

Wood identifications on wood remains from various buildings from the archaeological investigation at Hrísbrú

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Introduction

The Mosfell Archaeological Project (MAP) started in 1995 and has been an ongoing project ever since. Excavation at the Hrísbrú farm began in 2001 and revealed many interesting archaeological remains, which included preserved wooden structural features from the longhouse, and church.

At Hrísbrú it has been possible to study the wood use on one single site from the time when it was settled until it was abandoned and even some time after that since the longhouse was used as a midden after it went out of use. This report is a compilation of all the wood identifications, which have been done so far, by various scientists through the years. They are Helge Høeg, Steve Martin, Virginia Popper, Dawn Mooney and Lísabet Guðmundsdóttir.

The aim of this project is to gather all the wood identification results together and look at the Hrísbrú wood use in whole. Wood was sampled from the longhouse, church and the coffins in the cemetery. The results have concluded where the people at Hrísbrú got their wood and how they used it and also the change of wood use from the time when the longhouse was built until the end of habitation in that area and the farm was moved to Mosfell. This is at least 300 year period, from the settlement period late 9th century to the year 1150, according to the written sources.

It is not certain from what timber the longhouse was built but the internal structure for example benches and the inside paneling were most likely built from local downy birch. The wood in the postholes was all charred and it thought that it was a secondary deposition. One of the more interesting samples was from the floorboard in the doorway since it was not local nor driftwood, most likely *quercus sp.* (oak sp.) or *fraxinus sp.* (ash sp.). These two genera are either imported or perhaps wood from dismantled ship. The church was built from driftwood and so is part of the coffins but *quercus sp.* (oak sp.) was also used for the coffins.

It is obvious that the local wood was quite important resource for the first settlers at Hrísbrú and it seemed to be the preferred wood to begin instead of using driftwood for example. During the 11th century that does change and driftwood is used for the church building. The local birch is in use the whole time but as fuel wood. This could reflect either a change in the availability of birch or it could be a shift in architectural styles and the need for different sizes and kinds of wood. The use of wood and the type of wood used can be a marker of social status in the society the longhouse and the church at Hrísbrú might be a perfect example for that.

Church

The church at Hrísrú was established shortly before or after Christianity was established in Iceland around 1000 AD. According to written sources (Egils saga) the church was relocated to Mosfell around 1150 AD which is about 400 m east of Hrísrú.¹ The church was a wooden stave building in all, including chancel and nave, 6,8 m long. The nave was 3,2 m wide and the chancel 2,5 m wide and 2,5 m long on the outside. Separate buildings styles were used for the nave and chancel. The chancel might be a later addition so the chieftain could show how powerful he was.

Nave

The nave structure was based on four earth-dug postholes connected by four wooden sill beams. The walls were constructed with plank walls clad in turf on the north and south sides. The planks were vertical, at the inner wall the ends were tapered and inserted into sill beam grooves. Between the inner and outer plank walls was an air space. The outer planks are called *stafir* in Icelandic and the inner walls are called *piljur*. The foundation was made of stones and the still beam was laid on top of the foundation. The foundation was very well preserved at Hrísrú and it was documented that the lower ends of the wall planks were held in place by a cut groove in the still beams. In all four corners of the nave the still beams were connected to vertical posts dug in to the ground.² This kind of a building style is called *stólpaverk* but the part that was above ground was most stave constructed (Icelandic: *Stafverk*). *Stafverk* is an ancient building tradition which was common in North West Europe especially Norway and succeeded the *stólpaverk* or the buildings with earth dug posts.³

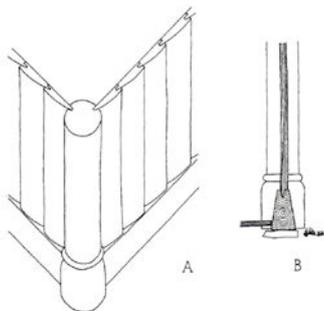


Figure 1 A drawing of stave construction done by Hörður Ágústsson architect. (Ágústsson, H., 2004, bls. 128)

There is evidence of turf walls on the north and south sides of the nave but not surrounding the chancel.⁴

Chancel

The chancel was a later addition to the church, which tends to be a common trend of in Iceland.⁵ For example, at the church Neðri Ás in Skagafjörður,

¹ Byock, J., et al, 2005, p. 206

² Byock, J., et al, 2005, p. 7

³ Ágústsson, H., 2004, p. 127, Jensenius, J., 2010, p. 149-150

⁴ Zori, D., 2010, p. 308

(Northern Iceland), the first phase of the church was a square timber building with earth dug posts (*Stólpaverk*). The second church which was built in the second half of the 11th century had earth dug corner posts as well and a chancel which was similar in size as the church at Hrísbú, just slightly smaller. Turf walls seem to have been a later addition since they were not very substantial and acted as a support for the wooden walls.⁶

However, at Þórarinsstaðir in the east, a different trend appears where two phases of wooden stave churches were excavated from the beginning of Christianity in Iceland, the older one burned down so another one was built on top of the old foundation but in both cases the chancel seem to have been built simultaneously.⁷ At Seyla, Skagafjörður, the older church had four earth dug posts with no chancel at all, the church was moved quite early on which might explain.⁸

Not many churches have been excavated from the first years of Christianity in Iceland but for some reason the chancel in Neðri Ás and Hrísbú is a later addition while it is not in Þórarinsstaðir. The reason might be that the churches at Neðri Ás and Hrísbú are earlier than the one at Þórarinsstaðir but that there is no evidence to suggest that theory at this point.

The chancel at Hrísbú was constructed in a different way than the nave. The foundations did not make use of postholes only stone foundation. The north and the south side consisted of two parallel east-west running lines of stone foundation, which were separated by 30 cm of gravel with badly preserved wood remains, which probably belonged to the wall. The eastern foundation consisted of two large flat stones. It is thought that the chancel was a so called *stokkverk*, horizontal logs were stacked on top of each other and joined at the corners with logs of the perpendicular wall by a system of interlocking notches (Icelandic: *Nöf*).⁹ *Stokkverk* was never a common building style in Iceland but the best known is Auðunarstofa which was constructed 1315AD in Hólar, Hjaltadalur which was the bishopry for the north of Iceland.¹⁰ Auðunarstofa, like the church at Hrísbú, had two building styles, the so-called *forstofa* was a stave built construction (Icelandic: *stafverk*) and the *timburstofa* a log house.¹¹ (Icelandic: *stokkverk*). According to written sources Auðunarstofa, that is the logs for Auðunarstofa, were originally from Norway, the house was constructed in Norway and imported to Iceland.¹² It is not certain if the *stafverk* is a later construction or contemporary with the *stokkverk timburstofa*.

⁵ Byock, J., et al, 2005, p. 14

⁶ Vésteinsson, O., et al, 2000, p. 22

⁷ Kristjánsdóttir, S., 2000, p 7

⁸ Zoëga, G., 2012, (per. com.)

⁹ Byock, J., et al, 2006, p. 10-11

¹⁰ Ágústsson, H., 2004, p. 127

¹¹ Guðmundsson, Þ., 2004, p. 56-57 and 76

¹² Guðmundsson, Þ., 2004, p. 16 and *Íslenzkt fornbréfaasafn* III, p. 608-609

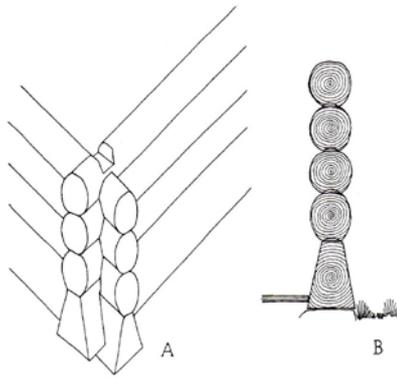


Figure 2 A drawing of a stökkverk by Hörður Ágústsson architect. (Ágústsson, H., 2004, p. 128)

Very few structures are known to have been built from stökkverk and it is generally thought that this building tradition was never common in Iceland perhaps because there was no suitable wood for this kind of a building tradition.

It is not certain why the building style was changed so drastically when it was decided to build the chancel. It is known that the earth-dug posts were not suitable in Iceland and Norway since the bottom part of the post rotted quite quickly and the building became unstable. The solution was to put the post on a post stone, which was on the ground so the post was dry and lasted longer. There is no evidence of that in the chancel but that might be the reason why the chancel was built in a *stökkverk* tradition. The trend in Norway for examples had been that the first churches were built from logs which were earth dug side by side. A plank was set up to keep them together and a roof constructed on top, *stólpaverk*. The next phase of churches had earth dug posts and the walls were constructed on a *aurstokkur* (sill beam) like the nave at Hrísrú that is the second generation of *stólpaverk*. *Stafverk*, the third phase, all of the corner posts were lifted from the ground and the whole structure rested on a beams which layed on top of a stone foundation, like the chancel at Hrísrú. If compared to the North Atlantic traditions it is more likely that the chancel was a stave construction rather than a log construction.¹³ It is very difficult to know for sure what kind of building tradition was used for the chancel and that is often the case with the timber buildings. The wood used for the structure might give some evidence but it is unlikely.

The first phase of the church at Hrísrú is *stólpaverk*, a building with earth dug posts. It has been suggested that the chancel of the church was *stökkverk* but it is more likely that it was *stafverk*, where all the posts rested on stone foundation. That was the general trend in Norway. This change in architecture might rather be a indication of a relationship between the chieftain at Hrísrú with Norway (or other North European country) since at the same time period, the 12th century, the Norwegians are changing the church architecture to their famous stave constructed churches which are well known today.¹⁴

¹³ Ágústsson, H., 1975, p. 25-26

¹⁴ Jensenius, J., 2010, p. 149

Structural timber

In all, 190 wood pieces were identified from the church structure, which includes both structural timber and charcoal.

Three sill beams (aurstokkur) were uncovered from the church's stone foundation; all except the northern beam were preserved and formed the rectangular nave. Of the three beams the eastern one was the best preserved one on site.¹⁵

Eastern sill beam

The eastern sill beam 12041 had preserved length of 2.8 m and width 0,10-0,13 m, it is thought that the beam continued into the southeast post support and the north east post support.¹⁶ Five samples were taken and four identified by Helge Høeg and the fifth one by Steve Martin. Two of the samples were identified as *picea sp./larix sp.* (spruce sp./larch sp.) and the other two *betula sp.* (birch sp.). The fifth one is *pinus sp.* (Pine sp.) Obviously they do not come from the same beam; according to Davide Zori the birch is from the wall panels and the spruce sp./larch sp. from the sill beam.¹⁷ It is impossible to identify that for certain but a very interesting discovery if correct. It is not certain where the pine sample fits in but perhaps a mixture of wood species was used, whatever was available at the time or deliberately chosen.

Southern sill beam

The southern sill beam [7920] was placed directly on top of a flat stone foundation. The wood was not as well preserved as the eastern sill beam but a central groove that ran along the entire beam was identified which showed how the church walls were constructed. The preserved length of the beam was 3.47 m and width between 0,12-0,16 m. The groove was 0,04-0,07 m in width and the depth of the groove was between 0,02-0,03 m decreasing towards the ends.¹⁸ The wood was deteriorated but identifiable. Eight wood fragments were identified by Helge Høeg, three samples were identified as *betula sp.* and five as *picea sp./larix sp.* As with the eastern beam the sill beam itself is either spruce or larch while the panels are likely constructed from local birch.

Western and northern sill beams

The western sill beam [AL 12401] was deteriorated like the southern sill beam and the wood used here was not identifiable. No remains of the northern sill beam were found either it was not preserved or it was removed after the church was demolished.¹⁹

¹⁵ The sill beams were all analysed by dr. Helge Høeg see: Byock, J., et al., 2005, p. 44-47
Appendix E: Wood identification, Mosfell, 2004

¹⁶ Byock, J., et al., 2005, p. 10

¹⁷ Zori, D., 2010, p. 379

¹⁸ Byock, J., et al., 2005, p. 10

¹⁹ Byock, J., et al., 2005, p. 12

Postholes

The nave of the church had four earth-dug posts and in all of them were preserved wood remains. The exact identification of the wood species, is however, complicated by the fact that the wood was charred and in two of the postholes there were more than one genus of wood.

Northeast post

The most significant post was the NE post, feature AO 12981, the post was preserved in situ. It was 40 cm in length/height and the width was 21 cm. The post was identified by Helge Høeg as *larix* sp. (larch sp.).²⁰ According to Høeg's report 19 charred *larix* sp. samples were identified the reason might be that the bottom part of the post was charred so it would not rot as fast as uncharred wood. The outer shell is carbonized hence no fungi will attack the wood or at least not as fast.²¹ The other possibility is that it charred after the church burned down, which is however the more unlikely scenario since the bottom part of the post would not have been burned since it was covered with stone lining and soil. That can clearly be seen on the northeast post, which is still standing vertical in the posthole.

Northwest post

The northwest post (feature 2005-6 [AO100687] was lined with stones like the other posts. Small pieces of uncharred wood were uncovered and little pieces of charcoal and burned bones.²² Five pieces of uncharred wood samples were identified by Helge Høeg as *pinus* sp. (pine sp.). The charcoal and burned bones must have filled the posthole after the original post was removed. The pine is more likely from the original post. The depth of the posthole was 36 cm from the surface and 19 cm in diameter, which gives an idea what the diameter was of the post itself.

Southwest post

The southwest posthole, feature 2005-5 (AO 100688), was 36 cm deep from the surface, like posthole 2005-6, and 24 cm in diameter. The fill consisted of friable brown soil with charcoal inclusions.²³ The charcoal was deposited after the post was removed from the posthole. In all 10 wood samples were analyzed by Helge Høeg, three samples were identified as charred *betula* sp. (Birch sp.) and seven as charred *pinus* sp. (pine sp.) The pine is from the post itself and the birch is from the later fill. As with the northeast post the pine was charred which might be to keep the rot away.

²⁰ Byock, J., et al., 2005, p. 14

²¹ Kristjánsdóttir, S., 1999, p. 15

²² Byock, J., et al., 2006, p. 10

²³ Byock, J., et al., 2006, p. 10

Southeast post

The southeast posthole, feature AO 7544 was lined with stones as the other postholes. Small fragments of wood were preserved in the fill.²⁴ In all 20 wood samples were analyzed by Helge Høeg. 19 of 20 were identified as *picea sp./larix sp.* (spruce sp./larch sp.) and one sample as *betula sp.* (Birch sp.) All samples were charred but the spruce sp./larch is part of the original post and the birch was deposited after the post was removed.

Northern inclined post

Feature 20 was situated north of the church and was first thought to be an inclined post to support the northern wall of the chancel. The fill was sieved and analyzed by Steve Martin, 10 charcoal fragments were randomly chosen for identification and all of them turned out to be *betula sp.* (birch sp.)²⁵ There are some speculation if this was an inclined post for the church or not but it the charred material is thought to have been burned residues of original post. If so the post was from a native tree. It could also be from a secondary deposition and then perhaps fuel remains.

Wood remains were preserved in all four postholes of the nave, the northeast post was very well preserved, the post was still horizontal in the posthole. Two posts were identified as *pinus sp.* (pine sp.), one as *larix sp.* (larch sp.) and one as *picea sp./larix sp.* (spruce sp./larch sp.). These genera of wood are common in Icelandic driftwood assemblages. Pine and spruce can both be imported and driftwood but larch is always driftwood.²⁶ The composition of these genera in one structure suggest that these post are all originally driftwood. The sill beams (*aurstokkar*) were identified as *pinus sp.*, (pine sp.) *picea sp./larix sp.* (spruce sp./larch sp.) and *betula sp.* (birch sp.) All the wood is conifer except for the birch, which is most like indigenous *betula pubescens* (downy birch). As with the posts it is not possible to say for sure if the conifers are imported or driftwood but it is a more likely possibility. Birch is thought to have been used for the wall planks (*biljur*). The Icelandic birch is usually a crooked shrub and not suitable as a building material but birch trees can grow to fairly impressive heights if the conditions are right and, therefore, in some cases the wood may actually be suitable as a building material.²⁷ This must have been the case in the area surrounding Hrísrú if the birch was for the planks. It can also be that the birch was reused from other structural material perhaps from the longhouse. The main reason why it is thought that the conifer wood is driftwood is the composition of the building material, if it was imported the composition of the material would perhaps be more homogeneous. The birch planks also indicate that the birch trees during that time period must have been big enough to be cut in to planks. This is rarely seen today but the buildings at Hrísrú and Keldudalur in the north do suggest that there were birch trees suitable for building constructions.

²⁴ Byock, J., et al., 2006, p. 13

²⁵ Byock, J., et al., 2006, p. 36-37

²⁶ Eggertsson, Ó., 1994, p. 9-10

²⁷ Kristinsson, H., 2012, p. 240

The church/farm at Hrísrú could acquire valuable driftwood as the church by this time probably legally held what is called *rekaitök*, which means that the church owned all or part of the wood that drifted on a particular shore.²⁸ There are not particularly good driftwood beaches in the vicinity of Hrísrú according to Árni Magnússon and Páll Vídalín who travelled the country in the 18th century. However, that does not mean that there was no driftwood in the area in previous centuries when the textual evidence suggests otherwise. The best driftwood beaches were at the Reykjanes peninsula especially around the farm Hraun that is in Grindavík and Kálfatjörn.²⁹ A monastery was established in Viðey in 1226 AD and it acquired the best driftwood beaches in the area. Looking at their driftwood easements can be a good indicator where the most suitable wood could have been gathered. Hrísrú was a chieftain's farm so it is not unlikely that the farm had acquired a driftwood easement quite early on. While there is no known written sources which support this theory, the archaeological evidence shows that the church was mostly built with driftwood timber so the farmers at Hrísrú clearly were able to acquire this precious resource; where exactly they acquired it from is uncertain and needs to be explored further.

Floor

Two samples were analyzed from a gravel lens in the chancel floor, which was poorly sorted gravel and woody debris up to 15 cm thick. This is a layer of cultural origin and contained within the chancel but very uneven and not suitable for walking.³⁰ The wood debris in the layer does suggest that there might have been a wood floor and than the gravel a suitable foundation. Sample 2003-25 was identified by Virginia Popper as *pinus sp.* (Pine sp.) Sample 2003-26 was identified by Lísabet Guðmundsdóttir as *picea sp./larix sp.* (spruce sp./larch sp.) more likely *picea sp.* (spruce sp.) It is difficult to distinguish between those two genera since the wood anatomy is practically the same.³¹ Samples 2003-68, 2003-67 and 2003-75 were all found in the chancel, the north end. The wood is uncharred and was identified as *pinus sp.* (pine sp.), sample 2003-68 was identifiable to species level as *pinus silvestris* (scots pine). Sample 2003-75 was badly preserved and, therefore, unidentifiable. All of the wood samples in the chancel are conifer species not native to Iceland and are probably originally driftwood. The samples were not charred so it must derive from the structure itself, internal features such as benches or wood floor, which is the most plausible explanation. Wooden floor was identified in the chancel of the church in Þórarinsstaðir but the nave was paved with stone slabs. Samples from the wood floor was identified as *pinus silvestris* (scots pine) and *pinus pinea* (umbrella pine).³² Wood floor was also identified in the church at Neðri Ás which is from the same time period. There were three churches built in the same spot so it was not possible to identify from which church it belonged, perhaps

²⁸ Jónsbók, Lúðvík

²⁹ Lúðvík Kristjánsson, 1980, p. 229

³⁰ Byock, J., et al., 2004, p. 9

³¹ Schweingruber, F., 1990, p. 56

³² Kristjánisdóttir, S., 2000, p. 8 and 23

there was wood floor in all of them.³³ It is logical, churches were being built in a certain architectural style at that time and a timber floor was a common feature. The building material reflects the social status and wealth of the owner and the flooring is a crucial part of that.

In Hrísbú there was another floor layer below the gravel, which consisted of fine gravel and greasy black sediments.³⁴ The original floor was a mud floor which was changed for some reason, perhaps due to dampness and that is why the gravel was put over the original floor as a drain and then wooden planks built over it.

Charcoal

Nave

Charcoal is carbonized wood which was used as a fuel, for household use or industrial, or structural wood, which was carbonized in a fire. In the Hrísbú church evidence of both were found. Floor layer [14142] extends across the entire nave, it is composed of fine gravel and charcoal. Two samples were identified by Helge Høeg, sample 12077, five *betula sp.* (birch sp.) pieces were identified and in sample 12078 10 *betula sp.* (birch sp.) pieces. It is thought that the charcoal might be linked to a burning of the church.³⁵ If that is the case an earlier church must have stood there and it must have been built mainly of birch. There was an indication of at least one burning event associated with the destruction of the building. But in the center of the nave the floor is compact due to people walking on the surface so the charcoal got there before that. Whether the charcoal is originally a fuel or part of a structure is unknown but all the charcoal identified in this layer was *betula sp.* (birch sp.) most likely *betula pubescence*.

Layer [7307] is associated with the destruction of the church and as has been mentioned before the church burned down after it was abolished. Sample 100683 was retrieved from the layer and all 31 samples identified by Helge Høeg, 16 pieces were charred and 15 uncharred. Of the charred samples eight samples were identified as *betula sp.*, (Birch sp.) eight as *picea sp./larix sp.* (spruce sp./larch sp.) of the uncharred samples all were identified as *larix sp.* (larch sp.) According to Davide Zori these remains probably derive from the roof, internal walls and benches.³⁶ The larch is driftwood and most likely the spruce sp./larch sp. as well but the birch is indigenous to Iceland.

Layer [14835] is a burn in the floor of the last phase of the church, just to the east of the nave's eastern sill beam. Could possibly represent burning of the church. Samples 12072, 12073, 12074, 12075 and 12076 were retrieved from this layer. In all 30 pieces of charcoal were identified by Helge Høeg which all were identified as *betula sp.* (birch sp.) which is indigenous to Iceland. One

³³ Vésteinsson, 2000, p. 19

³⁴ Byock, J., et al., 2004, p. 9

³⁵ Byock, J., et al., 2005, p. 16

³⁶ Zori, D., 2010, p. 379

uncharred sample 2003-43 was analyzed by Lísabet Guðmundsdóttir as *larix sp.* (larch sp.) and another one within the same sample number was identified by Virginia Popper as *pinus sp.* (Pine sp.). It probably derived from the structure itself or internal features.

Discussion

The church at Hrísrú was built shortly before or after Christianity was legalized in Iceland. The church was a wooden stave built building, which was very common at the time. The church had at least two building phases, first the nave was built, a rectangular *stólpaverk* structure with earth dug posts and later the chancel was built in a different building style, *stafverk*?. Wood was identified from the east and south sill beams (*aurstokkar*), the eastern one was *picea sp./larix sp.* (spruce sp./larch sp.), two other genera were identified, *betula sp.* (birch sp.) and *pinus sp.* (pine sp.) It is thought that those come from the paneling of the church. The south sill beam was identified as *picea sp./larix sp.* (spruce sp./larch sp.) and other sample as *betula sp.* (birch sp.) that might also be from the paneling. The posts are all from conifer species, *larix sp.* (larch sp.), *pinus sp.* (pine sp.), and *picea sp./larix sp.* (spruce sp./larch sp.) This composition of wood genera suggest that the church was built from driftwood and perhaps the paneling from native *betula sp.* (birch sp.) and pine. Wood identification has been done on two other churches from the same time period, they are Neðri Ás in Skagafjörður and Þórarinsstaðir in Seyðisfjörður. The church at Neðri Ás was built from *pinus sp.* (pine sp.) and *larix sp.* (larch sp.), most likely driftwood.³⁷ And the Church at Þórarinsstaðir was built from *pinus sylvestris* (scots pine), *larix sp.* (larch sp.) and *picea abies* (Norwegian spruce), which are all common driftwood species.³⁸

The church at Hrísrú had very well preserved wooden remains, which sheds a new light on the church building tradition in Iceland. As so often with archaeology there are no clear answers and it often raises more questions than answers. The excavation revealed that the church burned down at one point since there were several large pieces of charred wood within the building. The sill beams were not burned at all which might be interesting to look further in to. Are they part of a rebuilt or did they survive the fire? These wooden churches burned very easily, both the church at Neðri Ás and Þórarinsstaðir burned down but in the case of Neðri Ás part of the sill beams were charred. The church at Þórarinsstaðir was completely rebuilt after the fire.³⁹

In the postholes there were several fragments of charcoal, both of conifer species and birch. The conifers have been interpreted as part of the original posts but the birch as part of the posthole fill after the church went out of use. How is it possible to tell the difference? It is not impossible that this interpretation is correct and rather logical but it could also have been deposited with the birch charcoal fragments.

There are at least two building phases, in the older phase there was a mud floor but there is a possibility that the younger phase had a wooden floor, several wood remains were found in a gravel layer which might have been a drain and the wood floor was constructed over the gravel.

³⁷ Guðmundsdóttir, L., 2011a, p. 9

³⁸ Kristjánsdóttir, S., 2000, p. 23

³⁹ Vésteinsson, O., 2000, p. 19 and Kristjánsdóttir, S., 2000, p. 7

The church buildings were a status symbol and for that reason you would choose the best available construction timber for the building. The farm at Hrísrú had a driftwood beach easement and access to good indigenous birch wood. I would suggest the chancel was a later addition to highlight the power of the chieftain and perhaps an indication of new foreign influences.

Burials

In total 26 burials were identified at the Hrísrú cemetery. Of which 13 had identifiable wood remains. Most of the wood remains had been preserved or mineralized on iron coffin nails/clench bolts but in some cases wood from the coffin had preserved. All clench bolts and coffin nails were analyzed and revealed very interesting results. This research also revealed several clench bolts in the same layer, which most likely belonged to a grave, which was emptied at some point.

Burial feature [4852]

Burial feature [4852] is situated at the northeastern part of the cemetery. The organic remains were not well preserved but the coffin outline was well defined and 21 clench bolts were preserved with wood remains. The human remains were not well preserved but the size of the coffin suggests that the person buried there was an adult.⁴⁰

In all 21 clench bolts had preserved wood remains of which all could be identified to genus level or conifer with resin canals which are *larix sp./picea sp./pinus sp.* Five samples were identified as *quercus sp.* (Oak sp.). Four samples as *pinus sp.* (Pine sp.) and 17 as *larix sp./picea sp./pinus sp.* Although it was not possible to narrow it down to genus level most characteristics suggest *pinus sp.* (pine sp.)

Find number	Context	Identification	Identification	Comments
2004-72-07	4854	Larix sp./Picea sp./Pinus sp.	Larch/Spruce/Pine	Most likely pine
2004-72-08	4854	Larix sp./Picea sp./Pinus sp.	Larch/Spruce/Pine	Most likely pine
2004-72-09	4854	Larix sp./Picea sp./Pinus sp.	Larch/Spruce/Pine	
2004-72-10	4854	Larix sp./Picea sp./Pinus sp.	Larch/Spruce/Pine	Most likely pine
2004-72-11	4854	Pinus sp.	Pine	
2004-72-12	4854	Larix sp./Picea sp./Pinus sp.	Larch/Spruce/Pine	
2004-72-	4854	Larix sp./Picea	Larch/Spruce/Pine	

⁴⁰ Byock, J. et al, 2005, p. 19

13		sp./Pinus sp.	e	
2004-72-14	4854	Larix sp./Picea sp./Pinus sp.	Larch/Spruce/Pine	
2004-72-15	4854	Larix sp./Picea sp./Pinus sp.	Larch/Spruce/Pine	
2004-72-16	4854	Larix sp./Picea sp./Pinus sp.	Larch/Spruce/Pine	Most likely pine
2004-72-20	4854	Quercus sp.	Oak	
2004-72-20	4854	Larix sp./Picea sp./Pinus sp.	Larch/Spruce/Pine	Most likely pine
2004-72-21	4854	Pinus sp.	Pine	
2004-72-22	4854	Larix sp./Picea sp./Pinus sp.	Larch/Spruce/Pine	Most likely pine
2004-72-23	4854	Quercus sp.	Oak	
2004-72-25	4854	Quercus sp.	Oak	
2004-72-26	4854	Larix sp./Picea sp./Pinus sp.	Larch/Spruce/Pine	
2004-72-27	4854	Larix sp./Picea sp./Pinus sp.	Larch/Spruce/Pine	
2004-72-28	4854	Quercus sp.	Oak	
2004-72-29	4854	Quercus sp.	Oak	
2004-72-31	4854	Larix sp./Picea sp./Pinus sp.	Larch/Spruce/Pine	

It cannot be established if the conifer came from driftwood or import both is possible. Oak however is always imported or ship timber for example.⁴¹ There were at least two different wood species used for the coffin construction imported *quercus sp.* (Oak sp.) and *larix sp./picea sp./pinus sp.* (larch sp./spruce sp./pine sp.).

Feature/Cut [9973]

Feature [9973] is a cut, situated north west of the church. It is thought that this was a burial feature but no human remains were found. In all 24 nails/clench bolts were allocated to this layer with wood remains. Of them 12 were identified as *quercus sp.* (Oak). Seven were identified as conifer, of which four were *larix sp./picea sp./pinus sp.* (larch sp./spruce sp./pine sp.). Three nails had wood remains, which were not identifiable due to bad preservation. It is not certain if this is from a burial or not but it is very likely, there are in all 24 nails/clench bolts with wood remains. The skeletal material has most likely been removed

⁴¹ The timber can be from shipwrecks which drift to shore and is called *vogrek* in Icelandic or dismantled ships.

from the grave when the church was moved from Hrísbú to Mosfell.⁴² If these objects are all from the same burial feature, different wood species were used for the coffin, both softwood and hardwood. It could be that not all of these finds belong to this specific burial, perhaps just the oak and the softwood belongs to another feature. The other possibility is that the finds all belong to the same coffin and it was put together from more than one wood species. One sample

Find number	Context	Identification	Identification	Comments
2004-72-55	9973	Larix sp./Picea sp./Pinus sp.	Larch/Spruce/Pine	Big resin canals, most likely pine
2004-72-56	9973	Conifer	Conifer	
2004-72-62	9973	Quercus sp.	Oak	
2004-72-112	9973	Larix sp./Picea sp./Pinus sp.	Larch/Spruce/Pine	Most likely pine
2004-72-113	9973	Conifer	Conifer	
2004-72-114	9973	Quercus sp.	Oak	
2004-72-115	9973	Unidentifiable	Unidentifiable	
2004-72-116	9973	Unidentifiable	Unidentifiable	No wood remains
2004-72-117	9973	Quercus sp.	Oak	
2004-72-118	9973	No wood	No wood	No wood
2004-72-120	9973	Larix sp./Picea sp./Pinus sp.	Larch/Spruce/Pine	
2004-72-121	9973	Quercus sp.	Oak	
2004-72-136	9973	Larix sp./Picea sp./Pinus sp.	Larch/Spruce/Pine	
2004-72-137	9973	Quercus sp.	Oak	
2004-72-138	9973	Quercus sp.	Oak	
2004-72-139	9973	Quercus sp.	Oak	
2004-72-140	9973	Quercus sp.	Oak	
2004-72-	9973	Quercus sp.	Oak	

⁴² Egils saga, 1953, p. 311

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2004-72-142	9973	No wood	No wood	No wood remains
2004-72-143	9973	Quercus sp.	Oak	
2004-72-145	9973	Quercus sp.	Oak	
2004-72-146	9973	Conifer	Conifer	
2004-72-119	9973	Unidentifiable	Unidentifiable	
2004-72-122	9973	Quercus sp.	Oak	
2004-72-147	9973	Pinus sp.	Pine sp.	mixed layer overlying few possible burial cuts.

Feature/Cut [12758]

Feature [12758] is most likely a burial at least part of it. In all 24 nails/clench bolts belonged to the feature of which 22 had preserved wood remains. 10 wood samples were identified as *quercus sp.* (*Oak*). 6 samples were identified as *larix sp./picea sp./pinus sp.* (Larch/Spruce/Pine). 2 samples were *pinus sp.* (pine) and one as either *larix sp.* (larch) or *picea sp.* (spruce). One sample could only be identified as hardwood due to preservation. In transverse view the sample seemed to be diffuse porous, most likely *betula sp.* (birch). If all of these samples belong to the same burial feature, both softwood and hardwood was used for the coffin. There is however a possibility that these objects belong to burials that were removed when the church was moved to Mosfell.

Find number	Context	Identification	Identification	Comments
2004-72-86	12758	Larix sp./Picea sp./Pinus sp.	Larch/Spruce/Pine	
2004-72-87	12758	Pinus sp.	Pine	
2004-72-88	12758	Larix sp./Picea sp./Pinus sp.	Larch/Spruce/Pine	Big resin canals, most likely pine
2004-72-89	12758	Quercus sp.	Oak	
2004-72-91	12758	Larix sp./Picea sp.	Larch/Spruce	
2004-72-	12758	Quercus sp.	Oak	

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2004-72-97	12758	Quercus sp.	Oak	
2004-72-98	12758	Quercus sp.	Oak	
2004-72-99	12758	Quercus sp.	Oak	
2004-72-100	12758	Quercus sp.	Oak	
2004-72-101	12758	Lauftré		Most likely birch
2004-72-102	12758	Quercus sp.	Oak	
2004-72-103	12758	Quercus sp.	Oak	Most likely oak
2004-72-104	12758	Larix sp./Picea sp./Pinus sp.	Larch/Spruce/Pine	
2004-72-105	12758	Conifer	Conifer	
2004-72-106	12758	Larix sp./Picea sp./Pinus sp.	Larch/Spruce/Pine	
2004-72-107	12758	Pinus sp.	Pine	
2004-72-108	12758	Quercus sp.	Oak	
2004-72-124	12758	Larix sp./Picea sp./Pinus sp.	Larch/Spruce/Pine	
2004-72-125	12758	Quercus sp.	Oak	
2004-72-126	12758	Unidentifiable	Unidentifiable	
2004-72-127	12758	Larix sp./Picea sp./Pinus sp.	Larch/Spruce/Pine	

Feature [13522]

Feature [13522] is a cut for a possible burial. 8 nails/clench bolts were retrieved from this layer and all of them had wood remains preserved. All but two samples were identified as conifer, *larix sp./picea sp./pinus sp.* (larch/spruce/pine). The wood samples were small and therefore it was not possible to identify the samples to genus but one sample had *pinus sp.* (pine sp.) characteristics. One sample was not identifiable due to bad preservation and one was *quercus sp.* (oak).

Find number	Context	Identification	Identification	Comments
2004-72-	13522	Larix sp./Picea	Larch/Spruce/Pine	

128		sp./Pinus sp.		
2004-72-129	13522	Conifer	Conifer	
2004-72-130	13522	Quercus sp.	Oak	
2004-72-131	13522	Pinus sp.	Pine	
2004-72-132	13522	Larix sp./Picea sp./Pinus sp.	Larch/Spruce/Pine	Most likely pine
2004-72-133	13522	Unidentifiable	Unidentifiable	
2004-72-134	13522	Larix sp./Picea sp./Pinus sp.	Larch/Spruce/Pine	
2004-72-135	13522	Larix sp./Picea sp./Pinus sp.	Larch/Spruce/Pine	

Feature [14604]

Feature [14604] is a cut in the Hrísrú cemetery, there were no human remains left in the cut nor wood remains only four clenched bolts with preserved wood remains. All of the nails were previously used on *quercus sp.* (oak sp.) wood most likely from a coffin, which had been removed.

Find number	Context	Identification	Identification	Comments
2004-72-150	14604	Quercus sp.	Oak	
2004-72-152	14604	Quercus sp.	Oak	
2004-72-153	14604	Quercus sp.	Oak	
2004-72-155	14604	Quercus sp.	Oak	

Burial feature 15901 and 20

Burial feature [15901] is situated at the southeast part of the cemetery. In all 31 nails/clenched bolts were retrieved with wood remains preserved. 26 of 31 were identified as *quercus sp.* (oak). Five samples were identified as conifer of which three had resin canals, *Larix sp./Picea sp./Pinus sp.* (Larch/Spruce/Pine). The skeletal material was quite well preserved and the bone analyses suggest that this was a male over 60 years of age. The coffin was constructed mostly of *quercus sp.* (oak) with few pieces of conifer.

The position of the conifer pieces would be interesting to locate and could possibly give better idea how the coffin was constructed. As has been said before oak is always imported and does not drift to Icelandic shores unless from shipwrecks.

Find number	Context	Identification	Identification	Comments
2004-72-58	100020	Conifer	Conifer	Very little wood left
2004-72-49	100020	Conifer	Conifer	Bad preservation
2004-72-50	100020	Quercus sp.	Oak	
2004-72-52	100020	Quercus sp.	Oak	
2004-72-53	100020	Quercus sp.	Oak	
2004-72-63	100020	Quercus sp.	Oak	
2004-72-64	100020	Quercus sp.	Oak	
2004-72-65	100020	Larix sp./Picea sp./Pinus sp.	Larch/Spruce/Pine	
2004-72-66	100020	Quercus sp.	Oak	
2004-72-67	100020	Larix sp./Picea sp./Pinus sp.	Larch/Spruce/Pine	
2004-72-69	100020	Larix sp./Picea sp.	Larch/Spruce	Most likely larch
2004-72-94	100020	Quercus sp.	Oak	
2004-72-95	100020	Quercus sp.	Oak	
2004-72-96	100020	Quercus sp.	Oak	
2004-72-123	100020	Quercus sp.	Oak	
2004-72-162	100020	Quercus sp.	Oak	
2004-72-170	100020	Quercus sp.	Oak	
2002-59-50	Fe. 20	Quercus sp.	Oak	
2002-59-22	Fe. 20	Quercus sp.	Oak	
2002-59-13	Fe. 20	Quercus sp.	Oak	
2002-59-12	Fe. 20	Quercus sp.	Oak	
2002-59-19	Fe. 20	Quercus sp.	Oak	
2002-59-	Fe. 20	Quercus sp.	Oak	

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2002-59-17	Fe. 20	Quercus sp.	Oak	Popper
2002-59-16	Fe. 20	Quercus sp.	Oak	
2002-59-09	Fe. 20	Quercus sp.	Oak	
2002-59-14	Fe. 20	Quercus sp.	Oak	
2002-59-11	Fe. 20	Quercus sp.	Oak	
2002-59-15	Fe. 20	Quercus sp.	Oak	
2002-59-20	Fe. 20	Quercus sp.	Oak	
2002-59-21	Fe. 20	Quercus sp.	Oak	Popper

Burial feature 05

Burial feature 05 is situated south of the church chancel. Since the skeletal material was well preserved we can with certainty identify the individual as a male between the age of 45-50 years old.⁴³ 15 clench bolts were retrieved from the coffin which all had preserved wood remains. All were identified as *pinus sylvestris* (Scots pine). *Pinus sylvestris* is common in modern driftwood assemblage but it is also grows in countries like Norway for example.⁴⁴

Find number	Context	Identification	Identification	Comments
2002-59-26	Fe. 05	<i>Pinus sylvestris</i>	Scots pine	
2002-59-30	Fe. 05	<i>Pinus sylvestris</i>	Scots pine	
2002-59-28	Fe. 05	<i>Pinus sylvestris</i>	Scots pine	
2002-59-36	Fe. 05	<i>Pinus sylvestris</i>	Scots pine	
2002-59-33	Fe. 05	<i>Pinus sylvestris</i>	Scots pine	
2002-59-29	Fe. 05	<i>Pinus sylvestris</i>	Scots pine	
2002-59-41	Fe. 05	<i>Pinus sylvestris</i>	Scots pine	
2002-59-31	Fe. 05	<i>Pinus sylvestris</i>	Scots pine	
2002-59-	Fe. 05	<i>Pinus sylvestris</i>	Scots pine	

⁴³ Byock, J., et al, 2003, bls. 25-26

⁴⁴ Eggertsson, Ólafur, 1994, p. 6

39				
2002-59-25	Fe. 05	Pinus sylvestris	Scots pine	
2002-59-27	Fe. 05	Pinus sylvestris	Scots pine	
2002-59-40	Fe. 05	Pinus sylvestris	Scots pine	
2002-59-34	Fe. 05	Pinus sylvestris	Scots pine	
2002-59-42	Fe. 05	Pinus sylvestris	Scots pine	
2002-59-38	Fe. 05	Pinus sylvestris	Scots pine	

Burial feature CK 1

Burial feature CK 1 is situated south of the church chancel, east of burial feature 5. In all three clench bolts had preserved wood remains. All three were identified as conifer with resin canals, *larix. sp./picea sp./pinus sp.* (larch sp./picea sp./pinus sp.).

Find number	Context	Identification	Identification	Comments
2007-21-140	CK 1	Larix sp./Picea sp./Pinus sp.	Larch/Spruce/Pine	Burial feature
2007-21-139	CK 1	Larix sp./Picea sp./Pinus sp.	Larch/Spruce/Pine	Burial feature
2007-21-141	CK 1	Larix sp./Picea sp.	Larch/Spruce	Burial feature
2007-21-133	CK 1	Larix sp./Picea sp./Pinus sp.	Larch/Spruce/Pine	Burial feature

Burial feature CK 3

Burial feature CK 3 is situated south east of the chancel, south of burial feature CK-C-2007-5. The feature had no skeletal material, it could have been emptied when the church was moved to Mosfell.⁴⁵ In all two clench bolts had preserved wood remains, one was identified as conifer with resin canals, *larix. sp./picea sp./pinus sp.* (larch sp./picea sp./pinus sp.) but the other could only be identified as a conifer due to bad preservation

Find number	Context	Identification	Identification	Comments
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⁴⁵ Byock, J., Walker, P. L., Zori, D., 2007, p. 43

2007-21-135	CK 3	Larix sp./Picea sp./Pinus sp.	Larch/Spruce/Pine	Burial feature
2007-21-136	CK 3	Conifer	Conifer	Burial feature

Burial feature CK-C-2007-5

The burial was situated southwest of the church. It contained very poorly preserved human skeleton, which was a male between 15 and 18 of age. 26 iron clench bolts with wood remains were retrieved as well as wood from the coffin, which was primarily preserved along the north and the south sides of the long axis. The clench bolts layer on top of the skeleton.⁴⁶ In all 26 wood samples were identified as conifer. 22 samples were identifiable to the genus, *pinus sp.* (pine sp.). Five samples were identified as *larix sp./picea sp./pinus sp.* (larch sp./spruce sp./pine sp.) due to poor preservation of the wood but since all the other samples are *pinus sp.* (pine sp.) these four are most likely the same genus. As with other coffins constructed from coniferous wood it is not certain if they are import or driftwood.

Find number	Context	Identification	Identification	Comments
2007-21-146	CK 5	Larix sp./Picea sp./Pinus sp.	Larch/Spruce/Pine	Burial feature
2007-21-148	CK 5	Larix sp./Picea sp./Pinus sp.	Larch/Spruce/Pine	Burial feature
2007-21-149	CK 5	Larix sp./Picea sp./Pinus sp.	Larch/Spruce/Pine	Burial feature
2007-21-147	CK 5	Larix sp./Picea sp./Pinus sp.	Larch/Spruce/Pine	Burial feature
2007-21-172	CK 5	No wood	No wood	Burial feature
2007-21-178	CK 5	Pinus sp.	Pine	Burial feature
2007-21-163	CK 5	Pinus sp.	Pine	Burial feature
2007-21-168	CK 5	Pinus sp.	Pine	Burial feature
2007-21-164	CK 5	Pinus sp.	Pine	Burial feature
2007-21-170	CK 5	Pinus sp.	Pine	Burial feature
2007-21-169	CK 5	Pinus sp.	Pine	Burial feature
2007-21-172	CK 5	Pinus sp.	Pine	Burial feature
2007-21-166	CK 5	Pinus sp.	Pine	Burial feature

⁴⁶ Byock, J., Walker, P. L., Zori, D., 2007, p. 43

2007-21-167	CK 5	Pinus sp.	Pine	Burial feature
2007-21-171	CK 5	Pinus sp.	Pine	Burial feature
2007-21-165	CK 5	Pinus sp.	Pine	Burial feature
2007-21-153	CK 5	Pinus sp.	Pine	Burial feature
2007-21-154	CK 5	Pinus sp.	Pine	Burial feature
2007-21-156	CK 5	Pinus sp.	Pine	Burial feature
2007-21-158	CK 5	Pinus sp.	Pine	Burial feature
2007-21-150	CK 5	Pinus sp.	Pine	Burial feature
2007-21-162	CK 5	Pinus sp.	Pine	Burial feature
2007-21-157	CK 5	Pinus sp.	Pine	Burial feature
2007-21-151	CK 5	Pinus sp.	Pine	Burial feature
2007-21-152	CK 5	Pinus sp.	Pine	Burial feature
2007-21-155	CK 5	Pinus sp.	Pine	Burial feature
2007-21-161	CK 5	Pinus sp.	Pine	Burial feature
2007-21-134	CK 5	Larix sp./Picea sp./Pinus sp.	Larch/Spruce/Pine	Burial feature

Burial feature CK 8

Burial feature CK 8 had two clench bolts with preserved wood remains. One was attached to a conifer with resin canals, *larix sp./picea sp./pinus sp.* (larch sp./spruce sp./pine. The other was attached to *quercus sp.* (oak sp.)

Find number	Context	Identification	Identification	Comments
2007-21-299	CK 8	Larix sp./Picea sp./Pinus sp.	Larch/Spruce/Pine	Burial feature
2007-21-298	CK 8	Quercus sp.	Oak	Burial feature

Feature 49

Burial feature 49 is situated up against the northern side of the chancel. The coffin lid was preserved in three places, beneath the reburial directly on top of the skull, the second was preserved along the centre line at the stomach area and the third above the tibia.⁴⁷

In all four samples were analyzed from burial feature 49. Coffin lid over the cranium was identified as *betula sp.* (birch) and so was the coffin lid over the pelvis/femur. One fragment was collected from wet screening and, it was badly preserved but it was identified as a conifer with resin canals, which can be *pinus sp., larix sp. or picea sp.* (pine sp., larch sp. or spruce sp.). The fourth wood sample could not be identified due to bad preservation. The coffin was constructed from Icelandic timber and most likely driftwood as well since *pinus sp./larix sp./picea sp.* are/is not indigenous to Iceland.⁴⁸

Find number	Context	Identification	Identification	Comments
2003-41-38	D-Quad D	Betula sp.	Birch	coffin lid: over cranium
2003-41-39	E	<i>Pinus sp./Larix sp./Picea sp.</i>	Larch/Spruce/Pine	wood: Fe 49, wet screen 1/8"
2003-41-61	E	Unidentifiable	Unidentifiable	coffin wood: Fe 49, south side
2003-41-62	E	Betula sp.?	Birch sp.?	coffin lid: Fe 49, from pelvis/femur area

⁴⁷ Byock, J., et. al., 2004, p. 18-19

⁴⁸ Eypór Einarsson, 2005, p. 18-23

Feature 46

Burial feature 46 rests on top of burial feature 49 and is a reburial, most likely contemporary features. The near absence of sediment between the reburial and Feature 49 suggests that the two were interred at the same time (i.e., the individual in Feature 49 was buried in a coffin and grave, and then bone bundle of Feature 46 was placed on top of it).⁴⁹ Four wood samples were identified of which one was preserved on a clench bolt. Three samples were identified as *pinus sp.* one to species level, *pinus sylvestris* and one sample was identified as *betula sp.* Since these two features are contemporary it is not unlikely that the bone box and the coffin were constructed at the same time and therefore the both features were constructed of indigenous wood and most likely driftwood.

Find number	Context	Identification	Identification	Comments
2003-41-34	D-Quad D	<i>Pinus sylvestris</i>	Scots pine	wood: close to Fe 46
2003-41-42	E	<i>Betula sp.</i>	Birch sp.	wood: Fe 46 – Burial
2003-41-44	E	<i>Pinus sp.</i>	Pine sp.	wood: Fe 46, wet screen 1/8"side
F-2003-34	E	<i>Pinus sp.</i>	Pine sp.	box for secondary burial: Popper

Coffins – discussion

13 burial features had preserved wooden remains. These 13 features might not all be burials or at least they need to be examined further since they did not have any skeletal material. The clench bolts however suggest that there was some activity there but perhaps they are from graves that were emptied when the church was abolished. The coffins were built from various wood genera, mostly driftwood but several clench bolts had mineralized oak still attached. Oak was found in six burial features (15901, 9973, 4852, 12758, 14604 and 13522). The coffin in burial feature 15901 was constructed almost entirely from oak. The burial is situated about 2,5 m east of the chancel. The person in the grave was identified as a 60 year old male. Burial 4852 had 6 oak samples but the rest was conifer, in all 21 samples. Other oak samples come from features that were not interpreted as burial features but the wood identifications suggest that there must have been burials there but perhaps the skeletal material had been removed. These features are 12758, 127801, 13522, and 14604. These features

⁴⁹ Byock, J., et al., 2004, p. 18-19

have both oak and conifers attached to clench bolts but the genera distribution is very mixed but perhaps spatial analyzes would shed some light on these features. Oak coffins have not been found from this time period in Iceland before to the author's knowledge.

Other burial features with preserved wooden remains were 46, 49, 5, 3, 1 and 2007-5. Feature 5, and 2007-5 are both south of the church and both coffins were constructed from pine, 5 could be identified to species level, Scots pine. The coffins in features 46 and 49 were constructed from Scots pine and birch. Those are the only burial features that had indigenous wood.

Most of the coffins were constructed from driftwood, mostly pine but quite a lot of oak was identified as well which uncommon. The oak was imported or from dismantled ships for example.

Longhouse (Skáli)

The longhouse at Hrísbú was situated 10 m northeast of the church. The structure is about 28 m in length and 10 m in width. The structure was built between 871 and 920/940 and then partially rebuilt after that. The longhouse had bow-sided walls, entrances, benches, thick floor deposits, empty post holes, barrel pits, and a large central hearth. The excavation also revealed that the church and the longhouse were in use partly at the same time, the house was still in use after the church was built. Therefore it can be linked with the chieftain at the longhouse. After the house was abandoned, the structure was reused as a midden.⁵⁰ Several wood remains were preserved which were analyzed by Lísabet Guðmundsdóttir, Steve Martin and Dawn Mooney.

Midden

After the longhouse went out of use trash was dumped in to it. Wood remains were preserved in the midden layers, which will be discussed further below.

C-2006-8

Context C-2006-8 is a midden layer that lies directly underneath the deep deposit of windblown soil that filled the depression between the longhouse walls (C-2006-4). The midden layer contained increased densities of charcoal and burnt bone as well as several mussel skins.⁵¹ Several charcoal and wood fragments were identified in this layer. Wood sample 2006-63 consisted of a charred branch 3 mm in diameter, which was identified as *betula sp.* (birch sp.) Sample 2006-77 consisted of several pieces of charcoal, 50 pieces were randomly chosen for identification and all of them were identified as *betula sp.* (birch sp.). Sample 2006-97 consists of 18 fragments of charred *betula sp.* (birch sp.) Sample 2006-6 consists of bark and uncharred wood which were identified by Steve Martin as *betula sp.* (birch sp.)

⁵⁰ Byock, J., et al., 2007, p. 4 and Byock, J., et al, 2008, p. 5

⁵¹ Byock, J., et al., 2006, p. 9

All wood samples in this midden layer were identified as *betula sp.* (birch sp.), which is a domestic genus.

C-2006-9

C-2006-9 is a grayish compact layer with iron staining that contains inclusions of charcoal and burnt bone, a small number of unburned wood fragments and greenish gray glacial sand. C-2006-9 was the first layer to have accumulated on top of the roof collapse after the abandonment of the house. It is composed of a mixture of windblown deposits and a few refuse dumps with a low density of food remains.⁵²

One wood sample was identified from this midden layer, sample 2007-4 was identified by Steve Martin as *betula sp.* (birch sp.).

C-2006-15

The deposition of this midden clearly post-dates the abandonment of the house. The midden is below the Katla 1500 tephra layer, but it is not certain if it is in situ or not so the midden could date to somewhere around or soon after AD 1500. The midden is above the northern wall of the longhouse and consisted of a light pinkish brown silty soil matrix with dense inclusions of charcoal, calcite bone, and peat and wood ash.⁵³ One sample, sample 2006-08, was analyzed by Steve Martin, who concluded that the wood was both a piece of bark from *betula sp.* and wood also identified as *betula sp.* (birch sp.)

C-2007-36

C-2007-36, a midden layer consisting of a dense peat ash concentration, appeared below C-2006-4 and immediately above C-2006-9 in the eastern part of the central area above the longhouse. C-2007-36 is the only dense and extensive midden layer over the central room of the longhouse, whereas the midden layers discussed above were all located over the eastern end of the abandoned longhouse.⁵⁴ Sample 2007-2 was retrieved from midden layer 36. It consisted of a leaf bud, bark and wood all from *betula sp.* (birch sp.)

All samples from these midden layers were identified as *betula sp.* (birch sp.). The time period these layers span from are 11th to 15th century but it has not been possible to refine the date any further than this. After the longhouse was abandoned the depression it created was a suitable place for trash disposal, it must have happened some time after the structure went out of use, the walls had collapsed and so forth. The midden was under the Katla 1500 tephra layer so sometime between this time period or even during the whole of that period trash was being disposed there. Most of the samples gathered from these layers were charred which means that indigenous wood was being used for fuel with other material such as peat and bones but it does give an idea that during this period the farmers and Hrísbú could get hold of birch. The charcoal samples

⁵² Byock J., et al., 2007, p. 13

⁵³ Byock J., et al., 2006, p. 8

⁵⁴ Byock J., et al., 2007, p. 12-13

have that in common that they are very small and the few branches show that this is mostly small plants, either *betula pubescens* (downy birch) or *betula nana* (dwarf birch) it is not possible to identify between those two species since the wood anatomy is the same.⁵⁵ In Iceland the term for small branches of wood, *betula nana* (dwarf birch) or *betula pubescens* (downy birch) as *hrís* and a *hrís* resource was a good asset on a farm. The wood and *hrís* was cut down in fall or winter, the twigs or branches were cut off and the cuts were then used as firewood but the trunk was cut in to 7 – 10 cm long pieces for charcoal production.⁵⁶ This knowledge does come from the 19th century so that is necessary to have in mind when interpreting data. However it is not unlikely that the smallest charred sample are firewood since that material is not suitable for charcoal production.

Turf collapse

Two separate turf collapse layers had preserved wood remains. The layers are at the eastern end of the central hall of the longhouse. Stratigraphically, turf collapse 2007-53 is above turf collapse 2007-54.⁵⁷

Sample 2007-7 was retrieved from turf collapse layer 2007-53 and sample 2007-9 from turf collapse layer 2007-54. Both samples were identified by Steve Martin as *betula* sp. (birch sp.) It is not known if this wood is from the structure itself or windblown pieces that ended up in the turf collapse. However the wood is native to Iceland and it was not charred so perhaps it was from an internal structure like the benches.

Bench surface

C-2006-12 is the southern bench, the layer is 1 to 2 cm thick and slopes gently up towards the southern wall. The bench surface lies 30 to 40 cm above the longhouse floor, a height that probably preserves the original height of the bench relative to the floor. In some places, C-2006-12 appears to have several inconsistent lenses, and even to be pressed into and interspersed with the coarse, light brown soil that was interpreted as the natural soil left for the bench foundation.⁵⁸

Sample 2006-10 was collected from bench surface C-2006-12, the sample was identified by Steve Martin, it consisted of charred wood and bark from *betula* sp. (birch sp.). The bark might have been used as an insulator.

Layer C-2008-137 is situated at the eastern end of the southern bench it consisted of high concentration of charcoal which was interpreted as in situ burning and collapse of the wooden paneling inside the southern wall because of loose fire. The layer is above layer C-2006-12 and is made up of charcoal of varying sizes but in general rather large pieces. Cobbles from the cobble wall were pressed into the top of the layer. The fire seems to have happened shortly

⁵⁵ Hather, J., 2000, p. 104

⁵⁶ Jónasson, J., 1961, p. 66

⁵⁷ Byock, J., et al., 2007, p. 16

⁵⁸ Byock, J., et al., 2006, p. 16

after the structure went out of use since it was not repaired.⁵⁹ 10,0 L of charcoal were sampled and analyzed by Steve Martin. 50 pieces were randomly selected for identification which were all *betula* sp. (birch sp.)⁶⁰ Very few samples have been identified from the actual structure, only this sample and the threshold, but this sample suggests that at least birch was used for the paneling.

Floors

Wood and charcoal pieces were found in several floor layers and are most likely fuel residues.

C-2006-19, the youngest floor layer

Floor layer C-2006-19 is the youngest and the last floor layer. The layer contained high density of charcoal but so far only two samples have been analyzed, sample 2006-05 and 2006-09. The two sample consisted of *betula* sp. (birch sp.) and birch bark. The samples were analyzed by Steve Martin.

C-2006-14

Floor layer C-2006-14 is below C-2006-19, it is greasy and compact with high density of charcoal and burned bones. The floor extends across the whole area inside the longhouse benches, except over the fireplace.⁶¹ In all 23 fragments were identified within five sample numbers. Sample 2006-29 consisted of two very small charred branches of *betula* sp. (birch sp.), *betula pubescens* (downy birch) or *betula nana* (dwarf birch). Sample 2006-32 consists of 14 fragments of charred *betula* sp. (birch sp.) and two fragments of *salix* sp. (willow sp.) Sample 2006-83 consisted of three fragments of charred *betula* sp. (birch sp.) Sample 2008-165 consisted of little charred *betula* sp. (birch sp.) branch, cut down in late summer. Sample 2008-41 consisted of charred *betula* sp. (birch sp.) fragment. All samples are charred and are originally fuel residues from the hearth, which the floor surrounds. All fragments were birch except for two willow fragments, which are indigenous to Iceland just as the birch. The willow cannot be identified to species level since the anatomical characteristics are the same.⁶² There are four indigenous willow species in Iceland, two of them are creeping species, *salix herbacea* (dwarf willow) and *salix arctica* (arctic willow), and two are shrubs, *salix phylicifolia* (tea leaved willow) and *salix lanata* (woolly willow).⁶³ Both species are common in Iceland and easy to get hold of. The water content of willow is often quite high and for that reason it is not as good for charcoal production as birch.⁶⁴

Icelandic name	Latin name	English name
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⁵⁹ Byock, J., et al., 2008, p. 33-34

⁶⁰ Martin, Steve., 2012, p. 11 (In publication)

⁶¹ Byock, et al., 2008, p. 27

⁶² Schweingruber, F., 1990, p. 154

⁶³ Kristinsson, H., 2010, p. 240-246

⁶⁴ Mooney, D, 2011, p. 164

Grasvíðir	Salix herbacea	Dwarf willow
Grávíðir	Salix arctica	Arctic willow
Gulvíðir	Salix phylicifolia	Tea leaved willow
Loðvíðir	Salix lanata	Wolly willow
Reyniviður	Sorbus aucuparia	European rowan
Einir	Juniperus communis	Common juniper
Birki	Betula pubescens	Downy birch
Fjalldrapi	Betula nana	Dwarf birch
Blæösp	Populus tremula	Aspen

C-2007-95, Top Floor Layer in the Intermediary Area

Floor layer C-2007-95 is situated between the central hall and the western gable room. The floor has been disturbed by several pits and dumping. The floor is contemporary with C-2006-19 and possibly C-2006-14. In the floor were charcoal inclusions, burnt bones and pebbles.⁶⁵ Two samples were identified by Steve Martin, sample 2007-38 was uncharred *betula sp.* (birch sp.). Sample 2007-398 consisted of three fragments, uncharred wood, bark and a leaf bud all from *betula sp.* (birch sp.) As has been said before the floor was disturbed and trampled on so it is not certain from what these samples are originally from but most likely trash material within the floor.

C-2008-194, Central Aisle of Eastern Gable Room

Floor layer C-2008-194 is situated in the central aisle of the eastern gable room. It occupies a small area of the eastern end of the central aisle up against the eastern wall. The layer is a dark gray, compact silty loam with large chunks of charcoal.⁶⁶ Only one sample has been identified, sample 2008-168, which was a small charred *betula sp.* (birch sp.) branch.

C-2007-94, Main Floor Layer in Central Aisle

Floor layer C-2007-94 is the largest floor in the central aisle, it consisted of black gritty layer with charcoal, black ash and burned bones. Quite large pieces of charcoal were found south of the northern line of postholes.⁶⁷ Steve Martin identified several pieces of charcoal and all were *betula sp.* (birch sp.) one uncharred sample was also identified as *betula sp.* (birch sp.) All the charcoal is most likely from fuel residue but perhaps the large charcoal pieces are there due to loose fire. The uncharred wood, sample, 2008-158, was very badly preserved and it is impossible to identify from what it came originally especially since it is only one little fragment.

⁶⁵ Byock, J., et al., 2008, p. 50

⁶⁶ Byock, J., et al., 2008, p. 43

⁶⁷ Byock, J., et al., 2008, p. 94

Postholes

Wood remains were found in 9 postholes, which were identifiable.

Posthole C-2006-21 and C-2006-24

Posthole 21 and 24 were underneath turf collapse C-2006-10, the postholes were stone-lined and penetrated through the floor layers of the longhouse. The postholes line the inside of the northern bench and are situated in the interface of the floor and the bench. There was hardly any fill in these postholes, only air pockets. Few artifacts were recovered from other postholes but it is thought that they got there after the posts were removed from the holes.⁶⁸ It is not certain if the wood was part of a later fill or from the original post itself. In posthole 21, three samples were retrieved. Sample 2006-111 was an iron object with mineralized wood remains, which were identified as *betula sp.* (birch sp.). Sample 2006-112 consisted of charred material in all 11 charcoal pieces were identified as *betula sp.* (birch sp.). Sample 2006-55 consisted of 12 little fragments of charcoal which were all identified as *betula sp.* (birch sp.) In all 24 wood pieces were identified as *betula sp.* (birch sp.) One sample was uncharred and attached to iron object, that could be part of structural timber but it can just as well be from the internal benches or even an artifact. The charcoal pieces are most likely younger than the structure itself but there is a possibility that the posts are originally birch but the outside of the posts were scorched to keep the rot away.⁶⁹

Two samples were identified from posthole 24, sample 2006-7 and 2006-64. The former one consisted of a very small charred birch branch and the latter of charred birch bark.

Posthole 2007-59

Posthole 2007-59 is situated at the eastern end of the structure, just south of north wall. Sample 2007-15 was retrieved from fill 2006-60. One wood piece was identified by Steve Martin as *betula sp.* (birch sp.)

Posthole 2007-91

Posthole 2007-91 is a posthole in the central area of the structure, south side. Sample 2007-25 was retrieved from the fill 2007-92. The sample consisted of uncharred wood, which was identified by Steve Martin as *betula sp.* (birch sp.)

Posthole 2007-98

Posthole 2007-98 is situated east of old bulk, next to the north wall of the structure. Sample 2007-29 was retrieved from the fill 2007-99. Two uncharred wood remains were identified, wood and leaf bud, by Steve Martin as *betula sp.* (birch sp.)

⁶⁸ Byock, J., et al., 2006, p. 19

⁶⁹ The same idea has been suggested with the corner posts from the church but it is thought that the posts from the church at Þórarinsstaðir were burned for the same reason.

Posthole 110

Posthole 110 is situated at the eastern end of the longhouse near the northern wall, cut through floor layer 2007-94. Sample 2007-31 was retrieved from fill 2007-111. One sample was identified by Steve Martin as *betula sp.* (birch sp.).

Posthole 112

Posthole 112 is situated at the eastern end of the longhouse near the south wall. Sample 2007-30 was retrieved from the posthole fill 2007-113. One wood sample was identified by Steve Martin as *betula sp.* (birch sp.).

Doorway

The western doorway is situated in the southern wall. It is thought that this was the primary doorway in to the house. Outside of the house, the 1.15-1.2 m wide walkway, which is flanked by entry walls and covered with planks, leads south toward the church, less than 10 m away. A layer of burned and unburned wood was discovered inside the doorway, which were remains of plank flooring.⁷⁰ One charred sample, 2008-185, was identified as *betula sp.* (birch sp.) It is not certain if this wood is from charcoal pieces, which were brought in or out as fuel or trash or perhaps wood paneling, which burned after the longhouse, was abandoned. The plank itself was identified by Dawn Mooney as a ring porous deciduous wood and she does suggest the genera *quercus sp.* (oak sp.) or *fraxinus sp.* (ash sp.). They are the most common ring-porous deciduous woods occurring in Viking Age and medieval wooden artifact and building timber. The floor is therefore imported since neither oak nor ash are found as driftwood and are not native to Iceland.⁷¹

The entrance leads straight to the church this might be an indication of a sacred passage, a door to the dead even since the burials are literally in front of the entrance. A rare wood piece like oak must have been deliberately chosen for this space and might be regarded as a religious symbol. The door can symbolize the both worlds, for the living and the dead, a boundary between two spaces⁷² Oak was also found quite frequently in the cemetery attached to clench bolts, perhaps there is a link to these two spaces.

Pits

Pit C-2007-114

Pit C-2007-114 is a pit at the eastern edge of the two hearths. It is filled with floor like material but it has been suggested that it was for a container holding substances or objects used for food preparation.⁷³ Sample 2007-32 was identified by Steve Martin as *betula sp.* (birch sp.) The wood was not charred so it could be from a wooden barrel built from birch sp.

⁷⁰ Byock, J., 2008, p. 56

⁷¹ Milek, K., et al., in press

⁷² Beck, A. S., 2010, 101-102

⁷³ Byock, J., et al., 2007, p. 35

Pit C-2007-46

Cut C-2007-46 is a pit for a barrel, which was situated in the northern central part of the intermediary area. The cut was about 1,15 m in diameter, the longer axis and it was filled with stones. It is thought that the barrel stood on top of the stones.⁷⁴ Sample 2007-11 was identified by Steve Martin as *betula* sp. (birch sp.) The wood was not charred so it could be from a wooden barrel built from birch sp.

Pit C-2008-186

Storage pit C-2008-186 is situated against the inside of the northern wall opposite of the western entrance in the south wall. The cut has several fill layers but wood was identified in fill C-2008-181 that is the on top of the bottom layer of the pit.⁷⁵ Sample 2008-164 was identified as *betula* sp. (birch sp.) a little branch that was slow growing. It is unlikely that it is from the barrel itself since it would have been made out of larger wooden planks rather than small pieces of shrub tree.

Longhouse discussion

Several wood samples were found within the longhouse, most of them were charred birch, most likely fuel residues.

After the longhouse went out of use the depression was used as a midden. Birch charcoal fragments were retrieved from four midden layers which were deposited between the 11th century and the 15th. Although this is a wide time gap it does tell that during that period birch was available in the area for fuel. Two pieces of birch wood was retrieved from two separate turf collapse, the wood was not charred so it could be from an internal feature for example the benches or even panels. To further support this theory are large charcoal pieces in layer C-2008-137 that is situated at the eastern end of the southern bench. It is thought that the charred birch was part of the wooden paneling inside the southern wall, which burned down.

Birch and willow were identified in the floor layers, both charred pieces and uncharred which are most likely fuel residues, in floor layer C-2007-95 birch leave buds were identified which means the wood was cut down in the spring.⁷⁶

Birch was retrieved from seven postholes and it has been interpreted as a secondary deposition, it might however be that the posts were actually from birch. Wood identification on wood from postholes in a byre in Keldudalur, North of Iceland, from the 9th to 10th revealed that the building was mostly constructed from birch.⁷⁷ That means, at least in Skagafjörður, north of Iceland the birch trees were big enough to be suitable for roof bearing posts. Therefore it is not impossible that birch was also used for the longhouse at Hrísbú.

⁷⁴ Byock, J., et al., 2007, p. 38

⁷⁵ Byock, J., et al., 2008, p. 55-56

⁷⁶ Church, M., 2007, p. 663

⁷⁷ Guðmundsdóttir, L., 2011a, p. 8-9

One of the more interesting wood samples were found in the western doorway at the southern side of the building. The sample was identified as an oak or an ash. This is the only preserved wood in the building that was imported. It has been suggested that the doorway of a longhouse has a symbolic or ritual meaning and the closeness to the church might support that theory. The longhouse is older than the church but the doorway or the path from the longhouse might have been the reason why the church was chosen it's place.

The wood that was identified from the structure, the wood panels and perhaps part of the posts, were constructed from indigenous birch. The threshold was from imported oak or ash. Most of the wooden posts and other timber was most likely reused when the longhouse went out of use so it is not certain if these identifications represent the building material used for the structure. It is surprising that no driftwood was found in the longhouse but as has been said before perhaps it was reused or not preserved. There is also a chance that birch was more important for the first generations of Icelanders than previously thought.

Conclusion

The archaeological remains spans over 300 years and it is an extraordinary opportunity to examine the wood use at the same place for this period of time. The oldest part of the research are is the longhouse which was in use from late 9th century to early 11th century. Almost all wood samples consisted of *betula* sp. (birch sp.) they were found in floor layers, most likely fuel residues, as well as in postholes and in barrel pits. The indigenous wood was more important to the Viking age society than previously thought. This research indicates that the birch trees were big enough to be used for planks (*þiljur*) and even posts and perhaps they were the preferred wood for that construction. It is not unlikely that a high status farm like Hrísrú had driftwood easement and most likely it was available to them quite early on. There is however no evidence of driftwood use until the church is built in the beginning of the 11th century. The reason might be that it was reused after the longhouse went out of use, if used for the longhouse. Since birch has preserved uncharred it would not be unlikely that parts, even tiny splinters of driftwood, which is always conifers, would have preserved as well. One sample from the longhouse was imported and that was an oak or ash threshold. It has been suggested that the entrance has symbolic meaning and it might have had something to do with the placement of the church. The oak has often been related to ships and there were several clenched bolts in the cemetery with oak fragments which might have symbolized boats for the dead. The oak in the entrance might also have been part of a decorated doorway in to the building as a status symbol of some sort.

The church at Hrísrú was a *stólpakirkja*, a timber building with four earth dug posts and most likely the a stave constructed walls. The posts and the sills were constructed from driftwood species but the planks or *þiljur* could have been local birch. A chancel was a later addition to the church which was a typical stave constructed building with no earth dug posts. The early church buildings in

Iceland were a big status symbol to begin with and the church at Hrísbú is no exception from that. It is built in a architectural style common in Norway and elsewhere in Northern Europe so obviously there is a clear connection to those areas. The chancel of the church is also an evidence for that connection. During the late 11th century the architectural style of the Norwegian churches changes from *stólpaverk* to *stafverk* and that happened during the same time period at Hrísbú. The addition to the church is therefore an evidence of the chieftains attempt to further show his status and power and perhaps his connection to the wider world.

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