and Context 11to the south only natural sediments underlay Context 6.

Finds in Context 6 include most importantly, three diagnostic pieces of cremated human bone. These were two human vertebrae fragments (F-2012-104) and one human skull fragment (F-101). In addition to this, six additional possible human bone pieces were identified. But these were too small to be identified for certain. Three copper alloy (bronze) finds were recovered and measured in situ in the northeast corner of the excavation area (Sample grid N5E5 and N4E5; see Figure 23 for the location of these finds). These include a bronze sheet with a rivet head and a copper alloy nail (Figure 27). Some of these finds could be related to the cremation even, although this remains uncertain because of the post-deposition mixing. In contrast to Context 5, however, no ceramics or other post-medieval finds were recovered from Context 6. We interpret Context 6 as mostly windblown soil that accumulated after the cremation event. During the

gradual accumulation of this layer some intermixing of the cremation deposit from below occurred naturally.

1.2.2 Cremation Deposit Layers

The cremation deposit excavated in 2012 was divided into three contexts (Figure 28). The top layer that included substantial intermixing from above was designated Context 11. The largest concentration of cremation material, particularly ash and charcoal, was named Context 12. Context 13 represents an identifiable portion of cremation material that has remained in situ with only very limited, if any, intermixing. In these layers one cremated human vertebral join and one cremated human tooth were recovered. The layer also contained large number of fragments from a broken iron sheet that we interpret as part of the goods included in the funeral pyre.

A Layer of Mixed Cremation Deposit and Windblown Soil Accumulation: Context 11

Context 11 is the top of the charcoal concentration that characterizes the cremation deposit on Hulduhóll (Figures 28 and 29). It is a deposit of homogenous mid brown to light grayish brown sandy silt with ambient charcoal and bone that increases in density with depth. The layer was approximately 5 cm thick in most areas and the compaction was mostly soft with pockets of compact soil. The boundary of Context 11 was clear on the north side and extended beyond the excavation area to the east and south. The stratigraphical transitions between Context 11 and the overlying Context 6 and the underlying Context 12 were clear. In the field, this was the first layer that included an elevated charcoal concentration that we interpreted as related to the cremation event. The recovery of a human vertebral joint (F-2012-103) in this layer supports the interpretation that this layer is related to the cremation event. Other finds were limited – six registered finds total – and include a single nail and a fragment of an iron sheet (see Table 3). In light of the character of the layer and the recovered finds, this layer should be interpreted as the top of the charcoal

The Cremation Layer: Context 12

Context 12 is the recognizable concentration of the cremation deposit (see Figures 28 and 30). This layer has a dense concentration of charcoal and ash (up to 15-20%). It seems likely to us that post-depositional processes of gradual soil accumulation, frost-thaw processes, and bioturbation has resulted in portions of this deposit being incorporated into the overlying layers (specifically Contexts 6 and 11). Besides dramatically increased amounts of large charcoal, this layer yielded a diagnostic Viking Age bead and a cremated deciduous human tooth (Figure 31). The soil matrix of Context 12 consisted of a soft mid brown to light grayish brown sandy silt. The large amounts of charcoal in the layer included increasing amounts of very large chunks as excavation progressed. Ambient bone and wood charcoal were also common. As seen in the 2012 finds register (Table 3), many more animal bones were recovered in this layer. Although there was an increase in burnt bone, the recovered record was skewed towards recovery in this layer as we switched to 1/8 inch water screening to maximize recovery of artifacts and bone that we felt could be securely associated with the cremation event (Figure 32). The layer was generally 1-6 cm deep, although the layer was a bit deeper in a depression in the southwest corner of the excavation area (in sample grid N1E3, see Figure 23). This depression appears to have may have been filled purposefully before the cremation event since charcoal was present but decreased dramatically in the trench fill (Context 16). The edges of this layer were very clear

and we were able to define the edges of the layer to the north, south, and east. To the east the cremation extended in a point just barely beyond the excavation area (see east profile in Figure 45 and picture in Figure 46). To the west the layer extended into the previously excavated area, where it was excavated as part of the "Stratum II" cremation layer. The layer was homogenous, but had a clear concentration of charcoal, ash, and finds in sample squares N2E4 and N3E4. No disturbances of this layer were observed except of course the previous archaeological trenches.

The finds in this layer include cremated human bone, a relatively large collection of animal bone, and a dramatic increase in iron finds. The diagnostic Viking Age bead (F-2012-115; Figure 31) was particularly useful because the dating of this bead type corresponds to the late 10th-early 11th century dates that were provided by previous carbon dating of samples from the cremation deposit (see Table 1). The bead, a small blown blue glass bead of Type E060, was recovered in wet-screening of soil from sample grid unit N2E4, which was also the center of charcoal, ash, and other artifacts that we relate to the cremation event (see Figure 23). The cremated human deciduous tooth is interesting as it is our first – and a very unexpected – indication that two individuals are represented within the assemblage of the cremated bone. The rest of the bone that could give any indication of age has all pointed to an adult person. The most likely scenario is that two people were burned on the cremation pyre. Another possible explanation sees the deciduous tooth as some kind of amulet or keep-safe included in the burial assemblage or kept on the cremated person.

A large number of iron finds were recovered in Context 12. Some of the iron appears to have been exposed to fire (Figure 33). A large number of flat small iron pieces were concentrated in sample grid unit N2E4 (Figure 34). These iron fragments were originally part of a large iron sheet with unknown function. Also recovered in Context 12 were 11 iron nails, 3 iron roves, 6 pieces of probable iron slag, and two fragments of an unidentifiable iron fitting. From the bottom of context 12 we took two 10 liter samples of soil that were floated, and sorted in Iceland (Figure 35). The heavy fraction of the samples yielded small finds that are included in the finds sheet (Table 3), while the light fraction was sent to Dr. Steve Martin at UCLA for identification of botanical remains and the selection of samples for radiocarbon dating.

Cremation Layer with in-situ Wood Elements: Context 13

A small portion (ca. 1 x 0.75 m) of the cremation deposit to the northern extent of the cremation concentration (Context 12) appeared to contain more structured wood charcoal and ash that may have remained where it was burned during the cremation (see Figures 17 and 28; see photographs in Figures 37 and 38). Because the wood charcoal remains appeared more structured – with fractured charcoal pieces found lying together as part of a few pieces of original wood – we decided to record this as a separate context (Context 13). In most other ways, Context 13 differed very little from Context 12. Context 13 was lying directly on top of the natural soil and bedrock. In the area just north of the 2003E trench it filled a depression in the subsoil that meant that the cremation deposit was found immediately on top of exposed bedrock.

Context 13 consisted of a loosely compacted gray silt matrix with heavy charcoal mottling. Charcoal in this layer reached 20% with large chunks and pieces making up a larger percentage of the whole than in Context 12. The layer was homogeneous, 1-5 cm thick, and had clear boundaries. No disturbances were noted except the 2003E trench that truncated the layer to the west.

Some evidence of in situ burning was found, including red soil, large chunks/branches with bark in linear form that could indicate they still lay where they were burnt. A little cut or

depression dipped down to bedrock and was filled with pure charcoal. The shape of the depression suggests that the underlying subsoil here was removed, either during or after the construction of the cremation pyre. Two stones of cobble size, probably deriving from the underlying bedrock sat within this layer. One of the stones was found in "upright" position. Very little burned bone was found in Context 13 and few finds were recovered except a few iron sheet fragments similar to the sheet fragments found in Context 12. The low density of burned bone and artifacts compared with Context 12 seemed surprising initially. But perhaps this bottom layer of in situ wood and ash represents the lowest level of fuel for the pyre. This seems logical if the bottom and other grave accompaniments were placed on top of the fuel.

1.2.3 Turf modification of the Hulduhóll knoll

The 2012 excavations found evidence of turf modification of the Hulduhóll mound on the north and south slopes. This modification included the addition of turf strips and fill to the northern and southern margins of the top of the knoll just where the landscape begins to dip. The inclusion of landnám tephra within the turf that was brought up to the top of the knoll from a wetland below indicates that this modification of the mound took place in the Viking period, probably within 100 years after AD 870 ± 2. It is most probable that this turf and fill leveling was done concurrently with the cremation event. It is also possible that it was done around the time of the cremation in reference to that event or as a later reverence paid to the symbolic meaning of the site. This modification should be connected with the modification of the western tip of the mound that was documented in 2002 and 2003. The turf identified in 2012 and the gravel and stones identified in 2002-3 were both brought to the site to level the knoll or modify its appearance.

Turf Leveling on the Northern Margins of Hulduhóll: Context 9

A turf deposit stretched along the entire northern extent of the 2012 Hulduhóll excavation area (see map in Figure 28 and photographs in Figures 39, 40, and 41). This turf deposit appeared underneath cultural layer Context 6. The turf was the earliest cultural deposit on the spot. Underneath the turf lay only natural and sterile subsoil of mostly windblown origin. The Context 9 turf was a spongy to firm greyish-brown silt containing pockets of clayey sediment, bluish gray organic soil (ancient topsoil), and iron staining in gray clay. Landnám tephra stringers were identified throughout the turf. The layer was 1-1.5 cm thick. Context 9 had sharp boundaries along clear turf discolorations and more diffuse boundaries in areas where the turf was mixed with the underlying natural soil. In general, the layer was relatively homogenous and identifiable most readily by the contents of tephra, organic soil, and clay. The only disturbances to this layer were limited root and worm bioturbation. No finds were recovered in this layer.

Turf Leveling on the Southern Margins of Hulduhóll: Context 14

In the southeast corner of the excavation, a small context of turf fill – 50 x 50 cm – was identified in the area where the Hulduhóll mound begins to slope down towards the south. The turf fill layer matches the turf fill on the northern slope. We interpret this layer as a southern manifestation of the turf leveling that took place on the Hulduhóll mound. The character and contents of the turf, including *landnám* tephra and gray clay, was similar in the modification of the northern and southern slope. The Context 14 soil matrix consisted of firm to soft brown silt with darker grayish brown clay and stringers of landnám tephra. The layer was homogenous with

clear boundaries against the charcoal containing deposits above and the natural soil below. Context 14 extends to the south and the east beyond the excavation area.

Mixed Turf Fill of Cut in Northern Slope: Contexts 17 and 18

In the northwest corner of the excavation area we uncovered a cut or marked natural depression filled with mixed turf and clayey soil underneath the turf leveling represented by Context 9 (see Figures 47-50). The cut ([17]) could be cultural, but it is more likely to be an anomalous natural vertical break in the slope of the knoll. The fill of the cut sloped with the natural topography, such that it was ca. 20 cm deep on the south side against the rising slope, but followed the natural slope of the knoll on the north side. The fill was compact brownish gray clayey silt with red oxidized mottling (see profile in Figure 44 and photograph in Figure 49). The fill contained turf chunks with landnám tephra, clay, and low densities of charcoal. The fill was clearest to the north side where the depresion or cut is alsmot vertical and the fill contrasts with the natural soil. The boundary of the fill becomes less clear to the north and downslope where the cut or depression into the natural soil ceases. We interpret Context 18 as an effort to fill or level a natural or man-made break or hole in the slope.

1.2.4 Human Cremated Bone Recovered during the 2012 Season

We recovered five human bone fragments during the 2012 season: one tooth, three vertebral fragments, and one piece of a skull (see Figure 54). The vertebral fragments are the only elements of the skeleton beyond the cranium and head found at the Hulduhóll cremation site. The recovery of a deciduous tooth shows that at least two individuals are represented in the cremated human bone assemblage from Hulduhóll. This data has significant implications for our understanding of pre-Christian religion and burial practices, particularly since this is the first cremation discovered in Iceland. This short section summarizes the bone that can definitively be said to be human bone. Another range of bone fragments listed as "possible human" in our find catalog (see Table 3) are not described here. This section is based on the identifications and descriptions of the skeletal elements by Per Holck in October of 2012 (see Figure 53). We employ Holck's cremation scale (see Holck 2008) to describe the extent of the burning on the bones. The bones were first identified as potentially human by Liam Lannigan in August during the field season.

Two Human Vertebral Fragments, F-2012-104 and F-2012-158

Two human vertebral fragments were found in Context 6. Both were identified as having been subjected to cremation scale 3 burning. The inner structure of the bone is typical human.

Human Lower Vertebra, F-2012-103

A lower vertebra, L2 or perhaps L3, subjected to scale 3 cremation was recovered in Context 11.

Human Skull Fragment, F-2012-101

One piece of a human skull was recovered in Context 6. Clear remnants of sutures can be seen on this fragment in two places. These are possibly two parts of the same suture. The outer surface is preserved. On the inner surface there is just a 2 mm section where the vault is

preserved in one corner of the fragment. *Lamina interna*, or the inner structure of the bone, is visible. The skull fragment was subjected to scale 2-3 cremation.

Human Deciduous Tooth, F-2012-97
The root of a child's tooth (deciduous tooth) was recovered from the dense cremation concentration of Context 12. The root is very small and is not completely developed. The root canal is still clearly visible. The apex of the root is not complete and the crown is gone. The tooth could be an incisor, but this is not certain. The age of the child ranges from 3-12 years of age. The tooth is clearly not from a baby. The tooth was burned to the level matching cremation stage 3-4. This tooth is indicates that two individuals are represented in the assemblage of burned bone at Hulduhóll.

FIGURES

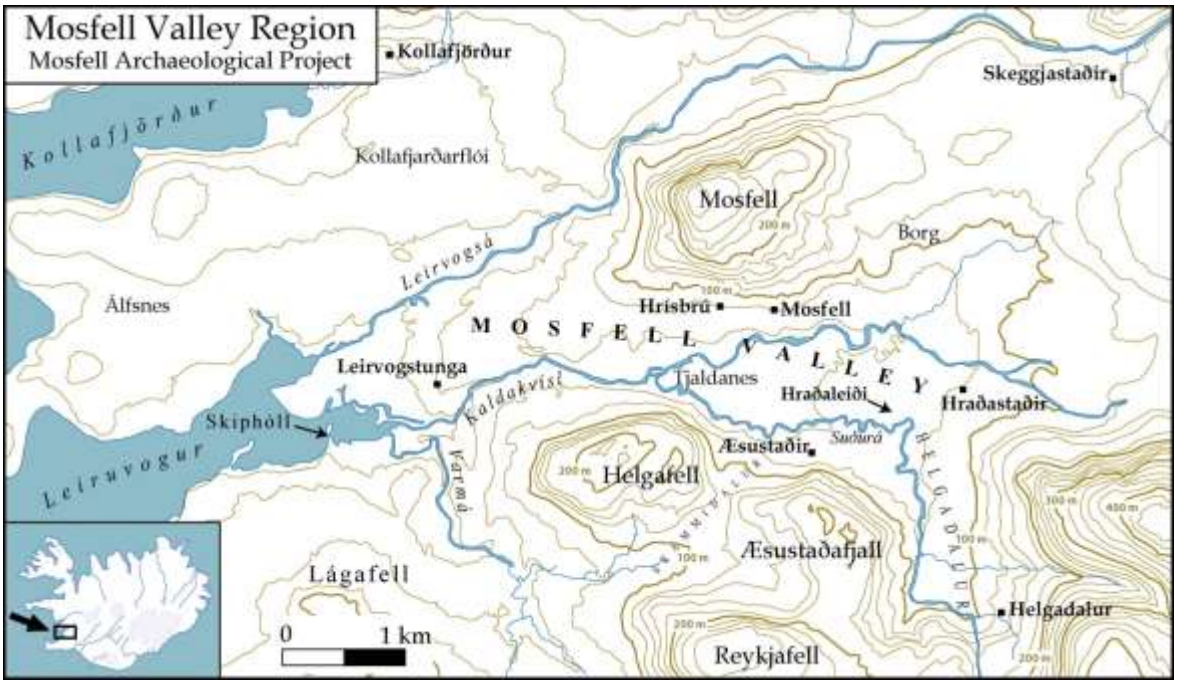


Figure 1. The Mosfell Valley, showing MAP's main sites of excavation and research.

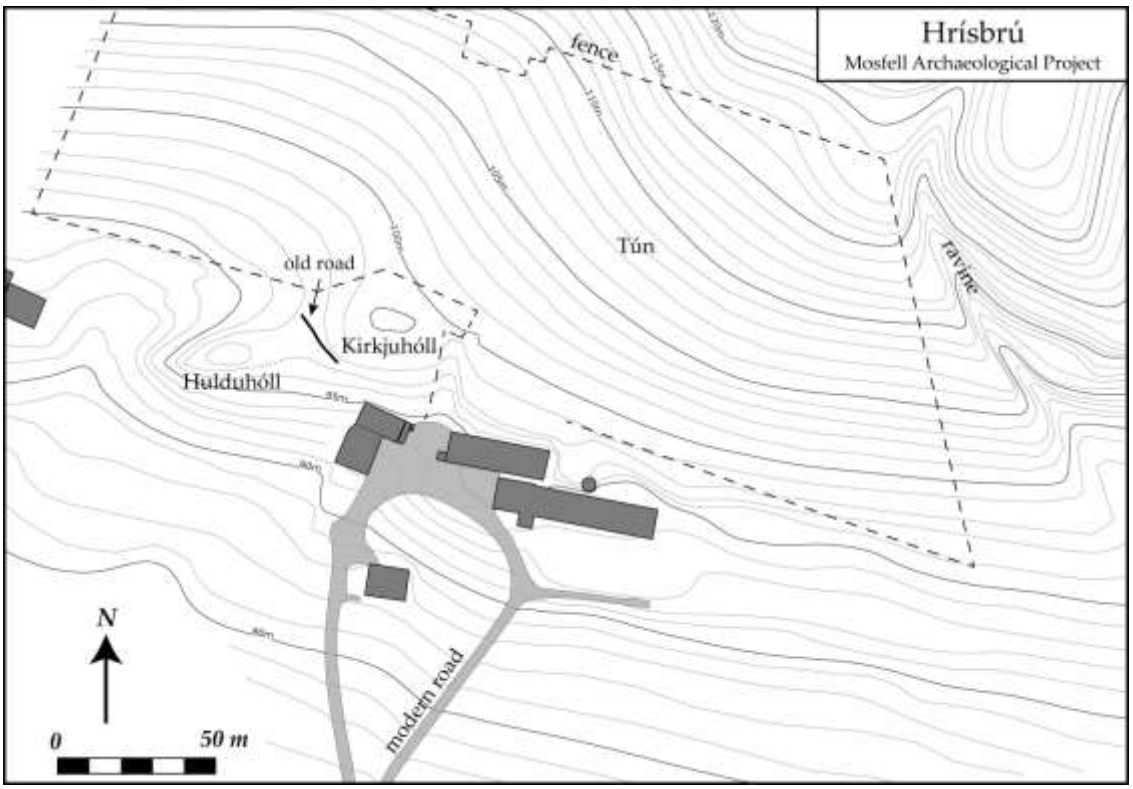


Figure 2. The Hrísbrú farm showing the location of the Hulduhóll cremation site in relation to the modern farm and the Kirkjuhóll site where we have excavated a conversion-period church.

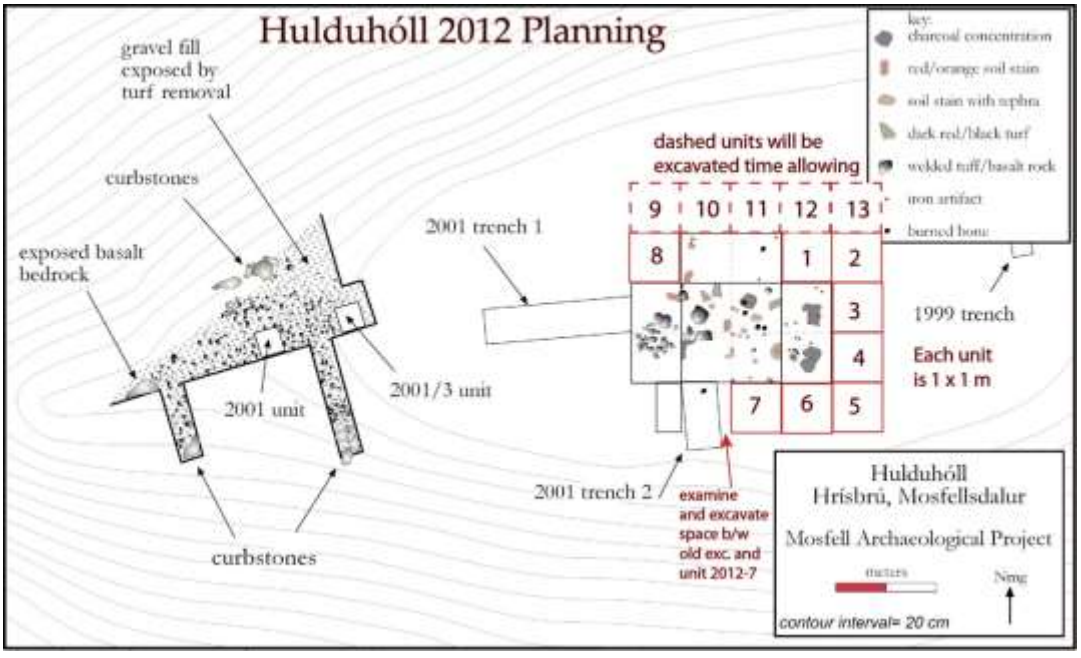


Figure 3. Map for planning the excavation of 2012 at Hulduhóll. The map shows the excavated area of the modified western "prow" of the ship-shaped mound with the flat curbstones lining the margins of the tip. In the middle of the mound, the previously excavated units from 2001, 2002, and 2003 are shown with selected features in plan.

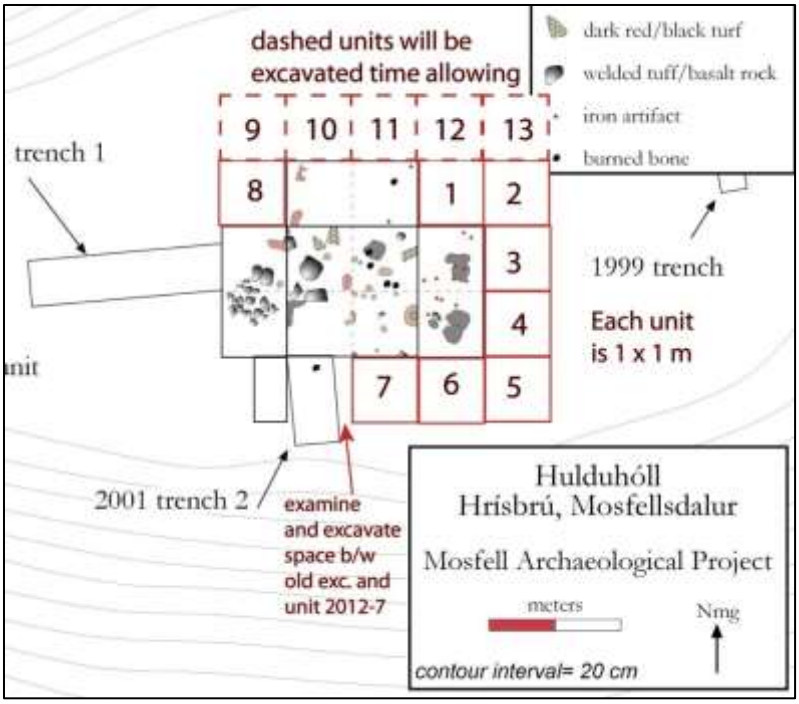


Figure 4. Close-up of the map used for the planning of the 2012 excavation. The map shows the proposed units around the previous excavation area in the center of the Hulduhóll mound. Selected features are shown in plan. See Figure 3 for complete legend key for these features.

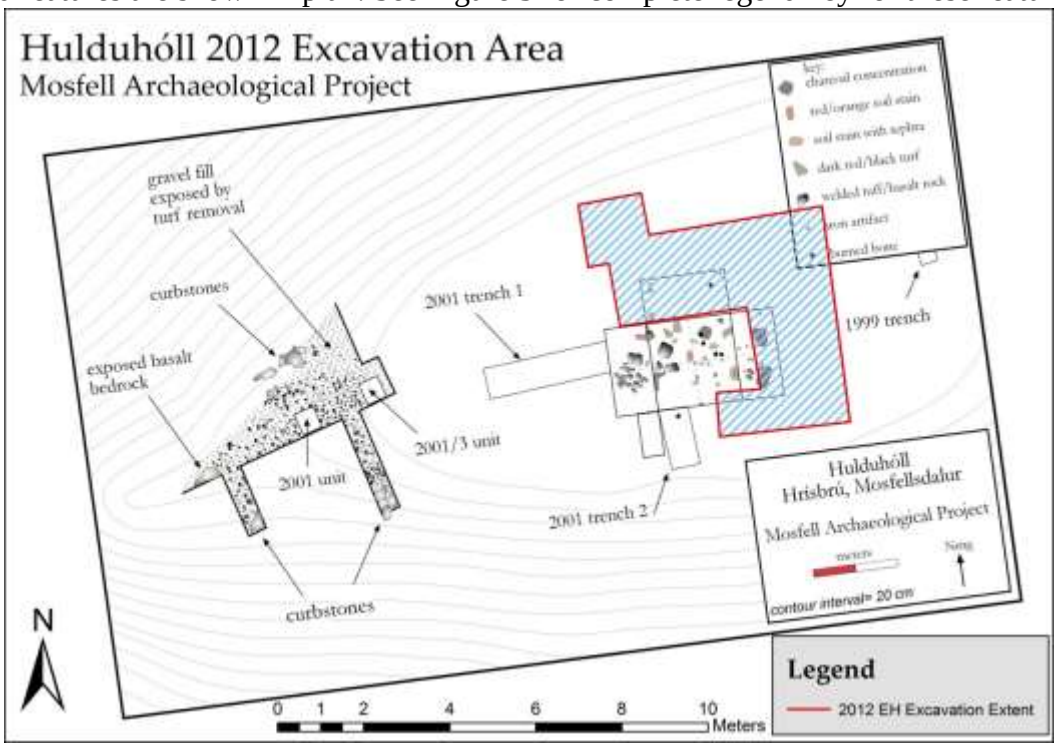


Figure 5. Final extent of the 2012 Hulduhóll excavation showed overlying a georeferenced map from 2003. The underlying map shows the extent of MAP excavations prior to 2012. The old map uses magnetic north and is therefore "tilted" in respect to the True North used in our GIS model based on the ISNET 1993 coordinate system.

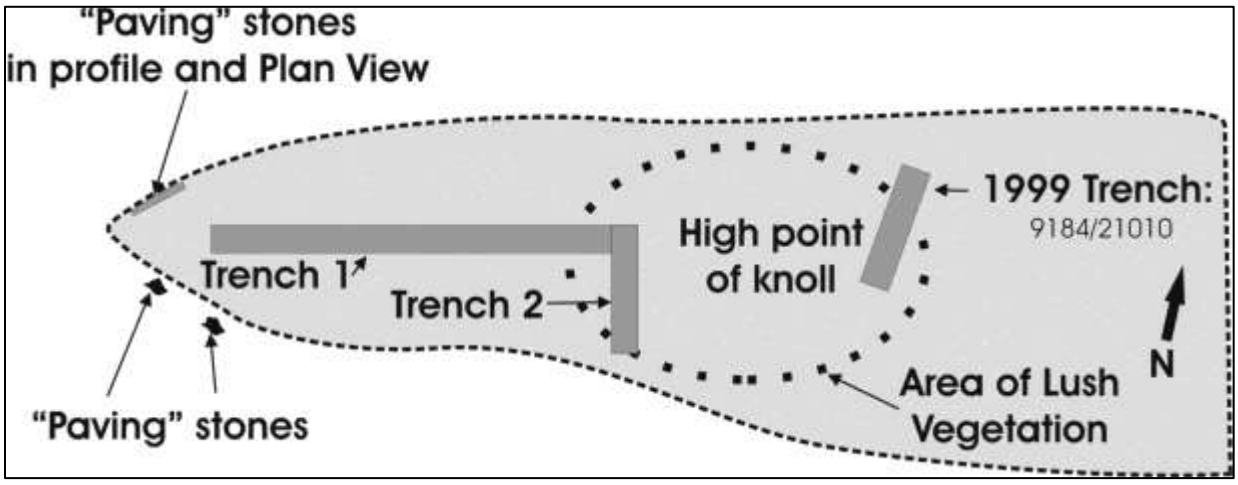


Figure 6. Site map of the 2001 Hulduhóll trench excavations. Here the 1999 trench is also depicted to the right.

Figure 7. Large flat curbstones used to modify the western tip of the Hulduhóll hillock. This picture was taken in 2001 when the stones were first identified.

Figure 8. In 2001 we excavated a trench (Trench EH-2001-1) east-west in the middle of the Hulduhóll knoll. The far western end of the trench showed the gravel fill brought up on top of the knoll to fill the area between the two rows of curbstones on the northern and southern margins of the knoll.

Figure 9. Human cranial vault fragment recovered in 2001 from Hulduhóll Trench EH-2001-2.

Figure 10. Riveted iron recovered in the Huldhuhóll cremation layer in 2001 in Trench EH-2001-2.

Figure 11. Copper alloy, most likely bronze, found in 2001 in the cremation layer on Hulduhóll and in close proximity to the cremated human skull fragment (Figure 9).

Figure 12. Looking west across the 2002 excavation unit on Hulduhóll. The picture shows bedrock exposure and turfs.

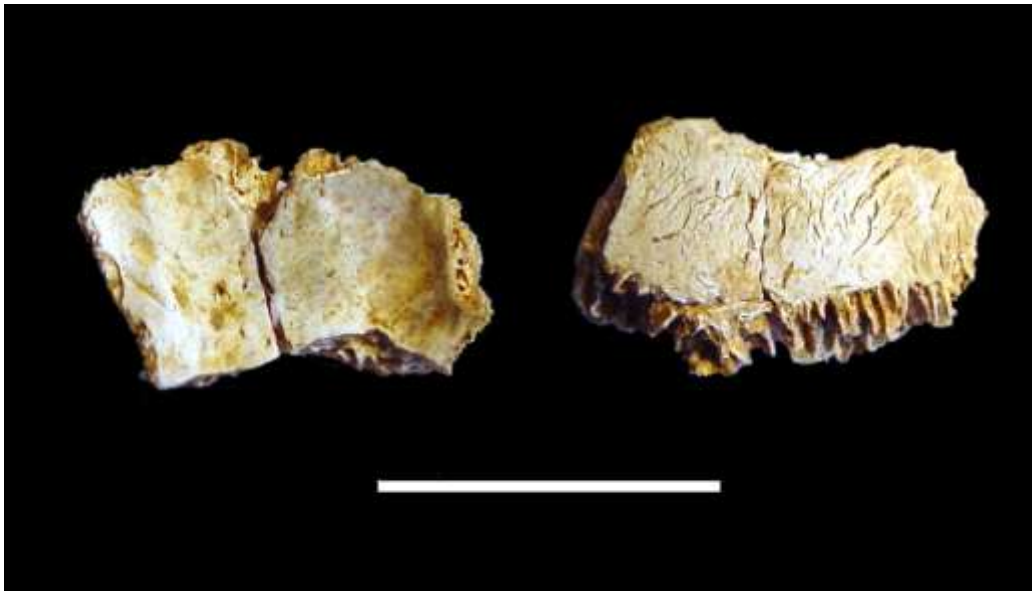


Figure 13. Two cremated human cranial vault fragments that fit together were recovered during the 2002 season at Hulduhóll in Unit 2B. This figure, in which the pieces are fit together, shows a top and bottom view. Left: endocranial surface, Right: ectocranial surface.

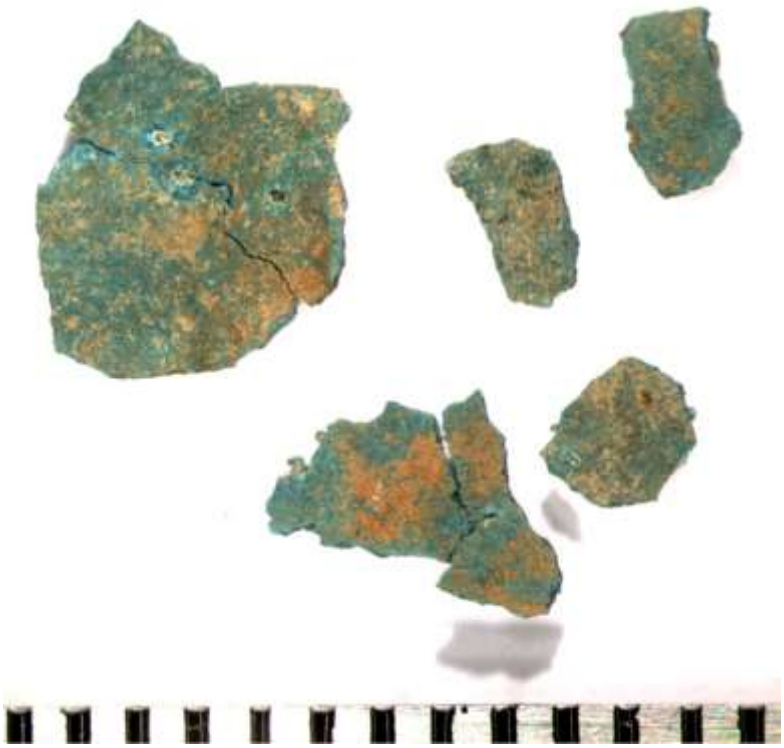


Figure 14. Fragments of a bronze sheet recovered in the cremation deposit on Hulduhóll in 2002.

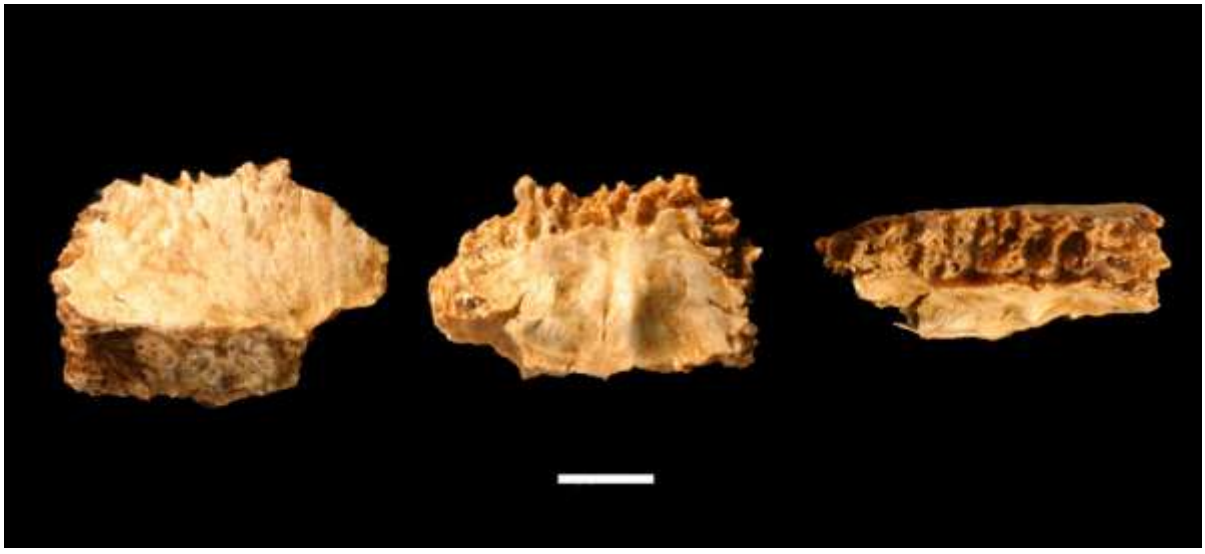


Figure 15. Three views of the cremated fragment of human cranial vault bone recovered at Hulduhóll in northwest corner of Unit 2I during the 2003 excavation. Left: ectocranial view, Middle: endocranial view, Right: sutural view. The white bar is 1 cm long.

Figure 16. Looking west over the "prow" of the modified Hulduhóll mound. The picture shows the gravel fill in the center and the large flat "curb stones" laid in a line along the northern edge of the mound to the right.

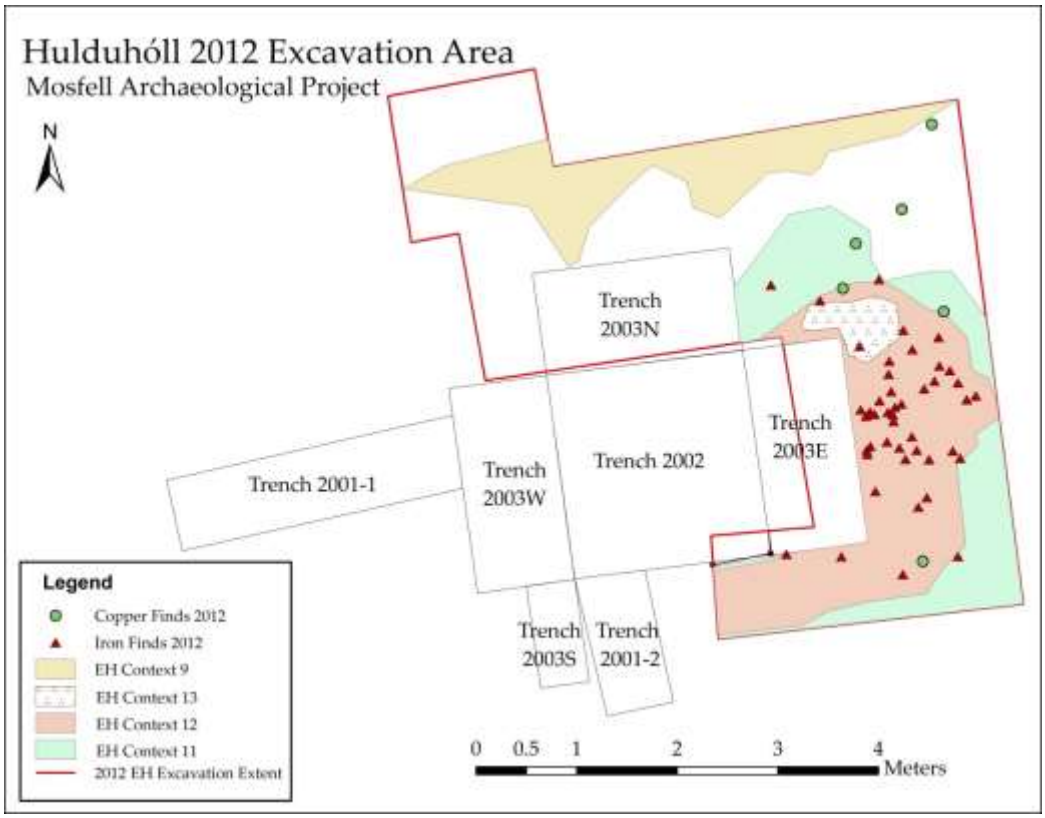


Figure 17. Huldhóll 2012 excavation area outlined in red and shown in relationship to the earlier excavation trenches 200-2003. In 2012 the cremation layer was recorded as EH context 12 and 13. EH context 11 is a mixed layer of loess soil containing increased densities of charcoal intermixed from the underlying context 12.

Figure 18. Deturfing the Hulduhóll site in 2012.

Figure 19. The excavation extent, archaeological layers, samples, and finds recovered in situ were recorded with a Topcon total station and imported into ArcGIS. The datum where the total station was set up each day is located just northwest of the longhouse.

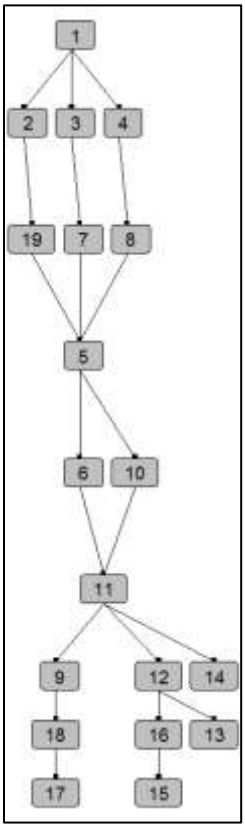


Figure 20. Harris Matrix showing the stratigraphical relationships of the excavated contexts recorded in the 2012 Hulduhóll excvation. The concentrationso f charcoal beloing to the cremation deposit consist of Contexts [12] and [13].

Figure 21. Looking south from the excavation area across the Mosfell Valley. Recording of archaeological layers followed the single-context method.

Figure 22. After the removal of the topsoil, the archaeological trenches from 2003 and 2002 were located and re-excavated. Here the re-excavated 2003N and 2003E trenches are visible.

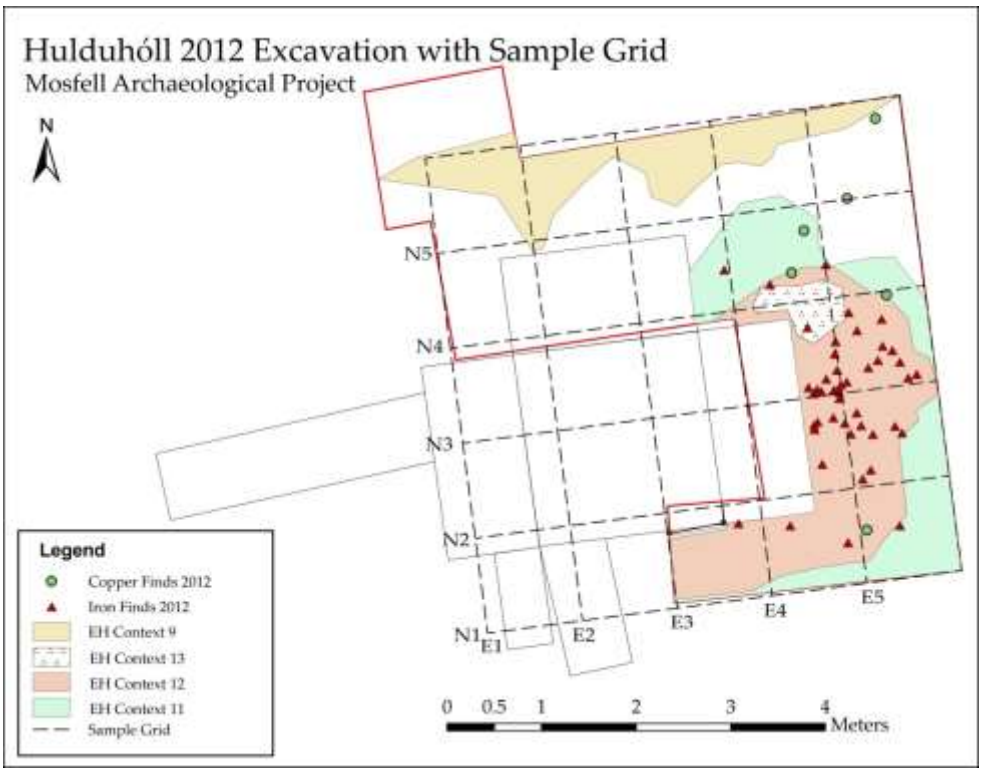


Figure 23. Hulduhóll 2012 excavations with the sample grid overlaid. This grid was designed for ease of find collection and use in the field. The grid and the finds related to the grid units were subsequently translated and rotated into our database Isnet 93 coordinate system.

Figure 24. The top of EH Context 6, consisting primarily of wind-blown andisols with ambient charcoal and burnt bone. Through natural post-depositional processes, some of the contents of the cremation layer have become intermixed in this layer. These remnants include three fragments of cremated human bone.

Figure 25. Excavating EH context 6. From left to right: Sice, Ben, and Rúna.

Figure 26. The top layers overlying the concentration of charcoal from the cremation layers were screened over ¼ inch mesh.

Figure 27. Copper alloy, probably bronze, sheet recovered from Context 6. To the right a rivet head can be seen, while the obverse view on the right shows how the sheet is folded.

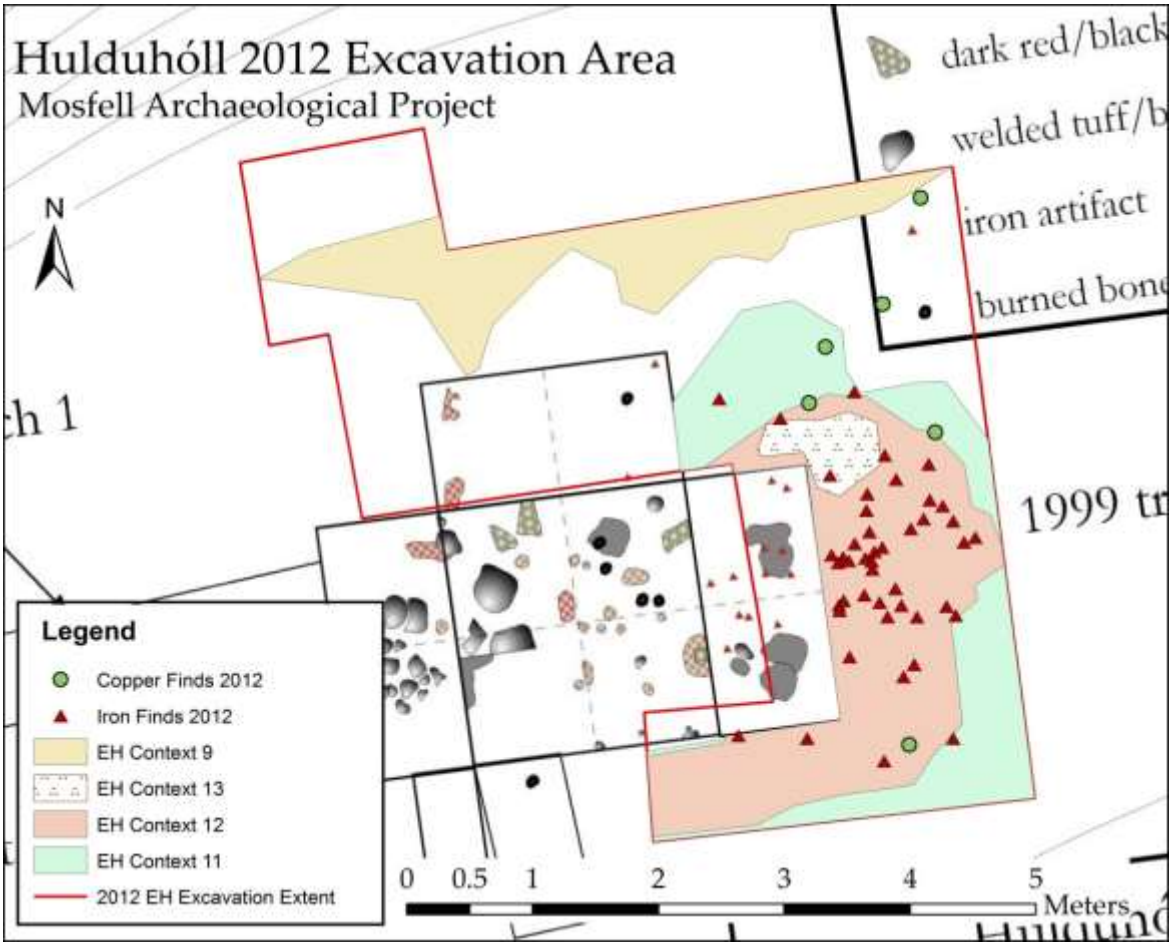


Figure 28. Focused view of the 2012 excavation area showing the distribution of finds and the layers that can be securely related to the cremation event (Contexts 11, 12, and 13), and the turf leveling on the northern margins of the knoll (Context 9).

Figure 29. Looking south across Context 11, the top of the cremation layer.

Figure 30. Looking east at Context 12, the cremation layer outlined with a trowel.

Figure 31. Viking Age bead (F-2012-001) recovered in the cremation layer (Context 12) at Hulduhóll during the 2012 excavations.

Figure 32. The concentrated cremation deposit (EH Contexts 12 and 13) was water-screened over 1/8th inch mesh. This matched the recovery methods employed during the 2001-2003 seasons.

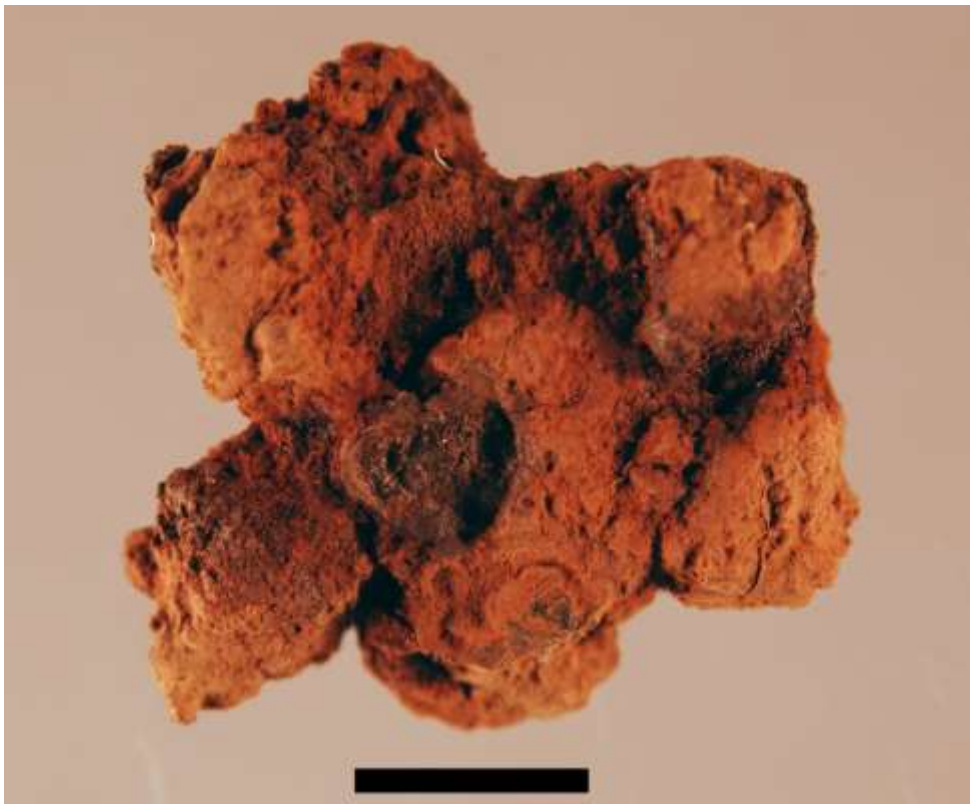


Figure 33. Fire-exposed iron (F-2012-051) recovered in the cremation layer, Context 12.

Figure 34. Flat iron fragments (F-2012-033) recovered concentrated in sample unit grid N2E4 in Context 12. These fragments were part of a larger sheet.

Figure 35. Davide Zori collecting a 10 liter sample from the bottom of the Context 12 cremation layer.

Figure 36. Large chunk of charcoal in cremation layer (Context 12).

Figure 37. The bottom portion of the cremation layer that contains evidence of in situ burning, including large branches and burned earth. This part of the cremation layer was recorded as Context 13.

Figure 38. Jesse Byock and Davide Zori after removing of the cremation layer in 2012.

Figure 39. The Huldhóll 2012 excavation area with all cultural layers except the turf modification removed. The Context 9 turf deposit is outlined on the right.

Figure 40. Context 9 provided evidence of purposeful modification of the Hulduhóll mound with turf strips and fill containing *landnám* tephra. The context here was drawn up with a trowel to show the extent of the layer that lies against the northern extent of the 2012 excavation area. The extent of the modification down the slope was revealed at the end of the season by extending the excavation down the slope (see Figure 28).

Figure 41. Exposing the turf modification and the natural subsoil beneath the cremation layer of Hulduhóll.

Figure 42. Óskar Gisli Sveinbjarnarson taking kite photographs of the Hrísbrú farm and the Huldhóll site during the 2012 season.

Figure 43. After natural deposits had been reached everywhere across the excavation, narrow trenches were dug along the north and east profiles to reach pure bedrock and to facilitate the drawing of section profiles.

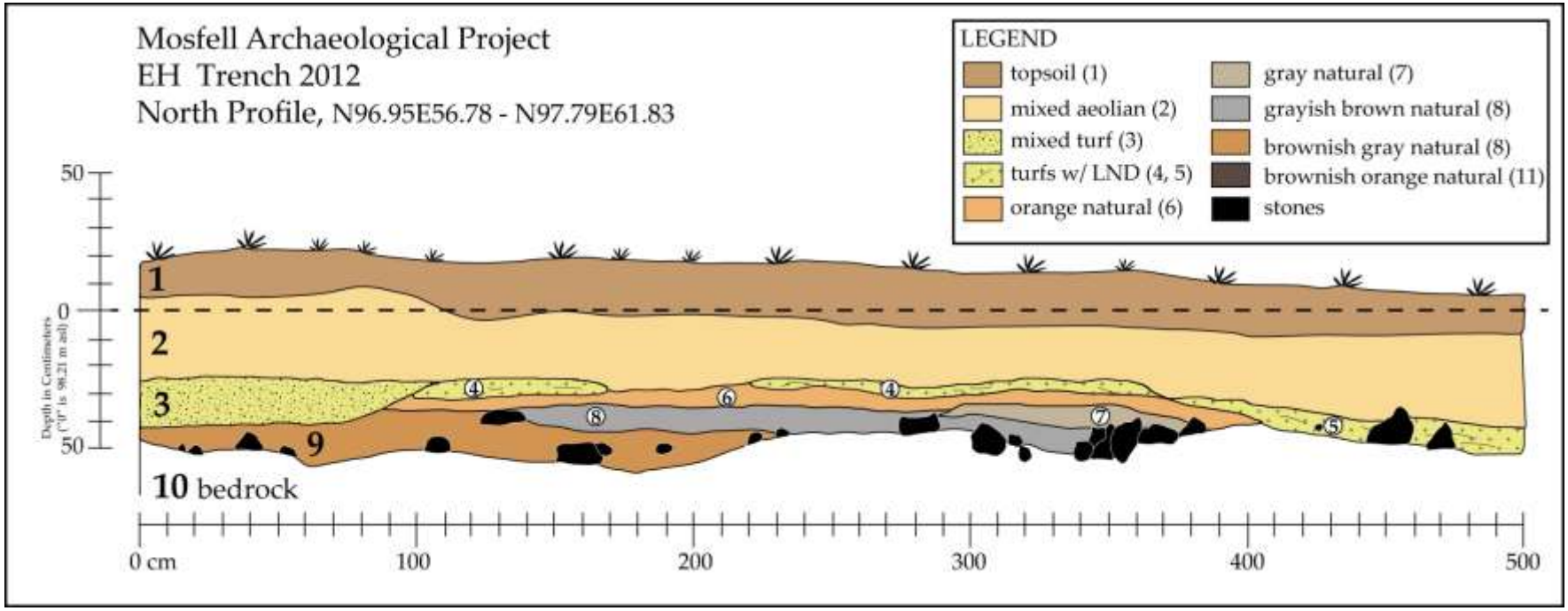


Figure 44. North profile of the 2012 Hulduhóll excavation area. Note the turf layers that consist of turfs containing landnám tephra that were brought to top of Hulduhóll. These turfs were most likely used to level the knoll. The age of the turfs as suggested by the stratigraphy and the presence of the landnám tephra from AD 870 ±2 suggests that this modification was contemporary with the cremation event. This furthermore, makes it seem more probable that the gravel and stone slab modifications of the western tip of Hulduhóll also took place at this time.

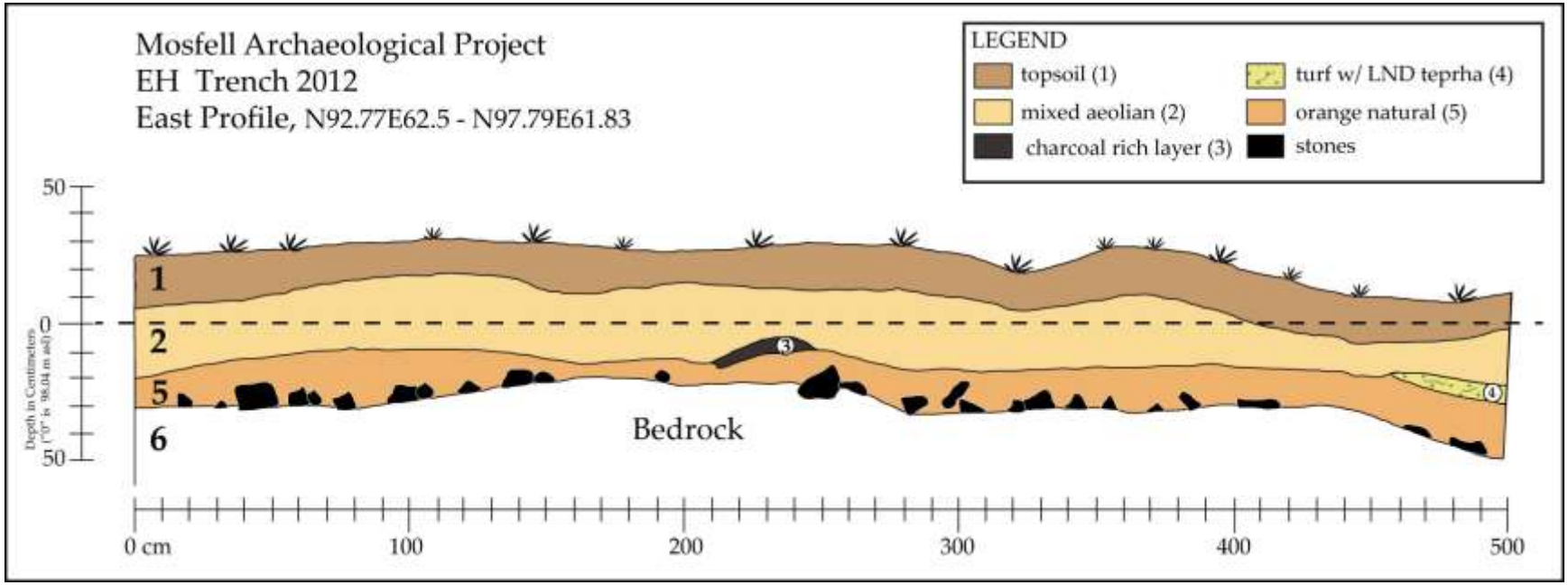


Figure 45. East profile of the 2012 Hulduhóll excavation area. It was not possible to identify EH Context 11 in profile, but EH Context 12 was clearly visible as it barely stretched into the east profile section of the excavation area (compare with map of Context 12 in Figures 17 and 28 and photograph in Figure 46).

Figure 46. Photograph of the eastern profile of the Huldhuhóll excavation area. The photograph shows the section 2-3 m (compare with Figure 45). The arrow points to the narrow point of the cremation deposit, context 12, that extends to the east of the excavation area (see also map in Figure 28).

Figure 47. Profile trench along the northern extent of the 2012 Hulduhóll excavation area. The stones at the bottom of the trench are the top of the exposed the underlying bedrock. Note in the far northwestern corner of the excavation the emptied depression or cut filled with turf (EH Context 17).

Figure 48. A cut or truncation (Context 17) of the northern slope of the Hulduhóll mound cut into the natural soil. The cut was filled with a mixed turf deposit containing landnám tephra, gray iron-stained clay, and low densities of cultural material. We extended the excavation area to the south to further investigate this cut/fill and the turf modification of the Hulduhóll knoll.

Figure 49. Northwest corner of the Northern profile of the 2012 Hulduhóll excavation area. The pictures shows the Context 18 fill of the cut C-17 (see also N profile in Figure 44).

Figure 50. Looking south at the extension of the excavation area to the south to investigate the turf modification of Hulduhóll.

Figure 51. Backfilling the Hulduhóll site at the end of the 2012 season.

Figure 52. Hulduhóll excavation site backfilled and covered with sod after the 2012 season.

Figure 53. Per Holck (center) examining the burnt bones recovered from the Hulduhóll cremation area. Five new cremated human bones were identified from the material recovered in 2012.

Figure 54. Human cremated bone from the 2012 excavation. A total of five separate new pieces of human bone were recovered during the 2012 season. One skull fragment (see picture above) and two human vertebral fragments were recovered in Context 6. Context 11 yielded one vertebral joint. The single human deciduous tooth was found in Context 12 (see picture above).

Figure 55. The Hulduhóll 2012 excavation crew. From left to right: Ben, Sice, Rúna, Liam and Davide.

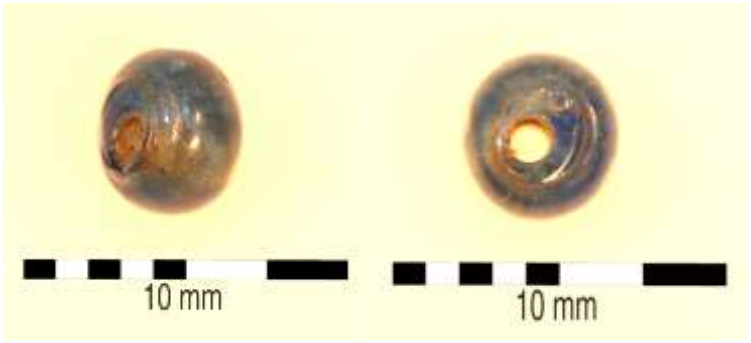
Appendix A

Elín Hreiðarsdóttir

Blue glass bead found in the summer of 2012

Material: Glass.
Condition: The bead is whole and the glass is in fairly good condition.
Shape: Rounded with tortated ends.
Size: Length 0,4 cm, diam. 0,48 cm, diam. of hole: <0,1 cm.
Method of manufacture: Blown, undecorated glass
Colour: Dark blue.
Found in context: wet sieve from context [12], N2, E4

A small blue blown bead was found in wet-screening of soil from a sample from Hulduhóll. It came from context [12] grid unit N2E4. The bead is complete and in good condition. It is a simple, blown bead of dark blue colour. The bead is well made. A tiny fragment has broken off on one end but otherwise the bead is complete. It is of type E060 and has clear tortated ends. The hole is not in the center of each end but to one side. Until 2004 altogether 83 such beads had been recovered in Iceland making it one of the most common bead types from Viking age Iceland. They are most common in the east and northeast Iceland although found all across the country. Callmer groups together dark blue, blown beads of this type whether they are simple or segmented. In Iceland most of the dark blue beads of this type are segmented (either double or triple) and less than 25% are simple, like the bead from Hrísbrú. Most of the beads of type E060 found in Iceland come from heathen burials but beads of this type have been recovered from a few settlements sites, such as from Hrísbrú and from Hrísheimar in S-Þingeyjarsýsla. This type of bead is found throughout the whole of the Viking Age. Callmer suggests the eastern Mediterranean as a likely production area.



Reference

Callmer, Johan. 1977. *Trade beads and bead trade in Scandinavia, ca. 800-1000 A.D.* R. Habelt: Lund.

Elín Ósk Hreiðarsdóttir. 2005. *Íslenskar perlur frá víkingaöld: með viðauka um perlur frá síðari öldum.* Ritgerð til M.A. prófs í fornleifafræði. Hugvísindadeild Háskóla Íslands.