Rannsóknasjóður

rannís

ICELANDIC RESEARCH FUND
ANNUAL REPORT

The annual report covers the grant period for the calendar year (01.01. - 31.12.).
A signed copy of the annual report shall be submitted to Rannís by email to rannsoknasjodur@rannis.is – Subject: IRF - Annual report.

Grant number: 217821-051
Project title: Power, Wealth and Plague in Two Valleys: Svarfaðardalur, Hörgárdalur and their hinterlands ca. AD 870-1500
Grant year: 2021
Project leader: Árni Daníel Júlíusson
Project leader email: adj@hi.is
Type of grant: Grant of Excellence
Expert panel: Kristian Kristiansen, University of Göteborg, Lotte Hedeager, University of Oslo, Karen van Niekerk, University of Bergen and Guðmundur Ólafsson, National Museum of Iceland.

Signatures to certify that all information in the annual report is correct and that the report includes all relevant information:

Date and place
Project leader
Person responsible for research facilities

To be filled out by Rannís:

Date annual report received	
Grant previously paid	
Grant paid upon approval of annual report	
Annual report approved (date and signature)	

SCIENTIFIC REPORT

Note: A financial report for the project is submitted separately.

Topics

PROGRESS REPORT FOR THE GRANT YEAR

Describe the progress of the project; main results, milestones reached and other achievements or outputs. Please refer to the milestones in the application. If there are deviations from the original research plan, please explain the need or rationale for those changes.

Main results

Progress of the project

Beginnings

The grant of excellence was awarded in January. Following the announcement, a series of zoom-meetings between the co-proposers were organised by the PI´s. These were held in February and March. In April a combined face-to face and zoom-meeting was held in Reykjavík at Hannesarholt. By then planning for the field season during the summer of 2021 was already well underway and a plan for the archaeological and palaeoecological field work had been proposed. Housing in Eyjafjörður had secured by then. During those meetings it was decided to move the annual meeting of the project from April to October due to issues of practicality and effectiveness.

The project is managed by the Faculty of Humanities, University of Iceland. Meetings were held with admins from the Faculty during January, February and March. In March the administrative framework for the project was mostly in place, with the PI´s provided with an office in Nýi Garður on the University campus.

In April preparations for advertising for the two PhD students proposed to be hired by the project went ahead at the University of Iceland and University of Bergen. The advertisements were posted in May and by the autumn the positions had been filled, bringing the doctoral students Kristin Møller-Nilsen and Elísabet Ásta Eyþórsdóttir into the project in the zooarch WP (WP 2/5) and the palaeoecology WP (WP 4/3. The first number accrues to the project description, while the second number is as stated in the budget document for the project).

During May the project website (https://twovalleys.hi.is) was planned and designed by María Árnadóttir and the Two Valley team.

During June Elín Hreiðardsóttir, in collaboration with the WP leaders established a FB website linked to the project website which was also very useful in notifiying the interested public on the fieldwork (https://www.facebook.com/profile.php?id=100069190841955)

Field season 2021

The field season in the summer 2021 was further prepared during May and June. During May the PI´s, Árni Daníel Júlíusson and Ramona Harrison, convened in Akureyri with project archaeologist Elín Ósk Hreiðarsdóttir and made a field trip to Svarfaðardalur and Hörgárdalur with the purpose of preparing the summer field season. The small team was accommodated with office space and office services at the Stefansson Arctic Institute.

The research team arrived in Eyjafjörður on June 20. It stayed until July 20. During the first three weeks the work was in Svarfaðardalur, with around 15 researchers active in the field in three teams. These were the settlement archaeology team (WP 1/6), zooarchaeology team (WP 2/5) and palaeoecology team (WP 4/3). Each team in turn successfully conducted the research it had planned. The weather was excellent, the best Northern Iceland has to offer with mostly clear skies and temperature usually around 20 degrees celcius, which helped considerably. The settlement archaeology team was mostly active in the inner parts of the Svarfaðardalur valley system, with numerous test trenches dug in Fram-Svarfaðardalur, on Tungur and in Skíðadalur, doing research on the origin date of settlement in these areas along with research on deserted medieval small farms. The exception to these locations was test trenching in one location in Upsadalur west of Dalvík, down by the coast. The zooarchaeology team tested for middens at various locations in Svarfaðardalur-Skíðadalur, successfully doing a test trench in Kóngsstaðir. The palaeoecology team successfully searched for and located three cores at three locations for research into the ecology of the area.

On July 6 an open day in the field was organised in the evening with the municipal museum, Byggðasafn Dalvíkur, led by Björk Hólm, and the Svarfaðardalur Historical Society, Sögufélag Svarfdæla led by Þórarinn Hjartarson, Björk Eldjárn and Jón Bjarki Hjálmarsson, helping to promote and organise the open day. Around 50 people local people attended in a very successful Two Valleys open day. The people were given talks at the site of Krákustaðir in Tungufell, where Árni Daníel Júlíusson, Howell Roberts, Hólmfríður Garðarsdóttir and Stefán Ólafsson explained the project and what was happening at the test trenches dug there. Later the guests of the open day gathered at Kóngsstaðir, where Ramona Harrison and Jack Hartley Threlfall Hartley (volunteer, PhD candidate in Medieval studies at Oxford University) explained why middens, and their remains are so informative, and also interesting, showed the test trench in Kóngsstaðir midden, and explained the research.

The last week of the field season was dedicated to Hörgárdalur. A small team of researchers from WP´s 1/6 and 2/5 investigated farm mounds with drones and did surveying in preparation of the second field season, which will be primarily focused in Hörgárdalur.

October meeting

During January 2021, the PI Árni Daníel Júlíusson was staying in Lund in Sweden and had the opportunity to contact Lund archaeologist Per Lagerås. Lagerås´ interdisciplinary research project on the Black Death in Sweden is mentioned in the Two Valleys project description as being one of the inspirations for the project. Lagerås kindly accepted an invitation as a keynote speaker at the annual project meeting in Reykjavík.

Along with Lagerås other experienced researchers from history, historical ecology and archaeology were invited, along with the Two Valley team members. The invited guests were from the project advisory board, but as a part of the board was unable to travel to Iceland due to unforeseen circumstances other guests were invited; the very experienced UI emeritus historians Helgi Skúli Kjartansson and Helgi Þorláksson, and archaeologist Guðný Zoëga at Hólar University. Helgi Þorláksson and Guðný Zoëga have both participated in interdisciplinary projects in medieval Icelandic historical ecology.

The meeting took place on October 5 and 6. The proceedings of the meeting commenced at ten o´clock on October 5 at Neskirkja community center in Reykjavík, with Per Lagerås giving the keynote talk, Ólöf Garðarsdóttir the Dean of Faculty of Humanities addressing the meeting, presentations of the WP´s with talks from Elín Ósk Hreiðarsdóttir, Howell Roberts and Árni Daníel Júlíusson on settlement archaeology, from Ramona Harrison and Kristin Møller-Nilsen on zooarchaeology, Axel Kristinsson on history, Egill Erlendsson and Elísabet Ásta Eyþórsdóttir on palaeoecology and Árni Hjartarson and Sveinn Brynjólfsson on geomorphology. Helgi Þorláksson addressed the meeting and gave an overview of his experience with the Reykholt project.

On the second day of the meeting, October 6, Ramona Harrison and Árni Daníel Júlíusson gave an overview of the project to prepare for a general discussion. Guðmundur Ólafsson and Helgi Skúli Kjartansson led the general discussion. After lunch break Guðný Zoëga joined the meeting from Hólar on zoom and discussed the interdisciplinary SASS and SCASS historical ecology projects in Skagafjörður.

Besides the team members already mentioned Vicki Szabo joined the meeting in person, with biologist Brenna Frazer, and they both contributed to the discussion. Other team members joined the meeting on remote, Philippa Ashough, Ingrid Mainland and Konrad Smiarowski.

On October 7 Per Lagerås and Kristin Møller-Nilsen flew to Akureyri with Ramona Harrison and Árni Daníel Júlíusson. Lagerås and Møller-Nilsen were given a guided tour of the research area Svarfaðardalur and Hörgárdalur. The day after, on October 8, Ramona Harrison, Sveinn Brynjólfsson and Árni Daníel Júlíusson all gave a talk at the Berg culture house in Dalvík, Eyjafjörður discussing the Two Valley project and the results hitherto obtained by the research. Around 40 people attended, discussing the findings of the project.

On December 9, Árni Daníel Júlíusson and Ramona Harrison held an outreach talk as part of the ‘Torsdagslunsj’ lecture series at Harrison’s AHKR department, UiB. This talk was aimed at a, if highly educated in humanities disciplines, very general audience. Aim was to inform about and also introduce the project at Harrison’s home institution. Originally, the

plan had been for a visit by Árni Daníel Júlíusson to Bergen, but covid19 restrictions at UiB necessitated a zoom meeting instead. The trip will be taking place in 2022, instead. Otherwise, the covid situation has interfered with the project in various ways, but none serious.

During the rest of the year the samples and evidence obtained in the field season were processed and analyzed, with reports from WP1&2 expected in good time before the 2022 fieldseason. Results of each package can be reviewed below. Some highlights:

- Field season 2021:
With all WP leaders commencing work on their respective projects as soon as possible in year one, gathering members from all workpackages in the field during week three was an excellent demonstration on how connected this interdisciplinary team is in trying to address the overall research via their expertise, and by participating in the research dialogue not only during general meetings and project presentation occasions, but also on site, and in the field accommodations.

- Project workshop
The October workshop was a very successful gathering of initial information gathered as part of this project and presented in front of the team members and the invited guest speakers. Engaged conversations and brainstorming sessions helped push the individual research parts closer together and provide a greater understanding of the limiting factors, but also the overlapping potential. Just as the field gatherings, this was of great benefit not only to the research output itself, but also the group cohesion which can only lead to more innovative ways on how to address the research tasks along the way.

- Progress on the research questions for the project was considerable. Discussion and research on the various aspects of the research continued apace.

Budget remarks

The spending of the first year is only around half of the grant for year one. A large part of the budget is the PhD´s salary, and little of it was used during this year because of the process of advertise for and hiring PhD students for the two PhD positions in the project. The PI Árni Daníel Júlíusson had previous commitments that could not be discontinued despite the project being funded and so his salary for the first year was moved to the later years of the project.

Field work cost was within acceptable boundaries and other costs were mostly low, among other things because of low travel cost related to the covid situation.

Some aspects of the overall research status of the Two Valleys grant of excellence project, year 1

The main research effort in this project is directed at analysing and investigating the system of social class in Eyjafjörður, Iceland. How did a basically egalitarian Icelandic settler society in 870-1100 transform after that into an increasingly complex class society dominated by landowners with tenants subjected to them? In 1402–1404 Iceland was hit by a major catastrophe, the Black Death, with a severe fall in population. How did this affect society, f.ex. the relationship between tenants and the landowners?

These are the central concerns of the research, and they are approached through a multi-pronged research strategy, utilizing several academic disciplines to answer these questions. The various WPs describe the development of research in each discipline below, but here some selected aspects of the progress of research is highlighted.

A special effort was executed in determining the social status and age of settlement in the upper valleys of Svarfaðardalur and Skíðadalur. This was done by test trenching known remains of settlement, especially earth walls of various kinds, boundary walls f.ex. The reason for this effort was that these parts of the area showed somewhat different characteristics from the lower Svarfaðardalur. There are much fewer pre-christian burials, somewhat fewer churches and the farms are generally of lower value, though not all. The results are still not fully in. However, as can be seen in the WP1 report it is fairly clear from the test trenches that these parts of the Svarfaðardalur valley system were settled in a similar period as the other parts of the valley. When the valleywide system of earth walls was built the area had already largely been settled, with the exception of the smaller farms. It is, however, not unlikely that the upper parts were built later in the settlement process than the lower parts. The time difference here is measured in decades, not centuries and it is rather difficult for archaelogical methods used here to catch such nuances. Also some progress was made in identifying churchyards pointing to the existence of family churches on farms where circumstancial evidence shows they would be expected. Efforts will now be made to interpret the new evidence with earlier assumptions and research.

Historical and theoretical work progressed with noticeable results, supporting the central hypothesis of the project that the society of the Two Valleys was basically egalitarian during the period prior to 1100. The first results of historical investigation into the origin of manors in Iceland likewise gave support the idea that manors were not an original part of Icelandic society. Documentary evidence was found for the assumption that manors were created in the 11th and 12th centuries on basis of earlier owner-occupied farms, as seen in description of WP3.

Another important aspect of the research is the determination of the age of deserted farms dotting the landscape in the Two Valley area. These remains could possibly point to the existence of an hitherto unknown social group of sub-tenant farmers. The work of the summer pointed in the same direction as other work on the problem, f.ex. with excavations in Svarfaðardalur during the summer of 2020, and results of analysis of research into the same problem in other areas in Northern Iceland (Júlíusson 2021). The results of test trenches in assumed sub-tenancies showed that there probably existed a large and distinct group of sub-

tenancies, settled after 1100 and abandoned some centuries later, very probably early in the 15th century. These results need to be discussed, interpreted and assimilated into the present state of knowledge, like the results on social structure mentioned above.

Related to the research on deserted farms is the investigation of the social effects of the Black Death. The zooarchaeology work is already producing extremely interesting results in this aspect, with test trenches showing clear evidence of a decrease in activity around 1400, and a pickup of activity later, in the early modern period. The results of the palaeoecological work is already procuding valuable and surprising evidence, with an especially appropriate and original focus on linking the palaeoecological research to the social stratification focus of the Two Valleys project. It seems that the settlement process did not produce erosion of note in Svarfaðardalur, which is different than in many areas where this has been analysed. Also the geomorphological analysis has already suggested surprising aspects of the settlement process at the farm of Grund. Both the zooarchaeology, palaeoecology and the geomorphology will provide further insights when the fieldwork of the first summer season research has given further results.

Reports of the results of the research by each WP

WP 1/6

Progress report of Work Package 1**: Archaeological and historical investigation of the origin, extent and decline of the Hörgárdalur and Svarfaðardalur settlement**

Elín Ósk Hreiðarsdóttir

Main Aims and Results

The aim of this work package is to investigate aspects of the social and settlement history of the Two Valleys area (Svarfaðardalur and Hörgárdalur and vicinity). There are noticeable differences in the cultural landscapes between the inner parts of these valleys compared with the outer valleys and coastal regions. Particularly, the inner valleys mostly lack pre-Christian burials and have comparatively fewer early churches per farm. This might be taken as an indicator of varying social structures between the areas, which leads directly to one of the main questions of this project: Are there any indications that these inner areas were settled later or have a different settlement pattern to the outer valleys?

The more concrete objective of this work package is therefore to try and shed light on the likely date, extent and nature of early settlement in the above-mentioned valleys as far as possible with small-scale investigations at various places in the valleys. Specifically, by excavating numerous small-scale trenches in order to date turf boundary walls and dwellings; estimating size of farm mounds; exploring middens (middens are a part of WP2); and locating possible pagan graves. Dating approaches are largely based on tephrochronology, but also studies on sediment accumulation rates, alongside artefact and structural typology from other work packages will be used when needed.

In the summer of 2021, the focus was given to the Svarfaðardalur area where most of the research took place. In 2022 the focus of this WP will then largely turn to the Hörgárdalur area. During the summer dating information was collected for the settlement in the inner valleys of Svarfaðardalur and Skíðadalur by trenching the local earthwork boundary system. Additionally, an attempt was made to look for heathen burials in the same area (Ruth Maher) and some experimental 3D modelling to estimate size and scale of farm mounds in both Svarfaðardalur and Hörgárdalur (Howell Roberts).

Dating of the settlement in the inner valley of Svarfaðardalur and Skíðadalur

During the 2021 summer, 11 trenches were excavated into property and homefield boundaries of selected farms in Svarfaðardalur and Skíðadalur. Ten were positioned into boundaries and one into a structure. All the trenches but one was taken in the inner part of Svarfaðardalur or in Skíðadalur (and one in the outer valley). Five of the trenches were dug through property boundaries, while six dug into homefield boundaries of farms, usually smaller tenant's farms (býli/hjáleigur).

The preservation of tephra was fairly good; however, the final report of the tephra analysis is not due until February 2022 (Árni Hjartarson et al) thus the results presented here are based on the field archaeologists' provisional evaluations which indicate that at least 7 of the 11 structures were built before 1104 (i.e. between the LNS and 1104 tephras). One lacked clear traces of the 1104 tephra but was likely built close to LNS and sealed by 1300 tephra. Another boundary was likely built soon after 1104 and a third one sometime between 1104 and 1300. In one case no tephra from 1104 or 1300 were found so it could only be confirmed that the site was older than 1477. All of the property boundaries studied were most likely built before 1104.

Dating of boundaries in the inner part of Svarfaðardalur (and Skíðadalur) suggest that it is likely to have been predominantly built in the 10th-11th centuries. The system seems similar in construction and date to the outermore area dated in 2010 (see Hreidarsdottir. 2010). Therefore, there were no indications from the excavations of 2021 that the inner valleys were settled at a noticeably later date than the outer areas.

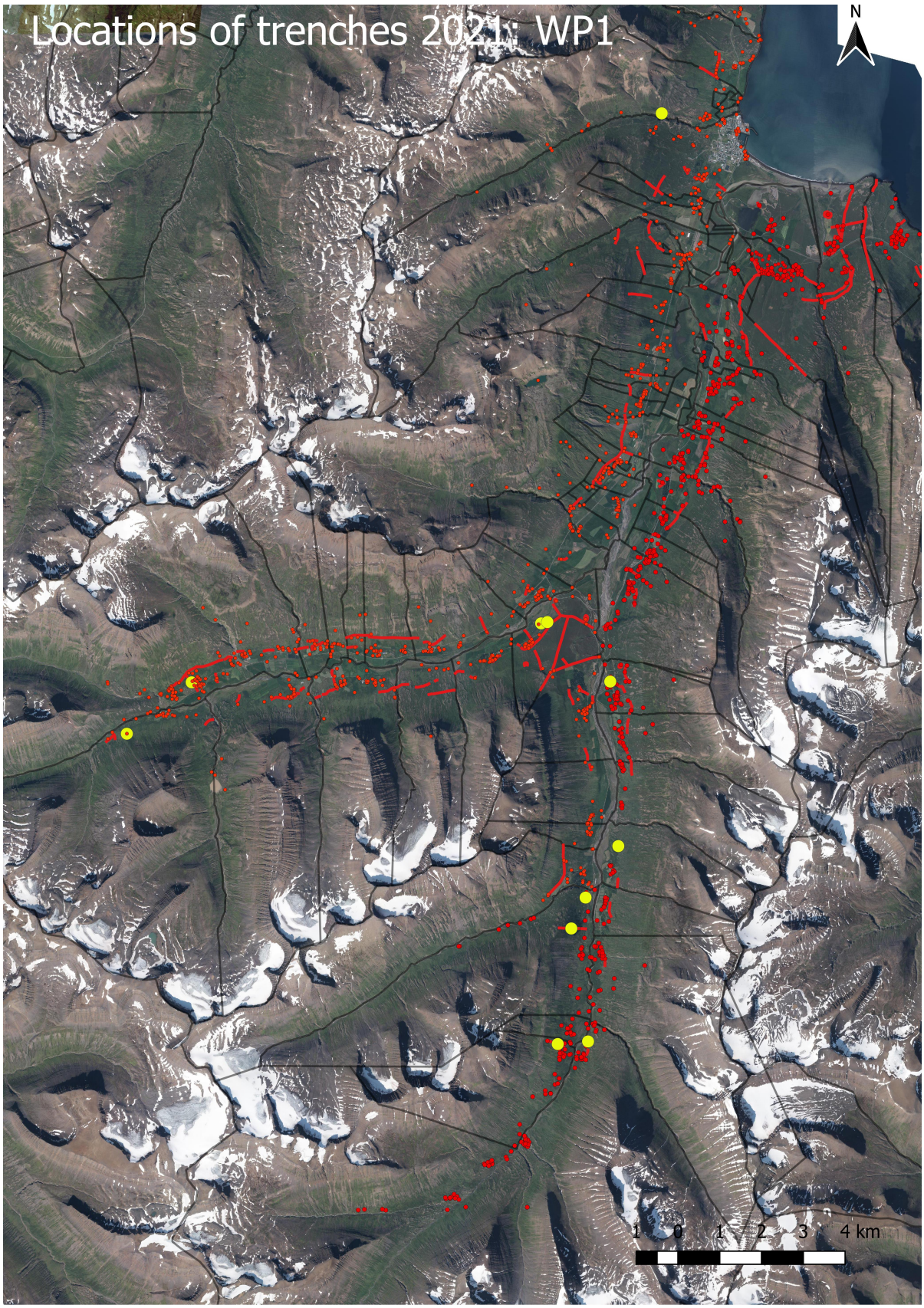


***Figure 1**: Location of trenches excavated in Svarfaðardalur and Skíðadalur in 2021. Red lines mark the boundary system in the area and red dots sites surveyed in archaeological survey in 1999-2003. Aerial: Loftmyndir ehf.*

common that they are not built during the first settlement of the areas but at a time when settlement is well established in 10th-11th century.

So, the main results of the summer of 2021 are that the boundary system in the inner part of Svarfaðardalur and Skíðadalur seems contemporary with the system in the outer valley. This does not suggest that the settlement there could not be later, only that if there was a delay in the settlement of the inner valleys it was probably measured in years or decades rather than centuries and both areas seem to have a well-established settlement by the 10th-11th centuries when the main lines of the boundary system are drawn.

Burial search

One of the clear differences between the outer part of Svarfaðardalur and the inner valleys is the ample heathen burial record known in the former and lack of the same in the latter. Most of the burials have been discovered by chance during road construction, home field levelling etc. that has happened to a greater degree in the outer areas and may therefore simply be a bias of discovery. In the last few years, we have started to understand a lot more about the topography of burials in Iceland and this summer Dr. Ruth Maher did a field walking experiment of four farms in the inner part of Svarfaðardalur and Skíðadalur in the attempt to locate possible pre-Christian burials. This was done by targeted fieldwalking based on location of known burials in the area and systematic transects and circular search patterns around elevated landscapes. The four farms chosen for preliminary pedestrian survey were: Atlastaðir and Skeið in Svarfaðardalur, and Klængshóll and Gljúfrárkot in Skíðadalur. The research question that guided the search was whether the lack of known burials in the inner part of Svarfaðardalur and Skíðadalur was likely to reflect a different or later settlement pattern or due to other factors relating to bias of recovery. Such factors might include lesser disturbance due the earlier abandonment or increased invisibility due to a larger impact from landslides.

Heathen burials in Iceland are generally unremarkable in appearance on the surface. The search covered a large area and the result was that no obvious burials were found on the four farms. The only possible exception to this was a small mound found and marked as a possible burial. Further trenching would be needed to determine the presence/absence of a burial there. No clear signs of heathen burials were discovered in the two inner valleys but that alone cannot be used to determine whether such burials exist in the area. However, the result of the field walking indicate that it might prove difficult locating pre-Christian burials in this area except with much more extensive research.

Farm mound assessments

Another element of the research in the summer of 2021 was the gathering of new survey data to enhance our records of targeted farm sites within the study areas of Svarfaðardalur (and Skíðadalur) and Hörgárdalur. At four of the WP1 sites, systematic drone photography was attempted at/around the presumed farm mound location, using the Pix4d mapping application and a DJI Mavic drone flying regular transects. Between 60 and 300 overlapping images were

taken at each site. Flights were conducted at the mounds of Hverhóll, Tungufell, Kot and Hólárkot. Further drone mapping flights were carried out in Hörgárdalur – at Staðartunga (at both the farm mound and a presumed pre-Christinan burial site), at Skuggi, and at Myrkárdalur (including both WP1 and WP2 members). Altogether seven farms of various status and value were subjected to this method. Whilst accepting the uncertainties and limitations of this approach, it may be seen that there is a significant range in scale, and that there are perhaps clusters of values rather than a continuous spread.

Name	**ID No**	**Type of farm**	**Tax value (hdr) 1712**	**Abandoned by**	**Farm mound area (m²)**
Hverholl	EY-155:001	Lögbýli	10	1947	2016
Krákustaðir	EY-149: 011	Tenants farm	Unknown	Unknown/Well before 1712	1876
Kot	EY-159:008	Tenants farm	Unknown	Unkonwn	395
Hólárkot	EY-159:001	Tenants farm	10	1926	1000
Staðartunga[1]	EY-215:001	Lögbýli	30	c. 1940	9619
Skuggi	EY-215:009	Tenants farm?	Unknown	1104?	1152
Myrkárdalur	EY-205:001	Lögbýli	20	1337/1955	1729

Figure 2: Estimated size of farm mounds with abandonment date and tax value

It is suggested that this technique may provide a rapid and affordable approach to mapping farm mounds and give a coarse estimate of the scale of archaeological remains. The gathered data and ortho-imagery may also prove to be of value and utility for many future studies of the sites addressed in this way. In terms of time and resources required, some broad estimates may be made. At or about 1000m² appears to be the lower limit for an independent farm – and even these are sites long since abandoned. Staðartunga is clearly exceptional within this group – and long since recognised as a large and important estate with a higher taxation value than the rest – but some levelling and spreading of the farm mound had taken place in the late 20th century that might have an effect of the measurements.

Milestones and publications

Two members of WP1 participated in the annual project meeting in October (Elín Ósk Hreiðarsdóttir and Howell Roberts), giving talks about the first results of the year. Additionally, members participated in an open event on selected sites in Svarfaðardalur and Skíðadalur in early July where the aims and first results of the project were introduced to the general public during an evening field walk. The members also contributed to the general outreach of the project through the Facebook page of the project.

[1] Additionally a pre-Christian burial site of the same farm was droned and the area of mound estimated 1315 m2

The first publication of the WP has been submitted to a peer reviewed journal (*Árbók hins íslenska fornleifafélags*) and is expected to be published in February or March 2022. The article is by Dr. Árni Daníel Júlíusson and discusses the farm abandonment in North Iceland focusing on Svarfaðardalur in comparison with two other northern districts. Additionally, a detailed field report is in progress and will be submitted in the spring of 2022.

Changes in research plans

The research plan of 2021 was generally unchanged from the submitted application of the project. However, instead of focusing evenly on both areas in 2021 and 2022 it was decided to focus primarily on one area each year and therefore the focus was almost entirely on Svarfaðardalur in 2021 but will shift to Hörgárdalur in 2022. Small scale investigation did still take place in Hörgárdalur, in Staðartunga, in preparation for the next field season. A few minor changes were done to the WP plan moving time of individuals between research years but those will all even out within the three-year period.

Continuation of the project in the next grant year/Highlights of Research plan

The aim for 2022 is to continue archaeological research in Hörgárdalur with similar aims as in Svarfaðardalur, that is try and use multiple trenches into boundaries to help date the settlements.

Milestones

In 2022 the first article of the WP will come out (see above) as well as a detailed field report about the research of 2021. In the second half of the year the focus will shift to a new field season. The aim is to continue to carry on a strong presence in social media. The members of the WP will attend the annual meeting of the project in the autumn and present the first results of the summer as well as presenting a detailed field report of the year in the spring of 2023.

WP 2

Work Package 2 – Progress report:

Investigation of economy and settlement chronology in SVARF and HÖRG through farm midden surveys and excavations.

Ramona Harrison

WP 2 consists of a series of farm midden investigations, including both coring and small-scale excavations of selected household refuse collections to address the basis of farm economy, livestock organization and farmers' (predominantly pastoralist) interaction with the environment. Especially when the animal bone remains are well-preserved and the midden layers are undisturbed and therefore well-stratified. In such a situation we can learn more about

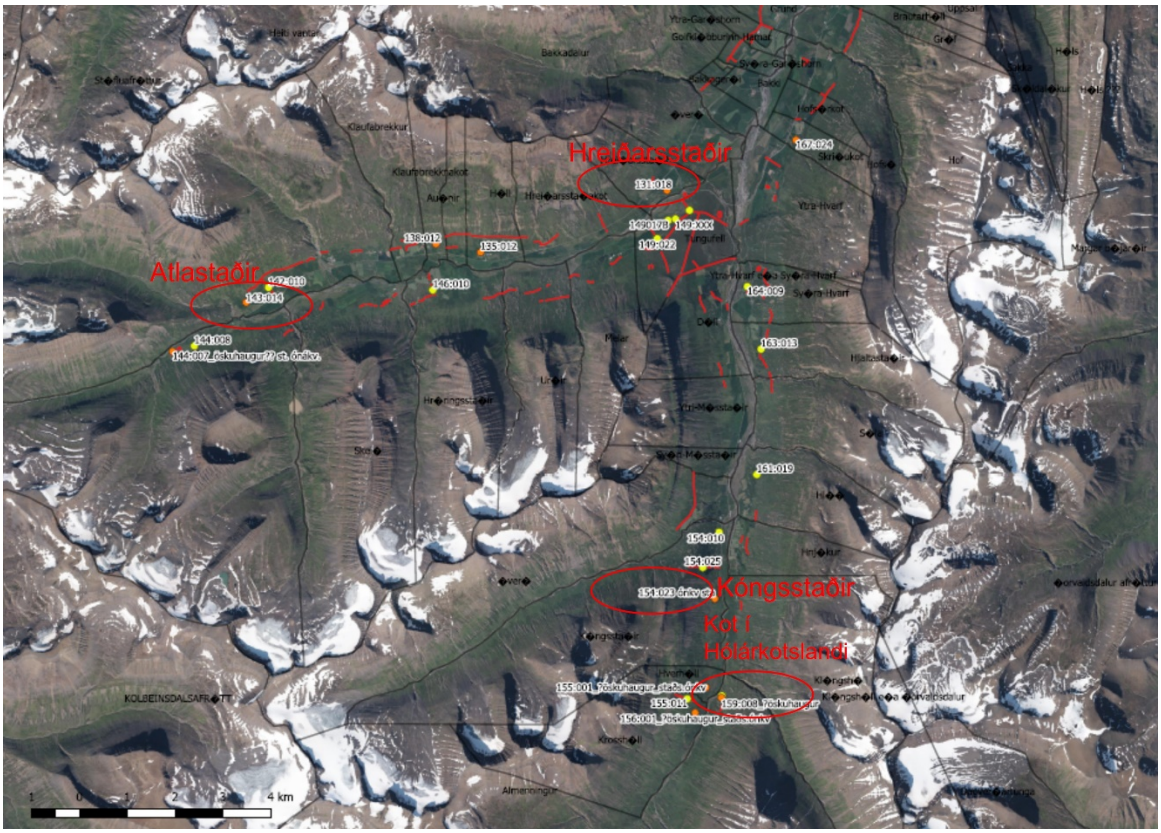
past human activities such as for example: craft working, farming, resource utilization, access, and restriction; trade and exchange. This can be achieved via faunal analysis on the macro- and the micro-level, with for example: isotope and trace element analysis, tooth microwear analysis, and aDNA analysis.

What was done in the field

For the 2021 field season, an investigative season into the Svarfaðardalur/Skíðadalur areas was to take place to locate, test, and possibly excavate middens associated with medieval and pre- and postmedieval materials. This would signify the first such investigation in these areas and was meant to lay the groundwork for a more extensive midden-excavation there in the following seasons. Since it was not possible to bring students from UiB, the team consisted of Ramona Harrison and Jack Threlfall Hartley.

Samtala	Heiti	Þjóðminjasafnsn	Hvað	Jörð/leyfi	X	Y	WP
EY-131:018	TVP21_12	2021-35	öskuhaugur	Hreiðarsstað	516644	597582	2
EY-143:014	TVP21_15	2021-35	öskuhaugur	Atlastaðir	507840	595228	2
EY-154:023	TVP21_17	2021-35	öskuhaugur	Kóngsstaðir	517663	589009	2
EY-159:008	TVP21_20	2021-35	öskuhaugur	Kot í Hólárko	517783	586912	2
EY-135:012	TVP21_13	2021-35	öskuhaugur	Hóll (Urðir)	512743	596281	2
EY-138:012	TVP21_14	2021-35	öskuhaugur	Klaufabrekkn	511810	596454	2
EY-144:007	TVP21_16	2021-35	öskuhaugur	Kot	506298	594196	2
EY-155:001	TVP21_18	2021-35	öskuhaugur	Hverhóll	517456	587128	2
EY-156:001	TVP21_19	2021-35	öskuhaugur	Krosshóll	517231	586605	2
EY-167:009	TVP21_21	2021-35	öskuhaugur	Syðra-Hvarf	519342	598640	2
EY-215:001	STAÐARTUNGA	2021-35	ÖSKUHAUGUR OFL	Staðartunga	524913,7	575035,4	1 og 2

Overview of potential 2021 midden target sites in Svarfaðardalur and Skíðdadalur and including Staðartunga in Hörgárdalur.



The new midden sites investigated are indicated in grey in the above list, with the known Staðartunga midden and farm site in Hörgárdalur in grey on the bottom of the list. The rest of the sites were not yet investigated in connection with midden remains. See WP1 report describing WP1 for boundary wall investigations that took place in summer 2021 on several of those, however.

The sets of middens targeted for coring investigations, and potential small-scale excavations following thereof were the following:
Hreiðarstaðir and Atlastaðir in Svarfaðadalur and Kot and Kóngsstaðir in Skíðadalur were cored to establish midden presence, extent, and in-situ preservation. Below is a short summary of the exercises.

1) The coring exercises:
TVP21_12 Hreiðarstaðir (EY-131:018): Midden remains located in the remains of the farm mound, but heavily disturbed, and therefore not producing enough period specific information to warrant an excavation.

TVP21_15 Atlastaðir (EY-143:014): Midden remains located in the remains of the farm mound, but heavily disturbed, and therefore not producing enough period specific information to warrant an excavation.

TVP21_20 Kot í Holárkotslandi (EY-159:008): No midden remains located across the entire infield, or even outside the boundaries. Likely that the midden remains were discarded into the adjacent river.

TVP21_17 Kóngsstaðir (EY-154:023): Two middens were located on this site. One in area A, the other in area C. The first did not contain satisfactory in-situ midden layers and needed to be abandoned upon rigorous sampling. The latter, located at the edge of the old farm mound was well-stratified, however.

2) Kóngsstaðir trench excavation

Picture of Kóngsstaðir indicating the three areas investigated.

As mentioned above, three areas were cored for potential midden deposits. While are A provided ash midden layers that were not undisturbed and thus not stratified, Area C, was more productive. Several sets of cores followed by the excavation of one small trench (1 x 1,5 m) at the eastern edge of the old farm mound and excavated in order of these cultural layers that followed the law of super position (i.e.: the earliest on the bottom, the most recent on the top). Unfortunately, despite the rigorous excavation and sampling methods implemented, the bone preservation in all the cultural layers was almost zero. With only few teeth remaining from some of the layers. Which is a sign of high acidity in the peat ash midden. The midden did reveal several undisturbed tephra layers. From most recent to earliest: H1477, H1300, V877, and possibly H1104 (still under analysis by members of WP5).

On initial analysis, it seems the area was occupied soon after Landnám, and in use until the High Middle Ages. Based on this midden trench, a post-1300 abandonment phase is currently suggested, with a presumed re-settlement phase in the post-medieval era. This information still needs to be corroborated with C14 dates and other specialist analysis expected in 2022.

In collaboration with WP4, Egill Erlendsson was able to submit the soil column taken from one of the midden sections for geochemichal and biochemical analysis via the collaboration with ROCS project (see more below). aDNA results from the soil may increase information on animal (and possibly plant) species once present in this midden. Once deemed of analytical value, remaining teeth are to be submitted to SUERC for Radiocarbon Dating, via Philippa Ascough. If this is to be done, Harrison will apply for destructive sampling permit in 2022.

Post-excavation work and field report work:
All the coring and excavation activities were thoroughly recorded, with the raw data organized into standard databases, and a field report planned for spring 2022. This report will be published in collaboration with the WP1 Team to allow for the most through dissemination of these two connected archaeological work-packages.
Further below the register of animal bones retrieved both from cores and TR1 in Area C. Analyzed by Harrison. All the data sets are housed at the internal FSI server where all the fieldwork information carried out in collaboration with WP1 and WP2 is backed-up.
A brief discussion on Data Structure Management can be found in the general part of the annual report.

PhD candidate in WP2:
In late Spring of 2021, WP2 advertised a call for a PhD to focus on the Staðardunga materials and to collaborate with Harrison to address the questions put forth in the grant application. In November 2021, Kristin Møller-Nilsen was employed in the School of Humanities and is mentored by Prof. Orri Vesteinsson as internal representative. Harrison is main PhD supervisor and works with Møller-Nilsen on faunal analysis, interpretation, and integration into the project. WP2 PhD plans to participate in one conference in 2022, likely at EAA conference.

WP2 planned work in spring 2022:
Together with Harrison, WP2 PhD will work on locating suitable samples for biochemical analysis, and radiocarbon dating, if needed based on the Staðartunga dates already available due to one of Harrison´s previous grants. In collaboration with Philippa Ascough and Ingrid Mainland who are both grant collaborators, isotope and trace element analysis and tooth microwear analysis will be attempted on, and if there are already, available specimens from Staðartunga and potentially Skuggi excavations (both on Staðartunga land). This will form a pilot study in collaboration between labs at AHKR (UiB), SUERC (U Glasgow) and UHI (Orkney) to investigate the analytical potential of the archaeofaunal materials.

This is then to be extended into a larger scale study of such kind in 2023, including suitable (if available) materials from both Valley Systems.

Overall goal of biochemical and teeth microwear work:
In collaboration with Philippa Ascough from the Scottish Universities Environmental Research Centre (U Glasgow, UK) analysis of stable isotopes such as carbon ($\delta^{13}C$), nitrogen ($\delta^{15}N$), oxygen ($\delta^{18}O$) and sulphur ($\delta^{34}S$) in selected animal skeletal remains will be coordinated. Harrison also collaborates with Ingrid Mainland (U Highlands & Islands, UK) on a pilot study to establish the potential of isotopic, trace element and dental microwear evidence in EY. They will establish baseline signatures for carbon and oxygen isotopes and microwear patterning in 20 modern sheep of known movement patterns and grazing/foddering regimes.
Should the HÖRG and/or SVF middens reveal suitable whale bone materials, Harrison collaborates on securing funding to conduct Marine Mammal aDNA analysis as directed by Vicki Szabo, Western Carolina U (US), and as carried out by Brenna McLeod Frasier, Saint Mary's University, Halifax (CA).

Seachange Project:
Harrison collaborates with ERC Synergy Grant Scheme funded SEACHANGE project (grant agreement No 856488, https://seachange-erc.eu/about), lead PI James Scource, U Execter. This project will help analyse marine shell remains from the project, but also marine fish, bird, and mammal remains from key cultural layers. The 2022 and 2023 seasons will be main foci of this collaboration once the faunal materials have been secured.

Field work 2022:
While successful in producing important information on the nature of middens in the Svarfaðardalur/Skíðadalur region, no stratified midden containing well-preserved animal bones could be located. Therefore, the plan for the WP2 summer season is two-fold: Up to two weeks are to be spent on continuation and extension of Staðartunga midden excavation in Hörgárdalur. Between one and two weeks will need to be spent on locating, testing, and ideally, excavating, at least one Svarfaðardalur and one Skíðadalur midden trench each. If small-scale midden trenching is indicative of productive midden contents, the team needs to decide whether to prioritize on and excavate it in the remaining time. Or, whether to wait for the last season to do so.

Bone bag nr	Context no.	Farm Name	Area	Weight (g)	Quant. Bags	unburnt bone	burnt bone	notes	iPad photo	Date	ID	initial analysis	species	bone	end	count	Frag	Fusion	butch	burn	further analysis useful?	zooarch related notes	
17-1	core nr. 14; 26-32 cm down	Kongsstadir	B	4,58	1	Yes	No		290119F0-E6FD-4262-9759-D5266366E339.jpg	07/29/202	1 RH	Yes	MTM (sheep/goat most likely)	man	low	1	5				no		
17-2	core nr. 13; 36-38cm down	Kongsstadir	B	1,15	1	Yes	No		7F84E883-C331-45CD-A1E2-D64DFAA52D5F.jpg	07/29/202	1 RH	Yes	MTM (sheep/goat most likely)	man	low	2	5				no		
17-3	17-2	Kongsstadir	C	2,97	1	Yes	No		E59F93C9-620A-4B9E-A06C-486B4361B35E.jpg; B0C2D76F-33B3-4B2B-98F0-A5FC2899118B.jpg	07/29/202	1 RH	Yes	Unim	uni		1	5				no	heavy deterioration; indicative of bone preservation on site	
17-4	17-2	Kongsstadir	C	2,11	1	No	Yes		775DD82F-78F0-4F7E-BB35-0BBC4A2EA25D.jpg; F29E3871-5BBC-470D-87CA-9B50D4A024FC.jpg	07/29/202	1 RH	Yes	Uni / likely unim	uni		8	2			white	no	indeterminate	
17-5	17-1	Kongsstadir	C	2,12	1	No	Yes		EEF12813-E8C6-4A42-9D12-B933FB6C233F.jpg	07/29/202	1 RH	Yes	Unim	uni	F	1	5			black	no	indeterminate	
17-6	17-5	Kongsstadir	C	10,3	1	both	both	only unburnt bone remains from teeth of ovca - probably to be used for C14 if needed - kept in separate bag, but with bones for now	E991CB76-9AC9-4C65-8AE4-7091FAD232C2.jpg; 16067555-68C6-4859-9C30-ECF1F365026A.jpg	07/29/202	1 RH	Yes	Uni	uni	F	30	2			white	possibly, but not if better preserved bone available	indeterminate	
17-7	17-8	Kongsstadir	C	1,72	1	Yes	No	very poorly preserved and undiagnostic	D1770BAA-F63C-447D-8613-2167442392 88.jpg	07/29/202	1 RH	Yes	Uni	uni	F	1	5				no	indeterminate	
17-8	17-9	Kongsstadir	C	0,35	1	No	Yes		A68A7CB8-E022-4E63-B53A-F91DA93D5E77.jpg	07/29/202	1 RH	Yes	Unim	uni	F	3	2			white	no	indeterminate	
17-9	17-10	Kongsstadir	C	0,17	1	No	Yes		7DE61D79-EA69-4D4F-8B1A-9D849D1C1D6A.jpg; A68A7CB8-E022-4E63-B53A-F91DA93D5E77.jpg	07/29/202	1 RH	Yes	Unim	uni	F	3	2			white	no	indeterminate	
17-10 1 of 2 (for analysis)	17-6	Kongsstadir	C	60,3	1 of 2	both	both	teeth to be used for C14 if needed - kept in separate bag, but with bones for now	3BF0D6EE-AEEE-4850-8A1B-CF84162231D1.jpg; 939D947B-5953-4F4E-ACF3-75A996888EB1.jpg	07/29/202	1 RH	Yes	unim	uni	F	50	2			white	possibly, but not if better preserved bone available	1 ovca tooth fr, 1 ovca scp, frontal, 1 mtm rib,	
17-10 2 of 2 (for analysis)	17-6	Kongsstadir	C	0,07	2 of 2	No	Yes	to be used for C14 if needed - kept in separate bag, but with bones for now	FCD793FE-B18F-42CF-93B6-0B29B8E006AC.jpg	07/29/202	1 RH	Yes	gad	cdv	F	1	1			white	possibly, but not if better preserved bone available	indeterminate	

Milestones predicted in 2022
Árni Daníel Júlíusson will participate in a joint paper on the occasion of the UiB conference hosted by Harrison and colleguagues as part of the joint research group: Humans and Materiality. The conference is called: Human Agency and Global Challenges: Re-Centering Social Change in Archaeology. Originally scheduled for the end of February 2022, it needed to be postponed to September 2022 due to covid-related issues. The paper is entitled: 'The mechanisms of social change in medieval Iceland: A regional case study in Two Valleys'

Harrison also plans to participate in the EAA conference, also in September 2022.
Currently, Møller-Nilsen plans to participate in the EAA conference to present on her PhD project.

WP 3
Progress report for 2021. WP 3 **History of the two valleys.**
Participant accountable: Axel Kristinsson
Work has proceeded on the monograph by AK which provides much of the theoretical foundation of the project. Progress has been somewhat slower than anticipated due to the fact that the monograph has not received dedicated funding and the author's necessity to pursue funded work. A draft is nearly finished. The writing of the monograph will be funded during 2022 with at least a month´s salary from the Two Valley project. The monograph provides a theory of emerging social stratification in early Iceland.

A draft of almost 400 pages is nearly finished. It is in three parts. The first discusses social stratification in early Iceland using both documentary and archaeological evidence. The preliminary conclusion is that there is practically no evidence of significant social stratification until the 11th century and much to indicate egalitarianism in the early period (meaning equality between households, not necessarily within them). This is commonly the case with settler societies. The second part discusses social stratification, how and why it emerges, drawing on theories from economics and other social sciences, network and complexity theory as well as cultural evolution. The conclusion is that Robert Merton's "Matthew Effect" provides the most plausible driver for inequality. The possession of assets itself increases chances of acquiring more assets. This is used to construct a model for how different kinds of assets, wealth, power, prestige and social network, tend to accumulate in the hands of social elites. The third part uses this theoretical foundation to analyse the growing social stratification in Iceland in the late Commonwealth period. A significant preliminary result is that all kinds of assets interact and play a part in the process. It also seems that Commonwealth Iceland holds the promise to further our general understanding of how inequality emerges and develops in human societies

A paper in English on manor formation in early Iceland, based on a talk given at the Medieval congress in Leeds in 2018 by AK is nearly finished but has been postponed in the hope that other work packages of the project will provide additional information. The results indicate that manors in Iceland were forming in the late 11th and 12th centuries as a part of a more general transformation of an increasingly stratified society.

A paper in Icelandic on the heritability of godords ('chieftaincies') by AK is nearly finished. The results indicate that the traditional view that the godords were heritable from the start needs reconsidering. All evidence for this is from the 13th century and later sources and is likely biased. A revision of the evidence from laws, historical narratives and other sources indicate that heritability was not firmly established until the early 12th century. This result has a direct impact on elite formation in Iceland in general and the two valleys. A part of this research relates directly to the research area.

The two contributors to WP 3, AK and ÁDJ are also participating with Viðar Hreinsson (not a member of the Two Valleys team) on the project Sagas and Retainers the results of which will be presented at the Icelandic Historical Congress (íslenska söguþingið) in May 2022 (with later publication). The project examines the relationship between the retinues of 13th century warlords in Iceland which formed large parts of their households and the literature produced in those same households. This work is not a part of the Two Valleys project but has a relationship with it through joint members and related research.

A paper co-authored by AK and ÁDJ on the socio-political situation in the two valleys and Eyjafjörður in general from the late 12th to the mid 13th century is in the planning stages. This will largely be based in Guðmundar saga dýra but also other sources, including sagas of Icelanders from the area.

WP 4

Fieldwork of WP4: Participants in the fieldwork were Egill Erlendsson (WP4 leader) and Elísabet Ásta Eyþórsdóttir. The fieldwork centred upon securing samples of organic soil (peat) from the Svarfaðardalur-Skíðadalur area. The strategy was to collect those samples across a socially hierachical (class) and altitudinal transect. This was achieved. A peat monolith sample from the farm *Sakka* in the lower, northern reaches of Svarfaðardalur. Sakka is representative of a farm that is believed to have been of a high social standing from the onset of landnám. A second peat monolith sample was accrued from the abandoned farm Kot in the upper, southern reaches of Skíðadalur. This peat monolith will represent the environmental footprints of a lower-social level, (sub)tenancy-based household. A third peat monolith sample was taken from an area called Tunga, located geographically between Sakka and Kot and completes the altitudinal transect along the valley system. As primarily an outfield grazing area, the Tunga site is believed to be the most responsive to changes in magnitude and nature of historical land-use. As such is it is probably an area most likely to reflect land use change in response to the Black Death impact. The three samples and sample sites complete and fulfill the proposed sampling for WP4 for the year 2021. All the profiles

were sampled to sufficient length (depth) to capture the whole historical period and to extend sufficiently long back into prehistoric stratigraphy. The length of the profiles was Sakka = 53 cm; Kot = 65 cm; Tunga = 82 cm. The profiles all allow for the proposed high-resolution approach.

Sedimentary analyses for WP4: High resolution sedimentary analysis of historical contexts provide two crucial types of information: 1) The conditions of land surfaces at any given point in time over the study period and 2) indications, through anomalies (chemical peaks) in soil geochemistry, about cryptotephra layers (concentrated shards of tephra that do not form visible horizons in stratigraphies). The latter goes beyond what was proposed in the project proposal. New collaboration (not forseen at the time of the proposal) has opened the door to undertake XRF core scanning. This new collaboration has also allowed for sedimentary analysis to take place at a much higher resolution than proposed. All three samples were taken to the Globe Institute, University of Copenhagen, DK where they were analysed at high resolution (every mm) soil geochemistry and (at every 4 mm) magnetic susceptibility. Although the results are at a preliminary stage, they demonstrate an unusually muted environmental signal to the landnám itself and through the first centuries of settlement. This rather unexpected result is of interest and allows for the generation of the hypothesis that controlled land management in the area, perhaps witnessed by the extensive networks of medieval wall structures throughout the valleys, may have successful in preserving vegetation and the underlying soils. The most prominent disturbance period, where landscape stability is compormised is the period after AD 1766. Another hypothesis can be developed on the basis of this data: It is well documented that land use was altered in this period. The change included increased reliance on sheep and winter grazing and from the general discourse it is clearly believed that those changes in the farming system are believed to behind the greatest episode of land degradation and desertification in Iceland. The actual tangible data to support this hypothesis are, however, exceedingly rare. This research may go some way to rectify this unfortunate shortage of data. These results can also be placed in context with a change in the farming system which relates to a shift from a carefully controlled form of land-use to a form where land-use (i.e. grazing) is much less controlled.

Geochronology for WP4: Geochronology is of crucial importance to WP4, in which tephrochronology is central. All three samples have been sampled for visible tephra horizons. In addition, samples for tephra have been collected from depths within the profiles where the XRF and magnetic susceptibility patterns indicate a presence of a cryptotephra (see above). In total, 26 samples of tephra have been measured for their geochemical composition. The results are quite promising. Each sampling site can be furnished with a robust geochronological framwork. Importantly, all three sample sites share a suite of confirmed tephra layers of known age which can be used to securely correlate social (e.g. landnám, Black Death) and environmental events, processes and changes between the three study sites. All samples allow for the constraining of temporal extent by the presence of the Hekla-3

tephra layer (ca. 1000 BC) and a Hekla tephra layer from AD 1766. In addition all three sites allow for the stratigraphic placement of landnám to be identified, existence of one or two of Vatnaöldur tephra layer(s). Further two tephra layers of medieval age, Hekla tephra layers from AD 1104 and AD 1300 are found in all the profiles. It is therefore clear that all the sites can be provided an excellent tephra-based timline for the medieval period, which is the period of primary interest here.

WP 5 Progress report

Hugmyndir að rannsóknarspurningum og rannsóknum í WP5 hluta Tvídæluverkefnisins/

Some research questions and investigations for the WP5-part of the Two Valleys Project

Auður , völd og pest í tveimur dölum /

Power, Wealth and Plague in Two Valleys,

Svarfaðardal & Hörgárdal

Jarðminjar og náttúruvá / Geomorphology and natural hazards

Spurningar	*Questions*
Hvað segja miðaldaheimildir um skriðuföll og snjóflóð í dölunum?	What do the medieval sources say about screes and snow avalanches in Svarf and Hörg
Finnast jarðfræðileg ummerki um skriðuföll og snjóflóð frá sögulegum tíma sem ekki hafa ratað inn í ritheimildir?	Are there geological evidences about undocumented snow and rock avalanches in early historical times?
Hugsuðu fornmenn um ofanflóðahættu þegar þeir völdu húsum sínum stað?	Were the immigrants and first generations in Iceland aware of natural hazards such as screes and snow avalanches when they built their new homes?
Hve margir landnámsbæir eru óheppilega staðsettir mtt ofanfalla?	How many settlement farms in Svarf and Hörg are unfortunately located according to natural hazards?
Hvernig stendur á því að Þorsteinn svörfuður valdi sér bústað neðan við mesta skriðugil Svarfaðardals? Hófust skriðuföll seint?	Why did the immigrant leader Þorsteinn svörfuður locate his farm just below the most dangerous landslide gorge in Svarfaðardalur? Did the scree activity in the gorge start late?
Olli gjóskufall einhvern tímann búsifjum í dölunum á miðöldum?	Did tephra fall some time cause damages?

Hvað gerðist í Lönguhlíð 17. október 1390?	What kind of debris avalanche ruined the manor Langahlíð Farm in Oct. 17 1390?
Ollu skriðuföll og mikill framburður í Hörgá endalokum Gáseyrarkaupstaðar?	Did debris flows in 1390 and increased bedload in Hörgá River ruin the harbour of Gáseyri Town. Or was the harbour filled up by slower processes?
Eru til miðaldaheimildir um jarðskjálfta eða vísbendingar um tjón af völdum jarðhræringa?	Are there any written sources describing earthquake activity or damage?
Rannsóknir á vettvangi	*Actvity in the field 20021 & 2022*
Skoða skriðufallasöguna úr Grundargili í vélgröfnum rannsóknargryfjum	Soil profiles near the settlement farm Grund in Svarfaðardalur
Skoða flóðaummerki við Hörgárósa í vélgröfnum rannsóknargryfjum, aldursgreining lurka	Soil profiles near Gáseyri town, dates of logs in the old shoreline
Kanna skriðuumerki við Lönguhlíð í Hörgárdal í rannsóknargryfjum og með vettvangsskoðun	Soil profiles and mapping near Langahlíð manor farm in Hörgárdalur
Kanna skriðuumerki við Skugga í Hörgárdal í rannsóknargryfjum og með vettvangsskoðun	Soil profiles and mapping near Skuggi ruins in Hörgárdalur

HISTORICAL POINTS

The farm Grund is according to Svarfdæla Saga the farm of Þorsteinn Svörfuður, one of the first settlers and an immigrant leader in the vally. The farm is located in the west side of the valley, 7 km from the sea shore and the town Dalvík. Grund is not mentioned in the Landnáma Book, however it seems highly likely that it was indeed a settlement farm as is stated in the rather untrustworthy Svarfdæla Saga. The farm is mentioned in Sturlunga and many ancient documents. There was a manor and a church for many centuries. Halldóra Tumadóttir the wife of Sighvatur Sturluson and Tumi, their youngest son, took a refuge there after the defeat of Sighvatur and his sons in the Battle of Örlygsstaðir.

One of the wealthiest chieftains in the country, Þorsteinn Eyjólfsson, lawman in Urðir, owned Grund in the second half of the 14th century and called it his best estate in the North. Bishop Jón Arason acquired the land and gave it to his daughter Þórunn. After the Reformation and murder of the bishop and his sons in Skálholt in 1550, the king's authorities forced the land out of her hands and after that it was considered a royal property until the 20th century. The flash floods in Grundargil Gorge are mentioned already in the Jarðabók ÁM & PV, the Svarfaðardalur section is written in 1712. After that they are mentioned in all the main works

about the geography of Iceland, Ferðabók Eggerts og Bjarna, Ferlabók Ólavíusar, Ferðabók Þorvaldar Thoroddsen and also in Þjóðsögur Jóns Árnasonar.

Written sources about landslides in Grundargil Gorge and its neighborhood

As seen by this Grund was originally a valuable property but was threatened and hit regularly by landslides and debris flows through the ages. It is not known when landslides began to cause significant damage to the land, but in the early 18th century it suffered repeated shocks and was deserted for several years from 1720.

Written sources don't mention any natural hazards in Grund until 17th century, after that only few are mentioned (table 1).

Table 1. *Written sources about landslides in Grundargil Gorge and its neighborhood*

Year	*Place*	*Ref.*	*Notes.*
1386	Grund	Stefán Aðalsteinsson 1978, Svarfdælingar	„My best estate in North Iceland" (Þorsteinn Eyjólfsson)
Before 1692	Brekka	Jarðabókin 10. bindi	A landslide damaged the grassland, surrounded the houses so the people had to flee.
1706	Brekka	Jarðabókin 10. bindi	The medow was damaged by a large-scale landslide that seems likely to be repeated in coming years
1707	Grund	Jarðabókin 10. bindi	Landslide hazards destructed half of the grassfield, ruined the meadows and threatened the living house
1726-1730	Grund	Stefán Aðalsteinsson 1978, Svarfdælingar	Deserted because of landslide damage
1895	Grund	Snorri Sigfússon 1968	Anna Sigríður Björnsdóttir housewife fell into the Grundarlækur stream during hazardous flood, barely escaped.
1949	Grundargil, Brekkugil	Ólafur Jónsson 1992	A debris flow damaged the meadow, the stream cut the main road
1956	Grund, Brekka, Tjörn	ÁH	Debris flow 26. maí, in a warm weather and intense snow melt

The floods from Grundargil

Flash floods and landslides seems to have occured regularly in three canyons side by side in the mountain slope above the farms Grund and Brekka. These canyons are: Grundargil, Ljósgil (or Ljótsgil) and Brekkugil. All the floods have a common origin in Lake Nykurtjörn.

The mountain slope above the farms is covered by a thick rockslide material from the huge Grundarhausar rockslide that occurred at the end of last glaciation 10 - 15 thousand years ago.

Much later on another rockslide, Útburðahraun, in the topmost part of the mountain dammed a small stream and formed the Lake Nykurtjörn. It is in 660 m a.s.l., the size is ca. 180 x 580 m^2 or 7,6 ha. The runoff from the lake forms the Grundarlækur stream.

The flash floods, land-slides and debris flows originating in Nykurtjörn are not directly weather dependant in the same way as most landslides and debris flows in Iceland are. They are caused by ice and piles of snow damming up the runoff from the lake during the winter. The ice and snow dam causes the surface of the lake to elevate slowly during winter. When the winter snow starts to melt in the spring time the water level behind the dam rises rapidly even by some meters. Finally, the dam brakes and 200 - 400 thousand cubic meters of water flow like a flash flood down to the valley. On its way the water erodes the thick loose rockslide material of Grundarhausar and has through the ages cut the wide and deep Grundargil Gorge into the mountain slope. Sometimes the water for some reason leaves its main course causing floods and debris flows in Ljósgil and Brekkugil gorges.

Why did the immigrant leader Þorsteinn svörfuður (or whatever his name was) locate his farm just below the most dangerous scree canion in Svarfaðardalur? Was this because of a lack of experience and knowledge about the new environment where he and his partners were settling. Or did the scree activity in the Grundarlækur gorge start late, long after the age of the settlement?

Trying to answer this question it was decided to dig several survey pits for measurements and logging. The profiles could throw a light on the problem. Using debris layers from landslides and soil layers with tephra markers it might be possible to find out the geological history and frequency of landslides in the area.

Lake Nykurtjörn is dammed up by the Útburðarhraun rockslide. Its runoff is the Grundarlækur Stream.

Tephra markers in Svarfaðardalur and Öxnadalur

First, a few words about tephra layers and tephrachronology. Tephra and thephra fall have seldom been hazardous in Svarfaðardalur and Öxnadalur. However several tephra layers can be found in soil profiles. Often they are, for some reason, missing. None of them are thick enough to have caused considerable damage on medows or hayfields and harvest. On the other hand poisoning because of fluorine and volcanic gasses might have caused illness in people and livestock and thus influenced wealth and power in the two walleys. In written sources no demonstrations about that can be found from Svarfaðardalur and Hörgárdalur except in the Haze Famine 1783-1784.

Historical tephra markers

LNS Settlement tephra series

LNL Settlement layer 876

LNS Katla ???

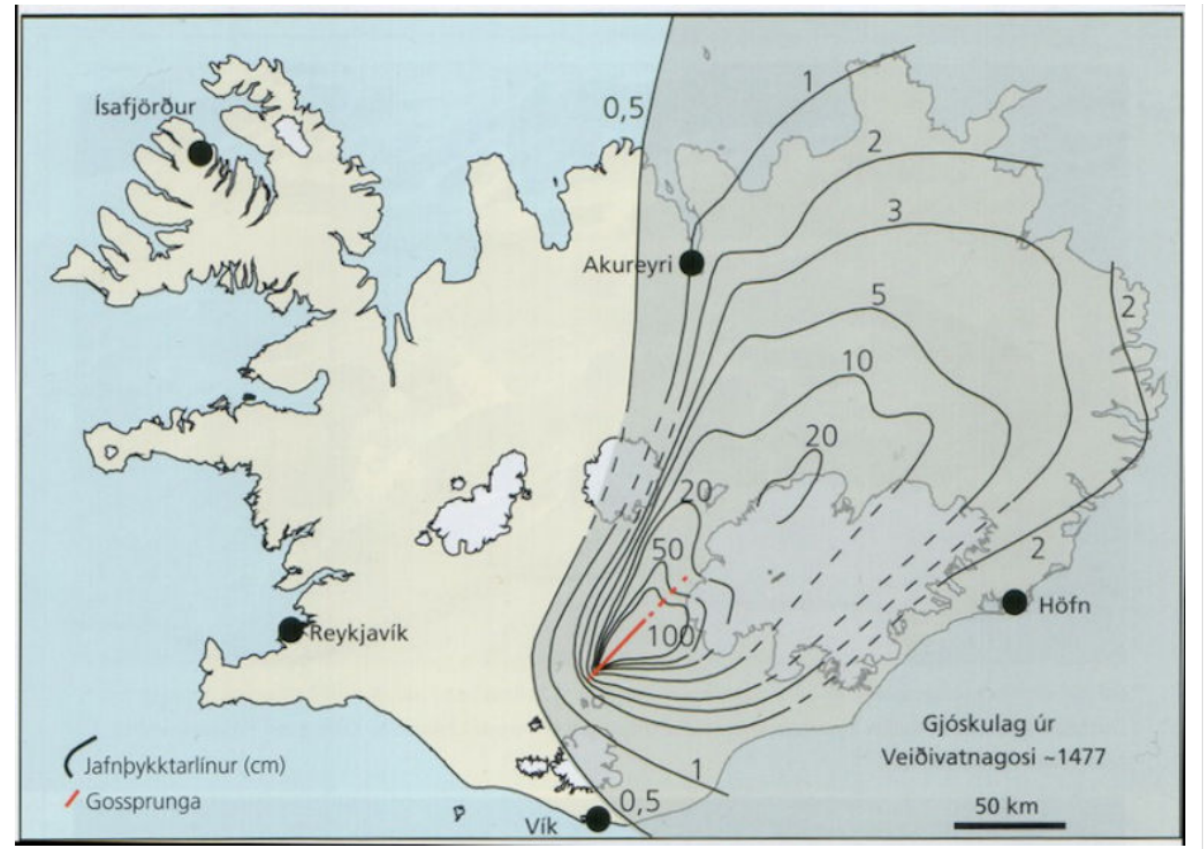
LNS Veiðivötn 940

Hekla 1104

Hekla 1300

Veiðivötn 1477

Hekla 1766



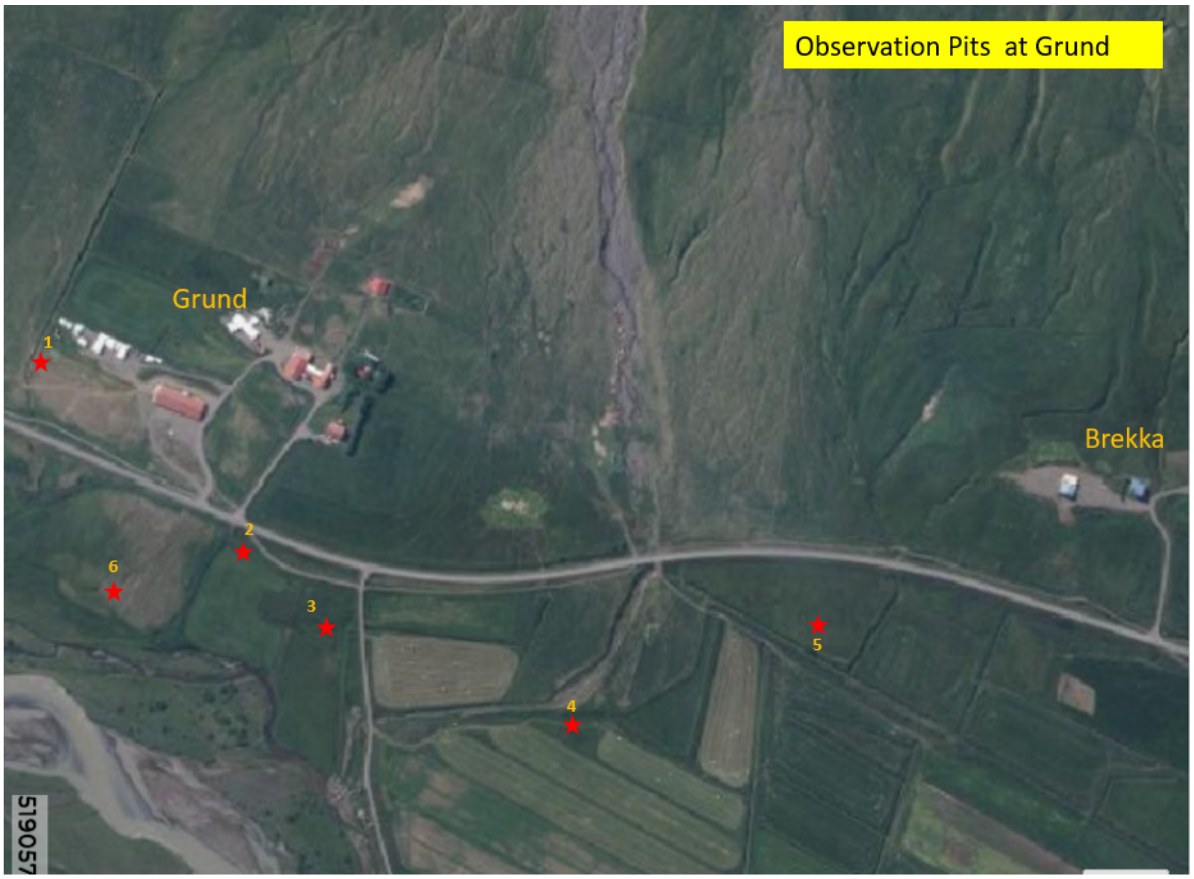
The tephra sector from the Veiðivötn eruption in 1477. This is the thickest historical tephra layer in Svarfaðardalur. The layer is one of the largest historical ones in Iceland. The total volume was around 10 km^3.

Observation pits

In August 2021 six deep observation pits were dug in the Grundargil and Ljósgil alluvial cones using a machine excavator. Their dept and locations are given in table 2

Table 2. *Survey pits dug in August 2021*

Pit no.	°N	°W	Depth	Notes
1	65,90652184	18,58497757	3,30	South of Grund Cowstall
2	65,90786009	18,58046123	3,37	East of Grund
3	65,90838417	18,57947568	3,18	East of Grund
4	65,91092351	18,57702205	3,50	Grundarlækur east of the main road
5	65,91338138	18,57951533	2,50	Ljósgil alluvial cone
6	65,90744586	18,57978590	4,18	Blakksgerði hay field



The location of the observation pits in the Grundargil and Ljósgil alluvial cones

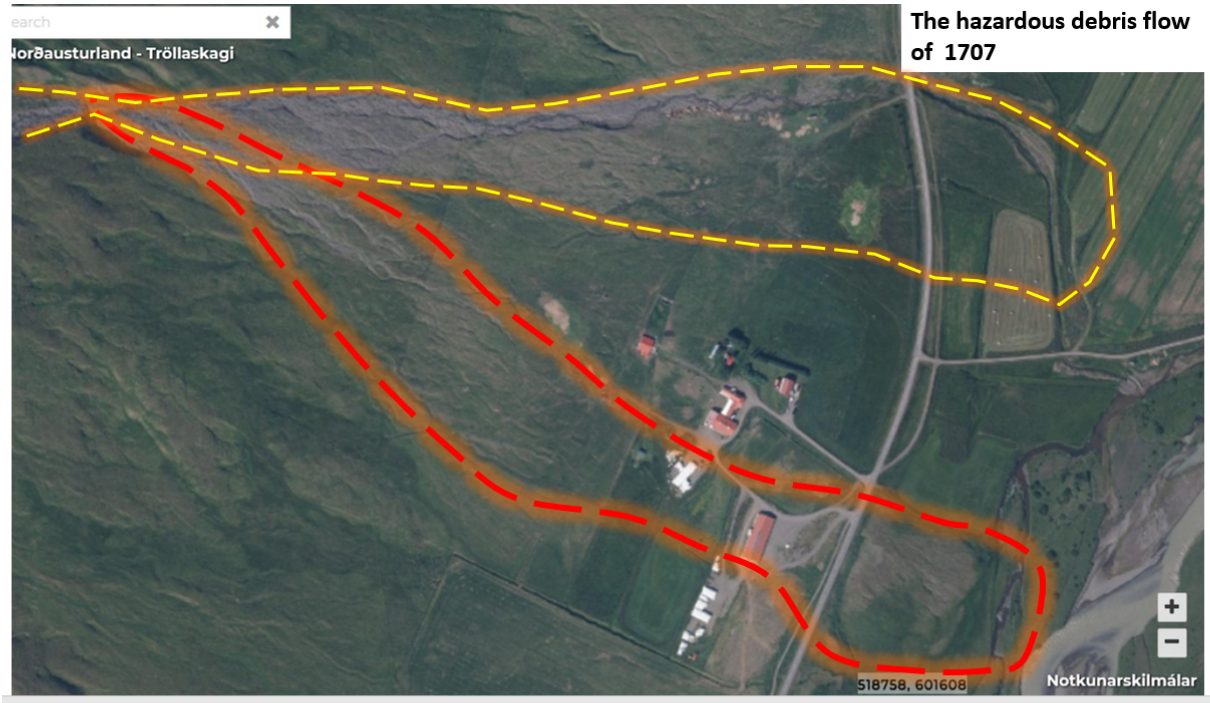
Discussion about the profiles (detailed descriptions and profile drawings in Appendix I)

The main suggestions that can be made after this investigation is that the profiles reflect frequent flows and landslides all through the historical time, both in Grundargil and Ljósgil Gorges. The main activity is on the northern part of the Grundargil alluvial cone and on the Ljósgil alluvial cone. The southern part of the Grundargil cone has suffered much less flows with long periods with no considerable flooding in between. It is noteworthy that no remains of a forest appeared in the profiles, the only traces of trees or shrubs were seen in observation pit 6. The large alluvial cones of Grundargil and Ljósgil appear to have been open landscape without birch and bushes and seems accordingly to have been an excellent pasture for livestock. This can explain why it was so attractive in the eyes of the first settlers that they chose this very place above all others in the valley for their new home.

The large landslide of 1707

The profile from observation pit 6 differs from all the other profiles. There a thick continuous scree layer is found reaching from a thin layer (10 cm) of the surface soil and grass roots

down to 3,6 m depth, below it are pure turf and soil layers with wood pieces. This is by far the thickest scree layer found in the field area. The thin soil layer covering the scree indicates a recent catastrophic landslide. This seems to be a manifestation of the large landslide mentioned in the Jarðabók occurring in the year 1707. Its size and path has been unknown until now. Unlike most other historical landslides, that flowed down the northern part of the alluvial cone of Grundarlækur stream, this one seems to have rushed down the southern part of the cone all the way to the river Svarfaðardalsá leaving the farm houses on an island in between the screes and the river.



The main path for flash floods and landslides of the Grundargil stream is shown with yellow dashed line. An estimated path of the large landslide of 1707 is marked by the red dashed line.

CONCLUSIONS

- Continuous landslide activity has taken place in Grundargil for some thousands of years
- Ljósgil has also been an active landslide channel through the historical time
- At least one large landslide has occurred in Brekkugil in historical times
- No signs of quiescence are found during the Age of Settlement
- The main activity has been in the northernmost part of the Grundargil alluvial cone and in the Ljósgil alluvial cone.
- Very few events have happened in the southern part of the Grundargil alluvial cone

- However the largest known flash flood and landslide from Nykurtjörn through the Grundargil canyon occurred in 1707 leading to temporary desolation of the farm some years later.
- No remains of trees (trunks of birch and willow) were found in the soil profiles except in no. 6
- The Grundargil Alluvial Cone seems to have been open pasture and without birch and willow
- The open landscape might have been attractive in the eyes of the settlers as pasture for their livestock
- It seems that the settlers were not aware of the land-slide danger. If they were, then there must have been specific reasons for their choice of settlement location.

Project Report Summary

The individual WP reports demonstrate that the the Two Valleys Project research is well under way and is proceeding according to the project plan provided to Rannís as closely as can be expected from such a complex and innovative research program.

Below are the most important Milestones, currently foreseeable changes, and publication plans provided as a summary of the above report.

Milestones reached

WP 1

Two members of WP1 participated in the annual project meeting in October (Elín Ósk Hreiðarsdóttir and Howell Roberts), giving talks about the first results of the year. Additionally, members participated in an open event on selected sites in Svarfaðardalur and Skíðadalur in early July where the aims and first results of the project were introduced to the general public during an evening field walk. The members also contributed to the general outreach of the project through the Facebook page of the project.
The first publication of the WP has been submitted to a peer reviewed journal (*Árbók hins íslenska fornleifafélags*) and is expected to be published in February or March 2022. The article is by Dr. Árni Daníel Júlíusson and discusses the farm abandonment in North Iceland focusing on Svarfaðardalur in comparison with two other northern districts. Additionally, a detailed field report is in progress and will be submitted in the spring of 2022.

WP2

The members of the WP, Ramona Harrison and Kristin Møller-Nilsen, participated in the annual meeting of the project in October. They both gave talks.

Harrison and Roberts have collaborated on a peer-reviewed research article called: "*Skuggi Landnám Farm and Site Economy in Transition: An Assessment of the Structure A and Household Midden Remains from the Viking Age to the Medieval Period."* This article is based on research done in Hörgárdalur and is directly connected to this project as it discusses both household and midden remains on Staðartunga land. The article is to be published in February or March 2022, in UBAS (Universitetet i Bergen arkeologiske skrifter), as part of a special, peer-reviewed edition: Expanding Horizons.

WP 3

The members of the WP, Axel Kristinsson and Árni Daníel Júlíusson, participated in the annual project meeting in October. Axel gave talk about the historical research, focusing on the origin of manors and the heritability of *goðorðs*.

A paper by Árni Daníel Júlíusson on desertion of farms in Northern Iceland (see WP 1/6) touches upon key aspects of social history of the Two Valleys.

WP 4

The members of the WP, Egill Erlendsson and Elísabet Ásta Eyþórsdóttir, participated in the annual meeting of the project in October. They both gave talks.

WP 5

The members of the WP, Árni Hjartarson and Sveinn Brynjólfsson, participated in the annual meeting of the project in October. They both gave talks.
Research report submitted to PI, January 2022

Publications

List publications, manuscripts and conference proceedings, PhD and MSc thesis resulting from the project. Report how publications are in accordance with the IRF's open access policy.

General

A monograph discussion by PI Árni Daníel Júlíusson on the historical ecology of Svarfaðardalur and Hörgárdalur is in preparation and will be published by the project during the year in co-operation with the National Museum of Iceland. The title is „A Tale of Two Valleys in Medieval Iceland. Settlement, Land Use and Landownership."

WP 1

An article by PI Árni Daníel Júlíusson, discussing research by f.ex. project member Elín Ósk Hreiðarsdóttir, will be published in the 2021 volume of the archaeological journal *Árbók hins íslenska fornleifafélags*, edited by Ágústa Edwald Maxwell and Hildur Gestsdóttir. The title of the article is Á eyðibýlum norðanlands. *Um byggðaþróun í þremur héruðum norðanlands á miðöldum.* It discusses recent research into deserted medieval farms in Skagafjörður, Eyjafjörður and Þingeyjarsýsla.

WP 2

Harrison and Roberts have collaborated on a peer-reviewed research article called: "Skuggi Landnám Farm and Site Economy in Transition: An Assessment of the Structure A and Household Midden Remains from the Viking Age to the Medieval Period." This article is

based on research done in Hörgárdalur and is directly connected to this project as it discusses both household and midden remains on Staðartunga land. The article is to be published in February or March 2022, in UBAS (Universitetet i Bergen arkeologiske skrifter), as part of a special edition: Expanding Horizons.

WP 3

The proposed titles for publications mentioned in the chapter on „main results“:
Monograph: The More You Have, the More You Get: Early Iceland and the Evolution of Inequality.
Article on goðorð: Arfgengi goðorða
Article on manors: Manor formation in early Iceland.
An article by PI/member of WP Árni Daníel Júlíusson, discussing research by f.ex. project member Elín Ósk Hreiðarsdóttir, will be published in the 2021 volume of the archaeological journal *Árbók hins íslenska fornleifafélags*, edited by Ágústa Edwald Maxwell and Hildur Gestsdóttir. The title of the article is Á eyðibýlum norðanlands. *Um byggðaþróun í þremur héruðum norðanlands á miðöldum.* It discusses recent research into deserted medieval farms in Skagafjörður, Eyjafjörður and Þingeyjarsýsla.

Árni Daníel Júlíusson (2021), Famines in Iceland 1100 to 1800. The Early Modern Evidence vs. the Medieval Evidence. Lecture at the Leeds International Medieval Congress, 5-9 July, 2021.

WP 4

A manuscript about environmental signatures of the Black Death in the Eyjafjörður region is underway. It will highlight ecosystem responses to changes in society and land use in response to Black Death, through the use of pollen analytical data from grazing areas used by farms of different social standing. The working title is “Vegetation Responses to the Black Death in Icelandic Pastures”.

WP 5

The Two Valleys Annual Meeting Oct. 5.-6. 2021.

Árni Hjartarson: The landslides in the Grundargil Gorge. Field research 2021. First results.

Sveinn Brynjólfsson og Halldór G. Pétursson: Historical landslides in Svarfaðardalur and Hörgárdalur. An overview.

Lectures in a small conference des. 6 2021 in The Society for Archaeologists, Iceland (Félag Fornleifafræðinga).

Árni Hjartarson: Útburðir, nykrar og söguleg skriðuföll í Svarfaðardal

Sveinn Brynjólfsson og Halldór G. Pétursson: Ofanflóðaáföll í þremur dölum Eyjafjarðar

Article in press: Halldór G. Pétursson. The Landslides in Hörgárdalur 1390. In the magazine Heimaslóð (will be bublished in the next issue).

Individual WP Talks at meetings organised by the project

Two Valleys project meeting Reykjavík

- Axel Kristinsson, Theoretical aspects of egalitarian vs. strattified societies as relates to settlements in new territories and how an egalitarian society transforms into a startified one.
- Axel Kristinsson, Documentary sources for early Commonwelath and how they relate to governance and social stratification
- Árni Daníel Júlíusson, Settlement in the Two Valleys. Two Valleys meeting, Reykjavík, October 5, 2021.
- Árni Daníel Júlíusson and Ramona Harrison, Power, Wealth and Plague in Two Valleys: Svarfaðardalur, Hörgárdalur and their hinterlands ca. AD 870-1500. An overview. Two Valleys meeting, Reykjavík, October 6, 2021.
- Kristin L. R. Møller-Nilsen, Presentation 2VP meeting. Two Valleys meeting, Reykjavík, October 5, 2021.
- Árni Daníel Júlíusson and Ramona Harrison, Social, environmental and political development in Svarfaðardalur and Hörgárdalur 870 to 1500: An outline. Two Valleys meeting, Reykjavík, October 5, 2021.
- Árni Hjartarson, Halldór G Pétursson, Sveinn Brynjólfsson, Jarðminjar og náttúruvá/Geomorphology and natural hazards. Two Valleys meeting, Reykjavík, October 5, 2021.
- Sveinn Brynjólfsson, Landslides in Hörgárdalur and Svarfaðardalur – overview and records. Two Valleys annual meeting – Reykjavík 5-6.10.2021
- Egill Erlendsson Two Valleys: WP4. Two Valleys meeting, Reykjavík, October 5, 2021.
- Elísabet Ásta Eyþórsdóttir, PhD student, Two Valleys - Power, wealth and the plague in two valleys
- Work Package 4 Palaeoecology. Two Valleys meeting, Reykjavík, October 5, 2021.
- Elín Ósk Hreiðarsdóttir, Fornleifastofnun Íslands, FSÍ/Institute of Archaeology, Iceland, Two valleys – Svarfaðardalur. Previous archaeological investigation in the area and the first results of the fieldwork of WP1. Two Valleys meeting, Reykjavík, October 5, 2021.
- Howell Magnus Roberts, 2VP WP1. Two Valleys meeting, Reykjavík, October 5, 2021.

- Per Lagerås Abandonment and agricultural change in the wake of the Black Death. A review of pollen and dendro data from the South-Swedish Uplands. Two Valleys meeting, Reykjavík, October 5, 2021.
- Ramona Harrison, WP 2. Investigation of economy and settlement chronology in SVARF and HÖRG through farm midden surveys and excavations. Two Valleys meeting, Reykjavík, October 5, 2021.

Berg meeting

Ramona Harrison og Árni Daníel Júlíusson, Tvídæla – þverfaglegt rannsóknarverkefni um Svarfaðardal og Hörgárdal á miðöldum, Menningarhúsið Berg, Dalvík, 8. október 2021.

Other talks by members of the project related to the project

Árni Hjartarson, Tvídæla (Two Valleys). Talk at the annual Kristján Eldjárn conference, 6 December, 2021.

Árni Daníel Júlíusson and Ramona Harrison held an outreach talk as part of the 'Torsdagslunsj' lecture series at Harrison's AHKR department, UiB, Bergen, 9. December, 2021, «Power, Wealth and Pandemic in Two Valleys: Svarfaðardalur, Hörgárdalur and their hinterlands ca. AD 870–1500»

Changes to the research plan (if applicable)

WP1

The research plan of 2021 was generally unchanged from the submitted application of the project. However, instead of focusing evenly on both areas in 2021 and 2022 it was decided to focus primarily on one area each year and therefore the focus was almost entirely on Svarfaðardalur in 2021 but will shift to Hörgárdalur in 2022. Small scale investigation did still take place in Hörgárdalur, in Staðartunga, in preparation for the next field season. A few minor changes were done to the WP plan moving time of individuals between research years but those will all even out within the three-year period.

WP2

MA students involved in fieldwork:
Due to covid19 rules, no students could be brought to the field from Norway (UiB) to Iceland. Thus, no student could be included in 2021.

WP3

WP4

The following changes have occured within WP4:

1) Following advertisement, a candidate was selected as a prospective PhD student within WP4. The person had not completed an MSc degree and was hired from beginning of September 2021 as a "research assistant" within WP4 until the MSc degree was completed. Salary for research assistant are lower than PhD student salary. It is expected that a PhD student can be formally enrolled in the early months of 2022.

   Simply: WP4 used only 4 months of the PhD salary budget, at lower salary than anticipated.

2) New collaboration with the project "Queen Margrethe's and Vigdís Finnbogadóttir's Interdisciplinary Research Center on Ocean, Climate and Society" (short: "ROCS", led by Prof. Katherine Richardson, collaboration is via Globe Institute Univ. of Copenh., https://rocs.ku.dk/about/, funded by the Carlsberg Foundation and Rannís). EE is an active participant in the ROCS project. The collaboration has already opened new possibilities with regard to methods by which to examine landscape stability (see above). The new collaboration also opens the possibility to furnish the Two Valleys project with sediment aDNA analysis of lake and archaeological contexts (see below). This does not, however, alter the existing research plan, but serves solely as an addition/strengthening of the current plan.
3) Aside from fieldwork in June 2021, the work within WP4 did not commence until September 2021. The general progress of WP4 in 2022 is nonetheless on schedule to fulfill the milestones proposed in 2022.
4) Travel money for a PhD student in WP4 to support attendance at a conference could not be used.

WP5

Continuation of the project in the next grant year

Describe the research plan and milestones for 2022. Foreseeable changes to the proposed research plan, management and/or participation must be explained.

Highlights of the research plan

WP 1

The aim for 2022 is to continue archaeological research in Hörgárdalur with similar aims as in Svarfaðardalur, that is try and use multiple trenches into boundaries to help date the settlements.

WP 2

WP2 planned work in spring 2022:

Together with Harrison, WP2 PhD will work on locating suitable samples for biochemical analysis, and radiocarbon dating, if needed based on the Staðartunga dates already available due to one of Harrison´s previous grants. In collaboration with Philippa Ascough and Ingrid Mainland who are both grant collaborators, isotope and trace element analysis and tooth microwear analysis will be attempted on, and if there are already, available specimens from Staðartunga and potentially Skuggi excavations (both on Staðartunga land). This will form a pilot study in collaboration between labs at AHKR (UiB), Suerc (U Glasgow) and UHI (Orkney) to investigate the analytical potential of the archaeofaunal materials.
This is then to be extended into a larger scale study of such kind in 2023, including suitable (if available) materials from both Valley Systems.
While successful in producing important information on the nature of middens in the Svarfaðardalur/Skíðadalur region, no stratified midden containing well-preserved animal bones could be located. Therefore, the plan for the WP2 summer season is two-fold: Up to two weeks are to be spent on continuation and extension of Staðartunga midden excavation in Hörgárdalur. Between one and two weeks will need to be spent on locating, testing, and ideally, excavating, at least one Svarfaðardalur and one Skíðadalur midden trench each. If small-scale midden trenching is indicative of productive midden contents, the team needs to decide whether to prioritize on and excavate it in the remaining time. Or, whether to wait for the last season to do so.

WP 3

WP 4
Fieldwork: Fieldwork for WP4 is planned in June 2022. This will centre on the Hörgárdalur area, with the aim of 1) securing samples from farms of high and low social standing, and 2) complete a network of samples with which to model woodland decline within Hörgárdalur and Svarfaðardalur-Skíðadalur. In collaboration with the ROCS project a sampling of lake sediments from a tarn in the Tunga area and a lake close to the farm Urðir will take place in February-March 2022, depending on lake ice and weather conditions.

Data production and processing:
For Svarfaðardalur, the chronological and sedimentological analyses are near completion and will be finalised in the early months of 2022. These data will contribute to Milestone 2 (submission of article for peer-review) in 2022. Pollen analysis of samples from Sakka and Kot will take place from February to August 2022. All necessary consumables and materials to perform these analyses are in place and facilities to operate this part of the project are ready via funding of WP4. This allows for the production and submission of an article for the fulfillment of Milestone 2 in WP4.

Within WP4 work will continue on a paper about Black Death environmental impacts in the Eyjafjörður region. Submission of this paper is expected to take place in the early months of 2022 and fulfill the proposed Milestone 1 in WP4.

WP5

Milestones

List the proposed milestones, with reference to the milestones specified in the application.

WP 1

In 2022 the first article of the WP will come out (see above) as well as a detailed field report about the research of 2021. In the second half of the year the focus will shift to a new field season. The aim is to continue to carry on a strong presence in social media. The members of the WP will attend the annual meeting of the project in the autumn and present the first results of the summer as well as presenting a detailed field report of the year in the spring of 2023.

WP 2

There are two milestones listed for WP2 in 2022:

1) Submission of article about the impacts of Black Death in the Eyjafjörður region is listed as a milestone in month 13 in the proposal.

2) Submission of an article based on the research by a PhD student is listed as a milestone in month 21 in the proposal.

Foreseeable publications by members of the WP related to Two Valleys research, other than mentioned above

Harrison, Ramona, Birna Lárusdóttir and Howell M. Roberts (2022) Crucial Coastal Contexts:
Archaeology and Historical Ecology on a Millenial Scale at the Siglunes Fishery Site (Provisional title).

Árni Daníel Júlíusson will participate in a joint paper on the occasion of the UiB conference hosted by Harrison and colleguagues as part of the joint research group: Humans and Materiality. The conference is called: Human Agency and Global Challenges: Re-Centering Social Change in Archaeology. Originally scheduled for the end of February 2022, it needed to be postponed to September 2022 due to covid-related issues. The paper is entitled: 'The mechanisms of social change in medieval Iceland: A regional case study in Two Valleys'

Harrison also plans to participate in the EAA conference, also in September 2022. Currently, Møller-Nilsen plans to participate in the EAA conference to present on her PhD project.

WP 3

Foreseeable publications by members of the WP related to Two Valleys research, other than mentioned above

Szabo, Vicki and Árni Daníel Júlíusson, „Whale beachings and utilisation of whale products in the 13th to 15th century in Iceland. On documentary and other evidence on the role of whale products in Icelandic sustenance during that time.“ (Provisional title)

Árni Daníel Júlíusson and A.E.J. Ogilvie (2022), „A New Look at Climate and Agriculture in Fifteenth-Century Iceland“. Chapter for book on the *Fifteenth-Century Climate of Europe* Editors: Andrea Kiss, Rudolf Brazdil and Chantal Camenisch. Forthcoming.

Árni Daníel Júlíusson „The Pox and the Plague. The Black Death in Iceland 1402–1404 and the smallpox proxy 1707–1709.“

Árni Daníel Júlíusson (2022) „Two Famines in Early Modern Iceland.“, forthcoming.

WP 4
There are two milestones listed for WP4 in 2022:

3) Submission of article about the impacts of Black Death in the Eyjafjörður region is listed as a milestone in month 13 in the proposal.

4) Submission of an article based on the research by a PhD student is listed as a milestone in month 21 in the proposal.

WP5
In the summer of 2022 the main research will focus on Hörgárdalur Valley, especially the Langahlíð and Gásir areas. The areas of the landslide hazards of 1390 will be mapped. In Langahlíð deep survey pits will be dug in order to measure soil and scree profiles. Hopefully the location of the ruins of the disappeared farm can be found. The geological structure of the Gáseyri medieval harbor will be studied in the same way by survey pits. The question is if the debris flows in 1390 and increased bedload in Hörgá River ruined the harbour of Gáseyri Town. Or was the harbour filled up by slower processes? The area around Skuggi ruins will also be visited in order to find out the age and extent of the landslide that may have hit the

farm. In Svarfaðardalur the effects of landslides and debris flows on the Sveitarlangur boundary system will be studied.

Foreseeable changes to the research plan (if applicable)

Possible changes in 2022 and 2023

WP2

MA students involved in fieldwork:

With 2022 still a very difficult year in terms of moving students from Norway to Iceland, it is not yet decided whether a UiB MA student can join the project in the coming summer. This will need to be assessed by the end of March 2022. It is possible that either one or two MA students will be designated for the last fieldseason, in 2023. However, there will be at least 1 MA student involved into the project as part of their MA studies in autumn 2022, and another one in autumn 2023. This would push the projected graduation dates for these MA theses into 2024/25.

Harrison and Smiarowski conference:

Due to worldwide interruptions to travel and pushed back conference meetings as a result, it is currently not clear whether or not the proposed NABO conference originally planned for 2023 can be carried out. It is possible that this might be an option in 2024, but it is perhaps more reasonable, to make the last project conference a rather large one and to invited international collaborators. With a potential venue potentially on one of the Scottish Islands.

WP5

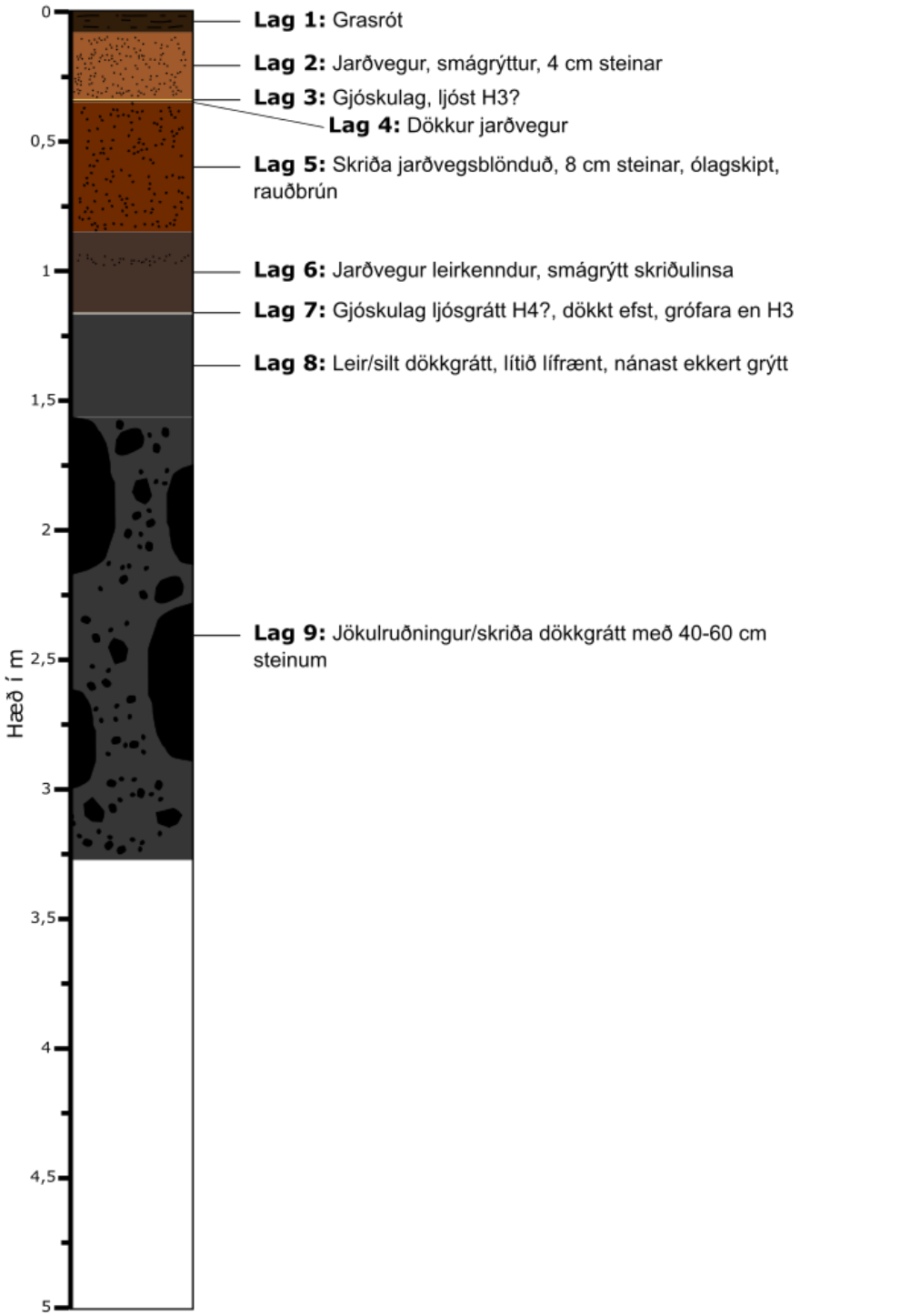
The milestones of the application will be followed up. Foreseen publication: 1) Submission of an article about the Hörgárdalur Landslides of 1390. 2) Submission of an article about the Grundarlækur landslides in historical time.

APPENDIX I

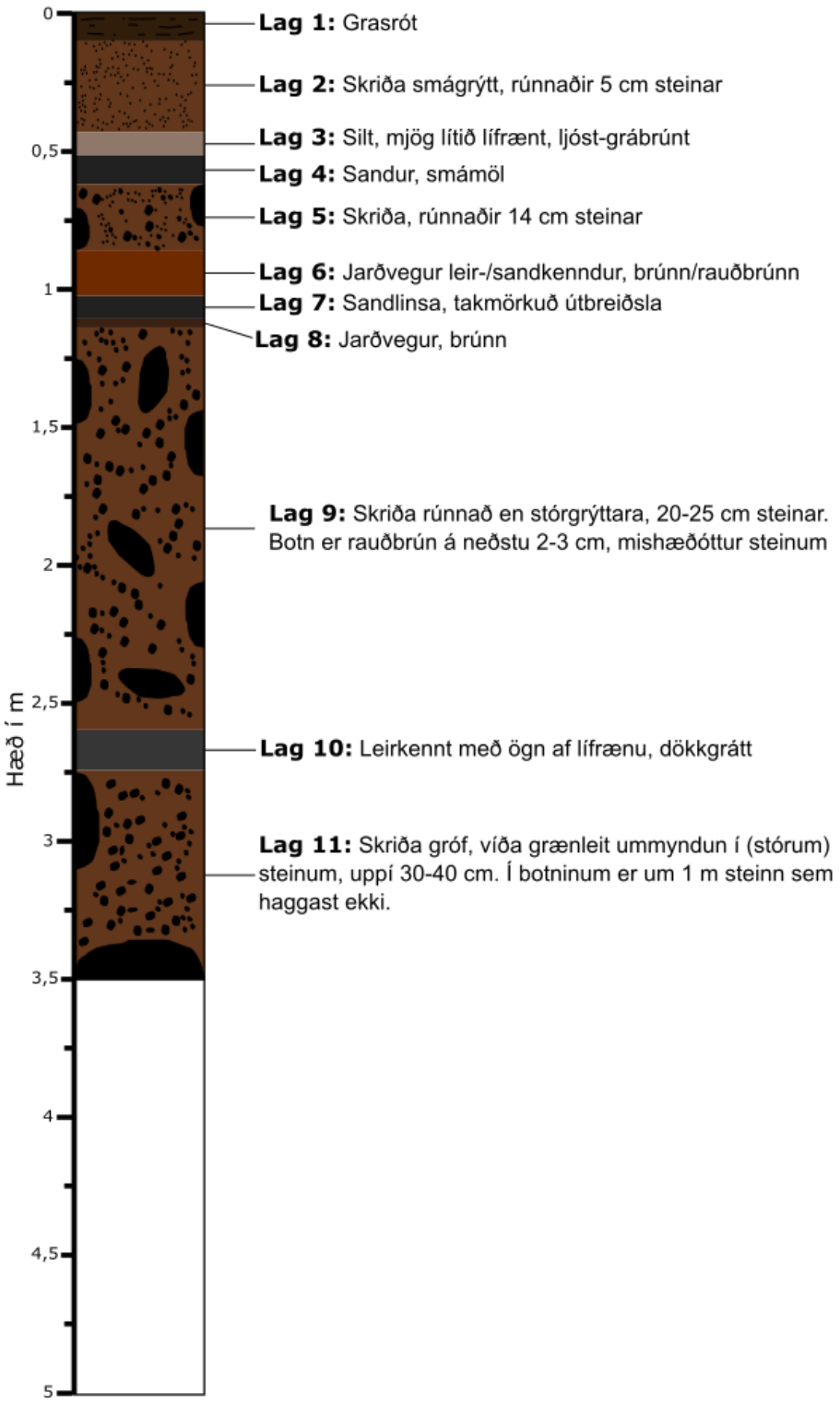
Observation pit profile descriptions

Grundarskriða - hola 1 330 cm

Sunnan við fjós, SV-horn á óræktarstykki, neðan við rúlluplan

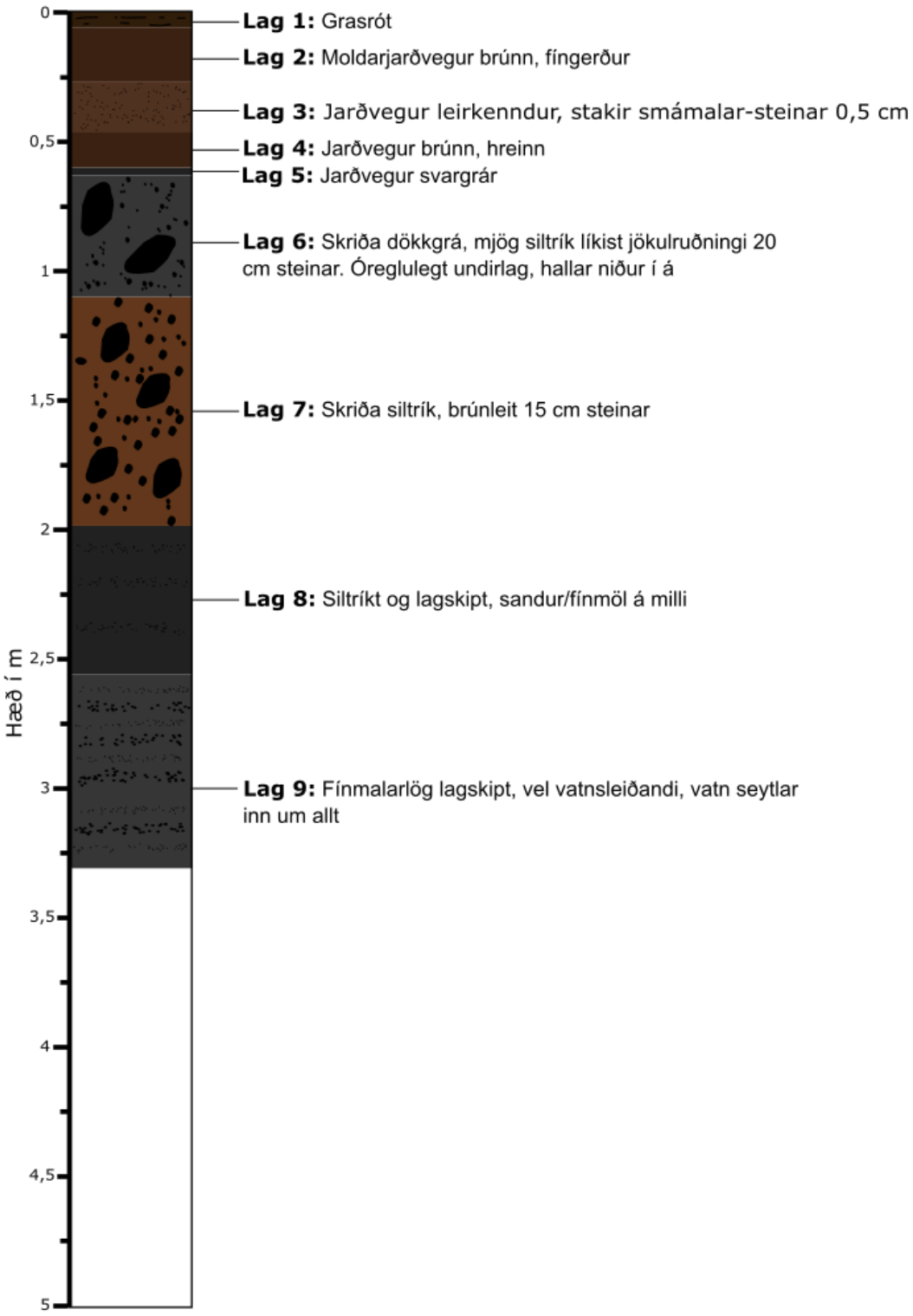


Grundarskriða - hola 2 337 cm
SV-horn á túninu neðan heimreiðar



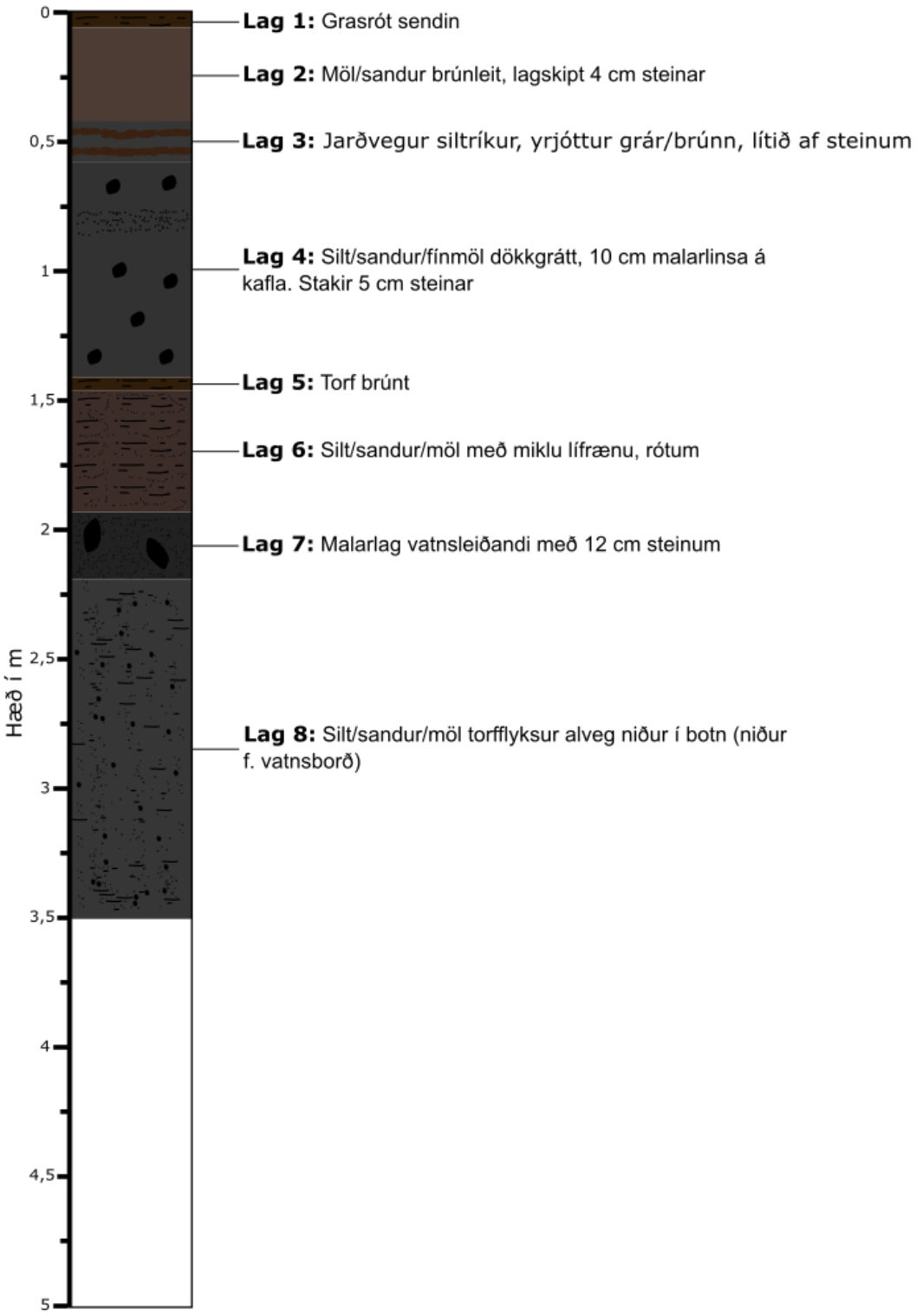
Grundarskriða - hola 3 318 cm

Óræktarstykki nyrst í túninu neðan heimreiðar



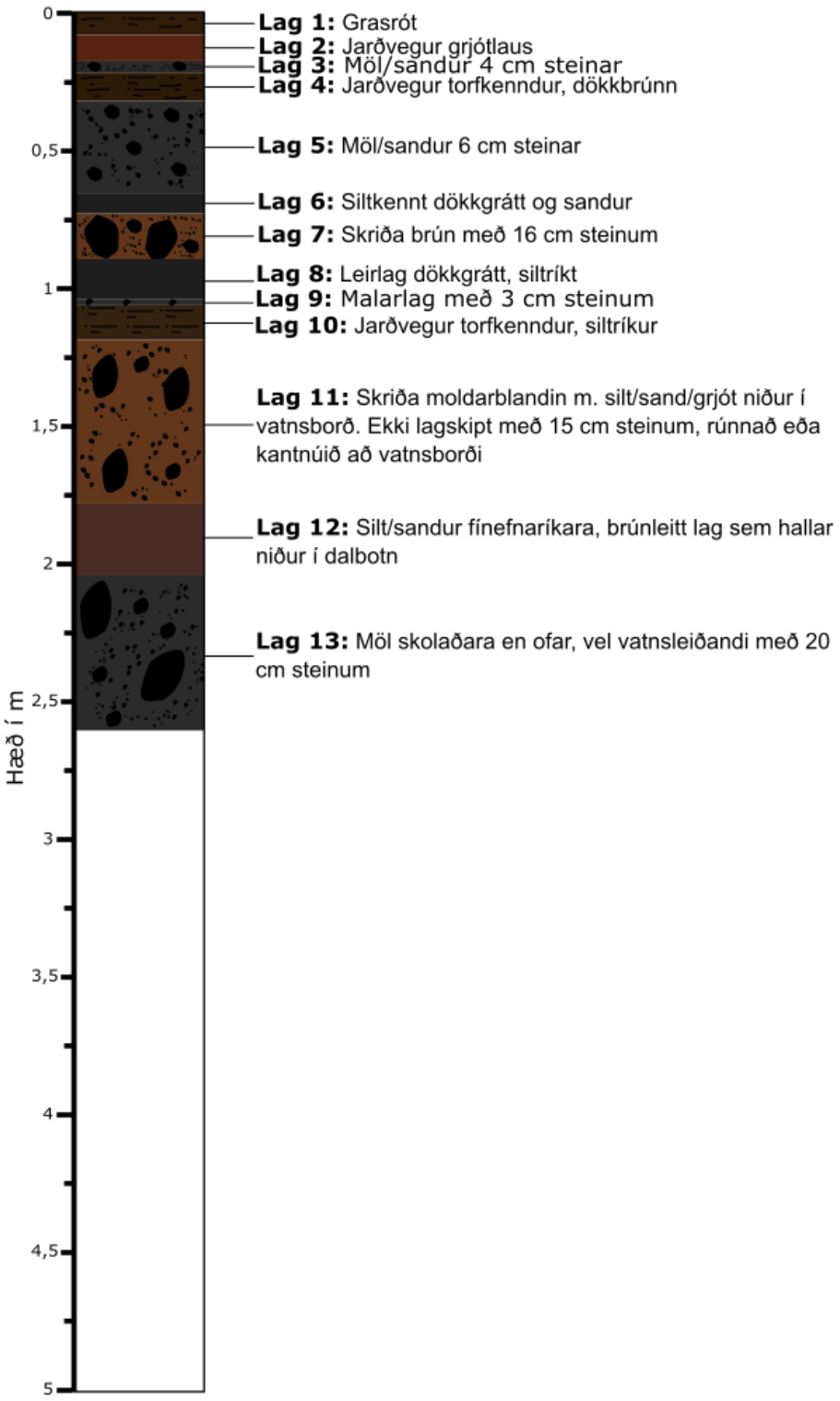
Grundarskriða - hola 4 350 cm

Neðan v. farveg Grundarlækjar þar sem hann liggur N-S neðan vegar



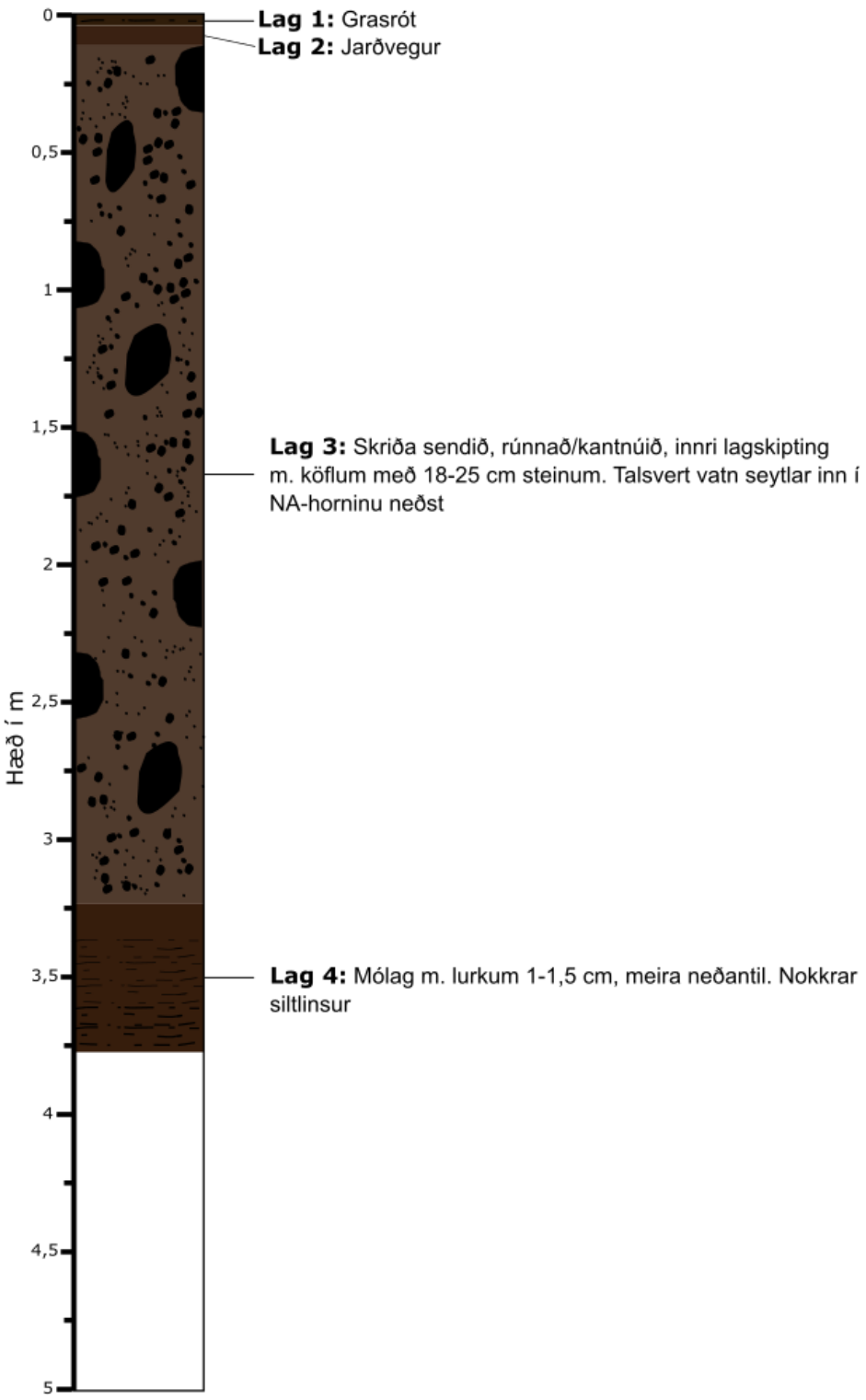
Grundarskriða - hola 5 350 cm

Um 30 m neðan vegar í N-jaðri Ljótsgilskeilunnar



Grundarskriða - hola 6 418 cm

Nyrst í Blakksgerði, í snauða landinu (grátt af mosa), ríflega miðja vegu frá vegi niður að á



Grundarskriða - skurður f. heimtaug

Liggur upp og niður, skammt norðan fjósheimreiðar