“Eyðijarðar … með öllum Víðidal:” Assessing settlement and abandonment sequences in marginal environments. Final report on coring reconnaissance of Víðidalur in Skagafjörður, 2014

Kathryn A. Catlin
Douglas J. Bolender

Picture on front page – Víðidalur, looking south from Þverá.

Kathryn A. Catlin and Douglas J. Bolender
Northwestern University
Byggðasafn Skagfirðinga
Fiske Center for Archaeological Research, UMass Boston

BSK-2018-194 / SCASS-2018-19
2018

Contents

Figures

Acknowledgements

The authors would like to thank their colleagues at the Skagafjörður Heritage Museum and the Skagafjörður Church and Settlement Survey, especially Sigríður Sigurðardóttir, Guðný Zoëga, Bryndís Zoëga, and the other members of the 2014 survey team: John Steinberg, Eric Johnson, and Alicia Sawyer. Hjalti Pálsson and Kári Gunnarsson from the Sögufélag Skagfirðinga provided logistical and background support on Víðidalur. We also thank Ferðfelags Skagfirðinga for providing access to the shelter at Þúfnavellir.

Coring permission for the survey of Víðidalur was granted by Minjastófnun Íslands (MÍ201306-0042). Funding for the Víðidalur work was primarily provided by a Foster/Friends of Anthropology at Northwestern Graduate Research Grant, and general funding for the 2014 field season was supported by a Robert W. Spayne UMass Boston Graduate Research Grant, the Andrew Fiske Memorial Center for Archaeological Research at the University of Massachusetts Boston, the Skagafjörður Heritage Museum and the Skagafjörður Commune. Further archival research was undertaken in Iceland during the 2016-2017 academic year thanks to a Fulbright/National Science Foundation Arctic Research Award and a Leifur Eiríksson Foundation Fellowship.

We are grateful to the Skagafjörður Commune for their ongoing and invaluable support. Any opinions, findings, conclusions, or recommendations expressed in this material are those of the authors and do not necessarily reflect the views of the individuals and institutions who support this work.

Fornbýli Landscape and Archaeological Survey on Hegranes

The coring reconnaissance in Víðidalur was undertaken as the initial investigation of what would later become the *Fornbýli* Landscape and Archaeological Survey on Hegranes (FLASH) project, Kathryn Catlin's PhD research in Anthropology at Northwestern University. FLASH investigates ruined structures and sites located on the environmental and social margins. This research complements the work of the Skagafjörður Church and Settlement Survey by seeking to understand the role of smaller, marginal settlements in the regional political economy, as well as the effects of anthropogenic environmental and landscape change on the establishment, abandonment, and reuse of these sites.

Skagafjörður Heritage Museum

The Skagafjörður Heritage Museum is a center for research on local history and cultural heritage in the Skagafjörður region, North Iceland. It is affiliated with the National Museum of Iceland and its main exhibition at the old turf farm of Glaumbær is one of the most visited national heritage tourist attractions. The Archaeological Department of the museum was established in 2003 and engages in contract and research driven archaeology both within and outside the region. The core long-term research programs center on fundamental issues surrounding the settlement and early medieval church history of Skagafjörður and the North-Atlantic region with a focus on developing methodological and theoretical approaches to the geography of early Christian cemeteries. The department is involved in multifaceted interdisciplinary collaboration with Icelandic and international institutions and specialists. Its research portfolio includes bioarchaeology, early metal production, and settlement studies, as well as the methodological aspects of archaeological survey.

Fiske Center for Archaeological Research

The Andrew Fiske Memorial Center for Archaeological Research at the University of Massachusetts Boston was established in 1999 through the generosity of the late Alice Fiske and her family as a living memorial to her late husband Andrew. As an international leader in interdisciplinary research, the Fiske Center promotes a vision of archaeology as a multi-faceted, theoretically rigorous field that integrates a variety of analytical perspectives into its studies of the cultural and biological dimensions of colonization, urbanization, and industrialization that have occurred over the past one thousand years in the Americas and the Atlantic World. As part of a public university, the Fiske Center maintains a program of local archaeology with a special emphasis on research that meets the needs of cities, towns, and Tribal Nations in New England and the greater Northeast. The Fiske Center also seeks to understand the local as part of a broader Atlantic World.

Skagafjörður Church and Settlement Survey

The Skagafjörður Church and Settlement Survey (SCASS) seeks to determine how the settlement pattern of the 9th-century colonization of Iceland affected the development of the religious and economic institutions that dominated the 14th century. The research builds on the combined methods of two projects, the Skagafjörður Archaeological Settlement Survey and the Skagafjörður Church Project. One has focused on Viking

Age settlement patterns. The other has been investigating the changing geography of early Christian cemeteries. Together, the research seeks to understand the connections between the Viking settlement hierarchy and the Christian consolidation.

Summary

Víðidalur, an abandoned valley in Skagafjörður, North Iceland, was the subject of a rapid, two-day reconnaissance coring survey in the summer of 2014. The primary purpose of the reconnaissance was to determine whether the valley's settlement history was appropriate for further in-depth study as a dissertation project. The brief work demonstrated the difficulties involved in such a project as well as the potential value of rapid coring assessments of abandoned regions. Accessing and working in marginal regions can be difficult and time consuming. Short and episodic occupations at farms can be difficult to assess or date. In Víðidalur, landslides and significant erosion had buried or completely removed portions of several sites and possibly some entire sites, making them particularly difficult to access. Despite these limitations, even limited coring reconnaissance provided information about the settlement and abandonment histories that advances our knowledge of these marginal areas and their relationship to neighboring regions.

We discuss the historical and archaeological evidence for settlement and abandonment of farms in the valley, including two possible medieval churches. Two farms show clear evidence of settlement prior to the 12th century, while in other cases significant environmental change and landscape degradation has made any such evidence difficult to assess. Very little evidence for settlement was observed between the 13th century and the historically known tenant farms of the 18th and 19th centuries. We discuss possible explanations for abandonment and resettlement, and conclude that changes in the use of Víðidalur were not precipitated by the plague outbreaks of the 15th century (a common explanation for abandonments in Iceland), but rather had more to do with social and environmental factors. Coring reconnaissance has significant potential for the rapid assessment and evaluation of preserved archaeological resources in Iceland's highland margin.

Útdráttur

Sumarið 2014 fóru fram fornleifarannsóknir á níu jörðum og aðrar stöðum í Víðidal, Litli-Vatnsskarð, og Hryggjadal í Skagafirði. Rannsóknirnar voru í formi ítarlegrar könnunar með töku kjarnabora og var ætlunin að kanna aldur jarða og umhverfis sögu þeirra. Verkið sýndi að slíkt verkefni er mjög erfitt, en líka það hratt fornleifaskráning með kjarnabor hefur mikla möguleika fyrir rannsókn í eyði dölum. Í Víðidal, skriðuföll og rof hafði grafið eða fjarlægt nokkrar jörðum. Þrátt fyrir þessar takmarkanir, við lærðum mikið um byggðasögu og eyðisögu í Víðídal.

Við ræðum sönnunargögnin um byggð og eyði frá heimildir sögu og fornleifarannsóknu, þar á meðal tvær mögulegar miðaldar kirkjur. Tvær jörðum var byggð áður 12.öld. Litla vísbendingar sáust um byggð á milli 13.öld og hjáleigar frá 18. og 19.öld. Við ræðum nokkrar hægt skýringar á eyði og endurnýtt, og ályktum það breytingar í notkun um Víðidal var ekki að því að Svartadauðinn í 15.öld, heldur breytingar í samfélög og umhverfi.

Farmstead Abandonment on Iceland's Highland Margins

The highland margins and back valleys of Iceland are dotted with the ruins of abandoned farms. Many of these farms had their origins in the settlement and medieval period (ca. 870-1300 AD), and some are known from historical records to have been inhabited more recently, in the 18th, 19th, and early 20th centuries. The category of abandoned farms includes those that were founded early and those that were founded late, as well as early farms that were later re-settled only to be abandoned again by the early 20th century.

Multiple surveys of highland and marginal areas have been conducted in Iceland including work in abandoned valleys such as Austurdalur and Vesturdalur in Skagafjörður (Guðrún Sveinbjarnardóttir 1992), Krókdalur at the south end of Barðardalur (Orri Vésteinsson, et al. 2014), Þórsmörk in Eyjafjallasveit (Dugmore, et al. 2006), Þegjandadalur in Suður-Þingeyjarsýsla (Aldred and Lucas 2010; Roberts, et al. 2009), Hrafnkelsdalur and Brúardalur in the Eastfjörðs (Sveinbjörn Rafnsson 1990), and Þjórsárdalur in Árnessýsla (Dugmore, et al. 2007), among others (e.g., Stenberger and Roussell 1943). Additional survey work has recently taken place in multiple valleys in Eyjafjörður (Árni Daníel Júlíusson 2016) and in Skagafjörður (e.g. Gudný Zoëga, et al. 2017). However, fundamental questions about the early settlement and subsequent history of these areas persist. In particular, although the settlement of many of Iceland's highland areas appears to have been early, their relationship to neighboring lowland settlement sequences is largely unknown.

Explanations for the initial settlement of these regions most commonly include overpopulation of the lowland landscape, along with a potential draw towards resources available closer to the interior, especially places where large wooded areas provided fuel for charcoal production (e.g. Dugmore et al. 2006). Desertion has been variously ascribed to ill-preparedness for the agricultural challenges of the margins, environmental change (especially erosion, landslides, volcanism, and climatic shifts), demographic disruptions such as plague, and/or social change (including shifts in the economic base, increasing control over land management on the part of powerful landowners, or dissatisfaction related to social isolation).

Each surveyed valley has its own settlement character and sequence. In Krókdalur, most farms were occupied between the 10th and 12th centuries, with little evidence of later resettlement (Orri Vésteinsson, et al. 2014). Though large portions of the valley are now denuded, most of the erosion occurred after abandonment, and so explanations for abandonment likely have more to do with social and economic factors. In the East, Hrafnkelsdalur was settled prior to the 12th century and abandoned before the 15th century, while neighboring Brúardalir contains some pre-12th century farms as well as others that were first settled both before and after the 15th century; abandonment is attributed to a combination of environmental catastrophes and economic change (Sveinbjörn Rafnsson 1990). Survey though multiple back valleys of Skagafjörður has shown that many farms were established in the 11th century and earlier, with multiple episodes of abandonment and reuse through the 19th and early 20th centuries. Inland sites at high altitude tend to be abandoned earliest, attributable in part to climatic deterioration and landscape degradation, though many of these far inland sites were resettled in the 19th century (Gudný Zoëga, et al. 2017; Guðrún Sveinbjarnardóttir 1992). Þórsmörk has also experienced significant erosion and landscape deterioration, and appears to have been inhabited from the 9th through 12th centuries with one short-lived attempt at 19th century reoccupation (Dugmore, et al. 2006). There, abandonment coincided with large-scale erosion, but may also have been related to preservation of the remaining nearby woodlands as a resource to support charcoal production in the surrounding regions.

The environmental and climatic deterioration that followed the settlement of Iceland would have had deleterious effects on highland farms. Colder winters, more snow, and later growing seasons, along with significant amounts of erosion, would have led to a reduction in the livestock that could survive on the land. Erosion and other natural events like landslides, avalanches, and volcanism would have reduced the available land area for agriculture and grazing. All of these changes would have reduced the amount of hay that could be grown and stored, as well as the length of the summer grazing season and the possibilities for winter grazing. As the livestock decreased, so would the number of people who could successfully live in the region. Social factors (such as isolation), economic factors (including availability of lowland farms, and fluctuations in the international wool market), and

Figure 1. View of Víðidalur looking north from Þúfnavellir.

political factors (including perhaps the claiming of highland resources by powerful lowland farmers) combined with environmental degradation to encourage farmers at the highland margin to relocate to the lowlands. The pressure in some cases may have been significant enough to outweigh the disadvantages of becoming a dependent or servant in another household.

Later reoccupation during the 18th and especially 19th centuries is historically documented, and was often driven by economic and social factors. Increasing populations in the countryside drove people into newly formed fishing villages, while others preferred to try their luck on distant, marginal farms. Frustration with marriage laws, which still required a couple to own or rent a farm, further contributed to a willingness to obtain land wherever possible, even in the most marginal areas. Furthermore, legislation was passed during the 18th century that encouraged settlement throughout the countryside (G. Á. Gunnlaugsson 1988).

Coring Reconnaissance in Víðidalur

The coring reconnaissance in Víðidalur was undertaken in the summer of 2014 as the initial investigation of what would later transform into the *Fornbýli* Landscape and Archaeological Survey on Hegranes (FLASH) project. The primary purpose of the brief, two-day reconnaissance was to determine if the valley's settlement history was appropriate for an in-depth doctoral research project proposed by Kathryn Catlin. After the reconnaissance, we concluded that Víðidalur, interesting as it is, was not suitable for a doctoral project as preservation was too inconsistent to guarantee that a comprehensive settlement history could be produced for all of the farms in the region (an essential baseline for the envisioned project). Ultimately, the idea of focusing on a marginal highland valley was abandoned in favor of an integrated project with the Skagafjörður Church and Settlement Survey (SCASS), assessing the small and abandoned farms and activity areas in Hegranes (Catlin et al. 2016, 2017a, 2017b).

The brief work illustrated both the difficulties involved in and the potential value of rapid coring assessments of abandoned regions (see also Zoëga et al. 2017 for coring reconnaissance of abandoned marginal farms). Accessing and working in marginal regions can be difficult, logistically complicated, and time consuming. Short and episodic occupations at farms can be difficult to assess or date without large excavation campaigns. Landslides and significant erosion have buried or completely removed parts and phases of occupation at sites. In at least one case, an entire site may have been erased by changes in the river. At the same time, even limited coring reconnaissance provided significant and valuable information about the settlement and abandonment histories that advances our knowledge of these marginal areas and their relationship to neighboring regions.

Víðidalur: Landscape and History

Víðidalur, an isolated valley in Skagafjörður, North Iceland, shares numerous characteristics with abandoned valleys elsewhere in Iceland (Figure 1). Víðidalur is less than one kilometer wide at the valley bottom, with patches of green fields above the meandering floodplain of the river Víðidalsá, which joins Gönguskarðsá in Hryggjadalur to the north and flows into Skagafjörður just north of Sauðárkrókur. The

valley is nearly 15 km from north to south, while the previously inhabited, northern portion is about 5.3 km long, starting at the eastern end of Litla-Vatnsskarð and stretching north to Kambur and the southern end of Hryggjadalur. The highest part of the valley bottom, at its distant southern end, is about 480m above sea level, but the deserted farms are all located below about 300m, dropping to about 250m in the north *(*Figure 2). Víðidalur's previously inhabited portion is therefore not technically considered a highland valley, which is usually defined by elevations higher than 400m (see e.g. Thomson 2003:135).

Three farms are historically documented within Víðidalur itself (Þúfnavellir, Helgastaðir, and Þverá), while three additional farms to the north and south are often included in assessments of the Víðidalur landscape (Móbergssel in Litla-Vatnsskarð in Blönduósbær, and Gvendarstaðir and Hryggir in Hryggjadalur) (e.g. Jónsson 1924-1927). There are also four place-names in Víðidalur that have sometimes been described as farms but are not historically documented: Atlastaðir, Hrafnagil, Svartagil, and Rauðagil.

The area has been subject to significant flooding, landslides, and erosion over the centuries. The hills that line the valley to the east and west are wrinkled with gullies carved by rainwater and the action of melting snow and ice; a great pile of scree lies at the base of each channel, testament to violent rockfalls (Figure 3). The area can be warm and beautiful in the summer, but in the winter is often under thick snow for many months, making access difficult and doubtless contributing avalanches to the roster of environmental catastrophes.

Víðidalur may have been part of the original land claim of Sæmundur, whose claim included the land between Staðará and Gönguskarðsá rivers to Vatnsskarð (Ari

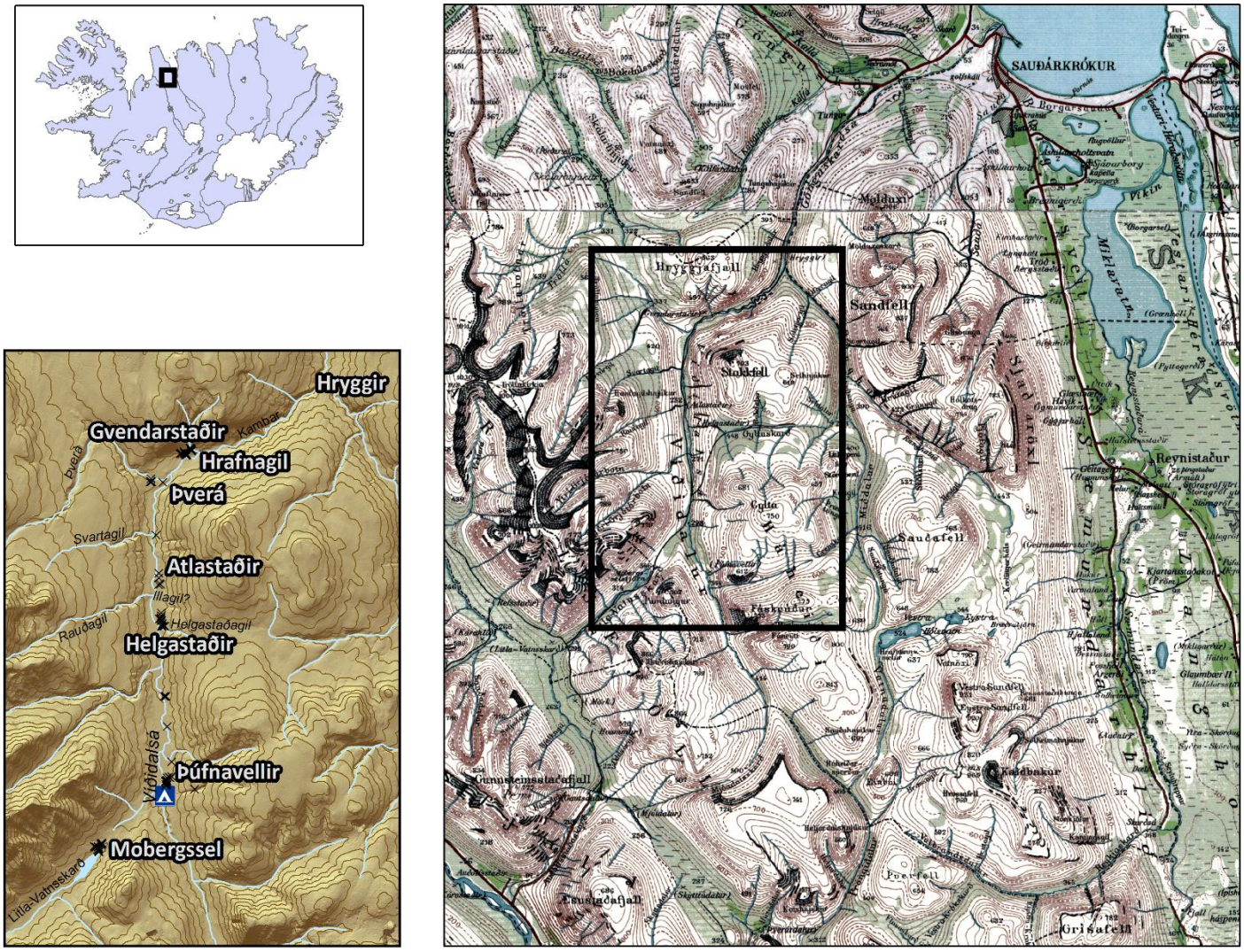

Figure 2. Víðidalur in Skagafjörður and environs, with farms surveyed in 2014.

Figure 3. Eroded valley bottom and side valley (Grjótárbotn) with scree and outwash plane, between Þúfnavellir and Helgastaðir.

Þorgilsson and Jakob Benediktsson 1968:228; Hermann Pálsson and Edwards 2007:88; Margeir Jónsson 1924-1927:318). The valley was part of the old mountain road between Húnavatnssýsla and Skagafjörður, open only in summer (Gísli Konráðsson 1954:54).

The highland region that includes Víðidalur is known as Staðarfjöll (the mountains of Reynistaður) and, in more recent times, was owned by Reynistaðurklaustur who used it as grazing land for many centuries. It is not clear when this association started, though it was certainly after A.D. 1295, when the cloister was established. It is not certain whether the earliest farms in Víðidalur would have been *hjáleigur* (subfarms) from Reynistaður before the valley was abandoned; they may have been independent farms, dependent farms associated with lowland properties, or under the control of the bishopric at Hólar, which was founded in A.D. 1106.

Oral histories from the 19th and early 20th centuries say that Víðidalur was abandoned during the Black Death in Iceland, during one of the plagues that devastated the countryside at the beginning and end of the 15th century (Gísli Konráðsson 1954:54; Hallgrím Jónasson 1946:116). In A.D. 1446 an inventory of the farms owned by Reynistaður lists Hryggir ("*riggiom*", p. 701), but none of the farms within Víðidalur proper are mentioned (DI IV 1897:700-702), leading to the assumption that they were not inhabited at the time, though it also possible that they were simply not then under the control of Reynistaður. In A.D. 1525, Hryggir, along with all of Víðidalur, is listed as deserted monastery farms ("*Jtem eydijarder. hrygger med ollum vididal*") (DI IX 1909-1913:321; Hjalti Pálsson 2001:165; Margeir Jónsson 1924-1927:318). A letter written by Björn Jónsson in A.D. 1654 mentions Þúfnavellir, Þverá, Helgastaðir, and Gvendarstaðir by name for the first time, describing them as abandoned farms on Reynistaður land ("*eijde Jarder er liggia a Vijdedal*") (Ögmundur Helgason 1969:200-202). There are some suggestions that a church, perhaps a parish church, was located at Helgastaðir in Víðidalur; if a church was located here, at least some of the farms are likely to have been independent, in which case the monastery probably acquired the area sometime after desertion and prior to the 1525 register (see the discussion below for more about a possible church in Víðidalur).

The second historically documented phase of settlement occurred in the 17th through 19th centuries. The Járðabók Árni Magnússonar states that Helgastaðir and Þúfnavellir were inhabited late in the 17th century, and mentions Gvendarstaðir and Þverá but does not include a settlement history (Árni Magnússon and Vídalín 1930:73-74). The late 18th and 19th centuries also saw resettlement of a few places near the valley, including Gvendarstaðir, Hryggir, and Móbergssel. These more recent settlements are known to have been *hjáleiga* of Reynistaður, and of Móberg in Langidalur in the case of Móbergssel. During this time Víðidalur was also being used as *selland* (shieling or dairying land) for Reynistaður. Several place-names at the end of Gyltuskarð, one of the passes that enters Víðidalur, reference shielings (Staðarsel in Seldalur under Selhnjúkur), and there are other shielings, *beitarhús* (grazing barns) and various smaller structures scattered through the surrounding valleys that would have supported dairying and summer grazing for Reynistaður and other farms of western Skagafjörður.

More recently, the region has been used as *afrétt* (common summer pasture) for several *hreppar* (agricultural communes) in Skagafjörður. Until the 20th century it was not technically common land, as the area was still owned and extensively used by Reynistaður; other farmers had to pay lamb-toll to Reynistaður for access (Gísli Konráðsson 1954:52-53). In A.D. 1899, a group of four *hreppar* in western Skagafjörður purchased most of the land from the farmer at Reynistaður (Margeir Jónsson 1924-1927:299-300), after the *hjáleigur* at Gvendarstaðir had been finally abandoned the previous year, and it continues to serve as *afrétt* land with tolls now paid to the commune. Livestock pastured here are primarily sheep and horses, but has also included cows at shielings, and perhaps pigs and goats in the earliest years after the initial settlement of Iceland.

The landscape and abandoned farms of Víðidalur have most recently been surveyed by Hjalti Pálsson for the *Byggðasaga Skagfirðinga* (Hjalti Pálsson 2001). Margeir Jónsson (1924-1927; 1925-1926) had previously surveyed the region in the early 20th century. Their observations, along with other sources, are summarized below for individual farms.

Survey Methods

Today, Víðidalur can be reached by foot or on horseback, or in dry weather by a good 4-wheel drive vehicle. Hiking west from Staðarrétt along the *afrétturvegur* (round-up road) and then north through Víðidalur and Hryggjadalur to Skarðarétt takes a full day. For our coring survey, which took place on 22 and 23 July 2014, we began to the south at Gautsdalur in Laxárdalur and walked north through Litla-Vatnsskarð, spending the night at the cabin at Þúfnavellir. We surveyed the locations of Þúfnavellir, Helgastaðir, Atlastaðir, Hrafnagil, and Þverá in Víðidalur proper, as well as Móbergssel and Gvendarstaðir; we were on the wrong side of the river for Rauðagil and Svartagil and we did not stop at Hryggir.

Our survey was intended to rapidly assess preservation of cultural materials and the extent of environmental degradation in Víðidalur to evaluate the feasibility of a larger project in the region. We therefore did not perform a complete survey of all structural remains, but rather employed only opportunistic coring and limited photography. The results of this short reconnaissance are therefore incomplete and fragmentary. We did find, however, that even this brief assessment significantly added to what was known about the occupational and environmental history of the valley. One of the main conclusions of the reconnaissance is that even very limited and rapid coring surveys can be highly valuable.

Coring is a rapid and effective strategy for assessing the nature and preservation of archaeological remains and sediment deposits in Iceland. The core used was a JMC Backsaver handle with an 18-inch (40 cm) large diameter sampling tube (diameter 1.2 inches, about 3 cm). This type of core can extend to penetrate up to three full barrels into the soil, for a total depth of about 120 centimeters; only two cores in our survey contained deeper sediments than the fully extended core.

The coring and recording methods used in Víðidalur closely matched those developed by the Skagafjörður Archaeological Settlement Survey and its successor the Skagafjörður Church and Settlement Survey in the regions of Langholt and Hegranes (Bolender, et al. 2017; Catlin, et al. 2017; Steinberg, et al. 2016). The SASS/SCASS coring protocols were designed to find buried farms that have been occupied for a significant period of time, and to produce metrics describing the size of the farmstead (the concentration of buildings and midden that make up the core of the farm) at different periods based on tephrochronological markers. However, it is clear based on the systematic surveys conducted in the lowland regions of Langholt and Hegranes that the methods will underestimate the size of farmsteads with short periods of occupation. There are similar problems when assessing and comparing non-farm sites such as smaller cottages, shielings, and special activity areas that may not see the same range of activities that are present at regular farms or may have only seasonal use. Farmstead sizes calculated for Víðidalur are therefore unlikely to be comparable to those calculated for long-term farms on Langholt, Hegranes, or other lowland regions. The FLASH project is currently developing methods to assess short farm occupations and special activity areas that will likely be more applicable to Víðidalur; this work is ongoing (Catlin, et al. 2017).

For the coring in Víðidalur, all 'farmstead' deposits (turf, midden, and floor; see below) were recorded as well as any anthropogenic inclusions and tephra layers found in the cores. Many farmstead areas had limited or patchy 'farmstead' deposits, which can be contrasted with lowland farm mounds that tend to have substantial continuous cultural deposits. Gravel, sand, and peaty bog growth are also apparent in cores and can help to distinguish between flooding events, standing water,

historical mires, and the drier windblown sediments that characterize hayfields and pasture.

Due to the short time available, the Víðidalur survey was more targeted and judgmental than employed in the lowland surveys of Langholt and Hegranes, aiming to quickly locate and date the farmsteads and to roughly describe changes to the local environment. Locations of cores were recorded with a Trimble Juno and differentially corrected in post-processing.

'Farmstead' deposits

Small and infrequent anthropogenic inclusions in soils – such as ash, charcoal, and bone – are common near farmsteads and other activity areas. These are good indicators that an activity area or domestic site may be near, but we do not count infrequent inclusions as contributing to the areal extent of the farmstead. Higher concentrations of anthropogenic inclusions, midden deposits, turf, dense cultural layers, and activity surfaces are included. For the purposes of the survey, farmstead deposits include the following.

Figure 5. Core 150604 from Keflavík on Hegranes showing a midden deposit.

Figure 4. Core 151006 from Ás on Hegranes showing low density cultural deposit (LDC). *Note: the accompanying photos were taken at large, major farmsteads on Hegranes, in lowland Skagafjörður; the layers we observed in Víðidalur were often thinner and less clear.*

Low density cultural layers – defined by anthropogenic inclusions amounting to 2-50% of the soil matrix (Figure 5). These are assumed to result from indistinct and extensive deposition events that suggest regular activity typical of farmsteads or other farm production areas.

Middens – defined by anthropogenic inclusions amounting to more than 50% of the soil matrix that suggest the regular deposition of household or production area waste (Figure 4). Middens are the result of distinct and intensive deposition events associated with purposeful disposal.

Turf deposits – any evidence for a turf structure, including collapsed or levelled turf, are considered evidence of farm buildings (Figure 6). The organic content and percentage of soil in turf deposits is variable.

Dense cultural layers and floors – characterized by dense, compacted, and/or greasy cultural layers indicative of floors, extramural activity areas, or areas

Figure 6. Core 150033 from Keflavík on Hegranes showing a turf deposit.

of intense deposition of organic materials. These deposits are often thin but are very distinct.

Geology and tephra

The geology of the region is characterized by Upper Tertiary basic and intermediate extrusive basalts (Feuillet, et al. 2012) overlain by morainic glacial till. The area was deglaciated by 6100 yr cal. BP and then subject to uplift (Cossart, et al. 2014). The natural stratigraphy of the surface of the region consists of a rapidly formed sediment and soil with intermixed tephra layers, along with gravel layers and lenses of glacial origin. The soil is a brown andosol that derives from aeolian sediments of volcanic origin, but is not the direct product of eruptions (Arnalds 2004, 2008; Arnalds, et al. 1995). The andosol is non-cohesive but has an extremely high water-retention capacity (Arnalds 2008).

Survey chronology and the Skagafjörður tephra sequence

The survey relies heavily on datable tephra layers preserved in the soil stratigraphy. Skagafjörður has an early tephra sequence that allows for a fine-grained chronology of the changes in early settlement patterns (Figure 7) (Gudrún Larsen, et al. 2002). While tephra deposition can vary over small distances (Davies, et al. 2010) the basic tephra sequence is found throughout Skagafjörður, including Víðidalur, and allows for a common dating system among farms and farmsteads, including sheet middens and relict field systems (Sigurður Þórarinsson 1977). The dates of the historic eruptions roughly coincide with several major historical events including the original settlement of the island about A.D. 870, the end of mass migration to the island in 930, the conversion to Christianity in 1000, the establishment of the tithe law in 1097, the incorporation of Iceland into the Norwegian state in 1262, and the beginnings of the Little Ice Age in 1300.

Historic tephras:

- Hekla A.D. 1766. A black tephra often observed in the upper 10-20 cm of the soil sequence.
- Hekla A.D. 1300. A gray-blue to dark black tephra (Gudrún Larsen 1984; Gudrún Larsen, et al. 1999; Gudrún Larsen, et al. 2002; Gudrún Larsen, et al. 2001; Guðrún Sveinbjarnardóttir 1992).
- Hekla A.D. 1104 (H1). A white or yellowish-white tephra that is the most consistent in Skagafjörður (J. Eiriksson, et al. 2000; Sigurður Þórarinsson 1967) and is readily identifiable in both natural and cultural stratigraphic sequences.

Landnám sequence tephras:

- Vj~1000 tephra. A blue to bluish-black layer whose source has not been determined but is likely to be either from Grímsvötn or Veiðivötn eruption dated to approximately A.D. 1000 (Boygle 1999; Guðmundur Ólafsson 1985; Magnús Á. Sigurgeirsson 1998; Wastegard, et al. 2003).
- The mid-10th century layer (~950). This blue-green layer is currently an un-sourced and undated layer that is found between the LNL and Vj~1000. There

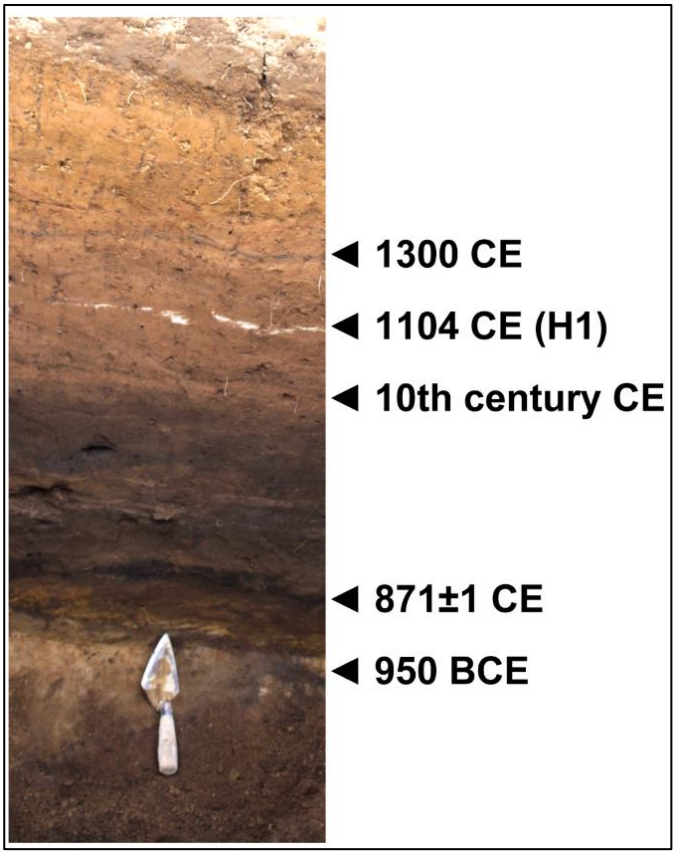

Figure 7. Skagafjörður tephra sequence, shown in a representative profile section.

are several potential candidates for this layer, including the large A.D. 934 ±2 eruption of Eldgjá (Fei and Zhou 2006; Hammer, et al. 1980; T. Thordarson, et al. 2001) or an A.D. 933 ±6 green tephra layer identified in the Lake Mývatn area from Veiðivötn, termed V-Sv~950 (Magnús Á. Sigurgeirsson, et al. 2013). Because this layer has not yet been dated it is referred to as the ~950 layer. We did not observe any 950 tephra in Víðidalur.

- "*Landnám*" or "settlement" layer (LNL). The layer is so-named for its association with the earliest settlements in Iceland (Dugmore and Newton 2012) and is dated to A.D. 871 ±2, (Grönvold, et al. 1995; Zielinski, et al. 1997 [A.D. 877 ±4]). The tephra originates from the Vatnaöldur fissure swarm associated with the Torfajökull and Bárðarbunga volcanos (Dugmore and Newton 2012; Gudrún Larsen 1984). In general, this layer consists of two distinct tephras–an olive-green tephra overlying a white tephra. However, in Skagafjörður, only the green portion is present (cf. Margrét Hallsdóttir 1987).
- Black tephra before the LNL. The earliest tephra in this sequence is a dark black layer probably from the Katla volcano, but is not well dated (Wastegard, et al. 2003). We did not observe this tephra in Víðidalur.
- 'LNS' signifies the *landnám* sequence, a series of tephra and other sediment layers that are often found in association with the LNL and Katla. This distinctive dark-colored sequence is sometimes observed in the absence of accompanying tephra, and in such cases is also assigned a date of ca. 870. The non-tephra elements of the LNS have been attributed to the widespread effects of human activity, especially deforestation.

Prehistoric and other tephras:

- Hekla 3 (H3). A thick (generally 2-3 cm), coarse grained, white or whitish-yellow tephra dating to about 950 B.C. (Dugmore, et al. 1995).
- Hekla 4 (H4). A thick (generally 1-3 cm), finer grained, white or yellowish-white tephra dating to about 2300 B.C. (J. Eiriksson, et al. 2000).
- Unknown tephras: Tephra that could not be identified were recorded as 'unknown' in the field. These are often dark tephras that do not obviously correspond to one of the known layers in the sequence. Descriptions, especially color, are recorded for unknown layers.

Deserted Farms in Víðidalur: History and Survey Results

In the brief two-day reconnaissance seven farms and place-names were surveyed at varying levels of intensity: Móbergssel, Þúfnavellir, Helgastaðir, Atlastaðir, Þvéra, Hrafnagil, and Gvendarstaðir (Figure 8). Two additional placenames on the west side of Víðidalur, Rauðagil and Svártagil, were not investigated due to time limitations. The following section describes known historical information about each site and the results of our survey. Occupational history and coring data for each farm is summarized in Tables 1 and 2.

Móbergssel

Móbergssel is located to the north and east of Móbergsselstjörn, a lake in Litla-Vatnsskarð, the region that extends to the southwest from Viðiðalur. Móbergssel is on the border between Húnavatnssýsla and Skagafjarðarsýsla, in Engihliðarhreppur, but Jónsson includes it in the *örnefnaskrá* (place-name register) for Staðarafrétt (Margeir Jónsson n.d.). Litla-Vatnsskarð was part of the old road between Húnavatnssýsla and Skagafjörður that led through Víðidalur, perhaps back to the settlement period, and continued to be regularly traveled until Route 1 was built to the south through Stóra-Vatnsskarð. When it was inhabited, Móbergssel was a regular stopping point for travelers (Margeir Jónsson 1924-1927:317; Margeir Jónsson 1925-1926).

According to the histories, Móbergssel seems to have been variously a *hjáleigur*, *sel* (shieling), and *stekkur* (weaning pen for lambs and ewes), perhaps cycling through these uses several times over the centuries. In earlier centuries, Móbergssel was probably a shieling associated with Móberg, a farm in Langidalur in Blönduósbær, two valleys to the west of Víðidalur, where the ring road now runs (Margeir Jónsson 1925-1926:37).

The Jarðabók Árna Magnússonar (JÁM) describes Móbergskot in 1713, likely referring to this site, as an environmentally poor abandoned *hjáleigur* from Móberg, at that time only a *stekkur*, and lists no knowledge of the farm's previous value (Árni Magnússon and Vídalín 1926:401).

Table 2. Summary of occupational history and sediment depth of Víðidalur derived from coring survey and historical documents.

Farm	Total Cores	Average depth to gravel	Cultural date from cores	Cultural deposit type	Historical date
Móbergssel	26	30.7	pre-1766 post-1766	LDC midden/turf	Pre-18th c, 19th c
Þúfnavellir	25	32.1	pre-1300 post-1104	LDC turf	Pre-17th c, late 17th c
Helgastaðir	19	47.8	pre-1104 pre-1300	peat ash speck turf	Pre-17th c, late 17th c
Atlastaðir	6	29.3	None	N/A	unknown
Þverá	11	46+	pre-1104 post-1104	floor/midden/LDC/turf LDC/turf	Pre-17th c
Gvendarstaðir	33	36.2+	pre-1104 post-1766	floor/LDC/turf midden/LDC/turf	Pre-17th c, late 18-19th c
Total	**120**	**35.2***			

*average of all cores taken in Víðidalur region during the survey.
+Note that few cores were carried out at Þverá and Gvendarstaðir in areas without cultural deposits, so this number is not environmentally representative.

Table 1. Summary of presence/absence of tephra in Víðidalur derived from coring data.

Farm	Cores with 1104		Cores with 1766		Cores with 1300		Cores with H3 or H4		Cores with 1000 and/or LNL/LNS	
Móbergssel	0	0.0%	6	23.1%	1	3.8%	1	3.8%	0	0.0%
Þúfnavellir	3	12.0%	7	28.0%	4	16.0%	0	0.0%	0	0.0%
Helgastaðir	4	21.1%	9	47.4%	4	21.1%	2	10.5%	2	10.5%
Atlastaðir	0	0.0%	4	66.7%	0	0.0%	0	0.0%	0	0.0%
Þverá	5	45.5%	1	9.1%	1	9.1%	5	45.5%	3	27.3%
Gvendarstaðir	7	21.2%	5	15.2%	1	3.0%	6	18.2%	1	3.0%
Total	**19**	**15.8%**	**32**	**26.7%**	**11**	**9.2%**	**14**	**11.7%**	**6**	**5.0%**

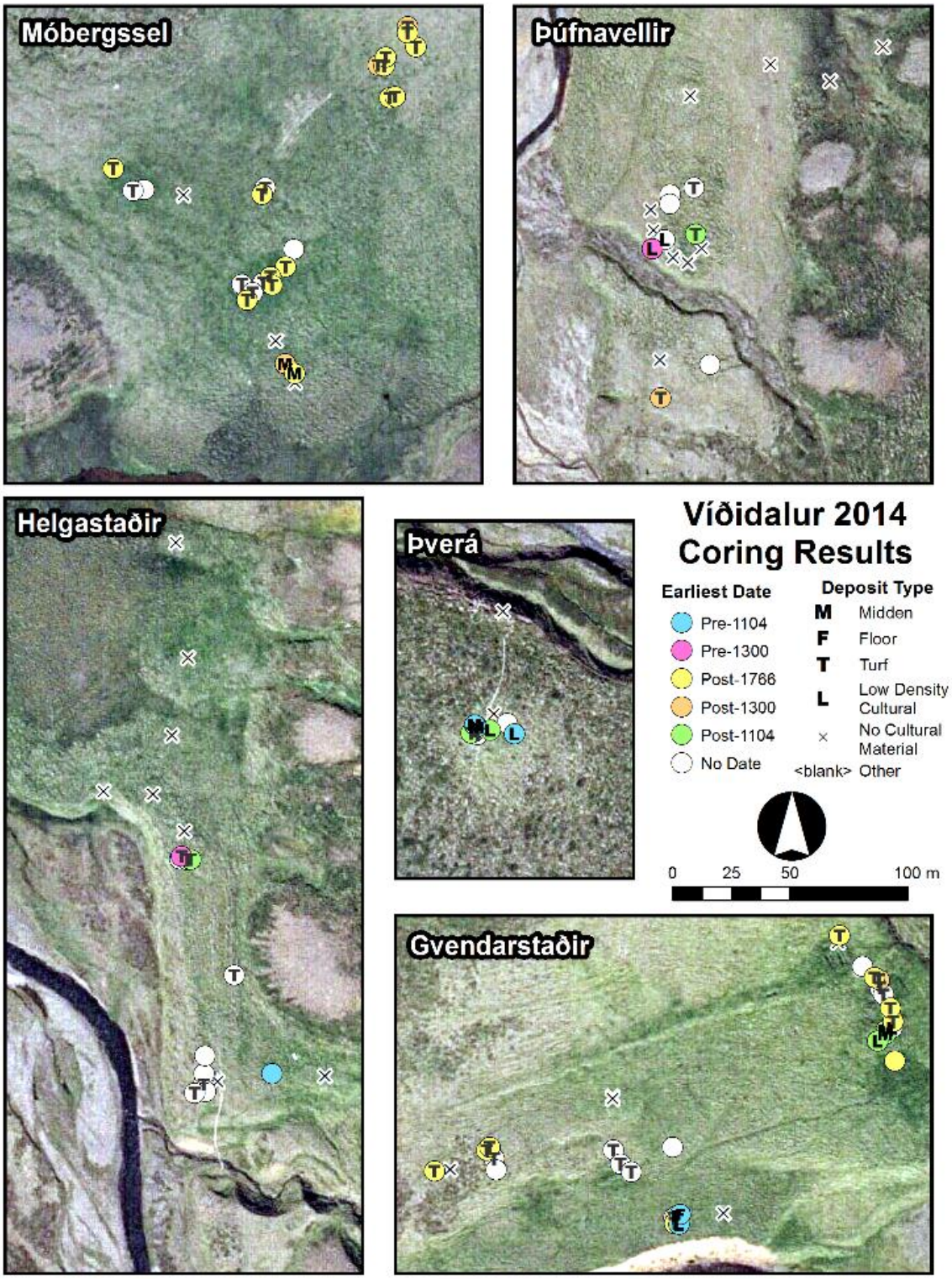

Figure 8. Coring locations, deposit types and tephra derived dates at surveyed farms.

Throughout most of the 19th century, Móbergssel was again inhabited as a *hjáleiga* of Móberg. Stories tell that one could catch trout in the well at Móbergssel, which was connected to the lake via an underground tunnel, and today a small channel flows from the lake at its eastern end (Jón Torfason 2007:154; Páll Sigurðsson 2012:108) (Figure 9). Census data shows at least 8 different families living here between 1835 and 1890, between 2-8 individuals at any given time (Þjóðskjalasafn Íslands 2017), but Hjördís Gísladóttir (1989:294-5) suggests there may have been more than 16 different farmers here after it was built around 1830. The Jarðatal Johnsen (Johnsen 1847:242) records Móbergssel as a *hjáleiga* with a single tenant, and includes its value with the assessment of Móberg. The Ný Jarðabók (anonymous 1861:91) lists Móbergssel separately with a value of 5.1 hundreds (and a previous value of 10 hundreds), comparable to other small *hjáleigur* in Skagafjörður. The last family to live at Móbergssel was Þóra Jónssdóttir and Hannes Kristjánsson with their four children, the youngest of whom went on to become the poet and singer known as Sveinn frá Elivogar. After leaving Móbergssel in 1895, this family was also the last to live at Gvendarstaðir, and later lived at Hryggir in Hryggjadalur (Kolka 1950:99).

Survey Results

Today, several structures are visible on the surface and in aerial photographs. Margeir Jónsson's survey of the farm in the early 1920s revealed little evidence of a *túngarður* (homefield wall), but he did observe four house ruins and the remains of one two-door *fjárhús* (sheep shed). He suggests that the house ruins could be in part the remains of the old shieling (Margeir Jónsson 1925-1926). In 2014, we observed at least four turf structures and an area of domestic refuse to the northeast of the lake.

Figure 9. View of stream and lake at Móbergssel.

The coring survey showed evidence for habitation or use of the site primarily after ca. 1766 (Figure 8, Table 1). Twelve cores with structural turf contained the 1766 layer, while three contained the 1300, with no evidence of earlier construction. Midden material was present in several cores in a cryoturbated area south of a visible structure: the 1766 layer was observed in situ below the midden. However, in one core the 1766 layer occurred in situ at the transition between midden (above the tephra) and low density cultural deposits (numerous inclusions of charcoal and peat ash in a matrix of primarily aeolian sediment, below the tephra). Therefore, we conclude that some human activity took place at Móbergssel prior to 1766 (perhaps limited to shieling activity), with intensified use and more permanent habitation after the mid-18th century and into the 19th.

The local environment at Móbergssel, like much of Víðidalur, appears to have experienced significant changes. The average depth of soil to bedrock was only 30cm, and little tephra was observed prior to 1766 (Table 2). Numerous cores (6 out of a total 26 at Móbergssel) in non-structural locations contained a small amount of sediment accumulation with the 1766 tephra layer in situ, directly atop impenetrable bedrock or gravel: the average soil depth below 1766 was 6.5cm, compared to 10cm of deposition after 1766, excluding cores with midden layers. The only other historically occurring tephra observed at the site was a single instance of the 1300, and what may have been the 1320, layer in one core underneath significant midden deposits. The prehistoric H3 and H4 layers were also observed in only one core, in this case within gleyed deposits and without later tephras. The gley and midden deposits may have served to preserve the tephra from succumbing to what appears to be the cataclysmic erosion that otherwise affected the site. Soil

Figure 10. View of Þúfnavellir south of the stream. The turf wall is marked above the visible wall line running across the picture. The hiking cabin is visible in the background.

deposits at the site may therefore have been largely undisturbed after 1766, in contrast to more volatile periods prior to the mid-18th century that either removed or buried earlier layers.

It is likely that Móbergssel was either eroded down to bedrock, or buried by significant rock fall, prior to 1766. Earlier habitation that may have existed here, including any clear evidence of a medieval farm or shieling, is therefore either no longer present (because it has eroded away) or inaccessible to coring prospection (because it is buried beneath gravel). Re-habitation of the site appears to have occurred as the area recovered through the 18th century, once again supporting soil depth sufficient to maintain vegetation cover for fodder and forage.

Þúfnavellir

Þúfnavellir is located over a short ridge 1.5km east of Móbergssel, just to the north of the modern hiking cabin (constructed in 1995 by Ferðfelags Skagfirðinga). The first mention of Þúfnavellir by name is in 1654, when it was described in a letter as abandoned (Ögmundur Helgason 1969). The JÁM (73-74) states that the farm was inhabited around 1670 by a farmer named Ólafur Þórlaksson, who later moved to Helgastaðir before his death in 1672. A survey of abandoned farms from 1777 mentions Þúfnavellir as a site that could potentially be resettled (Ögmundur Helgason 1969:207), but by 1842 the farm was still (or again) abandoned, and the land had many spots of '*flag*' (bare eroded ground) (Gísli Konráðsson 1954:53).

Margeir Jónsson observed the unclear ruins of two farms here in the 1920s, which he called Ytri- and Syðri-Þúfnavellir, perhaps five or more structures, both north and south of what is now a dry streambed running through the site (1924-1927:312). Hjalti Pálsson observed a few ruins that appeared to be old animal pens north of the channel, with the *túngarður* visible only to the south (Hjalti Pálsson 2001:167).

Survey Results

During our visit in 2014, we were able to see a portion of the wall both north and south of the channel, visible as badly degraded turf atop a rock foundation (Figure 10). Other structures are also badly degraded and the turf is often unclear. The stream appears to have formed after the abandonment of the farm, which would seem to contradict Margeir's assumption that the ruins to the north and south of the river comprised separate farms.

We targeted coring in and around the wall south of the gully, and near the unclear structures to the north (Figure 8, Table 1). Turf, where it was present in cores and could be dated, was constructed after A.D. 1104, and there is some inconclusive evidence for construction both before and after 1300. Small amounts of peat ash and charcoal, dated to before

1300, were observed in two cores north of the stream and west of the ruins. The average soil depth at Þúfnavellir was 32cm, most of it prior to A.D. 1766, which was the most commonly observed tephra (7 out of 25 cores) with an average depth of just 6 cm. The Hekla 1300 and Hekla 1104 layers were also observed in four and three places respectively. An unidentified dark tephra layer was also observed five times; its association with other tephra was inconsistent and no date can be suggested, though it seems to be early. Four cores in an east-west transect just to the north of the site showed very shallow, sandy soils in the floodplain, with wetter, deeper soils on the slope and what appeared to be dried mire farther up.

The coring survey showed evidence of habitation at Þúfnavellir between A.D. 1104 and 1300, with limited later activity. No sign of a 17th century settlement was observed, though some turf could not be dated and may have been later. The site has clearly been subject to major environmental changes, primarily after the medieval settlement. This includes flooding and other changes to the hydrology, the formation of a new and damaging stream, and subsequent drying of the stream along with drying out of nearby mires. It appears likely that the stream carved out its current location after the 17th century, and movement of the farmer north to Helgastaðir may even have been precipitated by this event, but additional work would be required to verify this.

Figure 11. View of valley bottom between Þúfanvellir and Helgastaðir. The recent landslide and scree slope in the background is common to the region. The eroded river cut shows a history of landslide activity.

Five cores were recorded during the walk from Þúfnavellir to Helgastaðir. Data from these cores show wet, deep soils, peat growth on top of sand, and shallow mud above gravel. Although no tephra was present, these cores serve as further indication of Víðidalur's dynamic environment: landslides and floods alternate with slower sediment deposition and the formation of peat mires (Figure 11). We did not observe the *nátthagi* (night pasture) that Margeir Jónsson described in this area (Margeir Jónsson 1924-1927:315).

Helgastaðir

Helgastaðir is about 2.5 km north of Þúfnavellir, where one of the many gullies along the eastern side of the valley flows into the Víðidalsá. The entire site is on the top of a cliffside that has been heavily eroded by the action of the Víðidalsá as it has meandered over the centuries. It is likely that the farmland above the river was at one point much larger than it now appears, as a large portion of the field and several buildings, including the main domestic structures, may have been undercut and fallen into the river. Most recent histories and maps describe Helgastaðir as located south of Illagil, the largest gully on this side of the valley (Margeir Jónsson 1924-1927:303; Margeir Jónsson n.d.; Páll Sigurðsson 2012:96). However, today, the largest gully is Helgastaðagil, which cuts through Helgastaðir along its south end, separating one of its sheephouses from the rest of the homefield (Margeir Jónsson 1924-1927:303; Margeir Jónsson n.d.:17). This gully has been here since at least 1842 (Gísli Konráðsson 1954:53). There is a faint remnant of a gully where Illagill is said to be located, on the east side of the river and south of Rauðagil, but it appears to have entirely filled with gravel over the last century and no longer delivers water into Víðidalsá.

The earliest mention of Helgastaðir, in a letter written in 1654, describes it as abandoned (Ögmundur Helgason 1969:201). According to the JÁM (Árni Magnússon and Vídalín 1930:73-74), Helgastaðir was inhabited 40 years prior to the survey, or ca. 1670, likely by Ólafur Þórlaksson after he left Þúfnavellir. At the time the farm

Figure 12. View of Helgastaðir looking west across the valley with area where the farm has been eroded by the meandering river marked.

had a land tithe value of 50 or 60 ells of vaðmal, which is well within the range of active farms in the lowlands. As at Þúfnavellir, the 1777 survey of abandoned farms describes Helgastaðir as a site that could be resettled (Ögmundur Helgason 1969:207), but it was abandoned again (or still) by 1842 (Gísli Konráðsson 1954) and there are no other references to its habitation. The site has been used over the last few centuries as a meeting place during the spring and fall round-ups (Margeir Jónsson 1924-1927:303).

Several histories state that Helgastaðir was a church farm, and Margeir Jónsson suggests it could have served a parish of between 14 and 30 farms spread throughout Staðarfjöllum (1924-1927:310,316). It is also likely that a church in Víðidalur would have been a much smaller *háfkirkja* (half-church) or *bænhús* (prayerhouse) with burial rights – burial rights being necessary due to the difficulty of travel to Reynistaður for burial in winter (Ögmundur Helgason 1969:218). The name Helga- means 'holy', which would seem to support the presence of church (though it is also possible the site was named for a man named Helgi, or acquired the place-name when rumors about the church began to circulate). The 1842 priests' assessment mentions that the deserted farm previously had a church (Gísli Konráðsson 1954). Several finds were retrieved near Helgastaðir by farmers in search of livestock between ca. 1910-1940. The finds included a dagger, a knife, and a bronze button, as well as human bones observed eroding from the cliffside, but all finds have since been lost (Hjalti Pálsson 2001:168-169; Margeir Jónsson 1924-1927:310-311). Grave goods are far more likely to be associated with pagan-era burials rather than a Christian cemetery, so these purported finds have little relevance to the question of whether there was a Christian church at the farm – though it is of course fascinating that there may have been an earlier pagan burial at the site. No bones were visible in or around the cliffside during our visit. The Jarðabók, on the other hand, states that the Víðidalur church was at Gvendarstaðir (see below for further discussion) (Árni Magnússon and Vídalín 1930:73-74). Given the history of recorded abandonment in Víðidalur, any church here must have fallen out of use prior to 1525, if not before 1446.

Survey Results

Margeir Jónsson observed several clear structures at Helgastaðir in the early 1920s, including a homefield, a house approximately 13m long, a churchyard, and two smaller ruins (Margeir Jónsson 1924-1927). Hjalti Pálsson mapped a roughly similar set of structures atop the cliff at Helgastaðir, though he was less certain than Margeir about the church (Hjalti Pálsson 2001:169).

Our observations roughly correspond with their assessments, though we did not observe a churchyard on the surface, nor any bones or grave fill in our rapid observation of the cliff face (Figure 8, Table 1). We targeted cores in and near indistinct turf structures near the north and south ends of the *túngarður* along the top of the eroded cliff. The structure at the south end has been identified by previous surveys as the farmhouse, while other structures are described as animal pens. None of the structures we observed or cored were obviously churchlike, nor did we see a round churchyard wall. The turf we observed here in cores was highly degraded and often difficult to distinguish from dried natural peat deposits or loose, rooty soil. When the turf could be dated, it was usually after 1104 but prior to 1300 and long before 1766, though more detailed work would be needed to confirm this date range. No domestic refuse was observed, which would have provided evidence of long-term habitation, aside from a single speck of peat ash below 1104 near the southeast corner of the field, above the gully. It is possible that any such evidence may have been removed by erosion, or the site may have served primarily for short-term or seasonal use (perhaps as a shieling), or we may simply not have searched in the right place (Figure 12). We also observed no evidence of habitation during the late 17th century.

The average depth of soil to gravel at Helgastaðir was 48cm, suggesting significant soil accumulation here, comparable to some lowland regions (Catlin, et al. 2017). The most common tephra layer was the 1766 tephra, observed in 9 out of 20 cores at an average

depth of 11 cm. This would suggest that significant soil accumulation occurred prior to 1766. However, among cores in and near the homefield, earlier tephra layers were observed primarily beneath or in very close proximity to turf deposits (this applies to 1300 layers observed in 2 cores in proximity to or above turf deposits, and 1104 layers below turf observed in 2 cores, and one observation each of the landnám and H3 layers below turf). The turf walls may have acted to preserve earlier tephra layers as well as tephra that fell shortly after abandonment. This is consistent with habitation after 1104, ending shortly before 1300, followed by episodes of significant erosion as well as deposition (perhaps flooding) between 1300 and 1766. A sediment profile that was cleared near the top of the cliff face contained a 10-cm gravel deposit between thicker deposits of aeolian and sandy material (Figure 13). The *landnám* layer was beneath the gravel, and would have been impenetrable to our core. No later tephra layers appeared in the profile to suggest whether the gravel event (flood or perhaps landslide) occurred before, during, or after the site was inhabited.

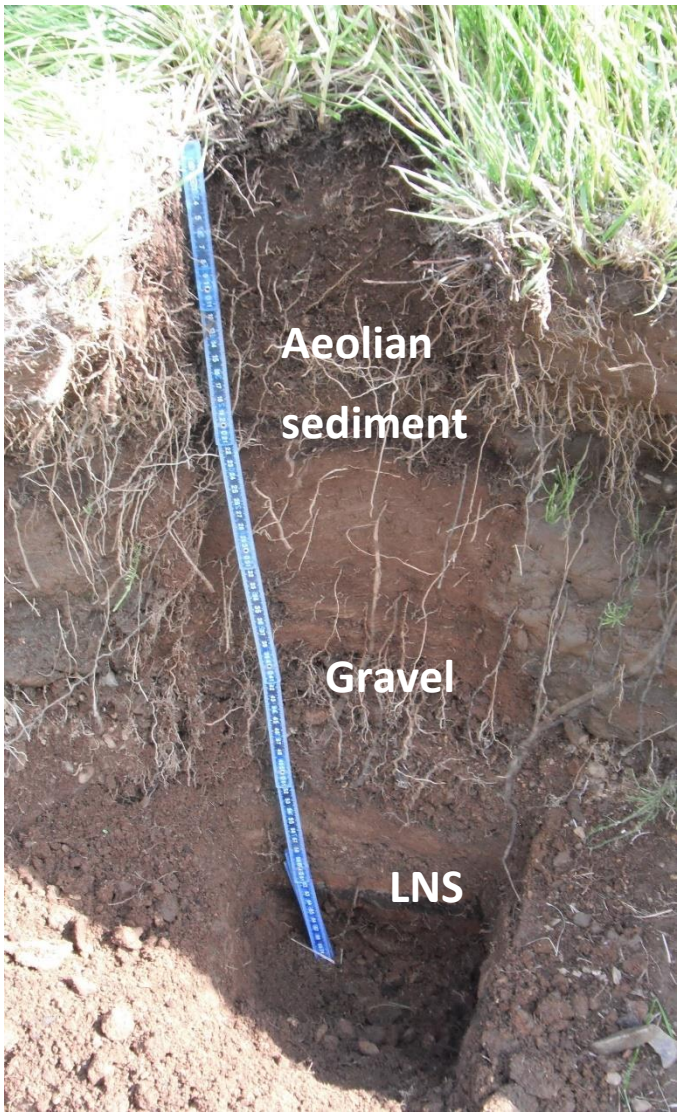

Figure 13. Cleaned profile of erosion front at the edge of Helgastaðir.

Atlastaðir

The location and existence of Atlastaðir is somewhat uncertain. The farm is not mentioned in any historical written sources. Oral accounts from the early 20th century, including several accounts from foxhunters who remember seeing walls, suggest it was north of Helgastaðir on the north side of Illagil (Hjalti Pálsson 2001:169-70; Ögmundur Helgason 1969:215). Illagil should be just north of Helgastaðir and a bit south of the point where Rauðagil comes in from the west to meet Viðidalsá, but as mentioned above, Illagil appears have silted up and become blocked by landslides relatively recently, and is now obscure.

Survey results

The suggested location of the farm is on the low floodplain of the Viðidalsá about 700m north of Helgastaðir (Figure 2). Unlike the locations of other abandoned farms in Víðidalur, there is no intermediate grassy area between the low, flat, boggy floodplain and the steep, cryoturbated slopes of the valley edge. The proposed farm location is on the valley bottom. In the five cores recorded at the site (plus one additional core about 750m further north), only the 1766 tephra layer was observed (Table 2). The average tephra depth was 19cm out of an average depth to gravel of only 29cm. The sediments were sandy, with lenses of sand and gravel. The area has been repeatedly flooded and likely also subjected to landslides both before and after 1766, and at some time prior to that date, earlier sediments were either removed or rendered inaccessible by gravel. No cultural material was observed in any cores. We cannot rule out the existence of an inhabited place here called Atlastaðir, but if any settlement or other structures were located here in the past, they were likely completely eliminated sometime before 1766 by the meandering river.

It is also possible that there was never a farm in this location. There is another abandoned farm called Atlastaðir in Laxardalur not far to the north (located west of Tindastoll at the south end of the Skagi peninsula), and the two farms could have been conflated in later stories. Furthermore, the silting of Illagil and relatively recent appearance of Helgastaðagil might have led later visitors to confuse the ruins of Hegrastaðir for those of a different farm, which they

called Atlastaðir. Historical descriptions of Atlastaðir may therefore be the result of observations of Helgastaðir applied to a place-name from a different valley.

Rauðagil and Svartagil

Rauðagil and Svartagil feed into Víðidalur from the west, across from Helgastaðir and Atlastaðir (Figure 2). Oral histories suggest there may have been settlement here, and both Hjalti Pálsson (2001:166-7) and Margeir Jónsson (1924-1927:313,316) observed unclear ruins: perhaps a small house or *rétt* (roundup pen) at Rauðagil and possible hay-yards at Svartagil. We did not survey this side of the valley in 2014, but from the east, the ends of both valleys appeared to be obscured by fallen rocks.

Hrafnagil

Hrafnagil is located at the north end of Víðidalur, about 2.8km north of Helgastaðir and across the river from Gvendarstaðir, past the point at which the river turns to the northeast (Figure 2). Like Atlastaðir, the place was not recorded until stories dating to the 20th century, and there is an abandoned farm to the north in Laxardalur that shares its name, shedding some doubt on its history as an inhabited place.

At the proposed location of Hrafngil, Hjalti Pálsson observed what may have been an old homefield, as well as a *beitarhús* and a few other small ruins, that may have belonged to either Gvendarstaðir or Reynistaður (2001:170). However, Jónsson (n.d.:17) suggested in the mid-20th century that any evidence of habitation here might long since have eroded into the river. When representatives from Ferðafélag Íslands visited prior to the publication of their 2012 Árbók, some ruins were accessible and visible (Páll Sigurðsson 2012:111).

Survey Results

The way to Hrafnagil from the south is partially barred by an eroded and treacherous scree slope. One of us (Bolender) worked their way over the scree and cored at several locations. The exact coring points were not recorded in the GPS, but no clear evidence of cultural material was observed on the surface or in the cores. The area is now primarily wetland, and soils were wet, rocky, and gleyed, with sedges growing. Three cores in the visibly drier, south side of the area also proved to be very wet and peaty, with no cultural material or tephra observed.

Seen from Gvendarstaðir across the river, Hrafnagil appears as a wet mire, with mounds that are the result of landslides from the mountains (Figure 14). The area bears further investigation, as we may have missed something in our rapid survey, and furthermore, Hrafnagil may have experienced significant environmental alteration over first decades of the 21st century. It is also possible that the site has only ever housed a *beitarhús* or other outbuildings, and the name has been confused with another farm. The three '-gil' place-names (Hrafnagil, Svartagil, and Rauðagil) could also be derived entirely from the names of their

Figure 14. Proposed location of Hrafnagil as viewed from across the valley at Gvendarstaðir. A smoother patch of green visible on the hillslope is roughly the size and shape of a homefield, but the area is very wet and may be a natural feature rather than the remnant of an old farm.

Figure 15. View of Þverá looking north up Hryggjadalur. The low, grassy mound just beyond the þúfur in the foreground and framed by the valley sides is a ruined turf building with a thin ashy floor.

associated gullies, though as Helgason notes, they do seem like reasonable places for settlements (1969:216).

Þverá

Þverá is located at the convergence of the Víðidalsá and Þverá rivers at the north end of Víðidalur, about 700m southeast of Hrafnagil and Gvendarstaðir. The area is now heathland, heavily cryoturbated and covered in moss and heather. The site commands views south to Þúfnavellir and northeast towards Hryggjadalur.

Þverá was first mentioned in 1654, as one of several abandoned farms in Reynistaður land (Ögmundur Helgason 1969:201). JÁM mentions Þverá by name, but only to state that nothing is known about it (Árni Magnússon and Vídalín 1930:73-74), and in 1842 it was described as an abandoned but rather large farm (‘*stór jörð’, ‘mikla tún’*), with the ruins of *nátthagi* in the homefield, which was then used a place for marking sheep’s ears (Gísli Konráðsson 1954:53,55).

Hjaltí Pálsson observed some ruins, including a *beitarhús* and few walls, as well as some *stekkir* and haytofts that may have belonged to Gvendarstaðir (2001:116). Eighty years earlier, Margeir Jónsson had observed similar ruins, though he attributed them to a farmstead, and also described a *nátthagi* farther out on the peninsula between the rivers (1924-1927:315-316). Both men also observed a *dys* (burial mound) about half a kilometer from the site.

Survey results

In 2014, we saw at least one and possibly two turf structures at Þverá, within a greener area that emerges from the hummocky and eroded heath (Figure 15). In cores, we observed midden layers both above and below the 1104 tephra, including a possible floor layer (Figure 8Error! Reference source not found., Table 1). Domestic refuse was observed under the 10th century tephra layer in one location, and in several places the *landnám* sequence was observed in structural turf. The 1300 layer was observed in a possible structure interior, but its association with cultural material is uncertain (it overlies a layer that could be either structural turf or natural peat accumulation). Þverá is one of two farms with secure evidence for long-term habitation in Víðidalur prior to 1104, and probably prior to 1000 AD (the other is Gvendarstaðir, see below). The end date for the settlement is less clear, but it may have been out of use well before 1300.

We did not core outside of the immediate vicinity of the ruins and so cannot speak with much detail about environmental change, but from visual observation the area appears very dry and eroded and has probably retained only a small amount of soil above the bedrock. However, unlike at most other farms in Víðidalur, the most commonly observed tephra layer was the 1104 layer (five out of 11 cores). It is possible that Þverá’s location, high up between the confluence of two rivers and not too close to any gullies, may have protected it from some of the erosion and landslide events that removed or buried early layers at the other sites.

Gvendarstaðir

Gvendarstaðir is located directly across the river from Hrafnagil at the north end of Víðidalur, just past the point where the river turns and begins to head northeast through Hryggjadalur towards Gönguskarð.

Gvendarstaðir has been described as the best hayfield in the valley (Margeir Jónsson 1924-1927:313,323), due to its location under the south-facing slope of Hryggjafjall, where it receives both the southern sun and some protection from northerly winds. The *túngarður* has been truncated by the river along its southern edge, leaving a starkly eroded cliff face through the base of the homefield. As the site was last inhabited near the end of the 19th century, some of this damage may be relatively recent, and is certainly ongoing.

Gvendarstaðir was described as an abandoned farm on the land of Reynistaður in a 1654 letter (Ögmundur Helgason 1969:201). JÁM (Árni Magnússon and Vídalín 1930:73-74) also lists Gvendarstaðir as part of Reynistaður, and it is probably fair to assume that it was still abandoned at this time, though it is not explicitly described as such. Gvendarstaðir was resettled later in the 18th century, and was inhabited almost continuously from at least the early 1780s to 1898, by at least twenty different tenant households, with only five short periods of abandonment (Hjalti Pálsson 2001:163-164; Sögufelag Skagfirðinga 1959:73). The Jarðatal Johnsen (Johnsen 1847:257) and Ný Jarðabók (anonymous 1861:108) list Gvendarstaðir as a *hjáleiga* of Reynistaðir (along with Hryggir in Hryggjadalur, which is located about 2.5km to the northeast). In 1850 the farm supported 12 people, nine of them under the age of 17 (Þjóðskjalasafn Íslands 2017). The last inhabitants of Gvendarstaðir were the family of the poet Sveinn frá Elivogar, after moving away from Móbergssel. After they left Gvendarstaðir for Hryggir in 1898, Víðidalur was completely abandoned, and the region was purchased from Reynistaður in 1899 by a group of *hreppar* from western Skagafjörður (Margeir Jónsson 1924-1927:299-300).

In JÁM, Gvendarstaðir is said to have previously been a church farm, and that human bones had been found eroding out of the bank, further noting that Helgastaðir and Þúfnavellir would have become part of Reynistaður parish after the abandonment of Gvendarstaðir (Árni Magnússon and Vídalín 1930:73-74). Later sources place the church, and the eroding churchyard, at Helgastaðir, and it is possible that Arni Magnússon's 1713 informant (one Jón Philippusson from Páfastaðir in Skagafjörður) may have been confused about the place-names, or there may have been a printing error (Margeir Jónsson n.d.:29). It is also possible that there were household churches at both farms (see the discussion below).

Margeir Jónsson reported on the ruins in the 1920s (1924-1927:313-314), describing the plan of a four-room farmhouse, as well as multiple sheepsheds in the homefield. He does not mention any destruction of the site due to erosion by the river, so it is likely that most of the damage, at least to the 19th century ruins, has occurred later in the 20th century. Hjálti Pálsson also observed a farmhouse and several barns, including one *fjárhús* outside of the homefield to the north, as well as assorted walls and other structures (Hjalti Pálsson 2001:159-164).

Survey results

Our observations of extant structures generally coincide with previous work. Archaeological remains of the *túngarður* and structures in the western side of the site contain the 1766 tephra layer in structural turf (Figure 8, Table 1). This part of the field had a series of barns and outbuildings with an unclear temporal sequence. The main barn appeared to be a newer structure, post-1766, which replaced what may have

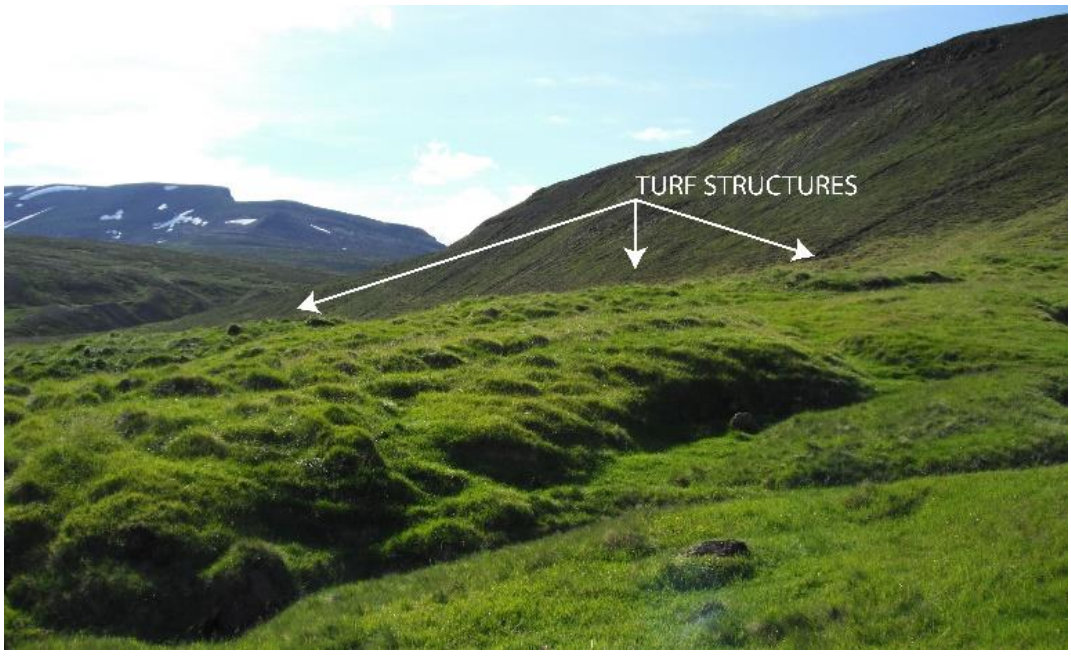

Figure 16. Turf structures on the northeast side of the homefield at Gvendarstaðir.

been an older barn, perhaps pre-dating 1766. More work would be needed to verify this. Another structure about 50m to the west was also of inconclusive date. The farmhouse was probably located in the northeast corner of the homefield (Figure 16). The turf structures in this location dated to post-1300 and post-1766, while the *fjárhús* just outside of the homefield boundary wall was also post-1766. Just downslope from the farmhouse, four cores contained domestic refuse, primarily peat ash. These midden layers were clearly post-1104, but in two cases, the midden was below what appeared to be in situ 1766 layers. However, given the dating of turf at the site, it seems likely that an excavation would show the midden to be underneath a layer of discarded turf that contained the 1766 tephra.

At the south extent of the homefield, on the edge of the eroded cliff above the river about 50m downslope from the later 19th century farm, a barely visible structure with badly degraded turf contained floor and peat ash layers underneath the 1104 tephra. This could very well be a *skáli* (longhouse) at the center of a settlement-period farmstead. It seems unlikely that the primary domestic structure, if that is what was identified in the coring, would have initially been located so close to a cliff face.

Although only a small portion of the 19th century homefield has been washed away, it is probable that any additional evidence of this medieval settlement has been removed and washed to sea over the centuries. This certainly could include a church, especially a pre-1104 household church. This potential *skáli* is in danger of suffering a similar fate and may merit additional documentation before it is also obliterated. The other visible surface ruins, the homefield boundaries and buildings, appear to all date to the later occupation of the farm and likely bear little relationship to the pre-1104 organization of the farmstead.

Erosion along the cliff face may have been one reason contributing to the earlier abandonment of the site and the relocation of later domestic buildings further upslope. Erosion may also have contributed to the later abandonment of the farm, although the remaining homefield is adequate (at least 20,000 m^2 on air photos).

As at Þverá, we concentrated our coring survey in and around the visible structures, so we cannot state with certainty the effects of environmental changes on the farmstead. However, even considering that most of the cores are in proximity to structure or refuse middens, Gvendarstaðir shows a generally more even distribution of tephra than other farms surveyed. Out of 33 cores, seven contained the 1104 tephra while five contained the 1766, plus one observation each of the 1300 and landnám layers. Gvendarstaðir's position south of the mountain, which gives it such good sun exposure and protection from northerly winds, may also have protected it from the wind erosion that plagued so many of the other sites in the valley.

Environment and settlement history in Víðidalur

The rapid coring reconnaissance of Víðidalur revealed an environmentally marginal and unstable region with a history of periodic occupation and desertion.

Environmental History

In general, the soils of Víðidalur are shallow above a layer of gravel or bedrock through which the core was unable to penetrate (Tables 1 and 2). The average depth of all cores that were stopped by gravel or bedrock was 35cm (significantly less than the average depth of 47cm observed on Hegranes in lowland Skagafjörður (Bolender, et al. 2017; Catlin, et al. 2017; Steinberg, et al. 2017). In some locations, the 1766 layer was observed in the soil matrix above the impenetrable gravel layer, suggesting that a cataclysmic event occurred between 1300 and 1766, restricting access to or obliterating earlier soil horizons and tephra. Coring alone cannot determine whether the gravel layer is degraded bedrock (which would indicate significant flooding and erosion prior to 1766) or more recently deposited rockfall (suggesting that landslides and/or avalanches prior to 1766 may have buried earlier soils, which could still be intact beneath the gravel). The soil profile observed in a river cut near Helgastaðir showed multiple layers of gravel between an intact landnám sequence and the 1766 tephra layer; this suggests that landslides, floods, and rockfalls may be a more likely explanation than erosion for the shallow gravel layer in many locations through Víðidalur. Therefore, where archaeological deposits were not observed, they may be buried under layers of gravel and could conceivably be accessible to a more intensive archaeological excavation.

Earlier tephra layers (H1, 1000, LNS/LNL, H3, H4), where observed, were often seen under structures (about 40% of these early tephra layers were observed in situ under turf). Since early tephra and good soil were accessible beneath walls, while early tephras were present but

inaccessible under gravel deposits in at least one location, major landscape alterations seem to have occurred after the abandonment of the structures. Floods and avalanches appear to have deposited significant amounts of sand and gravel around the standing turf walls, which protected the soil directly under the buildings. This suggests that the frequency of catastrophic events in Víðidalur has increased after ca.1104.

The landscape at and around the farmsteads at the north end of Víðidalur, Þverá and Gvendarstaðir, seems to have been somewhat less affected by environmental changes, as indicated by the presence and visibility of older tephra layers in situ. These farms may have had a more favorable location with respect to the mountains that resulted in less exposure to powerful winds, and have not been in the immediate path of landslides. Of course, both have been affected by the meandering of the river.

Our survey revealed somewhat different environmental circumstances within the locations of known farms and the landscape in between those farms. The distance between the Víðidalur farms is on average 1.3km, ranging between 0.3km (between Hrafnagil and Gvendarstaðir) and 2.7km (between Þúfnavellir and Helgastaðir) (Figure 8). Ten cores were recorded in the interstitial areas between farms. This very limited dataset supports the idea that the landscape of Víðidalur was repeatedly subjected to inundation and landslide events. Gravel and sand predominates, and few locations contained tephra layers, none earlier than 1766. The core was often unable to penetrate through the gravel, leaving the question of possible lower deposits or earlier catastrophic environmental changes inconclusive. Observation of early 20th century aerial photographs could shed some light on the timing of more recent environmental change in the region.

Settlement History

Medieval settlement is not historically documented anywhere in Víðidalur, though multiple sources suggest that it was inhabited at some point prior to the 15th century. The coring survey has allowed us to expand upon the histories, to show that there was settlement here between the 10th and 13th centuries, predating the establishment of Reynistaðaklaustur (AD 1295), and in two cases (Gvendarstadir and Þverá) settlement predated the establishment of the bishopric at Hólar (AD 1106). Of the farms known to have been *hjáleigur* in the 17th-19th centuries, we were able to confirm 18th and 19th century habitation at Gvendarstaðir and Móbergssel. We found little evidence of the late-17th century habitation that JÁM describes for Þúfnavellir and Helgastaðir; there is some turf at each of these sites that could not be definitively dated to any era, and might possibly have been constructed during this time (Tables 1 and 2).

The two sites with the best preservation of medieval deposits prior to 1104, Gvendarstaðir and Þverá, are located at the northern end of the valley where they have been somewhat protected from wind and landslides. However, both of these sites have been affected by movement of the river, especially Gvendarstaðir, where a significant portion of the medieval farmstead has probably been lost. Evidence from Þúfnavellir and Helgastaðir is less conclusive; the most precise we can be is to say that buildings were constructed primarily between 1104 and 1300, with probably at least some activity on either side of this range. Both sites have been partially removed by water in rivers and gullies, and they have also been much more affected by surface erosion and/or landslides than the farms at the northern end.

It is possible that earlier settlements existed throughout the valley but have only been preserved and accessible in the north (including perhaps settlement at Atlastaðir, Rauðagil, Svartagil, and/or Hrafnagil, where we observed little to no evidence of habitation). The same appears to be true of later settlements, as any evidence of 17th century settlement has not been well preserved. Most likely Gvendarstaðir's favorable location goes far towards explaining why it was resettled in the 19th century and not, for example, Helgastaðir, despite a late 18th-century suggestion in the Ferðabók of Ólafur Olavius that it might be appropriate for re-habitation ("*þeir taldir öðrum eyðibýlum fremur hæfir til endurbyggingar og ábúðar vegna einhverra landkosta*") (Ögmundur Helgason 1969:207).

Desertion, Plague, and Churches in Víðidalur

Farm abandonment in Víðidalur, like many regional abandonments of marginal areas throughout Iceland, has been attributed to medieval pandemics, especially the Black Death. The abandonment of Víðidalur after the plagues of the 15th century is "*almæli*" (Margeir Jónsson 1924-1927:325): something everyone knows. In the 1842 Syslu-og Soknalýsingar, Gísli Kónradsson says that the area was abandoned during the Black Death and later: "*Mælt er, að flest eyðikota þessara legðist í eyði við Svartadauðá árin 1402 og þar eftir, þó það sé eigi fullvíst, allra síst um sum, er þrælagerði ein*

sýnast verið hafa" (Gísli Konráðsson 1954:54). Since that time it has generally been reported as fact that the Black Death caused the desertion (e.g. Páll Sigurðsson 2000:38). Plague has been a common explanation for farmstead abandonment throughout Iceland (e.g. Gunnar Karlsson 1996), though more recent historical and archaeological work has begun to show that plague is perhaps the most unlikely explanation, instead favoring environmental, climatic, or economic interpretations (e.g. Callow and Evans 2016; Guðrún Sveinbjarnardóttir 1992; Streeter, et al. 2012).

Helgason (1969:217) analyzed the historical sources to assess the accuracy of the plague explanation in Víðidalur specifically. He points out that Kónraðsson's 1842 words "*og þar eftir*" (and later) are usually ignored, suggesting on the basis of this and other historical documents that even if Víðidalur was depopulated during the plague, it was subsequently resettled several times. He further notes that the Víðidalur farms were probably already abandoned by 1446, as only Hryggir is mentioned in the roster of Reynistaður farms, and in 1525, Hryggir *and* all of Víðidalur are described as abandoned. Finally, Helgason points out that the abandoned farms of Víðidalur were listed by name in Björn Jónsson's 1654 letter (Þúfnavellir, Þverá, Helgastaðir, and Gvendarstaðir along with Hryggir). If all these farms were abandoned during the 15th century plagues, in either 1402-4 or 1494-5, and left empty until the late 17th-century habitation described in JÁM, he finds it surprising that Björn would have known the names of the abandoned farms. Helgason therefore concludes that the Víðidalur farms were abandoned and resettled at least a few times between the 15th and 17th centuries.

Regarding Helgason's argument, there is no particular reason that the names of abandoned farms would be forgotten. Ruins at these sites were and are (mostly) visible today, and the places are well known by name to people who use the land for hiking, fox-hunting, and grazing. Continued use of the valley as grazing land, shielings, or bases for other highland or seasonal activities could easily have kept these placenames active and alive in cultural memory even through many centuries without permanent habitation in the area.

It is also worth pointing out that if any settlements were abandoned due to the plague, this need not mean that all the inhabitants perished. Their isolation may actually have protected them from illness, to a degree. Rather, the death of a large proportion of lowland residents would have left many lowland farms empty and available for resettlement. Relocation to a more productive farm would likely have been attractive to Víðidalur residents, and landlords also would have had good reason to want to move their highland and marginal tenants to more productive farms. Regional abandonment also brought resources, including grazing land (and woodlands for charcoal production) under the control of elites, and Reynistaðaklaustur likewise seems to have had a vested interest in acquiring the mountain landscape.

However, the limited historical documentation on medieval habitation in Viðidalur makes the 15th century plagues an unlikely cause for abandonment, as the earliest mention of many of the farms is in 1446, approximately 4 decades after the first wave of plague decimated the population in the early 1400s. Furthermore, the coring does not support the idea that the late medieval plagues precipitated the widespread abandonment of the valley: it rather indicates earlier abandonment. We saw very little evidence of habitation or construction in Víðidalur between the 1300 and 1766 tephra layers. Víðidalur had most likely been abandoned for well over a century before the first plague hit Iceland in 1402. Furthermore, the absence of settlement prior to the 18th century does not support Helgason's idea of regular resettlement and abandonment of these sites throughout the early modern period. It is certainly possible that evidence of settlement between the 13th and 18th centuries has been eroded away or buried by landslides, and it is also feasible to suggest that we could have missed such evidence over the course of our extremely rapid survey, but even assuming so, any such settlement was probably not substantial.

Our current work on medieval settlement patterns in Hegranes in lowland Skagafjörður suggests an alternate interpretation. There, numerous locations of early settlements on the landscapes of wealthy farms are described in JÁM (Árni Magnússon and Vídalín 1930:58-68). The sites are given names and described as current or former outbuildings, with rumors of earlier settlement. Coring survey and excavation has shown that in fact the majority of such named places were inhabited for a least a short period between the late 9th century and the end of the 11th century, and were used sporadically thereafter as *beitarhús* or *stekkir*, until the late 18th and 19th centuries (Catlin, et al. 2016; Catlin, et al. 2017). The farms in Víðidalur similarly continued to serve as important places in the landscape after their pre-14th century abandonment: we know from

historical accounts that the old farms have been used as resting points and meeting places during the spring and fall round-ups, and at various times throughout the summer months by ranchers and fox-hunters (Hjalti Pálsson 2001; Margeir Jónsson 1924-1927). It is therefore not unreasonable to suppose that their locations and names would continue to be known to landowners and officials all the way down to the 17th century.

Our work in lowland Skagafjörður has also shown that significant changes in settlement organization occurred during the 11th and 12th centuries (Bolender, et al. 2011; Catlin, et al. 2017; Guðný Zoëga and Bolender 2017; Steinberg, et al. 2016). These included farm relocation and abandonment, changes in the utilization of the wider agricultural landscape, and reorientation of social structures around an increasingly powerful landowning class that included the institutionalization of the church. Although this work is in its preliminary stages, given the historical association of Víðidalur with farms in lowland Skagafjörður, it seems fair to suggest that pre-plague and pre-Bishopric desertion of the valley may be intimately tied up with political and social changes that were affecting much of region during this time period.

This interpretation is related to the suggestion that there may have been one or more churches in Víðidalur. Medieval churches are known from other abandoned valleys around Iceland, including Ingiríðarstaðir in Þegjandadalur (Roberts, et al. 2009), and it is not unreasonable to suggest that Víðidalur might have had at least one. Oral histories, recorded in the early 18th century and later, state that there was at one point a church in Víðidalur, either at Helgastaðir or Gvendarstaðir (Árni Magnússon and Vídalín 1930:73-74; Gísli Konráðsson 1954). The historical descriptions of abandonment seem to preclude any church after the early 16th century, and indeed suggest that the valley, church and all, was abandoned prior to the 15th century. But it has been suggested that if the valley and its church were not abandoned until the 15th century, records of the church should have been preserved in documents from Reynistaður, at least in the 1446 list of the cloister's holdings (Margeir Jónsson 1924-1927:325). It is also possible that 18th century reports of a church in Víðidalur are no more than rumors.

Our coring survey at Gvendarstaðir is consistent with habitation prior to 1104, followed by a long period of abandonment and finally resettlement after ca. 1766. The JÁM describes human bones eroding from the cliff at Gvendarstaðir prior to the 18th century. At Helgastaðir, evidence of habitation was inconclusive but primarily points to settlement between 1104 and 1300, with significant erosion and landslide events that washed away much of the earlier tephra and may also have removed or deeply buried evidence of settlement from pre-1104. Reports of bones found in the cliffside here are much more recent than at Gvendarstaðir, primarily from the first half of the 20th century (Margeir Jónsson 1924-1927:310).

We suggest that both of these sites may well have had small household churches prior to 1104. This is consistent with archaeological research from elsewhere in Skagafjörður, which has shown that many farms had their own household church in the 11th century (Guðný Zoëga 2014; Guðný Zoëga and Bolender 2017; Guðný Zoëga, et al. 2016). Early household churches do not fit neatly into the idea of a parish church or prayerhouse serving all of Víðidalur or Staðarfjall. But household churches at both Helgastaðir and Gvendarstaðir would fit reasonably well with the historical and archaeological evidence, and would be consistent with abandonment at about the same time that household churches were going out of use in lowland Skagafjörður in the early 12th century. The pre-1104 farmstead at Gvendarstaðir seems to have been almost entirely lost to the river, while rather more appears to remain of the farmstead at Helgastaðir. Given the current extent to which erosion at each site has progressed, it seems reasonable to suggest that the churchyard at Gvendarstaðir was actively eroding during the 17th century, while the cliff at Helgastaðir may not have reached the churchyard there until the early 20th century. Of course, this remains speculative until and unless archaeological evidence of a church is observed in Víðidalur, which is somewhat unlikely given the difficult environmental conditions and ongoing deterioration in the valley.

Finally, it is probable that environmental change played a role in the abandonment of medieval settlements in the valley, along with social, economic, and religious pressures. Helgastaðir, Þúfnavellir, and Móbergssel in particular show evidence of repeated floods, landslides, and other cataclysmic events, while Helgastaðir and Þúfnavellir also experienced the formation of gullies through the middle of their homefields. While the evidence for catastrophic landscape change is highly suggestive, the temporal sequence of farmstead occupation and environmental change was not clear enough to determine a causal relationship between

early environmental degradation and farm abandonment. In most cases, the evidence for early (pre-1104 or pre-1300) occupation and land use was either non-existent or so tentative that it was unclear what early activity in the valley was or how it would have been impacted by environmental change. More detailed environmental work would be needed to assess whether such events can be correlated to the medieval abandonment of the farms.

Conclusion

Our rapid coring survey of Víðidalur has provided substantial evidence to describe the timing of settlement and abandonment of the valley, to assess the nature and extent of environmental and landscape degradation, and to evaluate the plausibility of various explanations for its abandonment. There is certainly potential for further archaeological research in Víðidalur and its neighboring valleys, to more precisely date the settlements, locate additional evidence for habitation, or evaluate the activities that took place in the valley - including, potentially, early Christian or even pagan burials. Our more recent work at medieval settlements on Hegranes provides a guideline for such a survey. Over three summers of fieldwork, we have determined that locating significant midden deposits at sites with limited visible medieval architecture and no known recent habitation can be extremely difficult, often requiring a systematic coring grid of 10m or less to locate areas of domestic refuse deposition (Catlin, et al. 2016; Catlin, et al. 2017; Catlin, et al. 2018). A more intensive, longer coring survey in Víðidalur might therefore be able to recover more evidence of habitation. However, the shallow, impenetrable gravel that covers much of the landscape of Víðidalur would make such an extensive coring program extremely difficult. If the gravel layer is capping evidence of settlement prior to a major avalanche or landslide, it might be accessible only to larger scale archaeological excavation, or perhaps to a targeted geophysical survey. But the difficulties of access to the valley and of exposing sites buried beneath perhaps multiple thick layers of detritus and scree presents logistical and practical difficulties for the prospect of carrying out a large project within the valley.

On the other hand, the data retrieved from a short and simple coring survey has allowed us to answer important questions about medieval settlement and landscape change, and more intensive further work would most likely serve primarily to refine the conclusions we have already reached. On the basis of the Víðidalur survey, along with other similar work carried out around Skagafjörður by Byggðasafn Skagfirðinga and SCASS (see e.g. Bolender, et al. 2017; Catlin, et al. 2017; Gudný Zoëga, et al. 2017 and previous reports, available online at glaumbaer.is), we suggest that coring recognizance has significant potential for the evaluation and assessment of archaeological resources in Iceland.

References

Aldred, Oscar, and Gavin Lucas
2010 Events, Temporalities, and Landscapes in Iceland. *In* Eventful Archaeologies: Approaches to Social Transformation in the Archaeological Record. D.J. Bolender, ed. Pp. 189-198: SUNY Press.

anonymous
1861 Ný Jarðabók fyrir Ísland. Kaupmannahöfn: J.H. Schultz.

Ari Þorgilsson, and Jakob Benediktsson
1968 Íslenzk fornrit I. Íslendingabók, Landnámabók. Reykjavík: Hið Íslenzka Fornritafélag.

Árni Daníel Júlíusson
2016 Miðaldir í skuggsjá Svarfaðardals Reykjavík: JPV og Þjóðminjasafn Íslands.

Árni Magnússon, and Páll Vídalín
1926 Jarðabók Árna Magnússonar og Páls Vídalíns: Áttunda Bindi: Húnavatnssýsla. Volume 8. Kaupmannahöfn: Hið Íslenska Fræðafélag.
1930 Járðabók Árna Magnússonar og Páls Vídalíns: Skagafjarðarsysla: Níunda Bindi. Copenhagen: Hið íslenska fræðafélag.

Bolender, Douglas J., et al.
2017 Hegranes Settlement Survey: Rein, Keta, Hamar, Utanverðunes, Ásgrímsstaðir. Interim Report 2016. Boston: Fiske Center for Archaeological Research. Report BSK-2017-183 / SCASS-2017-111.

Bolender, Douglas J., John M. Steinberg, and Brian N. Damiata
2011 Farmstead Relocation at the End of the Viking Age , Results of the Skagafjörður Archaeological Settlement Survey. Archaeologia Islandica 9:77-99.

Boygle, J.
1999 Variability of tephra in lake and catchment sediments, Svinavatn, Iceland. Global and Planetary Change 21(1-3):129-149.

Callow, Chris, and Charles Evans
2016 The mystery of plague in medieval Iceland. Journal of Medieval History 42(2):254-284.

Catlin, Kathryn A., John M. Steinberg, and Douglas J. Bolender
2016 Fornbýli Landscape and Archaeological Survey on Hegranes (FLASH) Interim Report 2015. Sauðárkrókur: Byggðasafn Skagfirðinga Report BSK-2016-163.
2017 Fornbýli Landscape and Archaeological Survey on Hegranes (FLASH) Interim Report 2016. Sauðárkrókur: Byggðasafn Skagfirðinga Report BSK-2016-176 / SCASS-2017-8.
2018 Fornbýli Landscape and Archaeological Survey on Hegranes (FLASH) Interim Report 2017. Sauðárkrókur: Byggðasafn Skagfirðinga Report BSK-2018-196 / SCASS-2018-15.

Davies, S. M., et al.
2010 Widespread dispersal of Icelandic tephra: how does the Eyjafjoll eruption of 2010 compare to past Icelandic events? Journal of Quaternary Science 25(5):605-611.

DI IV
1897 Diplomaterium Islandicum. Íslenzkt Fornbréfasafn, sem hefir inni að halda Bréf og Gjörninga, Dóma og Máldaga, og aðrar skrár, er snerta Ísland eða Íslenzka menn. Fjórða bindi 1265-1449. Volume 4. Kaupmannahöfn: S.L. Möllers.

DI IX
1909-1913 Diplomaterium Islandicum. Íslenzkt Fornbréfasafn, sem hefir inni að halda Bréf og Gjörninga, Dóma og Máldaga, og aðrar skrár, er snerta Ísland eða Íslenzka menn. Níunda bindi 1262-1536. Volume 9. Reykjavík: Félagsprentsmiðju.

Dugmore, Andrew J., et al.
2006 An Over-Optimistic Pioneer Fringe? Environmental Perspectives on Medieval Settlement Abandonment in Þórsmörk, South Iceland. *In* Dynamics of Northern Societies: Proceedings of the SILA/NABO Conference on Arctic and North Atlantic Archaeology, Copenhagen, May 10-14, 2004. Pp. 335-345, Vol. 44. Copenhagen: Aarhus University Press.

Dugmore, Andrew J., et al.
2007 Abandoned Farms, Volcanic Impacts, and Woodland Management: Revisiting Þjórsárdalur, the "Pompeii of Iceland". Arctic Anthropology 44(1):1-11.

Dugmore, Andrew J., et al.
1995 Radiocarbon Dating Tephra Layers in Britain and Iceland. Radiocarbon 37(2):10.

Dugmore, Andrew J., and Anthony J. Newton
2012 Isochrons and Beyond: Maximising the Use of Tephrochronology in Geomorphology. Jökull: The Icelandic Journal of Earth Science 62:39-52.

Fei, J., and J. Zhou
2006 The possible climatic impact in China of Iceland's Eldgja eruption inferred from

historical sources. Climatic Change 76(3-4):443-457.

G. Á. Gunnlaugsson
1988 Family and Household in Iceland 1801-1930: Studies in the relationship between demographic and socio-economic development, social legislation and family and household structures. Uppsala: University of Uppsala (Almqvist & Wiksell International, Stockholm).

Gísli Konráðsson
1954 Reynistaðar-prestakall, 1842. *In* Sýslu- og Sóknalýsingar Hins íslenzka bókmenntafélags 1839-1873: II Skagafjarðarsýsla. Akureyri: Prentverk Odds Björnssonar H.F.

Grönvold, K., et al.
1995 Ash layers from Iceland in the Greenland GRIP ice core correlated with oceanic and land sediments. Earth and Planetary Science Letters 135:149-155.

Guðmundur Ólafsson
1985 Gjóskulög í Austurdal og Vesturdal, Skagafirdi. , Námsritgerd við Háskóla Íslands.

Guðný Zoëga
2014 Early church organization in Skagafjörður, North Iceland. The results of the Skagafjörður Church Project. Collegium Medievale 27:23-62.

Guðný Zoëga, and Douglas Bolender
2017 An archeology of moments: Christian conversion and practice in a medieval household cemetery. Journal of Social Archaeology 17(1):69-91.

Guðný Zoëga, et al.
2016 Keflavík on Hegranes: Cemetery Excavation Interim Report 2015. Sauðárkrókur, Íslands: Byggðasafn Skagfirðinga. Document: BSK-2015-157 / SCASS-2015-1.

Gudný Zoëga, et al.
2017 Eyðibyggð og afdalir Skagafjarðar X - byggðasögurannsókn. Sauðárkrókur: Byggðasaga Skagfirðinga. Document: 2017/177, Available: http://www.glaumbaer.is/is/gagnabanki/rannsoknarskyrslur.

Gudrún Larsen
1984 Recent volcanic history of the Veidivotn fissure swarm, southern Iceland -- an approach to volcanic risk assessment. Journal of Volcanology and Geothermal Research 22(1-2):33-58.

Gudrún Larsen, Andrew J. Dugmore, and Anthony Newton
1999 Geochemistry of historical-age silicic tephras in Iceland. The Holocene 9(4):9.

Gudrún Larsen, et al.
2002 Correlation of late Holocene terrestrial and marine tephra markers, north Iceland: implications for reservoir age changes. Polar research 21(2):283-290.

Gudrún Larsen, et al.
2001 Geochemistry, dispersal, volumes and chronology of Holocene silicic tephra layers from the Katla volcanic system, Iceland. Journal of Quaternary Science 16(2):119-132.

Guðrún Sveinbjarnardóttir
1992 Farm Abandonment in Medieval and Post-Medieval Iceland: an Interdisciplinary Study. Oxford: Oxbow.

Gunnar Karlsson
1996 Plague without rats: the case of fifteenth-century Iceland. Journal of Medieval History 22(3):263-284.

Hallgrím Jónasson
1946 Ferðafelag Íslands Árbók MCMXLVI: Skagafjörður. Reykjavík: Ísafoldarprentsmiðja H.F.

Hammer, Claus U, Henrik B Clausen, and Willi Dansgaard
1980 Greenland ice sheet evidence of post-glacial volcanism and its climatic impact. Nature 288:230-235.

Hermann Pálsson, and Paul Edwards
2007 The Book of Settlements (Landnámabók): University of Manitoba Press.

Hjalti Pálsson
2001 Byggðasaga Skagafjarðar: II Bindi Staðarhreppur – Seyluhreppur [Settlements of Skagafjörður: Volume II]. Sauðárkróki, Iceland: Sögufélag Skagafirðinga.

Hjördís Gísladóttir
1989 Þáttur um eyðibýli í Húnaþingi. *In* Húnaþing III. S.J. Líndal and S.Á. Jónsson, eds. Pp. 273-300. Akureyri: Odds Björnssonar H.F.

J. Eiriksson, et al.
2000 Chronology of late Holocene climatic events in the northern North Atlantic based on AMS C-14 dates and tephra markers from the volcano Hekla, Iceland. Journal of Quaternary Science 15(6):573-580.

Johnsen, J.
1847 Jarðatal á Íslandi. Kaupmannahöfn: S. Trier.

Jón Torfason
2007 Árbók 2007: Húnaþing eystra frá jöklum til ystu stranda. Reykjavík: Ferðafélag Íslands.
Kolka, P.V.G.
1950 Föðurtún. Reykjavík: H.F. Leiftur.
Magnús Á. Sigurgeirsson
1998 Gjóskulagarannsóknir á Hofstoðum 1992–1997. Archaeologia Islandica 1:110-118.
Magnús Á. Sigurgeirsson, et al.
2013 Dating of the Viking Age Landnám Tephra Sequence in Lake Mývatn Sediment, North Iceland. Journal of the North Atlantic 21:1-11.
Margeir Jónsson
1924-1927 Víðidalur í Staðarfjöllum. Blanda 3(7-10):299-326.
1925-1926 Ævarsskarð hið forna. Árbók hins íslenzka fornleifafélags 39:32-42.
n.d. Örnefni á Staðarafrétt og aðliggjandi heimalöndum. Reyjkavík: Örnefnastofnun Íslands.
Margrét Hallsdóttir
1987 Pollen analytical studies of human influence on vegetation in relation to the Landnám tephra layer in Southwest Iceland. Ph.D., Lund University.
Ögmundur Helgason
1969 Bæjanöfn og byggð á Hryggjadal og Víðidal, Skagafjarðarsýslu. Saga: Tímarit Sögufélags 7:196-220.
Orri Vésteinsson, et al.
2014 Expensive errors or rational choices: the pioneer fringe in Late Viking Age Iceland. European Journal of Post-Classical Archaeologies 4:39-68.
Páll Sigurðsson
2000 Norðlenskar fjallaslóðir. *In* Morgunblaðið. Pp. 38-39. Reykjavík.
2012 Árbók 2012: Skagafjörður vestan Vatna. Reykjavík: Ferðafélag Íslands.
Roberts, Howell M., et al.
2009 Archaeological Excavations in Þegjandadalur 2007-2008. Reykjavík: Fornleifastofnun Íslands. Report FS424-08162.
Sigurður Þórarinsson
1967 The eruptions of Hekla in historical times. *In* The Eruption of Hekla, 1947-1948. Vol. 1 of The Eruptions of Hekla in Historical Times: A Tephrochronological Study. S. Thórarinsson, ed. Pp. 5-183. Reykjavik: Leiftur.
1977 Gjóskulög og gamlar rústir. Árbók 1976:5-38.
Sögufelag Skagfirðinga
1959 Jarða- og Búendatal í Skagafjarðarsýslu 1781-1958. Volume XI. Reykjavík: Herbertsprent.
Steinberg, John, et al.
2017 Hegranes Settlement Survey: Interim Report 2016, Part II. Boston: Fiske Center for Archaeological Research.
Steinberg, John M., Douglas J. Bolender, and Brian N. Damiata
2016 The Viking Age settlement pattern of Langholt, North Iceland: Results of the Skagafjörður Archaeological Settlement Survey. Journal of Field Archaeology 41(4):389-412.
Stenberger, M.K.H., and A. Roussell
1943 Forntida gårdar i Island; Meddelanden frêan den Nordiska Arkeologiska Undersökningen i Island Sommaren 1939. Köbenhavn: E. Munksgaard.
Streeter, Richard, Andrew J. Dugmore, and Orri Vesteinsson
2012 Plague and landscape resilience in premodern Iceland. Proc Natl Acad Sci U S A 109(10):3664-9.
Sveinbjörn Rafnsson
1990 Byggðaleifar í Hrafnkelsdal og á Brúardölum. Reykjavík: Fornleifastofnun Íslands.
T. Thordarson, et al.
2001 New estimates of sulfur degassing and atmospheric mass-loading by the 934 AD Eldgja eruption, Iceland. Journal of Volcanology and Geothermal Research 108(1-4):33-54.
Þjóðskjalasafn Íslands
2017 The National Archives of Iceland Census Database, Available: http://manntal.is/?lang=en, accessed 8. May 2017.
Thomson, Amanda M.
2003 A modelling approach to farm management and vegetation degradation in pre-modern Iceland. PhD Dissertation, U of Stirling.
Wastegard, S., et al.
2003 Rhyolitic tephra horizons in northwestern Europe and Iceland from the AD 700s-800s: a potential alternative for dating first human impact. Holocene 13(2):277-283.
Zielinski, Gregory A., et al.
1997 Volcanic Aerosol Records and Tephrochronology of the Summit, Greenland, Ice Cores. Volcanic Aerosol Records and Tephrochronology of the Summit, Greenland, Ice Cores 102(C12):26625-26640.

Appendix 1. Víðidalur Coring Data.

Farm	Core Number	ISN93 East	ISN93 North	End Depth	Gravel Depth	Stratigraphy				Tephra			Comments
						Category	Description	Top Depth	Bottom Depth	Layer	Depth	Description	
Móbergssel	141001	460917.025	570532.2112	20	20	Aeolian Deposit Gravel		0 20	20 20	1766	15		exterior of structure
Móbergssel	141002	460913.4233	570524.7617	60	60	Turf Aeolian Deposit Gravel		0 40 60	40 60 60				in a wall
Móbergssel	141003	460906.9429	570520.391	70	60	Turf Gravel		0 60	60 70				in a wall
Móbergssel	141004	460894.7824	570517.2821	40	40	Turf Rock		0 40	40 40				
Móbergssel	141005	460896.9644	570510.4782	22		Turf		0	22				in a wall
Móbergssel	141006	460907.6736	570516.9304	30	30	Turf Gravel		0 30	30 30				exterior structure
Móbergssel	141007	460903.9233	570517.9514	30	30	Turf Rock		0 30	30 30				interior structure
Móbergssel	141008	460899.3569	570513.7331	50	50	Turf Rock		0 50	50 50				interior structure
Móbergssel	141009	460917.4305	570479.2111	80		Midden Aeolian Deposit	Airy Irony	0 41	41 80	1766 1300 1320	45 73 75		midden þufur
Móbergssel	141010	460913.2645	570483.4536	25	25	Midden Low Density Cultural Gravel		0 20 25	20 25 25	1766	20		
Móbergssel	141011	460917.6965	570475.5763	23	20	Gley Gravel	Irony Sandy	0 20	20 23	1766	10		
Móbergssel	141012	460909.3328	570493.3151	120		Aeolian Deposit	Gleyey	0	120	H3 H4	80 85		
Móbergssel	141013	460904.8382	570558.4543	10	10	Turf Rock		0 10	10 10				interior structure
Móbergssel	141014	460903.4262	570555.5811	63	63	Turf Rock		0 63	63 63				in a wall
Móbergssel	141015	460870.109	570555.3551	15	15	Aeolian Deposit Rock		0 15	15 15	1766	11		soil seems to be blown pre-1766 - possible people moved here as the soil returned?
Móbergssel	141016	460853.2263	570557.6171	10	10	Aeolian Deposit Rock		0 10	10 10	1766	3		south of structure
Móbergssel	141017	460848.5107	570556.9918	10	10	Turf Rock		0 10	10 10				interior structure
Móbergssel	141018	460840.2241	570566.5666	40	40	Turf Rock		0 40	40 40				
Móbergssel	141019	460955.3835	570610.2422	20	20	Turf		0	20				

Farm	Core Number	ISN93 East	ISN93 North	End Depth	Gravel Depth	Stratigraphy				Tephra			
						Category	Description	Top Depth	Bottom Depth	Layer	Depth	Description	Comments
						Rock		20	20				
Móbergssel	141020	460956.2055	570613.9039	40		Turf		0	15				
						Aeolian Deposit		15	40				
Móbergssel	141021	460952.9259	570610.4956	40	40	Turf		0	40				wall in the middle
						Rock		40	40				
Móbergssel	141022	460957.8187	570596.5853	25	25	Turf		0	25				interior structure
						Rock		25	25				
Móbergssel	141023	460960.1793	570597.112	55	55	Turf		0	55				wall
						Rock		55	55				
Móbergssel	141024	460969.0535	570618.4154	15	15	Turf		0	15				interior structure
						Rock		15	15				
Móbergssel	141025	460965.5103	570624.2317	8	8	Turf		0	8				
						Rock		8	8				
Móbergssel	141026	460965.4502	570626.9886	30	30	Turf		0	30				
						Rock		30	30				
Þúfnavellir	141027	462053.3054	571600.8779	12	12	Turf		0	12				eroded tún boundary with rock base tephra in turf was designated 1300/1766 in the field, i am making judgement call it is probably 1300 given age of material in other cores at the site
						Rock		12	12				
Þúfnavellir	141028	462074.3937	571615.1356	55		Top Soil		0	10	1766	5		possible wall? AD layer could be really bad turf
						Aeolian Deposit		10	55	unknown	50	black	
Þúfnavellir	141029	462053.1237	571617.1256	10	10	Top Soil		0	10				
						Rock		10	10				
Þúfnavellir	141030	462049.8574	571664.3183	9		Aeolian Deposit		9	40	1300	39	could be sand	just off turfy mound AD layer could be really terrible, degraded turf under the 1766
						Low Density Cultural		40	45	1766	7		
						Rock		45	45				
						Aeolian Deposit		0	9				
Þúfnavellir	141031	462065.0756	571658.5839	15	15	Aeolian Deposit		0	15	1766	5		
						Rock		15	15	H1	12		
Þúfnavellir	141032	462070.9514	571664.7567	5	5	Aeolian Deposit		0	5				roots-gravel-rock
						Gravel		5	5				
Þúfnavellir	141033	462068.2213	571670.5914	100	100	Turf		0	42	1300	50		turf is unclear. There is a grey tephra at 50, LNS at 60, and a white layer at 98 - this might be a natural sequence captured in turf, or an in situ 1300 atop turf with LNS. the white layer is in turf and does not look like 1104.

Farm	Core Number	ISN93 East	ISN93 North	End Depth	Gravel Depth	Stratigraphy				Tephra			
						Category	Description	Top Depth	Bottom Depth	Layer	Depth	Description	Comments
													1st 40 cm of turf includes organic banding.
						Turf		42	100				
						Rock		100	100				
Þúfnavellir	141034	462057.4189	571687.4787	40	40	Aeolian Deposit		0	40	H1	5		wall?
						Rock		40	40	unknown	31	black	
Þúfnavellir	141035	462057.2437	571683.4087	20	20	Top Soil		0	10	1766		8	interior structure
						Aeolian Deposit		10	15				
						Sand		15	20				
						rock		20	20				
Þúfnavellir	141036	462067.527	571690.3971	70	70	Turf		0	60				60-70 cm layer is ambiguously written
						gravel		60	70				
						Rock		70	70				
Þúfnavellir	141037	462049.2545	571681.0436	8	8	Aeolian Deposit		0	8	1766	8		
						Rock		8	8				
Þúfnavellir	141038	462050.4357	571672.4253	25	25	Aeolian Deposit		0	25				
						Rock		25	25				
Þúfnavellir	141039	462055.3738	571667.1338	50	50	Aeolian Deposit		0	50	1300	35		
						Gravel		50	50				
Þúfnavellir	141040	462054.955	571668.2428	60		Top Soil		0	10	unknown	58	dark	
						Low Density Cultural		10	15				
						Aeolian Deposit		15	35				
						Aeolian Deposit	Sandy	35	51				
						Aeolian Deposit		51	60				
Þúfnavellir	141041	462058.7794	571660.8594	40	40	Aeolian Deposit		0	40	1766	7		
						Rock		40	40	1300	15		
										unknown	34	dark? possibly sand	
Þúfnavellir	141042	462065.9608	571729.7553	15	14	Top Soil		0	6	1766	6		
						Aeolian Deposit	Sandy	6	14				
						Gravel		14	15				
Þúfnavellir	141043	462100.2077	571743.0607	5	0	Gravel	Sandy	0	5				
Þúfnavellir	141044	462125.6128	571735.8964	60	60	Aeolian Deposit	Sandy	0	60	1766	6		in a bog
						Rock		60	60	unknown	20	black	
										H1	30	tentative	
Þúfnavellir	141045	462148.13	571750.4497	40	40	Sand	Airy	0	40				"turfy sand w/ air over gravel, lots of gravel and sand"
						Gravel		40	40				

Farm	Core Number	ISN93 East	ISN93 North	End Depth	Gravel Depth	Stratigraphy				Tephra			
						Category	Description	Top Depth	Bottom Depth	Layer	Depth	Description	Comments
Þúfnavellir	141046	462148.2571	572002.983	80		Aeolian Deposit	Wet	0	40				lost the last 20 cm, all very wet. Just next to this core was a core of nothing on gravel that stopped at 5 cm.. Doug's photos 102-0502 and 3 near here
						Aeolian Deposit	Sandy	40	80				
Þúfnavellir	141047	462077.8097	572599.0763	20		Aeolian Deposit	Sandy	0	14				
						Iron Pan		14	20				
Þúfnavellir	141048	462048.457	573121.2872	5	5	Aeolian Deposit	Wet	0	5				mud on a rock landslide
						Rock		5	5				
Þúfnavellir	141049	462048.2149	573103.3611	80		Aeolian Deposit	Wet	0	80				lots of compression and waterlogging
Þúfnavellir	141050	462018.66	573112.8337	60		Bog (Organic)	Turfy	0	50				grassy thing above river cut natural turf, lots of compression
						Sand		50	60				
Þúfnavellir	141120	462540.629	571538.714										this core has no data associated with it? possible bad point? it had no number in the gps shapefile, i gave it 120 as the last by default
Helgastaðir	141051	461940.5649	574422.4161	70		Aeolian Deposit	Sandy	0	40	1766			sheep cut into eroded meander of the river - kat's photos 104-4105 to 10
						Gravel		40	50	LNS	62		
						Aeolian Deposit		50	58				
						Sand	Washed	58	62				
						Aeolian Deposit		62	70				
Helgastaðir	141052	461989.215	574298.847	20		Aeolian Deposit		0	20	1766	8		
										1300	13		
Helgastaðir	141053	461983.1875	574297.4126	80	80	Turf		0	80	1766	10		turf wall? might be turf, or might be natural tephra sequence post-1766
						Rock		80	80	H1	25		
										1000	29		
Helgastaðir	141054	461984.0421	574294.4557	10	10	Aeolian Deposit		0	10	1766	8		structure interior?
						Gravel		10	10				
Helgastaðir	141055	461979.288	574293.6726	50	50	Aeolian Deposit		0	20				wall on the cliff - maybe in the church, according to Hjalti's drawing? turf is truly awful
						Turf		20	50				
						Rock		50	50				
Helgastaðir	141056	461983.2653	574302.0645	40	40	Aeolian Deposit	Disturbed	0	40				structure interior? lots of compression, highly þufurized includes a line of either 1300 or sand
						Rock		40	40				
Helgastaðir	141057	461983.6759	574309.628	60		Aeolian Deposit	Airy	40	60	1766	7		þufur, possible wall - airy and compressed
										H3	56		

Farm	Core Number	ISN93 East	ISN93 North	End Depth	Gravel Depth	Stratigraphy				Tephra			
						Category	Description	Top Depth	Bottom Depth	Layer	Depth	Description	Comments
Helgastaðir	141058	462012.2476	574302.0448	60	35	Aeolian Deposit	Sandy	0	35	1766	5		tiny speck of peat ash at 30 cm
						Gravel	Sandy	35	60	H1	21		
Helgastaðir	141059	462034.9489	574301.193	50		Aeolian Deposit	Sandy	0	50	1766	40		
Helgastaðir	141060	461996.1922	574344.0879	80		Aeolian Deposit	maybe turf	0	40	1766	10		possible wall AD at 10-40 could possibly be turf, but tephra sequence suggests otherwise for at least part of it??
						Gravel		80	80	H1	48		
						Aeolian Deposit		40	80	LNS	60		
Helgastaðir	141061	461977.4538	574393.2902	50	50	Turf		0	50				wall? could be AD w/ in situ 1104 instead of crappy turf
						Rock		50	50				
Helgastaðir	141062	461973.0311	574393.5105	30		Bog (Organic)		0	20	1766	5		interior structure
						Aeolian Deposit		20	30	H1	13		
Helgastaðir	141063	461976.1274	574393.2076	40		Aeolian Deposit		0	10	1766	8		corner of structure - hoping for fireplace charcoal inclusions 27-30
						Turf		10	25				
						Aeolian Deposit	Boggy	25	40				
Helgastaðir	141064	461974.9667	574405.5628	60	55	Aeolian Deposit		0	55	unknown	10	faint yellow-white, not H1, H3, H4	outside structure
						Gravel		55	60	unknown	35	faint yellow-white, not H1, H3, H4	
										unknown	44	black	
Helgastaðir	141065	461961.6828	574421.1796	80		Aeolian Deposit		0	32	1300	32		unusually large þufur
						Gley		32	55	H3	55		
						Aeolian Deposit	Gleyey	55	75				
						Sand		75	80				
Helgastaðir	141066	461969.8222	574446.2402	60	60	Top Soil		0	10	1300	45	could be sand	
						Aeolian Deposit		10	60				
						Rock		60	60				
Helgastaðir	141067	461976.4706	574479.378	30		Aeolian Deposit	Boggy	10	30				
Helgastaðir	141068	461971.4705	574528.4406	80		Aeolian Deposit	Airy	0	80	H1	60		airy, lots of compression
Helgastaðir	141119	461973.6854	574394.6605	50	50	Aeolian Deposit		0	12	1766	6		interior structure there were two #62s - changed this to 119
						Turf		12	31	1300	12		
						Aeolian Deposit	Boggy	40	50				
						Rock		50	50				
Altastaðir	141069	461927.7031	575003.5846	50	50	Aeolian Deposit	Sandy	0	50	1766	27		AD with sandy bands lots of recent flooding has destroyed premodern layers
						Rock		50	50				
Altastaðir	141070	461947.377	575023.6895	11	11	Aeolian Deposit		0	11	1766	10		
						Rock		11	11				
Altastaðir	141071	461960.1885	575008.2791	30	30	Aeolian Deposit		0	30				
						Rock		30	30				

Farm	Core Number	ISN93 East	ISN93 North	End Depth	Gravel Depth	Stratigraphy				Tephra			
						Category	Description	Top Depth	Bottom Depth	Layer	Depth	Description	Comments
Altastaðir	141072	461933.3815	575117.5997	15	15	Aeolian Deposit		0	15	1766	5		
						Rock		15	15				
Altastaðir	141073	461934.9933	575201.0336	20	20	Sand		0	20				
						Gravel		20	20				
Altastaðir	141074	461888.5284	575844.5506	50	50	Aeolian Deposit	Sandy	0	50	1766	35		
						Rock		50	50				
Þverá	141075	461796.1055	576748.5165	110	110	Turf		0	40				H1 and H3 in turf
						Turf		40	100				in a wall in a field of þufur
						Low Density Cultural		100	107				
						Aeolian Deposit		107	110				
						Rock		110	110				
Þverá	141076	461787.96	576747.2974	40	40	Turf		0	30	H1	30		base of þufur/wall
						Aeolian Deposit	Mottled	30	40				
						Rock		40	40				
Þverá	141077	461790.2934	576749.8381	100		Turf		0	20	H1	35		possibly some floor in the LDC
						Low Density Cultural		20	30	LNS	45	messed up	LNS is "messed up"
						Midden		30	45	H3	70		between þufur/walls - possible building interior?
						Aeolian Deposit	Disturbed	45	60				
						Aeolian Deposit		60	100				
Þverá	141078	461789.5452	576750.6289	80		Turf		0	17	H1	28		possible structure interior
						Aeolian Deposit	Mottled	17	34	1000	33		peat ash under 1104 in AD
						Midden		34	35	H3	55		
						Aeolian Deposit		35	80				
Þverá	141079	461790.7165	576746.6036	30	30	Aeolian Deposit		0	30				interior structure?
						Rock		30	30				
Þverá	141080	461789.3481	576747.9742	20	20	Aeolian Deposit		0	20	1766	6		structure interior
						Rock		20	20	1300	12		
Þverá	141081	461806.5046	576747.0357	120		Aeolian Deposit		0	40	H1	40		in a þufur
						Turf		40	74	H3	80		
						Low Density Cultural		74	77				
						Aeolian Deposit		77	120				
Þverá	141082	461803.3992	576751.4236	30	30	Aeolian Deposit		0	30	unknown	30	could be sand, black	interior base of wall
						Rock		30	30				
Þverá	141083	461797.8013	576755.6655	80		Aeolian Deposit		0	80	unknown	5		between þúfur
										H1	30	cryoturbated	
										1000	45		
										950	49		
										LNL	51		
										H3	75		
Þverá	141084	461801.7391	576799.2561	40		Aeolian Deposit		0	40	H3	20		
Þverá	141085	462001.0962	576739.2676	40		Aeolian Deposit		0	40				n a þúfur
Gvenðarstaðir	141086	462290	577222	80		Turf		0	35	H3	35		west side of túngarður
													GPS did not record

Farm	Core Number	ISN93 East	ISN93 North	End Depth	Gravel Depth	Stratigraphy				Tephra			
						Category	Description	Top Depth	Bottom Depth	Layer	Depth	Description	Comments
						Aeolian Deposit		35	80				coordinates, point made up from description.
Gvenðarstaðir	141087	462296.714	577222.8151	30	30	Aeolian Deposit Rock		0 30	30 30				off the wall between þúfur prehistoric AD at base
Gvenðarstaðir	141088	462312.1852	577230.8442	35	35	Turf Rock		0 35	35 35				in a wall
Gvenðarstaðir	141089	462313.4548	577232.1347	35	35	Turf Rock		0 35	35 35				animal building interior
Gvenðarstaðir	141090	462315.3282	577227.2511	25	25	Turf Rock		0 25	25 25				possible structure interior organic precipitate on top of rock
Gvenðarstaðir	141091	462316.2972	577222.5082	40	40	Top Soil Aeolian Deposit Rock		0 10 40	10 40 40	1766 H1	4 38	possible could be thin H3	next to 20 cm of blown AD on a þúfur/rock in structure, likely between 1104 and 1766 appears to be two animal barns here - the upslope structure may have been built to replace a decaying down slope structure
Gvenðarstaðir	141092	462365.9826	577254.0372	10	10	Aeolian Deposit Rock		0 10	10 10				þúfur
Gvenðarstaðir	141093	462366.0485	577252.9543	40		Aeolian Deposit	Turfy	0	40	H3	40		base of þúfur other coring inside possible structure - rock everywhere, nothing peopleish
Gvenðarstaðir	141094	462366.1813	577230.8917	61	61	Turf Aeolian Deposit Rock		0 60 61	60 61 61				possible wall
Gvenðarstaðir	141095	462369.2798	577225.0002	60		Turf Aeolian Deposit		0 32	32 60	unknown	32	dark, diffuse, to 35	structure interior charcoal at 31
Gvenðarstaðir	141096	462373.7398	577221.5833	50	50	Turf Aeolian Deposit Rock		0 35 50	35 50 50				interior structure
Gvenðarstaðir	141097	462391.8785	577202.0463	51	51	Turf Aeolian Deposit Rock		0 40 51	40 51 51	H3	50		wall?
Gvenðarstaðir	141098	462393.0814	577202.9306	73		Aeolian Deposit Midden Rock Floor		0 73 80 72	72 80 80 73	unknown unknown	13 30	thick, white black, with iron precip	interior?
Gvenðarstaðir	141099	462394.1215	577199.3083	37		Aeolian Deposit Turf		0 12	12 28	H1	12		interior? H1 could possibly be in

Farm	Core Number	ISN93 East	ISN93 North	End Depth	Gravel Depth	Stratigraphy				Tephra			
						Category	Description	Top Depth	Bottom Depth	Layer	Depth	Description	Comments
						low Density Cultural		37	40				turf, there may be another wisp of it at 28
						Rock		40	40				
						Aeolian Deposit		28	37				
Gvendarstaðir	141100	462394.6379	577203.5431	80	80	Top Soil		0	10	H1	13	thick	interior
						Aeolian Deposit	Mottled	10	35				floor changes character from peat ash to laminate with charcoal at 61
						Low Density Cultural		35	59				slight potential of turf between H1 and LDC
						Floor		59	65				
						Aeolian Deposit		65	80				
						Rock		80	80				
Gvendarstaðir	141101	462392.293	577199.5832	40		Turf		40	80				wall of old building the turf is really awful - it appears to have an inverted LNS in it as well as a possible 1766 (46) and 1300 (71), but it all has ???
						Turf		0	35				
						Aeolian Deposit		35	40				
Gvendarstaðir	141102	462413.196	577204.2032	40		Aeolian Deposit		0	40	H3	20	10 cm	þúfur
Gvendarstaðir	141103	462391.4699	577232.213	32		Top Soil		0	10	unknown	12	black	interior? probably end on a rock but we didn't write that down
						Aeolian Deposit		10	32	H3	20		
Gvendarstaðir	141104	462462.0846	577319.5437	0	0	Rock		0	0				"fjárhús hlaða - floor - rocks"
Gvendarstaðir	141105	462462.4562	577322.4437	40		Turf		0	40				back wall
Gvendarstaðir	141106	462472.3413	577308.437	30	30	Aeolian Deposit		0	30	1766	10		
						Rock		30	30				
Gvendarstaðir	141107	462472.4133	577309.2059	30	30	Aeolian Deposit		0	30	1766	10		next to fjárhús - túngarð?
						Rock		30	30				
Gvendarstaðir	141108	462477.3677	577304.4041	12	12	Turf		0	12				wall
						Rock		12	12				
Gvendarstaðir	141109	462479.45	577303.4335	40		Turf		0	30	1300	30		interior
						Aeolian Deposit		30	40	H1	35		
Gvendarstaðir	141110	462479.8336	577300.117	12	12	Turf		0	12				interior
						Rock		12	12				
Gvendarstaðir	141111	462481.3008	577297.1795	60	60	Turf		0	40				wall
						Aeolian Deposit		40	60				
						Rock		60	60				
Gvendarstaðir	141112	462485.2984	577285.6092	20	20	Turf		0	20				wall
						Rock		20	20				
Gvendarstaðir	141113	462484.2403	577291.3586	40	40	Turf		0	40				interior structure some 1104 also in turf
						Rock		40	40				
Gvendarstaðir	141114	462482.3391	577281.9515	80		Top Soil		0	10	1766	10		

Farm	Core Number	ISN93 East	ISN93 North	End Depth	Gravel Depth	Stratigraphy				Tephra			
						Category	Description	Top Depth	Bottom Depth	Layer	Depth	Description	Comments
						Aeolian Deposit		10	22	H1	37		interior
						Midden		22	24	H3	43		the H3 is on the page as H1 with a ?, so there may still be turf down there but I'm betting I just wrote it down wrong.
						Turf		24	35				
						Midden		35	37				
						Aeolian Deposit		37	80				
Gvendarstaðir	141115	462484.8325	577282.8761	40		Aeolian Deposit		0	18	1766	8		same spot as 114 to verify
						Low Density Cultural		18	40				LDC contains turf w/grey tephra
Gvendarstaðir	141116	462482.1847	577280.4136	63		Turf		0	40	H1	63	giant	wall
						Low Density Cultural		40	48	LNS	79		
						Midden		48	54				
						Turf		54	60				
						Aeolian Deposit		63	80				
						Midden		60	63				
Gvendarstaðir	141117	462478.7005	577277.3091	30	30	Aeolian Deposit		0	10	H1	21	big, to 23	between þúfur
						Low Density Cultural		10	12				
						Turf		12	21				
						Aeolian Deposit		21	30				
						Rock		30	30				
Gvendarstaðir	141118	462486.0041	577268.8686	70		Turf		0	70				wall
						Rock		70	70				