SKAGAFJÖRÐUR CHURCH AND SETTLEMENT SURVEY

Fornbýli Landscape and Archaeological Survey on Hegranes (FLASH)
Interim Report 2017

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Picture on front page – Sean Deryck, Sarah Breiter, and Lauren Welch O'Connor excavate a test unit at Grænagerði, 26 July 2017. Photo facing west.

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Coring and excavations were carried out under the direction of Kathryn Catlin. Portions of the work were assisted at various stages by John Steinberg, Douglas Bolender, Brian Damiata, Gúðný Zöega, Kimmarie Murphy, Rita Shepard, John Schoenfelder, Bryndís Zöega, Eric Johnson, Ceecee Cesario, Alicia Sawyer, Lauren Welch O'Connor, Nicholas Zeitlin, Sarah Breiter, Sean Deryck, Megan Sheehan, Melissa Ritchey, Tyler Perkins, and Kody Shugars. Some data discussed here were collected in 2015 and 2016 and have previously been reported; that work was assisted by many of those listed above as well as Aileen Balasalle, Allison Carlton, Shala Carter, Annie Greco, Leigh Koszarsky, Collin Lenfest, Laura Marques-Jackson, Jared Muehlbauer, Ramona Steele, Joe Trebilcock, and Katherine Wagner (Catlin, et al. 2016; Catlin, et al. 2017). Josiah Wagener cleaned, conserved, and photographed the artifact finds. Preliminary faunal analysis was carried out by Grace Cesario. Preliminary botanical analysis was carried out by MA students at UMass Boston under the direction of Heather Trigg. Radiocarbon dates and tephra analysis were provided by Brian Damiata. Drone and kite photography was performed in the field under the direction of John Schoenfelder and Guðný Zöega. Other background air photos shown in maps in this report are ©Loftmyndir ehf.

General permits for the survey of Hegranes and associated excavations were granted by The Cultural Heritage Agency of Iceland (Minjastófnun Íslands) (MÍ201606-0030, MÍ201606-0065, MÍ201606-0051, MÍ201606-0040, MÍ201706-0047 and MÍ201706-0037). The National Museum of Iceland (Þjóðminjasafnið Íslands) granted artifact catalogue numbers 2016-41, 2017-12, 2017-19, and 2017-20. The work was supported by the US National Science Foundation (PLR # 1523025, 1242829, 1345066, & 1417772) in a joint project of the Skagafjörður Heritage Museum (Byggðasafn Skagfirðinga), the University of Massachusetts Boston, and Northwestern University. Catlin's dissertation work at Northwestern (FLASH) is also supported by the Leifur Eiriksson Foundation and the Fulbright Commission. The Icelandic Archaeology Fund (Fornminjasjóður) supplied additional support for SCASS. We are grateful to the Skagafjörður Commune for their ongoing and invaluable support. Catlin also thanks her dissertation advisor and NSF co-PI, Matthew Johnson, for his advice and support, along with her committee members at NU (Mark Hauser and Cynthia Robin), and Gavin Lucas, who served as her Fulbright affiliate at the University of Iceland in 2016-2017. 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.

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 of Skagafjörður. 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 whether and 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 and results of two projects. One has focused on Viking Age settlement patterns (Steinberg, et al. 2016). The other has been investigating the changing geography of early Christian cemeteries (Guðný Zoëga 2014). Together, the research seeks to understand the connections between the Viking settlement hierarchy and the Christian consolidation.

FORNBÝLI LANDSCAPE AND ARCHAEOLOGICAL SURVEY ON HEGRANES

The *Fornbýli* Landscape and Archaeological Survey on Hegranes (FLASH) project investigates ruined structures and sites located on the environmental and social margins of modern farm properties. This research complements the work of SCASS by seeking to understand the role of smaller, marginal settlements in the political economy of the region, as well as the effects of anthropogenic environmental and landscape change on the establishment, abandonment, and reuse of these sites. The project is led by Kathryn Catlin as part of her doctoral dissertation in Anthropology at Northwestern University.

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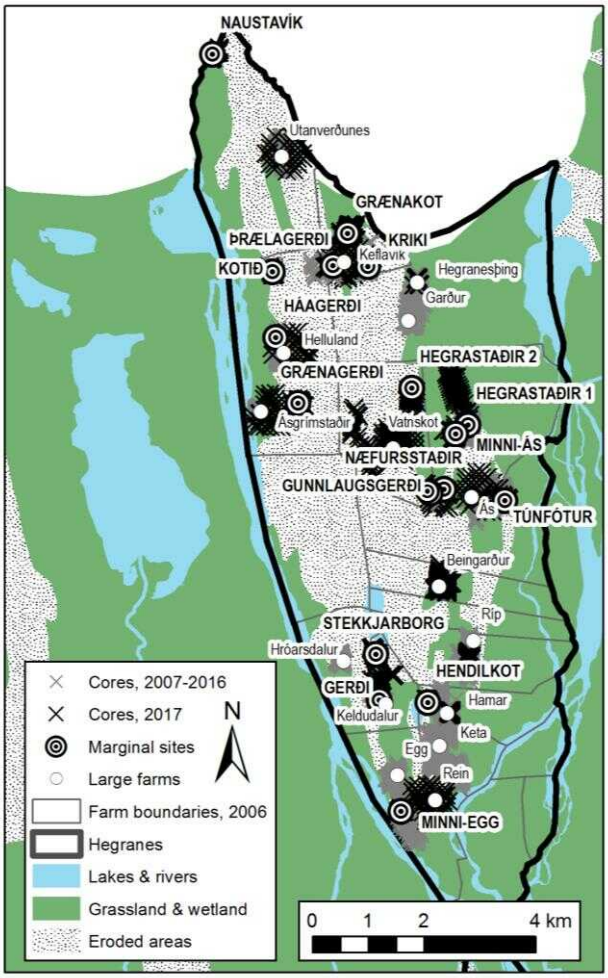


***Figure 1**. Map of Hegranes showing farms, FLASH sites, and cores. Erosion data ©LBHI.*

Introduction

In 2017, the *Fornbýli* Landscape and Archaeological Survey on Hegranes (FLASH) project and the Skagafjörður Church and Settlement Survey (SCASS) continued survey and excavation in and around known outlying ruins and archaeological places (*fornbýli*) on the farms of Ás (Næfurstaður, Gunnlaugsgerði, Túnfótur, Minni-Ás, and Hegrastadir), Keflavík (Grænakot/Vík, Kriki, and Þrælagerði), Egg (Minni-Egg), Helluland and Hulduland (Kotið and Grænagerði), Utanverðunes (Naustavík), Svanavatn (including Hegrastaðir), Keldudalur (Gerði and Stekkjarborg), and Hamar (Hendilkot) on Hegranes in Skagafjörður, North Iceland (Hjalti Pálsson 2010) (Figure 1). This report describes survey, excavation, and environmental analysis carried out on these farms in 2017, as well as updates to work carried out in 2015 and 2016, including newly available radiocarbon dates.

The work was performed to meet the goals of Kathryn Catlin's doctoral dissertation research at Northwestern University. Work at Stekkjarborg on Keldudalur was performed in 2017 by Nicholas Zeitlin as part of his MA at UMass Boston and is not reported here. Additional coring and excavation by SCASS in 2015-2017 at Garður (including Hegranesþing), Keflavík, Ríp, Utanverðunes, Keflavík, Egg (including Rein), Svanavatn, Helluland (including Ásgrimsstaðir), Beingarður, Hroársdalur, Keldudalur (including Stekkjarborg), Keta, and Hamar are described in separate reports, along with specific details and analysis of the farmsteads at these major sites (Bolender, et al. 2016; Bolender, et al. 2017; Bolender, et al. forthcoming; Catlin, et al. 2016; Catlin, et al. 2017; Guðný Zoëga, et al. 2016; Steinberg, et al. 2017; Steinberg, et al. forthcoming-a; Steinberg, et al. forthcoming-b; Zeitlin, et al. forthcoming).

The work described in this report was performed under two permits issued by Minjastofnun Íslands. Coring at the *fornbýli* sites was carried out under MÍ 201606-0030, test excavations were performed under MÍ 201706-0037, and finds were collected under ÞÍ 2017-20.

The FLASH research had two primary purposes: first, to locate, date, and to the extent possible, characterize the nature of the activities performed at the *fornbýli* locations; and second, to describe and understand the sequences of soil erosion, sediment deposition, and landscape change that have occurred on Hegranes, both near and distant from the *fornbýli* sites and the major farms, since the settlement of Iceland ca. 870 AD.

Coring was employed by FLASH and SCASS to (1) determine the establishment date and extent of the medieval settlements and farmsteads; (2) locate areas of human activity and measure soil depth in the fields immediately surrounding the medieval settlements; and (3) determine the dates, use, and environmental context of *fornbýli* sites.

Note on Terminology

The Icelandic word *fornbýli* usually refers to relatively small, early farmsteads, generally without evidence of settlement after the medieval period. Often *fornbýli* include a longhouse (*skáli*), one or two outbuildings, and an enclosure wall. *Fornbýli* is also sometimes used to describe indeterminate ruins which, based on the surveyor's experience, are likely to have previously been inhabited – this latter sense was used by Hjalti Pálsson in *Byggðasaga Skagfirðinga* (2010), and the FLASH project takes his designations as a starting point for investigation. Most of the sites surveyed in this project do not have surface features common to *fornbýli*, but archaeological research is showing that the majority of them were inhabited early, though most early features have since been obscured by later construction and agricultural use at the sites. It is also possible that the early habitation phases of at least some of the sites may not represent "farms" *per se* but rather long-term activity areas or cottages (*kot*) that were not directly engaged in agriculture on-site, which raises additional questions about terminology. For consistency, *fornbýli* is used to describe the early habitation phase of the sites, while the more general "site" designation is used for later phases and for the site as a whole.

Summary

Preliminary interpretations suggest that many *fornbýli* were inhabited early, that the sites were reused for multiple purposes after habitation ceased, through the medieval period and later, and that the overall landscape of Hegranes has been subject to significant erosion and alteration over the course of its history. Most of the *fornbýli* were inhabited prior to ca. 950 AD, and several of them were relatively large during the 10th and 11th centuries, comparable in size to farms that would later become much larger and more successful (Appendix F). Others seem only to have been inhabited for a short time, perhaps as a temporary or seasonal work site. None show evidence of habitation much after ca. 1104, and from that time until after the late 18th century, many of the sites were rebuilt as farm infrastructure for livestock management (*stekkir* and *beitarhús*, constructed between 1104 and the 19th century, are often still visible), only to be finally abandoned and fall to ruin before the 20th century. Preliminary environmental analysis suggests two significant periods of erosion: prior to 1104, and after 1766, roughly corresponding to the periods when the use of the sites was changing. Preliminary analysis of carbon content at nearby mires further suggests that wetlands were more likely to persist through time close to the sites than farther away, perhaps a result of intentional preservation to support wetland exploitation. Indeed, coring further shows that wetlands near most of the sites were exploited for peat and turf through most of their history.

Yfirlit

Rannsóknirnar voru í formi ítarlegrar könnunar með töku kjarnabora og könnunarskurða á nokkrum fornbýlum í Hegranesi. Ætlunin að kanna aldur jarða og stærð þeirra í upphafi, með sérstöku tilliti til umhverfisbreytinga.

Sumarið 2017 fóru fram fornleifarannsóknir á sextán fornbýlum á átta jörðum í Hegranesi, Skagafirði: Naustavík (á Utanverðunesi), Krika, Þrælagerði, og Grænakoti/Vík (í landi Keflavíkur), Minna-Ási, Næfurstöðum, Túnfæti, og Hegrastöðum (í landi Áss), Hegrastöðum og Vatnskoti (í landi Svanavatns), Hendilkoti (í landi Hamars), Gerði og Stekkjarborg (í landi Keldudals), Minni-Egg (í landi Eggjar), og Grænagerði og Kotinu (í landi Huldulands og Hellulands).

Jarðsjármælingar voru gerðar á Þrælagerði og Kotinu, og sýndu engin merki um byggingar neðanjarðar. Uppgreftir fóru fram á Grænakoti/Vík, Minni-Egg, Gerði, Grænagerði, og Kotinu. Skurðir fyrir umhverfis sýnatökur voru gerðir í Keflavík, Minna-Ási, Næfurstöðum, Túnfæti, og Kotinu.

Gjóska úr Heklu sem féll 1104 e.Kr. var notuð sem leiðarlag varðandi skilgreiningu á elstu byggð. Öll fornbýlanna voru byggð og komin í eyði fyrir 1104 e.Kr. Eftir 1104 voru beitarhús eða stekkir byggðir á sama stað og fornbýlin.

Uppsöfnun jarðvegs var yfirleitt lítil, um það bil 50 cm. Hún var mest innan túngarða, sem bendir til að torfveggir hafi verið mikilvæg vörn gegn jarðvegsrofi og þar með ýtt undir áframhaldandi framleiðni túna. Flest fornbýlanna lágu í þýfðu og veðruðu mýrarlandslagi. Til að skilja þróun mýranna voru sýni tekin til að mæla magn lífrænna efna í jarðvegi á mismunandi tímabilum (*loss-on-ignition*).

Á tveimur stöðum, annarsvegar í landi Áss, hinsvegar Svanavatns eru minjar sem eru taldar af Hegrastöðum, meintu landnámsbýli í Hegranesi. Mannvist fannst á hvorugum staðnum en á báðum stöðum voru þó seinni tíma útihús.

Methodology

Chronology

Skagafjörður has a tephra sequence that allows for a common dating system, leading to a fine-grained chronology of the changes in early settlement patterns (Figures 2 and 3) (Gudrún Larsen, et al. 2002; Sigurður Þórarinsson 1977). The dates of the historic eruptions roughly permit delineation between several major historical events, including the original settlement of the island about 870 AD, the end of mass migration to the island in ca. 930, the conversion to Christianity in ca. 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 around the beginning of the 14th century. Brian Damiata is engaged in ongoing analysis of the tephra layers.

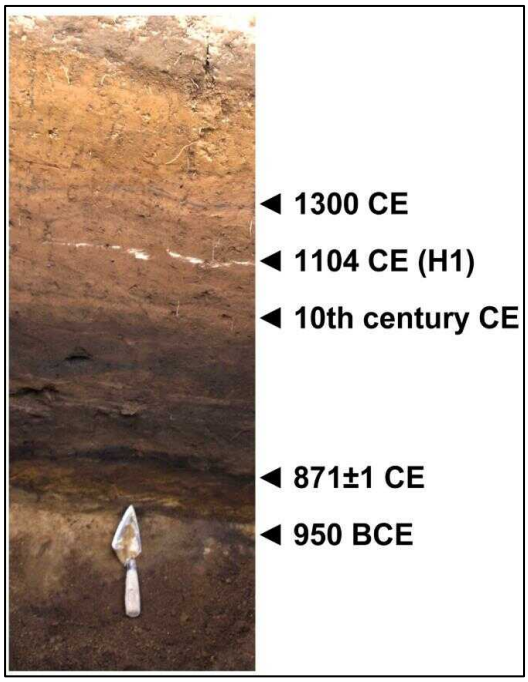


Figure 2. *Skagafjörður tephra sequence, shown in a representative profile section.*

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 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; the most consistent in Skagafjörður (J. Eiriksson, et al. 2000; Sigurður Þórarinsson 1967) and readily identifiable in both natural and cultural stratigraphic sequences. Variously referred to below as 'H1' or '1104'.

Landnám sequence tephras:

- Late 10th century tephra (~1000). The source has not yet been determined, but likely to be either the Grímsvötn or Veiðivötn eruptions dated to approximately A.D. 1000 (Vj~1000) (Boygle 1999; Guðmundur Ólafsson 1985; Magnús Á. Sigurgeirsson 1998; Wastegard, et al. 2003).
- A mid-10th century layer (~950). This bluish-green layer is currently un-sourced and undated, but is found between the LNL and Vj~1000. There are several potential candidates for this layer, including the A.D. 934±2 eruption of Eldgjá (Fei and Zhou 2006; Hammer, et al. 1980; T. Thordarson, et al. 2001), an A.D. 933±6 green tephra layer identified in the Lake Mývatn area from Veiðivötn, termed V-Sv (Magnús Á. Sigurgeirsson, et al. 2013), or a V~950 layer also

Figure 3. Stratigraphic layers in a JMC Backsaver core.

observed in Mývatnsveit (Magnús A. Sigurgeirsson, et al. 2002). Analysis by Brian Damiata is ongoing.

- "*Landnám* layer" (LNL), dated to A.D. 871 ±2, the approximate date of the settlement ("*landnám*") of Iceland (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 volcano system (Dugmore and Newton 2012; Gudrún Larsen 1984). The eruption had two stages, resulting in two distinct tephras – an olive-green tephra overlaying a white tephra. Only the green component has been identified in Skagafjörður.
- Black tephra before the LNL (Black Katla). The earliest tephra in this sequence is a dark black layer likely from the Katla volcano, but it is not well dated and its distribution is not yet well understood in Skagafjörður (Wastegard, et al. 2003).
- 'LNS' signifies the *landnám* sequence, a series of tephra and other sediment layers that are often found in association with the LNL and Black Katla. This distinctive dark-colored sediment layer 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 by the use of fire.

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.

Tephra are used to date layers within the stratigraphic sequence in soil cores and excavations, to associate specific layers with historical periods, and to characterize environmental changes through time.

Coring

Field Methods

Coring in and around *fornbýli* was performed in systematic paced grids at 10-meter spacing, with additional judgmental coring where evidence of habitation was observed. In some cases, coring at more distant areas employed 20 meter grids. Extensive field coring used spacing of up to 50 meters. We recorded a total of 2571 cores on Hegranes in 2017, of which 907 were recorded at *fornbýli* (plus 384 at Stekkjarborg (Zeitlin, et al. forthcoming)) (Table 1, Appendix G). In 2016, 2624 total cores were recorded (619 at *fornbýli*); in 2015, 1737 cores (814 at *fornbýli*) were recorded; and 91 cores in earlier years (2007 and 2013) (Bolender, et al. 2016; Bolender, et al. 2017; Catlin, et al. 2016; Catlin, et al. 2017; Steinberg, et al. 2017). Field and *fornbýli* coring primarily employed a JMC Backsaver core with an 18-inch large-diameter sampling tube. The backsaver core is capable of extracting up to 120 cm of sediment in 40-cm increments, with a diameter of approximately 3 cm (1.25 in) (Figure 3).

***Table 1**. Summary of coring data from* fornbýli. *(~=difference in depth in/out of wall is statistically significant to 0.05 (independent samples t-test); * = data collected in 2017 only; + = total includes one core with unknown location; ** = averages include 23 cores around the site that are assigned to Egg in the database and are excluded from counts; ° = date derived from analysis of cores, excavation, and radiocarbon (AMS) where available)*

Site	Total Cores		Average Depth (cm)		Cultural Material Any			1766 Total		1300 Total		1104 Total		1000 Total		~950 Total		LNS/ LNL Total		H3 Total		H4 Total		Unknown / Other Total		Bog Total		Earliest Clear Cultural Date°
	Inside Wall	Outside Wall	Inside Wall	Outside Wall	Midden	LDC	Turf	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	
Minni-Ás	175+		47~		52			26		24		21		4		0		8		66		12		3		34		pre~950 1130+-15 cal 886-972
	78	96	59	36	14	11	35	7	19	5	19	7	14	2	2	0	0	8	0	37	29	2	10	1	2	2	32	
Næfurstaðir	173		45~		69			35		24		53		12		14		6		75		17		5		49		pre~950
	99	74	49	39	17	13	43	14	21	6	18	37	16	8	4	14	0	6	0	51	24	4	13	2	3	16	33	
Túnfótur	226		39~		65			13		36		68		2		1		0		62		11		5		16		pre~950
	116	110	53	24	4	5	43	7	6	32	4	63	5	1	1	0	1	0	0	51	11	9	2	3	2	5	11	
Gunnlaugsgerði	23		42		1			3		0		2		0		0		0		7		3		1		5		post-1104 (turf)
					0	0	1																					
Hegrastaðir (Ás)	158		44		12			3		15		22		1		0		11		55		27		2		6		pre-1104 (turf)
					0	1	10																					
Hegrastaðir* (Svanavatn)	124		42		27			13		15		28		4		1		7		49		17		5		6		pre~950 (turf and animal floor)
					0	1	19																					
Kriki	120		57~		38			24		34		40		2		1		26		67		30		4		23		pre~950
	86	34	69	32	5	4	26	18	6	22	12	35	5	2	0	1	0	25	1	57	10	27	3	3	1	15	8	
Þrælagerði	168		44		82			11		19		31		2		0		3		88		13		2		19		pre~950
	99	69	45	42	19	7	56	2	9	5	14	11	20	0	2	0	0	3	0	60	28	7	6	0	2	4	15	
Grænakot/Vík	288		41~		76			21		37		56		2		2		11		86		10		3		39		unknown likely pre-1104
	111	177	39	45	11	10	59	1	20	1	36	24	32	2	0	0	2	7	4	44	42	4	6	1	2	10	29	
Naustavík*	54		49		22			12		10		9		0		0		2		18		1		1		5		post-1300
					4	0	20																					

Site	Total Cores		Average Depth (cm)		Cultural Material			1766		1300		1104		1000		~950		LNS/ LNL		H3		H4		Unknown / Other		Bog		Earliest Clear Cultural Date°
					Any			Total		Total		Total		Total		Total		Total		Total		Total		Total		Total		
	Inside Wall	Outside Wall	Inside Wall	Outside Wall	Midden	LDC	Turf	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	
Hendilkot	140		43		66			0		3		59		4		22		12		82		7		2		1		pre-1104
					26	22	12																					
Kotið	97		41		35			21		20		30		6		0		13		37		14		4		15		pre~950 1190+-15 cal 775-884
					7	10	22																					
Grænagerði	155		42		60			51		33		39		8		0		5		57		5		5		33		pre~1000
					20	11	21																					
Háagerði	46		39		17			8		8		9		0		1		0		13		1		0		16		post-1300
					0	0	16	2	6	3	5	3	6	0	0	0	1	0	0	6	7	0	1	0	0	4	12	
Stekkjarborg	385		43		161			12		11		55		8		1		5		138		47		6		86		pre-1104 1140+-15 cal 875-973
					69	28	57																					
Gerði	131		34~		42			1		5		12		0		0		6		43		10		1		11		pre-1104 likely earlier
	60	70	53	22	3	2	29																					
Minni-Egg	199		55**~		64			14		17		35		2		1		16		122		64		9		19		pre~1000
inner	122	77	64**	44**	3	8	48	10	4	9	8	26	9	2	0	1	0	13	3	86	36	56	8	9	0	16	3	
outer	178	21	57**	39**				12	2	14	3	32	3	2	0	1	0	16	0	113	9	62	2	9	0	17	2	

Recording Methods

Coring data was recorded in the field using an iPad or iPhone with remote access to the SCASS database via the FileMaker Go application. To characterize the history of sediment deposition and erosion on Hegranes, we recorded stratigraphic information for each core, including depth, thickness, and descriptions of sediment layers. Stratigraphic data was recorded from the top of the topsoil to glacial gravel or bedrock (or the depth at which the core could no longer penetrate the ground, if gravel was not directly observed). In some cases, when prospection for cultural material was the primary purpose of the core, coring halted after the prehistoric H3 or H4 layer was observed.

Stratigraphic layers were identified as belonging to one of several ecological or cultural descriptive categories. Ecological categories included topsoil, Aeolian deposit (silty andosol), bog, clay, gley, sand, glacial gravel, and bedrock. Bog (mire) deposits are discussed below in terms of landscape change and land use, and are shown on the maps. Cultural categories included domestic refuse or midden deposits (pink or grey layers primarily consisting of more than 50% ash, charcoal, and other debris), architectural turf, floors, and other dense cultural layers. We also used a "low density cultural" designation for layers in which Aeolian sediment was diffusely mixed with ash (10-50% of the soil matrix). Inclusions of ash, charcoal, bone, and other material in an otherwise sterile matrix were also recorded. Additional descriptions and disturbances, as well as other relevant comments regarding the core and its location, were noted when applicable.

Depth and thickness of tephra layers were also recorded where present, and the presence or absence of tephra layers in shown in the maps below. When observed in association with cultural deposits, tephra layers are used to constrain the earliest and latest possible dates for the deposit. When tephra was not observed in situ, *terminus post quem* (date after which) dates of certain cultural deposits can be obtained from layers of turf that include tephra; for example, a turf that includes multiple layers of the H1 tephra must have been cut from a bog after the year 1104. All recorded data from the coring surveys can be found in the accompanying document (Appendix G).

Analytical Methods

Chronological phasing of cultural material primarily relies on two tephra layers: the white Hekla A.D. 1104 (H1) and the dark bluish-grey Hekla A.D. 1300. These layers are the most commonly observed, and are often the easiest of the historical tephras to identify. When present, the dark black Hekla A.D. 1766, the black ~1000 layer, and the greenish ~950 layer are also used to date deposits. The chronology derived from the coring data allows the earliest evidence for human use at a point location to be assigned to one or more of the following time periods (all CE/AD):

- Pre~950
- Pre~1000
- Pre-1104
- 1104-1300
- Pre-1300
- Post-1766
- Post-1300
- Post-1104
- ‘All time’, denoting the presence of cultural material from any time period, even if a specific date could not be assigned.

Deposits associated with these temporal phases were labelled based on whether they contained any evidence of cultural material, including midden, LDC, turf, floor, or other cultural layers, excluding deposits with only small particles of ash, charcoal, or bone. Cores were assigned to a "yes," "no," or

"maybe" category for each time period. These criteria are used to date the various activities that have taken place at the site, and to map the spread of associated material remains. Approximate "farmstead" areas have been calculated for the *fornbýli* based on these observations, following the SCASS protocol (see methodologies in Bolender, et al. 2016). In later periods, after habitation ceased at the sites, approximate extents of turf have also been calculated. Maps showing the resulting estimated extents are included below. It should be noted that these farmstead sizes are early estimates and may be revised before final publication of the results.

Coring maps shown below display (1) the depth of glacial gravel/bedrock (or the full depth to which the core penetrated if basal deposits were not encountered); (2) the presence or absence of all tephra layers, shown along with the presence or absence of natural bog (mire) deposits; (3) the date of construction for turf deposits, where present; (4) the presence, category, and earliest date of observed cultural material; and (5) the approximate size of the 'farmstead' at 1104, with yes/maybe designation for cores that contained midden, LDC, floor, and/or turf. When available, maps include data collected in 2015 and 2016 as well as 2017. Complete map sets are only shown for sites first surveyed in 2017; for more details, see the FLASH reports from 2015 and 2016 (Catlin, et al. 2016; Catlin, et al. 2017).

Independent sample statistical t-tests were performed to explore the difference in soil depth to bedrock inside vs. outside of field boundaries, and the p-values (significance) of these tests are summarized in Table 1.

Table 2. *List of Test Pits and Profiles excavated at* fornbýli *in 2017 (coordinates in ISN 1993 Lambert) (*coordinates mark SW corner of units and center of profiles)*

Site #	Place #	Farm	Place	Excavation	Size (m)	Easting*	Northing*	Date Opened	Date Closed
445	3	Keflavík	Grænakot/Vík	TP1	1x1	477332.5	582417.9	7-Aug	9-Aug
447	1	Helluland (Hulduland)	Grænagerði	TP1	1x1	476486.3	579360.9	26-Jul	27-Jul
450	2	Keldudalur	Gerði	TP1	1x1	477930.0	574066.3	17-Jul	21-Jul
451	1	Egg	Minni-Egg	TP1	1x1	478301.7	572092.4	4-Jul	4-Jul
447	2	Helluland	Kotið	TP2	2x2	475997.4	581698.1	26-Jun	30-Jun
442	1	Ás	Minni-Ás	Profile1	Profile	479220.4	578694.2	14-Jul	14-Jul
442	1	Ás	Minni-Ás	Profile2	Profile	479063.6	578855.2	18-Jul	18-Jul
442	2	Ás	Túnfótur	Profile1	Profile	480037.2	577633.0	12-Jul	12-Jul
442	2	Ás	Túnfótur	Profile2	Profile	480107.8	577614.3	12-Jul	12-Jul
442	2	Ás	Túnfótur	Profile3	Profile	480042.0	577587.8	12-Jul	12-Jul
442	4	Ás	Næfurstaðir	Profile1	Profile	479075.3	577477.8	17-Jul	17-Jul
442	4	Ás	Næfurstaðir	Profile2	Profile	479150.4	577697.5	17-Jul	17-Jul
445	6	Keflavík	Lower Keflavík	Profile2	Profile	477445.5	581843.5	30-Jun	30-Jun
447	1	Helluland	Grænagerði	Profiles1&2	Cores	476363.4	579323.7	27-Jul	27-Jul
447	2	Helluland	Kotið	Profile1	Profile	475957.7	581681.5	30-Jun	30-Jun
447	2	Helluland	Kotið	Profile2	Profile	475950.4	581808.2	30-Jun	30-Jun
443	0	Vatnskot	N/A	Profile1	1x1	477686.3	578617.4	10-Aug	10-Aug

Excavations

Test excavations at the *fornbýli* targeted the oldest locations of ash middens as determined from coring survey. A total of five test pits were excavated in 2017 as part of FLASH (Table 2). Test pits were excavated using a single context recording protocol according to the methods described by the Icelandic Institute of Archaeology (Fornleifastofnun Íslands (FSÍ)) (Lucas 2003). Contexts under the 1300 tephra layer were sieved through a 5mm mesh screen. In the absence of tephra, sieving began as soon as cultural material of any kind was observed below the root mat. Finds, faunal remains, and macrobotantical flotation samples were collected from all contexts. When soils were particularly clay-ey, the last bits remaining in the screen for each context were collected in bag and later wet screened by Grace Cesario to ensure complete collection of faunal remains; some limited finds were also retrieved from wet screens. Selected tephra samples were collected from the side-walls after excavation. Contexts, photos, samples and finds were entered to the SCASS database in the field using an iPad or iPhone via remote access to the FileMaker Go application. Contexts within the test pits were divided in the field by major distinctions in color, composition, and inclusions. Layers were further identified and clarified in profiles. Profiles for all units were drawn in the field and converted to digital images in Adobe Illustrator or Inkscape.

All finds have been conserved by Josiah Wagener and will be remitted to the National Museum of Iceland. Numerous faunal remains were retrieved and are undergoing analysis by Grace Cesario. Macrobotanical flotation samples were floated in Sauðárkrókur and are undergoing microscopic analysis at UMass Boston. Charred seeds from these samples are undergoing AMS dating by Brian Damiata, who is also investigating the tephra samples. For a list of all finds and samples, see Appendices A (Finds Register), B (Sample Register), and C (Flotation and Seeds Register).

Loss-on-Ignition Sampling and Analysis Protocol

Sampling profiles were placed to characterize wetland development both near and far from inhabited sites. A total of twelve profiles were sampled for loss-on-ignition analysis (Table 2). Where feasible, profiles were cleared back from existing ditches, except units dug rapidly in areas with no cultural deposits at Svanavatn and Kriki (2016). Samples of both the mire matrix and visible tephra layers were collected directly from the profiles, starting at the base, using a clean knife for each sample. At Grænagerði, samples were collected directly from a core.

Loss-on-ignition (LOI) samples from mires were processed at UMass Boston in Fall 2017 by Kathryn Catlin and Lauren Welch O'Connor. Subsamples of 1 teaspoon (US) were extract from each sample bag. Subsamples were first dried at 60° for two hours in crucibles in a muffle furnace, then crushed, and finally ashed at 550° for four hours. Subsamples were weighed before and after drying to calculate water content and bulk density, and before and after ashing to calculate the organic mass lost. Data from analysis and processing is listed in Appendix D.

GPS Recording

Location data was recorded via several GPS devices. All measurements use the ISNET93 coordinate system. Core locations were recorded directly into the FileMaker software, using the built-in GPS of the iPhone or iPad. The device's internal GPS location is accurate to between 4 and 10 meters.

Location information was also recorded into a shared map in ArcGIS Online via iPads and iPhones running the ArcGIS Collector app, which allowed us to view all location data in real-time in the field. Data were recorded using the internal receiver on the device, or with a Trimble R1 or R2 differential GPS receiver connected to the mobile device via Bluetooth and accessing real-time corrections via the GNSS Status app. The location accuracy was <1m when connected to the R1 receiver, or 4-10m without an external receiver. The R2 was employed primarily to collect excavation unit corner locations to a horizontal accuracy of <10cm. Elevation data recorded in ArcGIS Collector was

converted in the lab from HAE (height above the ellipsoid) to ASL (height above mean sea level) using the internet application at http://cocodati.lmi.is. Coring locations recorded in 2015 at Kriki, Þrælagerði, Minni-Egg, Gerði, Túnfótur, Minni-Ás, Hegrastaðir-Ás, Grænakót and Næfurstaðir used only the internal iPad GPS in FileMaker Go, and therefore may only be accurate to within 4-10m.

SCASS also regularly employs two handheld Trimble devices, a Geo7X and a GeoXH (estimated accuracy <1m), as well as a Topcon Hiper SR differential GNSS (estimated accuracy 1cm with real-time corrections) to capture location data. Corners of test excavations at several of the *fornbýli* as well as some core locations were measured using the Topcon. Some coring locations were collected with the Trimble handheld devices, and this data was differentially corrected via post-processing using Pathfinder Office software. Due to vagaries of collecting location data with iPads and iPhones, which depend upon local cell phone service as well as line-of-sight connection to GPS satellites, location data failed to record for 5 SCASS and 1 FLASH cores in 2017. In a few other cases, core locations were estimated from memory in GIS. Coring location data is also provided in Appendix G.

Sites at Keflavík and Naustavík were previously surveyed by Byggðasafn Skagfirðinga, and the maps below display the resulting shapefiles (Bryndís Zoëga 2017; Guðný Zoëga and Guðmundur S. Sigurðarson 2009).

Digital Photography

During test excavations, all profiles and contexts were photographed with a Canon T5i DSLR camera with a Sigma 18-250mm lens, and photos were stored on the SCASS server and uploaded to the FileMaker database. Additional photos (candids and landscapes along with some excavation photos) were taken with iPhones and iPads. All photos (except cores) are listed in Appendix E. To supplement the coring survey, more than 200 digital photos were recorded in 2017, taken in JPG format using the built-in camera of the iPhone or iPad used for data collection. Most of these photos were taken directly in FileMaker Go. Others were uploaded to the database later, and are also stored on the SCASS server. Cores with photos on record are so noted in Appendix G.

Drone-based aerial photography, including infrared imagery, was performed at multiple sites in 2017 under the direction of John Schoenfelder. Kathryn Catlin and Guðný Zoëga also collected drone imagery at Ás and Egg in Spring 2017. In prior years, Schoenfelder directed the collection of kite aerial photography at several *fornbýli*. As a result of this work, air photos are now available for all *fornbýli* except Þrælagerði and both Hegrastaðirs, and are shown on the maps below. All visible-spectrum imagery from these sites has been processed in Agisoft Photoscan, except for Stekkjarborg (pending analysis by Zeitlin). Infrared imagery has not yet been processed. For details of the process and a list of photos, see the SCASS and FLASH reports for 2015-2017 (Bolender, et al. 2016; Bolender, et al. 2017; Bolender, et al. forthcoming; Catlin, et al. 2016; Steinberg, et al. 2017; Steinberg, et al. forthcoming-a; Steinberg, et al. forthcoming-b; Zeitlin, et al. forthcoming).

Geophysical survey

In late June of 2017, two *fornbýli* (Þrælagerði on Keflavík and Kotið on Helluland) were surveyed with an electrical conductivity meter. The frequency-domain electromagnetic (FDEM) surveys were conducted using a GF Instruments' CMD mini-Explorer, which operates at 30 kHz over three separate dipole lengths (i.e., a single transmitter located at one end of the unit and three separate receivers located at varying distances along the boom). By increasing dipole length, a greater volume and depth of soil can be sensed. When operated in the vertical dipole mode, the dipole lengths of 0.32, 0.71 and 1.18 m provide depths of interrogation of approximately 0.5, 1.0 and 1.8 m (~1.5 x the dipole length), respectively, relative to the level of the sensors.

For the surveys, the instrument was operated in the vertical dipole mode with the boom carried at foot level. Data were collected along contiguous, unidirectional transects that were separated by 0.5 m. The sampling rate was set to 10 Hz (10 samples per second), which yielded a spacing between measurements of ~0.06 m while walking at a normal pace. Surveying was guided by color-coded PVC flags that were placed every meter along either end of the grid, and measuring tapes were held in place along each transect during the survey. The true location of measurement was determined by fiducial markers that were placed into the data stream by the operator and assuming linear interpolation between markers. Both quadrature phase (bulk ground conductivity) and inphase (related to bulk ground magnetic susceptibility) components were recorded for each of the three dipole lengths (i.e., six simultaneous readings were recorded for each "measurement").

The raw data were initially corrected to properly adjust for the starting and ending locations of each transect. The data were then processed using ArcGIS mapping software to produce grey-shaded and color-contoured maps, displayed below. The processed data were also archived into a database for future use.

Field boundaries

Boundaries of homefields shown on the maps and used in soil depth comparisons were derived from several sources. Field boundaries at many of the *fornbýli* are visible on the surface today, and were traced with a handheld GPS on the ground by Kathryn Catlin or Bryndís Zoëga, or from (modern or historic) aerial photography.

During the second half of the 20th century, many farms in Iceland (including those on Hegranes) were enlarged, flattened, drained, and plowed to take advantage of higher yields made possible by modern machinery. Therefore, no surface trace is visible of walls and structures that were present prior to modernization, including homefield walls of the major farms as well as any *fornbýli* that were located within the expanded hayfields. For farms that were extant at the time, *túnakort* (property assessment maps) from 1918 were georeferenced to their best-guess location based on natural features, historical air photos, modern field shapes, roads, and structures, and were traced into a shapefile in GIS (Guðmundur Sveinsson 1918a; Guðmundur Sveinsson 1918b; Guðmundur Sveinsson 1918c).

Survey Results

Ás

Ás is the largest farm on Hegranes, both in terms of modern property boundaries and the size of the medieval farmstead (Bolender, et al. 2016; Steinberg, et al. forthcoming-a). Historically, Ás has also been the most prominent, prosperous, and populous farm in the region (Árni Magnússon and Vídalín 1930; Björn Lárusson 1967; Johnsen 1847). Ás is located along the eastern side of Hegranes and takes its name from the eroded, rocky ridge (*ás* in Icelandic) that runs along the north-south axis of the farm. The ridge is separated from the main landform of Hegranes by a low, now-drained mire that stretches from Ásvatn lake north into the fjörð. The modern property of Ás has been split into two farms, now called Ás I and Ás II. Both modern farmhouses as well as the medieval mound are all within the bounds of the historic homefield as surveyed in 1918 (Guðmundur Sveinsson 1918a).

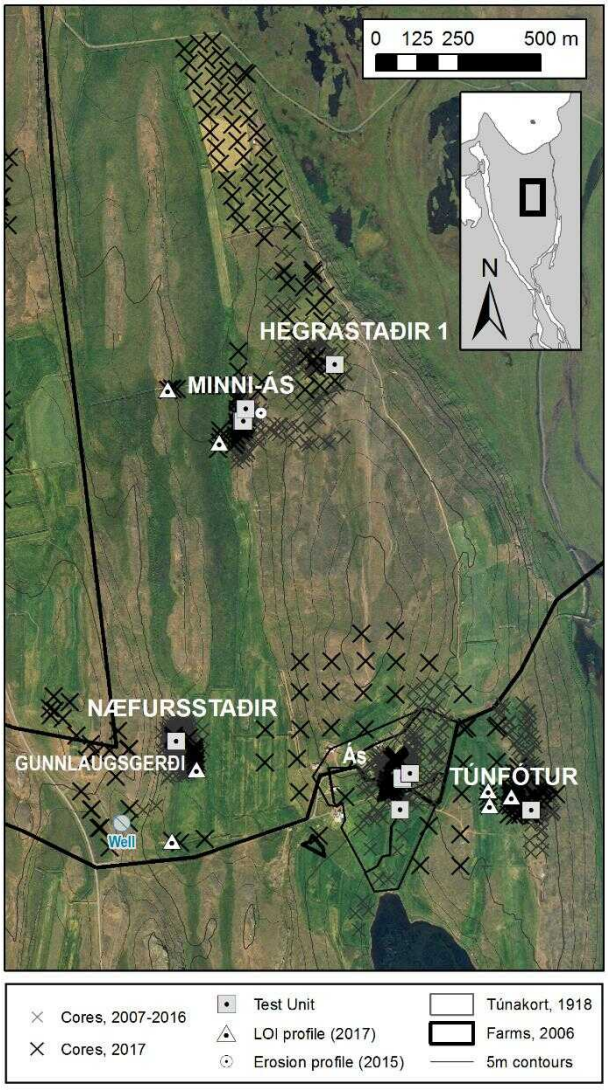


Figure 4. *Landscape of Ás and its* fornbýli.

There are five named places on the landscape of Ás that have been associated with accounts of earlier settlement: Næfurstaðir, Túnfótur, Minni-Ás, Gunnlaugsgerði, and Hegrastaðir (Hjalti Pálsson 2010:58-59) (Figure 4). Survey and excavation were carried out at Minni-Ás, Túnfótur, Næfurstaðir, and Hegrastaðir in 2015 and 2016 (Catlin, et al. 2016; Catlin, et al. 2017). In 2017, coring survey was carried out at potential locations for Gunnlaugsgerði and Hegrastaðir, and no evidence of early settlement was observed. At Minni-Ás, Túnfótur, and Næfurstaðir, a small number of follow-up cores were performed to fine-tune the size and date estimates for habitation at the site, all visible architecture was traced with a GPS, and loss-on-ignition samples were obtained from profiles in ditches near the sites. Aerial photographs of Minni-Ás, Næfurstaðir, and the potential Gunnlaugsgerði site were taken via drone in late spring.

Minni-Ás

Minni-Ás is located along the western side of the northern end of the *ás*. The site consists of a north-south oriented enclosure wall, bounded to the west by a ditch, and at least three tofts: an east-west oriented 3-room grazing shed/*beitarhús* or weaning pen/*stekkur* (8m by 10m), a north-south oriented possible 2-room longhouse/*skáli* (13m x 5.5m) that may have a 6.5m platform at its south end, and a small 2-room L-shaped structure (7m x 8.5m), possibly a small corral/*rétt* or *stekkur*, between the other two. Minni-Ás is near the base of the hillslope, with wetlands downslope to the west and an eroded hillside to the east. The area is heavily cryoturbated.

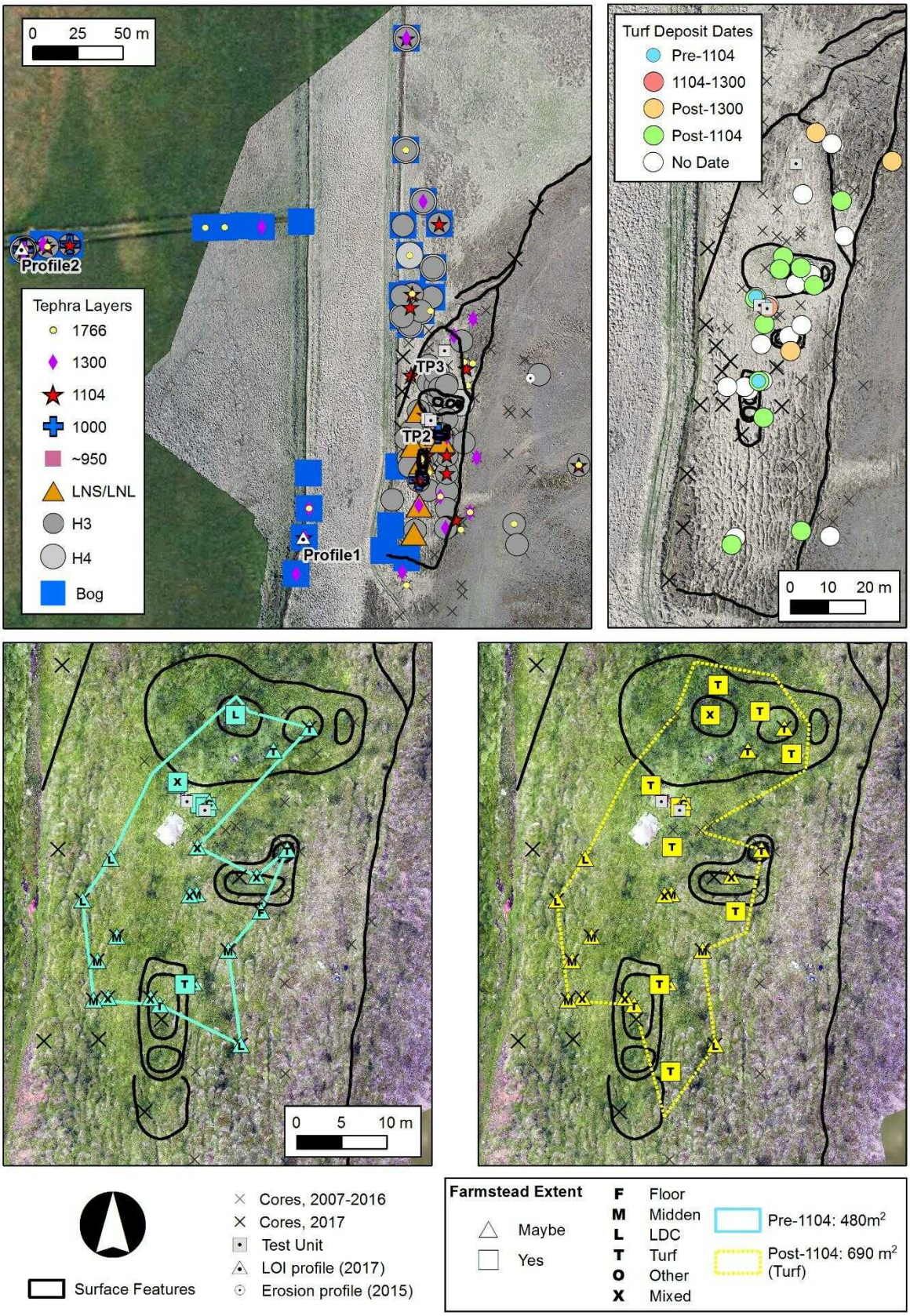


Figure 5. *Minni-Ás maps. Top left: tephra and bog. Top right: turf dates. Bottom: farmstead sizes using the SCASS protocol, left: pre-1104 (and earlier); right: post-1104 (turf only). Background, top: drone survey, Spring 2017; bottom: kite survey, Summer 2015.*

There is some question about the description and location of Minni-Ás in the historical sources. Minni-Ás is mentioned in the parish description of 1840 (*Sýslu- og Sóknalýsingar*) (Jón Reykjalín 1954:120), though interestingly it was not described in the *Jarðabók* farm survey of 1713. It is possible that the description of Hegrastaðir in the *Jarðabók* may refer to Minni-Ás, as it is described only as "girðíng lítil" (Árni Magnússon and Vídalín 1930:65). The *Örnefnaskrá* (place-name index) describes Minni-Ás as an old farm with a ruined house and enclosure wall, "*sunnan og vestan í Ásnum*," south and west of Ás, though this would seem to be the wrong direction (Sigurður Ólafsson, et al. 1936:4); the *Örnefnaskrá* goes on to suggest that the place called Gunnlaugsgerði in the *Jarðabók* might now be known as Minni-Ás (1936: 6, note (9)). The site investigated is that described by Hjalti Pálsson in 2010 (p. 59).

Coring; and Update from TP2 (AMS Date)

Forty-six additional cores were recorded at Minni-Ás in 2017 (bringing the total cores at the site to 175) (Figure 5). Twenty-nine cores were recorded while searching for an appropriate location for loss-on-ignition sampling, and one of these failed to record the location. The remaining 17 cores were intended to refine the dates of visible turf architecture and the size of the medieval midden.

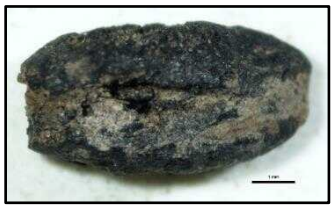


Figure 6. Barley from Minni-Ás TP2 [1104], AMS dated to ca. 886-972 CE (1130 +-1). Scale bar: 1mm.

Turf dates were inconclusive, aside from a post-1300 date on the small L-shaped structure, and a post-1104 date in the large *beitarhús*. The possible *skáli* had previously been dated to pre-1104. Undated turf was observed in one core in the wall/road that connects Minni-Ás to Hegrastaðir (not shown on the maps).

Barley from the lowest level of the 2015 excavation (TP2, context [114]) has been AMS radiocarbon dated to ca. 886-972 CE (cal) (1130+- 15 uncal) (Figure 6). This primarily peat-ash midden is located just southwest of the large *stekkur* at the base of its mound (Catlin, et al. 2016). In 2017, a second midden deposit was located along the western edge of the site in apparent association with the possible *skáli*. No tephra were observed in context with the midden. Its composition of dark charcoal and burnt bone is similar to that observed at many other *fornbýli*, and strongly suggests an early date (Figure 7). The middens appear to be spatially contiguous despite differences in composition and were likely deposited near the same time, though it is difficult to be sure without additional excavation. This additional coring work has resulted in a new estimate for the size of the farmstead pre-1104: 480m^2.

Figure 7. Charcoal-based midden in core 171062 at Minni-Ás. Midden: 30-36cm; Turf: 36-40cm.

Wetlands and Loss-on-Ignition

Cores along the ditch that runs along the western edge of the site consistently lacked all historic tephra layers. This suggests that the mire closest to the site has been mined for peat or turf perhaps as recently as the 19th century. The ditch 50m west of the site and the eastern section of the ditch to the northwest of the site both primarily contained the 1300 and 1766 layers; the single place where an 1104 layer was also observed was selected for the near-site loss-on-ignition profile. Tephra here suggests that this portion of the mire was mined for peat primarily prior to 1300. The distant-site loss-on-ignition profile was placed in the ditch 220m northwest of the site; here, all tephra layers were present, suggesting this more distant area has never been subject to mining. One

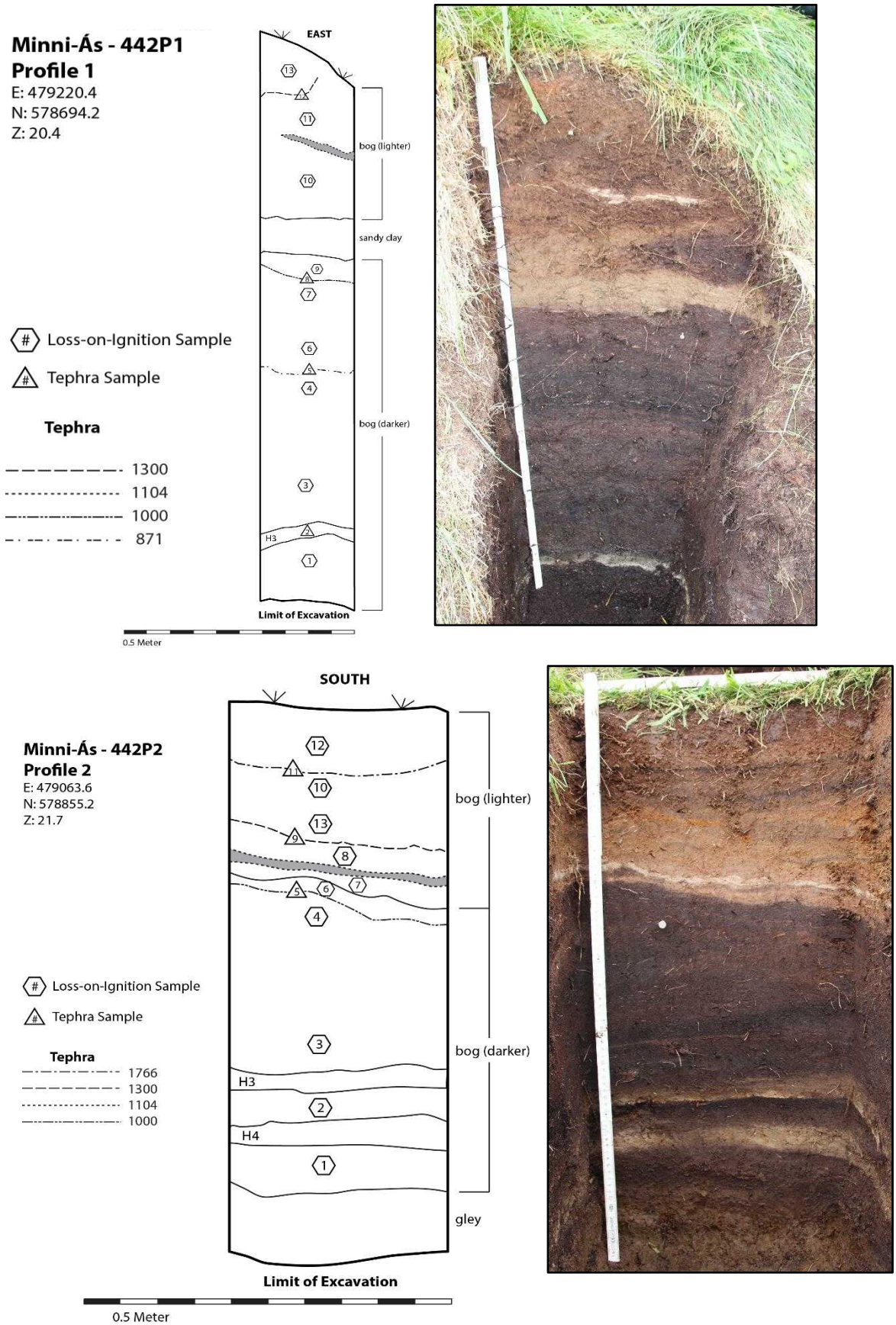


Figure 8. Loss-on-Ignition sampling profiles at Minni-Ás. (Note that only a section of each profile was drawn.)

core 150m north of the site seemed promising, but upon clearing the profile, multiple H1 layers were observed, probably the result of ditch excavation or other disturbance. Loss-on-Ignition results show a higher proportion of organic mass in the mire near the site (50-85%) than the mire farther from the site (30-50%) over the last thousand years (Figures 8, 9, and 10).

Figure 9. *Lauren Welch O'Connor beside Profile 2. Minni-Ás is visible on the hillside in the middle ground. View facing east.*

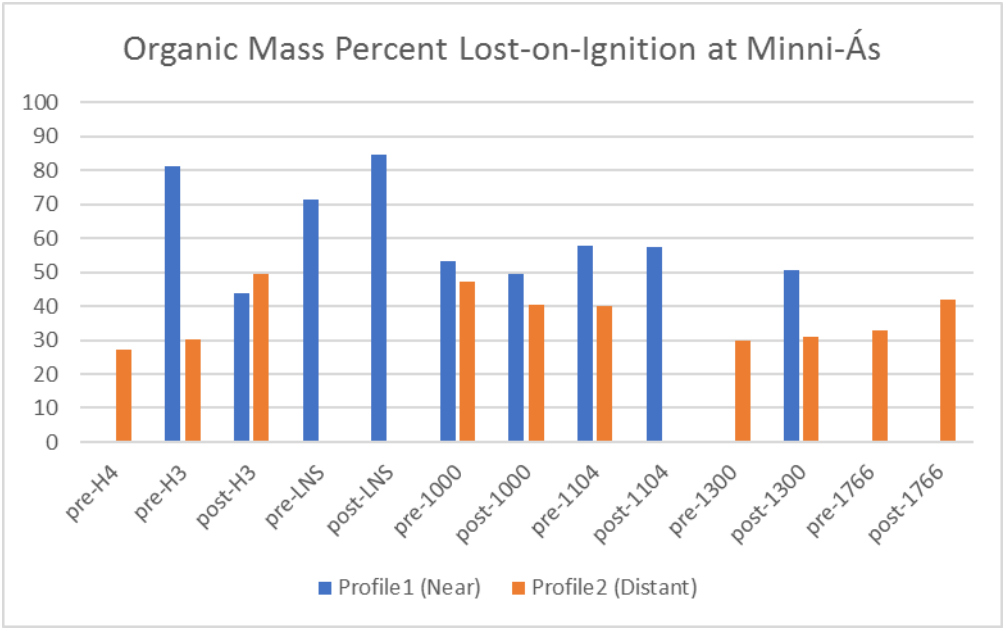


Figure 10. *Loss-on-Ignition results at Minni-Ás.*

Næfurstaðir

Figure 11. *The old well south of Næfurstaðir. View facing northeast. The buildings in the background at right are part of modern Ás.*

Næfurstaðir is located to the west of modern Ás, north of the farm road at the bottom of the slope that comes down from the top of Hegranes. The site is bordered to the east by a ditch and by wetlands, now cultivated, and to the east by an eroded hillslope. Næfurstaðir consists of a heavily cryoturbated enclosure with two visible tofts: a 2- or 3-room probable *stekkur*, 22m x 9m, in the higher northwestern part of the site, and a less distinct one-room structure to the east of it in the lower, wetter area, possibly a corral/*rétt* or shed/*skemma*, 8m x 7m. A modern, disused well on the hillside to the southwest of the site may have provided water for Næfurstaðir in the past (Figure 11).

The 1840 parish description includes Næfurstaðir in the list of farms settled by the first settlers of Hegranes (Jón Reykjalín 1954:120). The site is also mentioned as ruins, "*Girðínga og tóftaleifar*," in the *Jarðabók* (Árni Magnússon and Vídalín 1930:65), and both sources say that the site has also been known as Hafurstaðir, suggesting an association with goats. The *Örnefnaskrá* describes the site's location and suggests that it was hayed in the 19th century by Þorkell Guðmundsson *frá* Gröf (Sigurður Ólafsson, et al. 1936:4, 6-7). The site was also described by Hjalti Pálsson in 2010 (p. 58-59).

Coring

Sixteen cores were recorded at Næfurstaðir in 2017, bringing the total cores at the site to 173 (Figure 12). Twelve of these were recorded while searching for appropriate loss-on-ignition sampling locations; the remaining four were intended to refine the dates of architecture at the site. Only one of these was conclusive. A thick, compressed floor layer was observed in the deepest limit of a core (120cm) inside the large *stekkur*, of probable pre-950 date, that may represent habitation associated with the midden excavated in 2016 (Catlin et al. 2017). Coring did not significantly alter the size of the pre-1104 farmstead estimate, though the lines have been very slightly revised based on more detailed analysis of previous years' coring, to 1970m^2.

Wetlands and Loss-on-Ignition

Cores in the ditch along the eastern edge of the site (likely within the homefield wall prior to drainage) contained the 1766, 1300, and H3/4 tephra layers, suggesting the site was mined for peat or turf prior to 1300. The near-site loss-on-ignition profile was located 30m south of the field boundary in a location where the 1104 layer was also observed (Figure 12). The distant profile was located along the ditch 240m south of the site; here, it appears that mining has never been practiced (Figure 17).

Though the near profile lacked early historic tephra layers, trends in the late medieval to historic period show a higher percentage of organic material closer to the site (Figures 13-15). In fact, the percentage of organic material in the distant profile decreases dramatically over time, from 55% prior to landnám to 20% prior to 1766. When data is available from the near profile the organic content is between 40-60% during the historic period. Notably, the most recent (post-1766) sample at both locations was about 50% organic material, suggesting that modern alteration of the site including drainage and the construction of a raised gravel farm drive have altered the local hydrology.

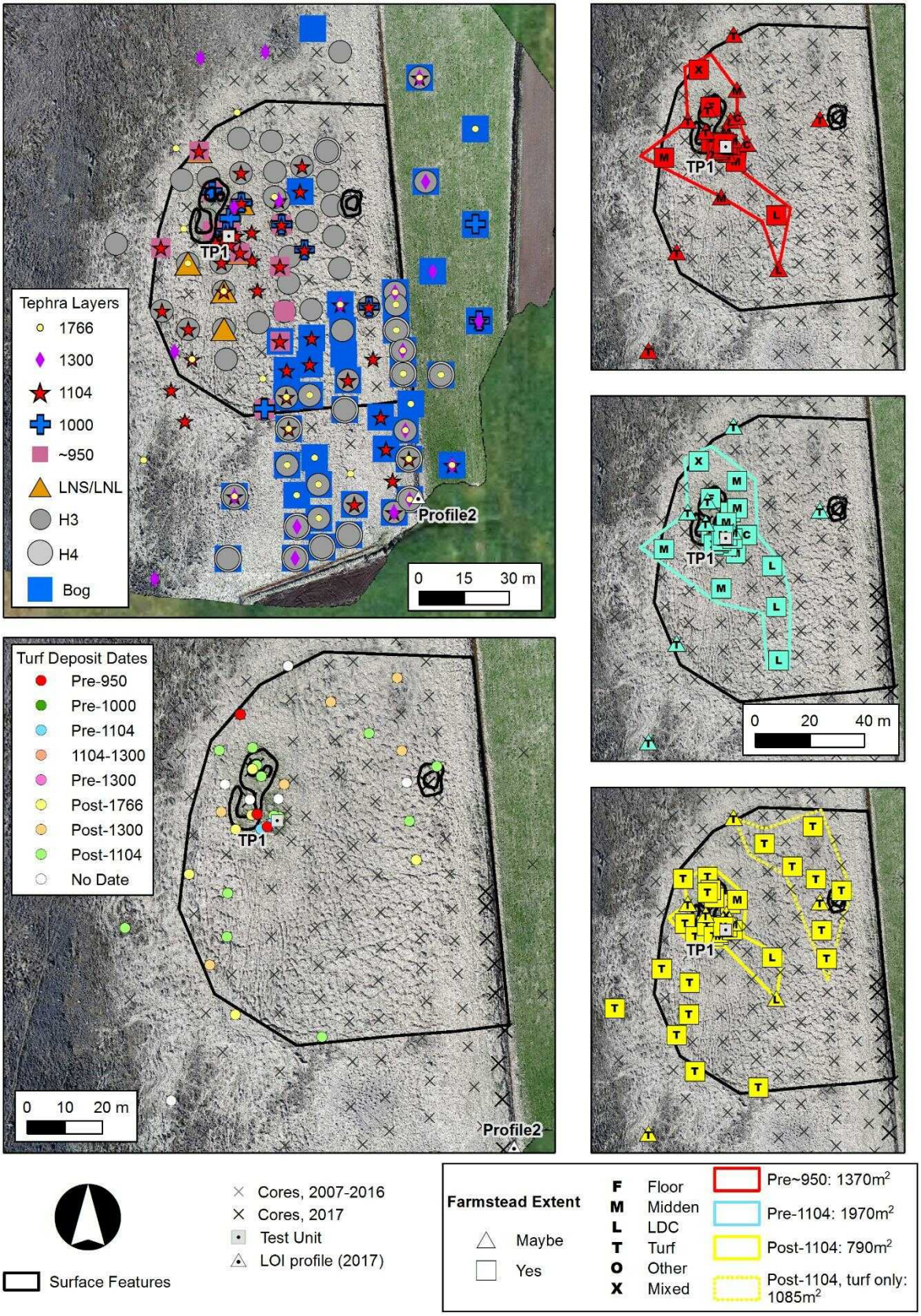


Figure 12. Næfurstaðir maps. Top left: tephra and bog. Bottom left: turf dates. Right: farmstead sizes using the SCASS protocol, top: pre-950; middle: pre-1104; right: post-1104. Background: drone survey, Spring 2017.

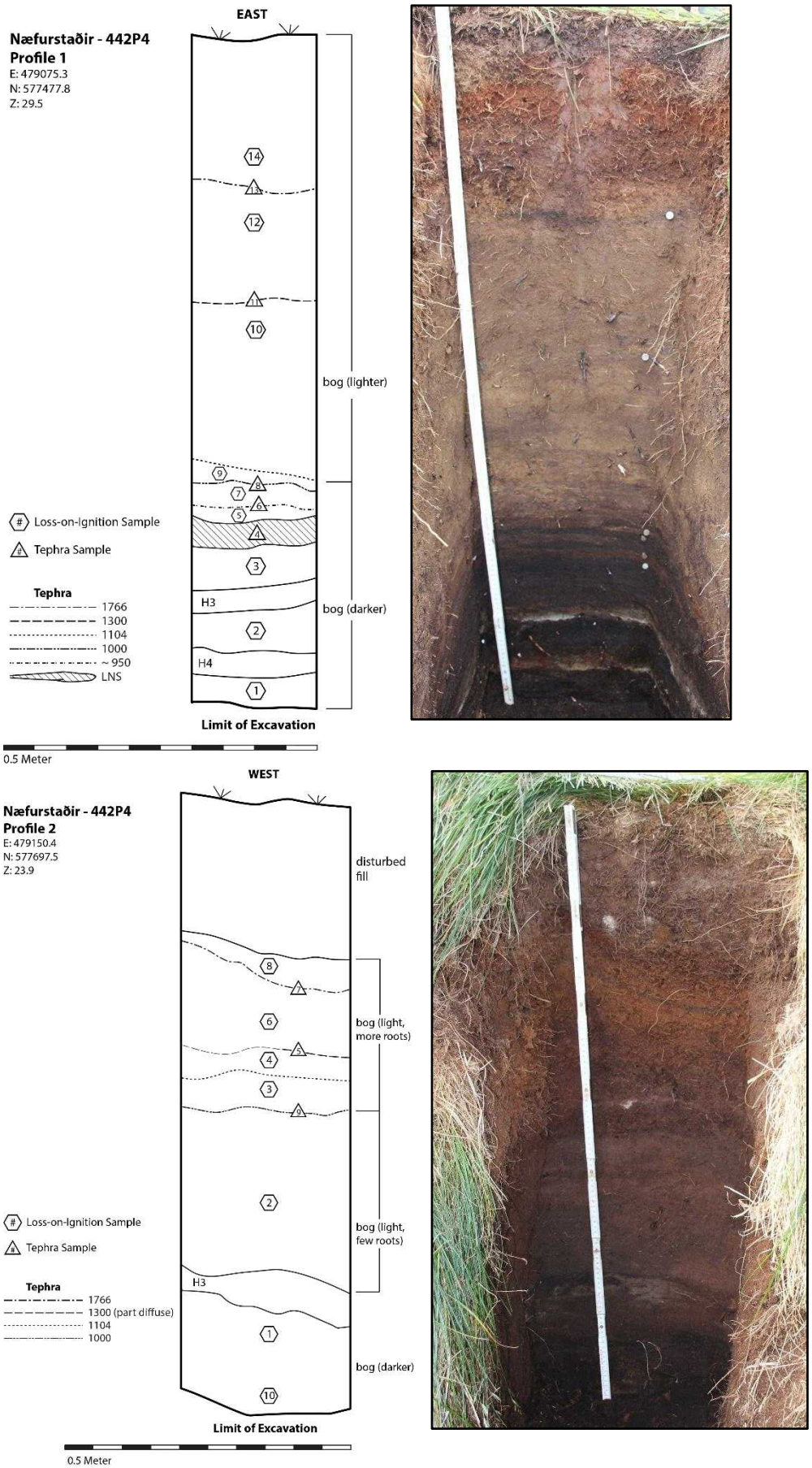


Figure 13. *Loss-on-Ignition sampling profiles at Næfurstaðir. (Note that only a section of each profile was drawn.)*

Figure 14. *Lauren Welch O'Connor beside Profile 2, 30m south of the wall at Næfurstaðir. View facing northwest.*

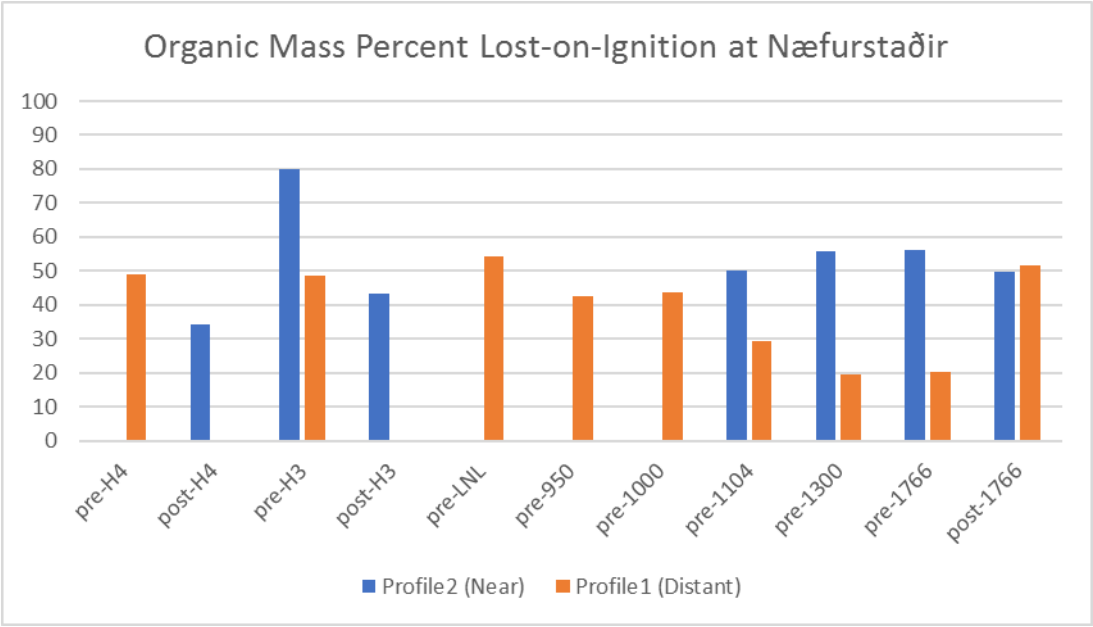


Figure 15. *Loss-on-Ignition results at Næfurstaðir.*

<u>Updates from TP1: Tephra and Finds</u>

The results of tephra analysis of samples from the 2016 excavation unit at Næfurstaðir (TP1) are now available. Analysis by Brian Damiata shows that the tephra layer excavated as [934] is, in fact, the ~950 tephra layer. Damiata had visually identified the layer in the profile as the ~1000 layer, and tephra analysis of Sample 12 from the floor of the unit during excavation of this level had also given a ~1000 date. However, the sample taken from the wall of the unit is now known to be certainly ~950, suggesting that sample 12 was probably contaminated from above. Although the tephra sample extracted from the wall of the unit from the context excavated as [1000] did not contain tephra, it now appears that the tephra observed at this level during excavation was probably in fact a partial ~1000 layer. An updated profile drawing appears in Figure 16.

Secondly, during laboratory analysis of the faunal materials, Grace Cesario encountered a partial bone comb in Bone Sample #1 from context [102], a low density cultural layer just above the 1104 tephra. This has been logged as Find #5 (Figure 17).

Gunnlaugsgerði

Gunnlaugsgerði is a place-name associated with Ás, but its location is uncertain. The 1840 parish description includes it parenthetically on the list of *landnám* farms, but suggests that it is more recent, given its name (Jón Reykjalín 1954:120). The *Jarðabók* of 1713 describes a *fjarhús*/sheephouse at Gunnlaugsgerði (p. 65), and the 1840 parish description describes it at "*ofanvert við túngarðinn.*" This appears right after a description of Næfurstaðir and seems therefore to describe a place at the top of Næfurstaðir's enclosure, which might place it at the top of the slope to the west, near Næfurstaðarétt. This is the place surveyed by FLASH researchers in 2017 (Figure 18).

However, the location might instead point to a spot at the top of the homefield at Ás, on the hill between the modern barn and farmhouse at Ás I (near the word 'Ás' in Figure 4). This is the place that was described by Hjalti Pálsson in 2010 (p. 59), and may correspond to the northernmost "peningshús" marked on the 1918 *túnakort* (Guðmundur Sveinsson) (Figure 19). The place near the Ás homefield has not yet been surveyed and may reward future research, though the hot water line runs through here and will complicate such a survey. Alternatively, the *Örnefnaskrá* suggests that the Gunnlaugsgerði described in the *Jarðabók* is the site now known as Minni-Ás (Sigurður Ólafsson, et al. 1936:6).

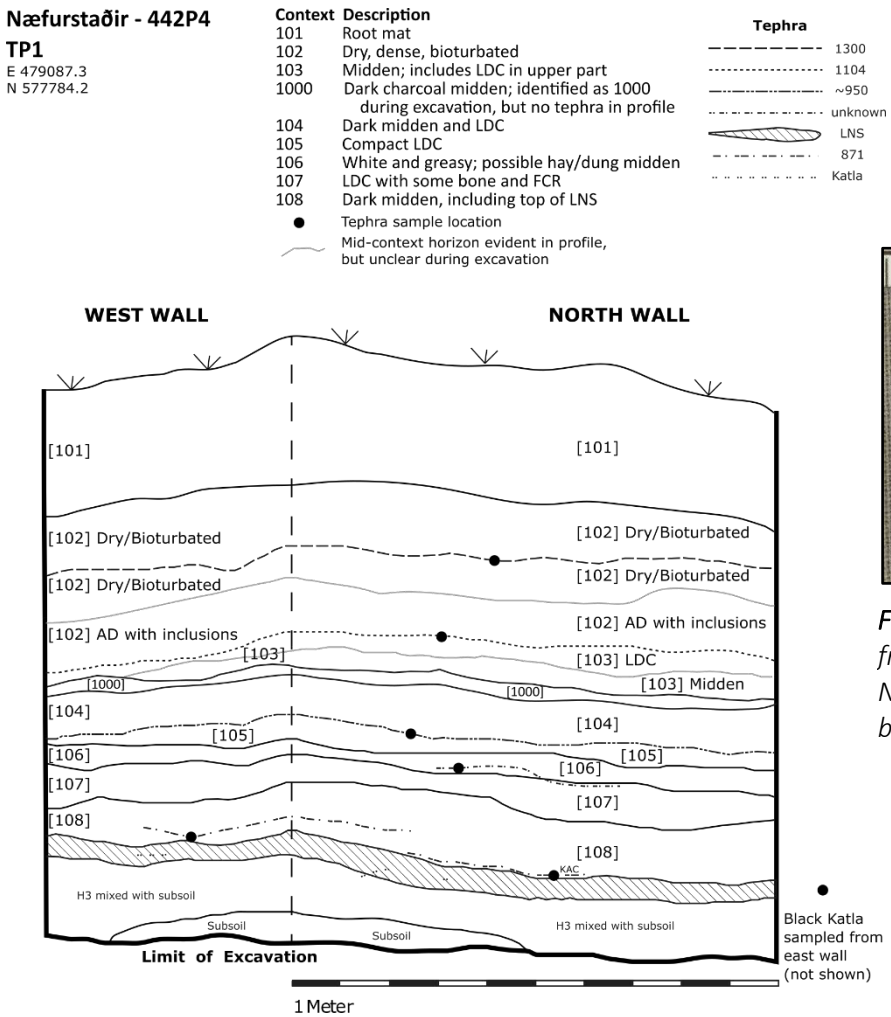


Figure 16. *Profile drawing for TP1 at Næfurstaðir, with new tephra dates. Updated from Catlin, et al. 2017.*

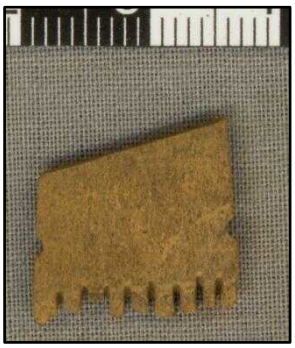


Figure 17. *Bone comb fragment recovered from Næfurstaðir TP1 [102], bone sample #1. Find #5.*

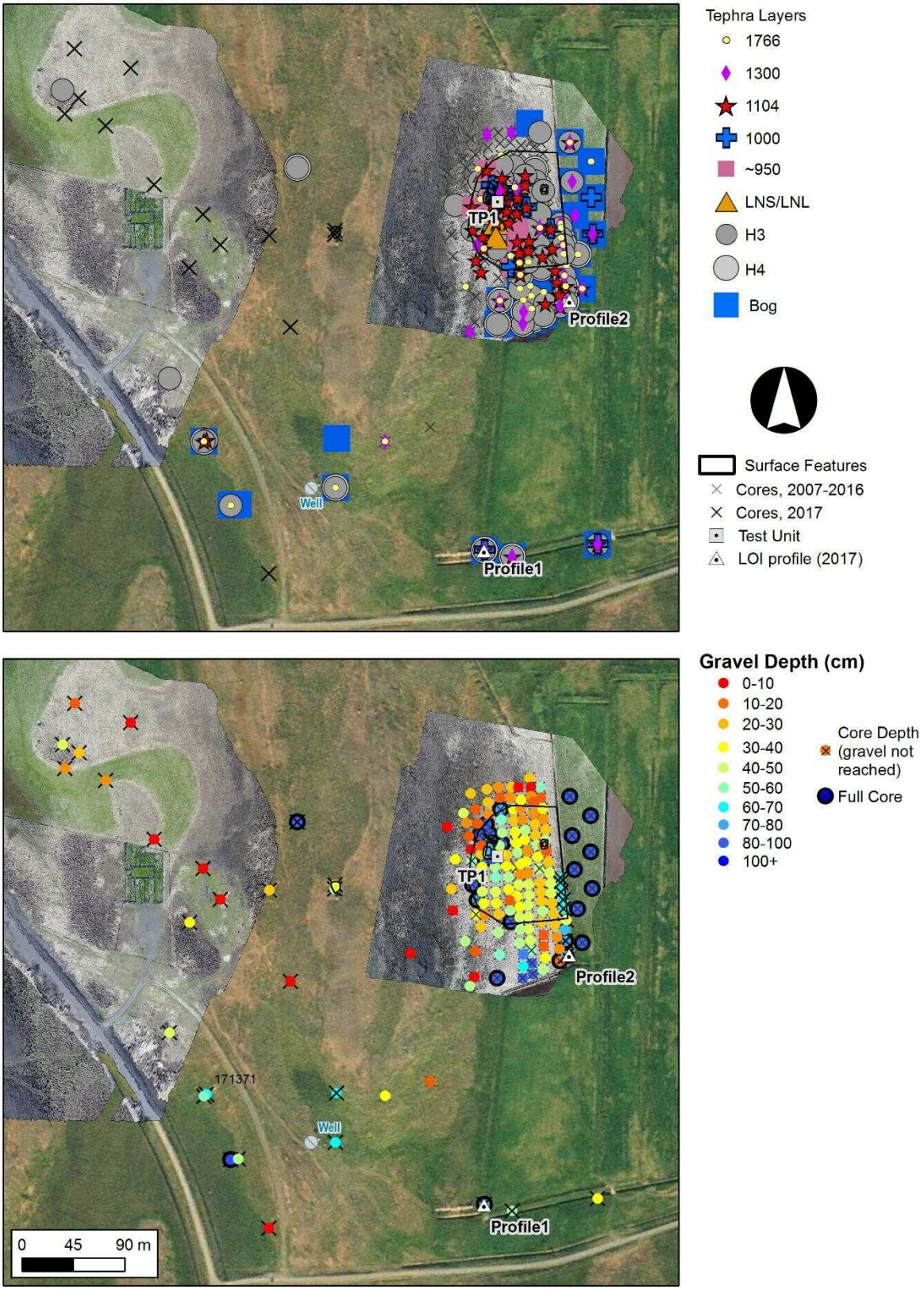


Figure 18. Maps of Næfurstaðir and survey of a possible Gunnlaugsgerði location, showing tephra (top), core depth (bottom), and locations of Næfurstaðir loss-on-ignition sampling profiles. Core 171371 contained post-1104 turf; no other cultural material was observed on the slopes around Næfurstaðir. Air photos taken with a drone in spring 2017.

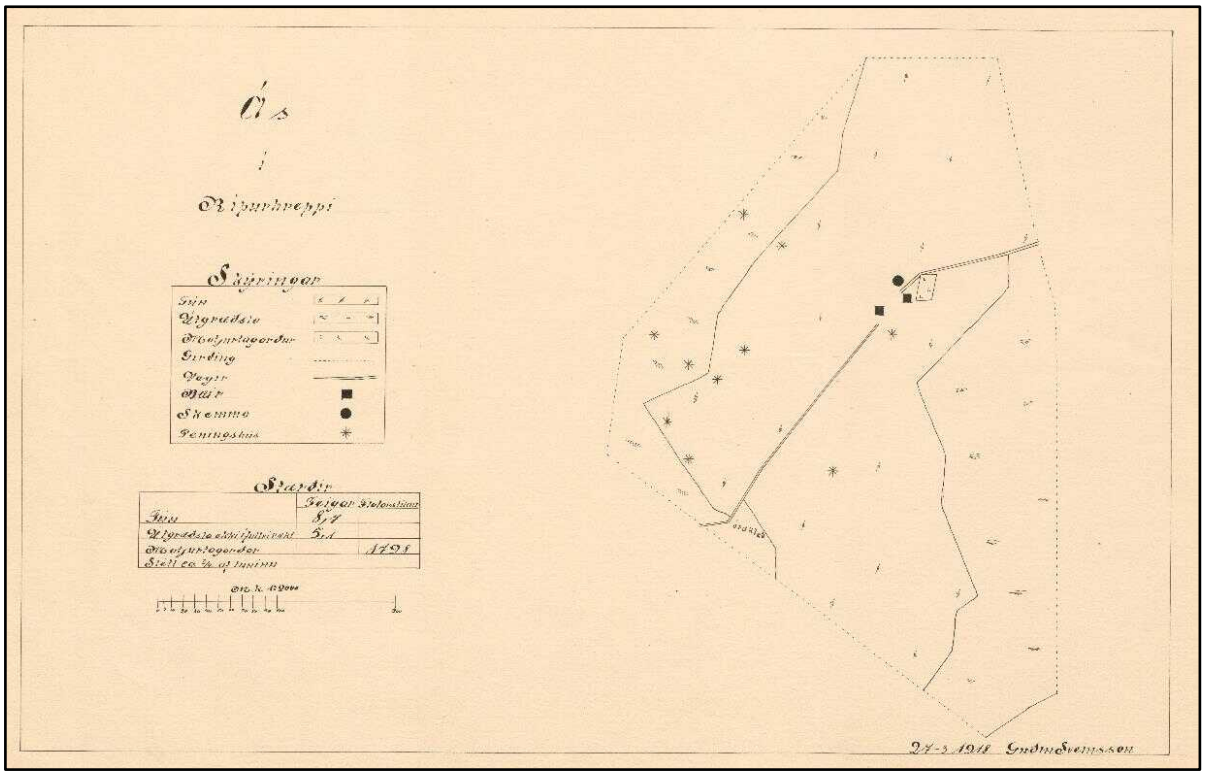


Figure 19. 1918 Túnakort map of Ás. The area between the túngarður (solid line) and girðing (dotted line) at left has not yet been surveyed and may be the location of Gunnlaugsgerði.

Coring

In 2017, 23 cores were recorded along the ridge west of Næfurstaðir (Figure 18). The area is eroded to bedrock in many places. The cores concur that very little soil remains here, with very little tephra and some wetland development near the southern slope. One core (171371) contained evidence of post-1104 turf. There is a disused concrete well along the southeastern slope through which the modern water line runs (Figure 11); this spot may have provided fresh water for Næfurstaðir in the past. If Gunnlaugsgerði was located here it, has long since eroded away.

Túnfótur

Túnfótur is located to the east of modern Ás, on land now belonging to Ás II, just at the top of the eroded and cryoturbated slope that leads down to the Austur-Heraðsvötn river. The site is often in hay and is bordered to the west by a ditch; the western portion of the site is boggy. The field to the north has shallow soil and is often also hayed, while the field to the south is highly eroded and gravelly. The site itself is little cryoturbated and has likely been flattened, though it does not seem to have been bulldozed (Figure 20). Coring, excavation, and kite aerial photography took place at Túnfótur in 2015 (Catlin, et al. 2016).

The site is dominated by a one-room toft, 16m x 12m, likely the *stekkur* described in historical sources, inside an enclosure wall that is most prominent along the east and south sides.
Túnfótur is described in the 1713 *Jarðabók* as an enclosure with a *stekkur* inside (Árni Magnússon and Vídalín 1930:65), and the 1840 parish description also describes a visible field wall (Jón Reykjalín 1954:120). The *Örnefnaskrá* has little to add, but suggests it might have been a settlement in the past (Sigurður Ólafsson, et al. 1936:4, 6). The site was also described by Hjalti Pálsson in 2010 (p. 58).

Figure 20. *Bryndís Zoëga stands atop the central stekkur at Túnfótur in Spring 2017. View facing southeast.*

Survey and Coring

During a visit to Túnfótur in spring of 2017 while the grass was low, several additional turf structures were observed, including the remains of a more recent wall along the western edge of the site, just east of the ditch. The very low walls that are all that remain of these structures had not been visible during previous site visits in the summer of 2015 when the grass was very high. It is now clear that the 2015 excavation had been inadvertently placed inside a multi-room, L-shaped structure.

Of the 62 cores recorded at Túnfótur in 2017 (for a total at the site of 226), 48 were intended to date the architecture and complete survey of the site, while the remaining 14 were recorded while searching for loss-on-ignition sample locations (Figure 21).

Coring in 2017 confirmed a post-1104 construction date for the enclosure wall. A long, three-room structure (31m x 8m) stretching north-south at the center of the site is somewhat unclear, and may in fact be three separate, small sheds. Parts of this room cluster date to pre-1104, post-1104, and post-1300. The two-room structure, likely a small *rétt*, 17m x 9m, at the northern edge of the site is post-1300. An indistinct, 9m long *stekkur* along the eastern wall of the site could not be definitively dated, nor could a 6m x 7m horseshoe-shaped structure in the eastern portion of the site. The more modern wall along the western side of the site had been mostly eroded but contained rock, barbed wire, and wood in addition to turf that lacked tephra and so could not be dated.

The three-room, L-shaped structure, 14m x 16m, that includes the 2015 excavation in one of its rooms might have been a dwelling. Coring in the room to the west of the excavation also contained low density cultural material dating to pre-1104, and the turf at this structure is also of an early date, suggesting that this architecture may in fact be associated with the midden. Based in part on information from these cores, the pre-1104 farmstead size has been adjusted to 260m^2.

Wetlands and Loss-on-Ignition

Cores near the ditch along the western edge of the site contained only the 1766 tephra, suggesting the area was mined for turf or peat prior to the mid-18th century. One location showed a 1300 layer in the core, but the layer was not visible in the profile that was subsequently cleared for the near-site loss-on-ignition profile. Cores in a ditch 70m to the west of the site contained more complete tephra

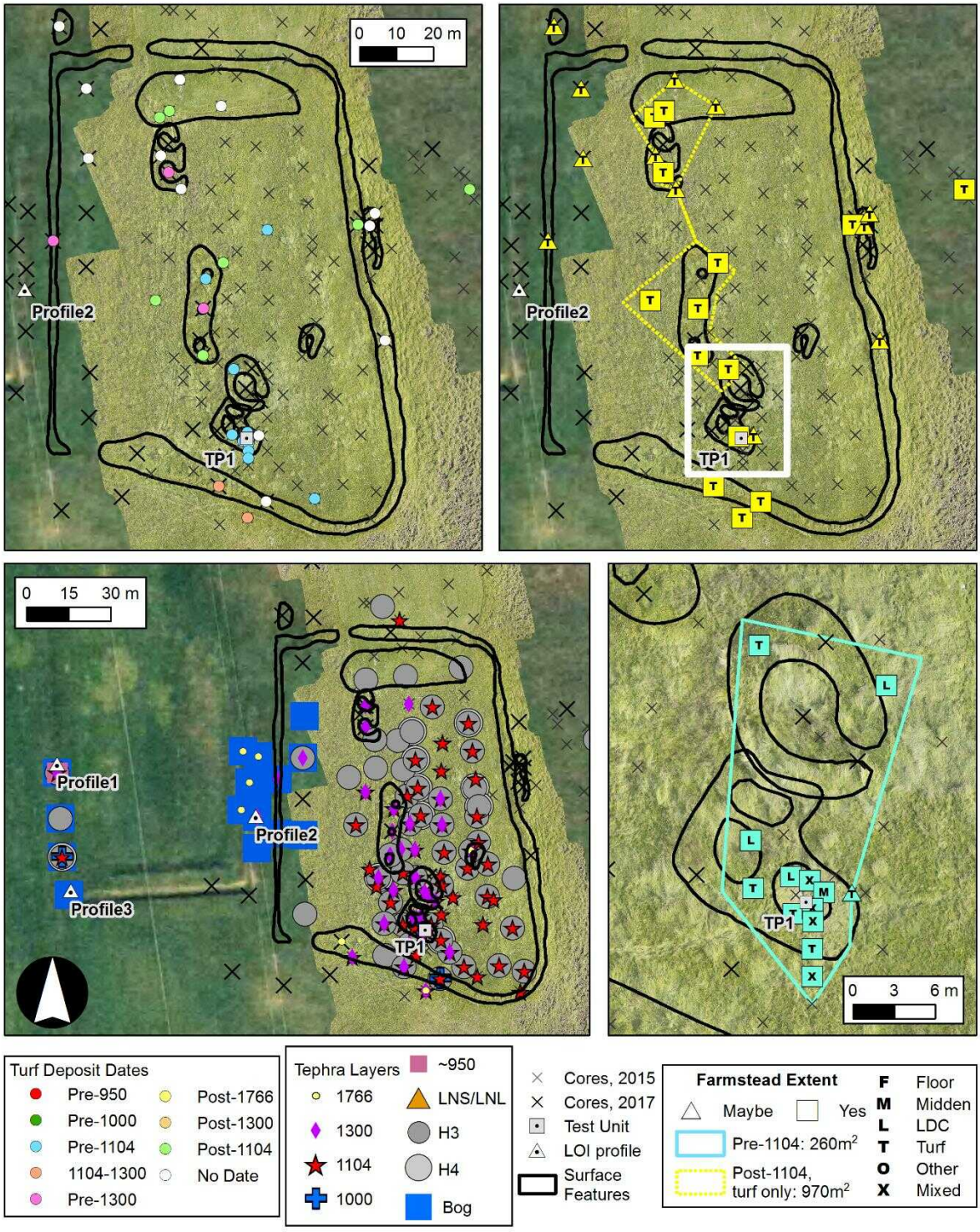
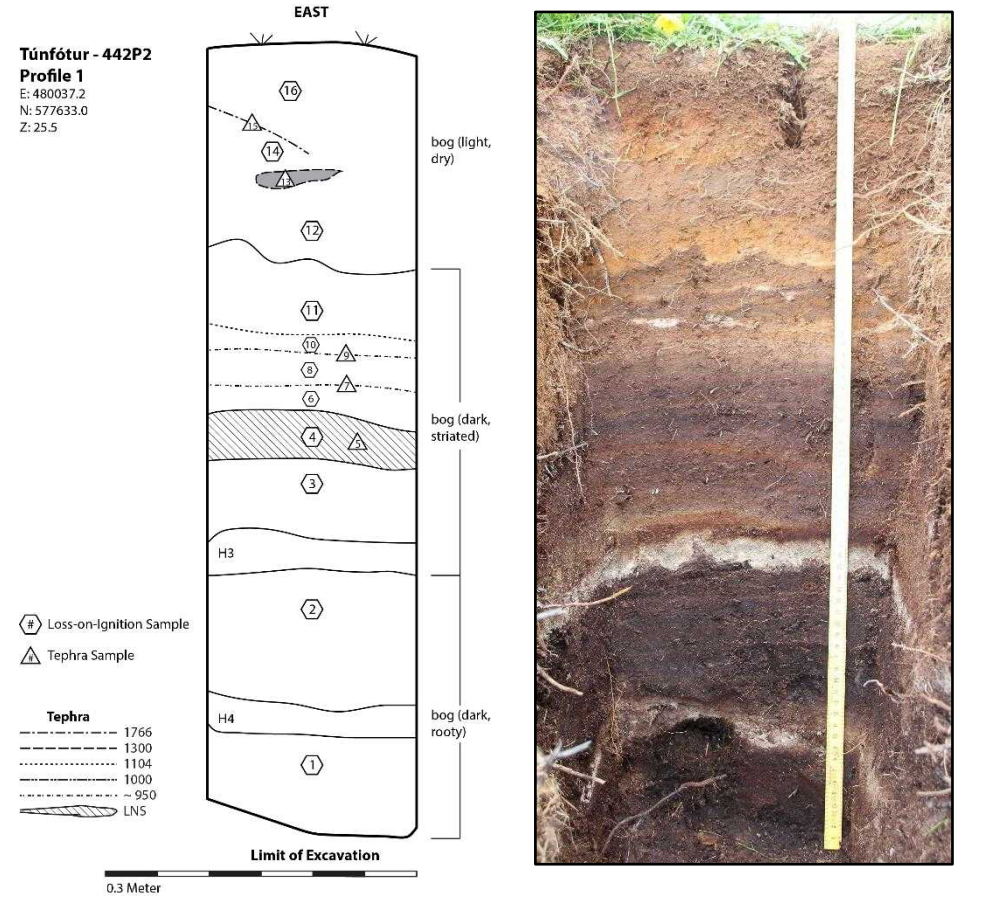


Figure 21. Túnfótur maps. Top left: turf dates. Bottom left: tephra and bog, including LOI profiles. Right: farmstead sizes using the SCASS protocol, top: post-1104 (turf only); bottom: pre-1104. Background: kite photos, Summer 2015.



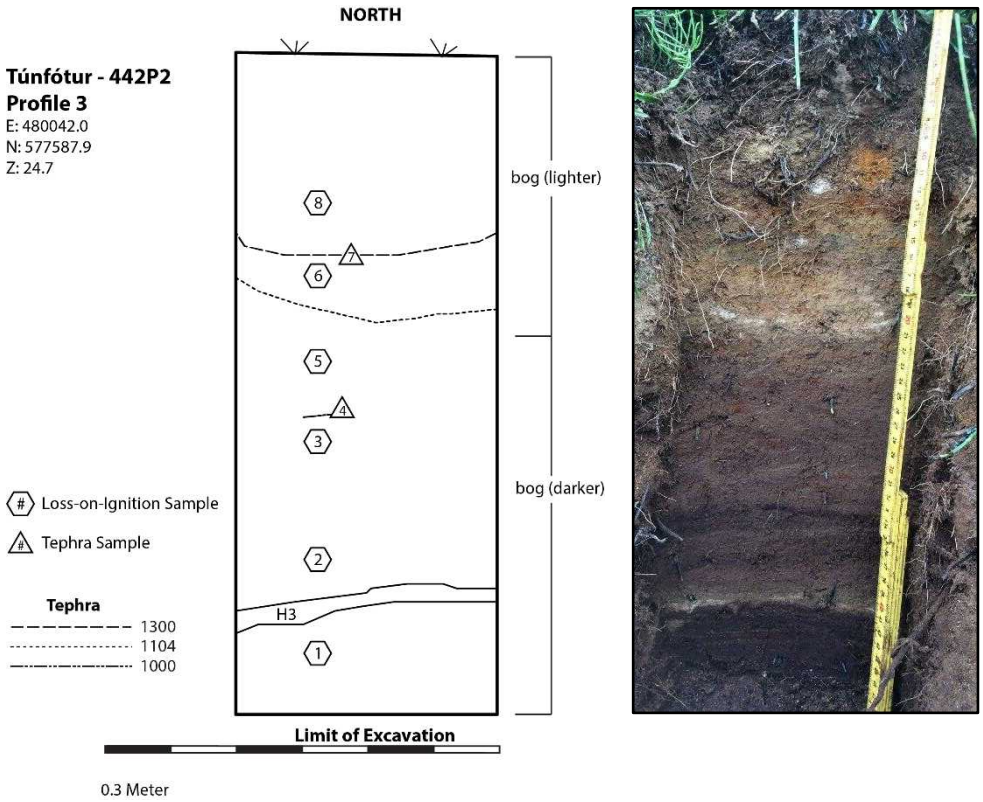


Figure 22a. *Loss-on-Ignition sampling profiles 1 and 3 at Túnfótur. (Note that only a section of each profile was drawn.)*

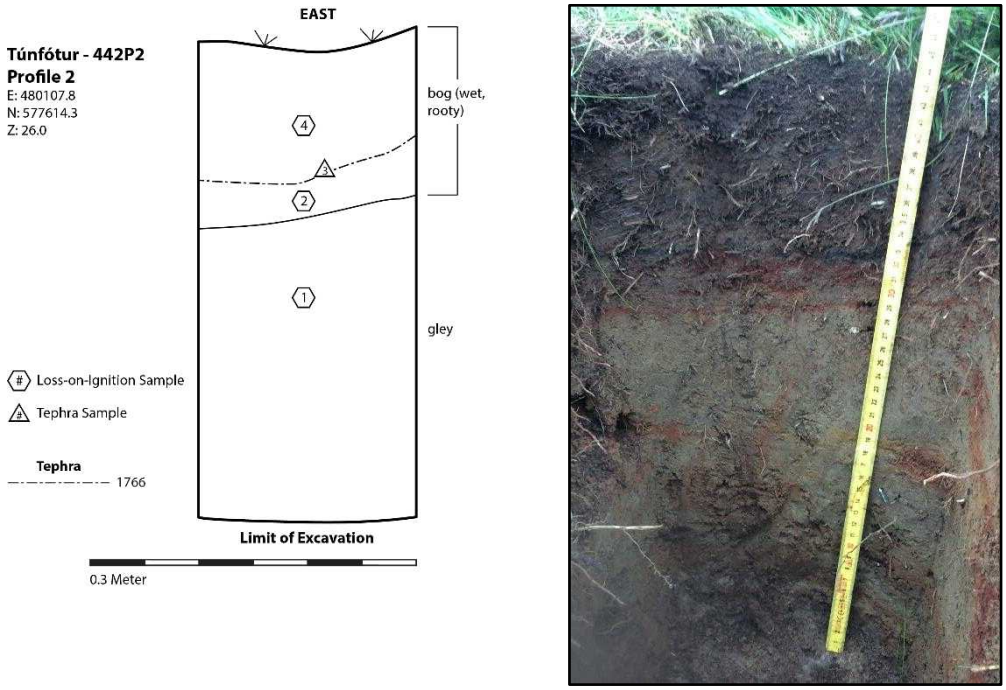


Figure 22b. Loss-on-Ignition sampling profile 2 at Túnfótur.

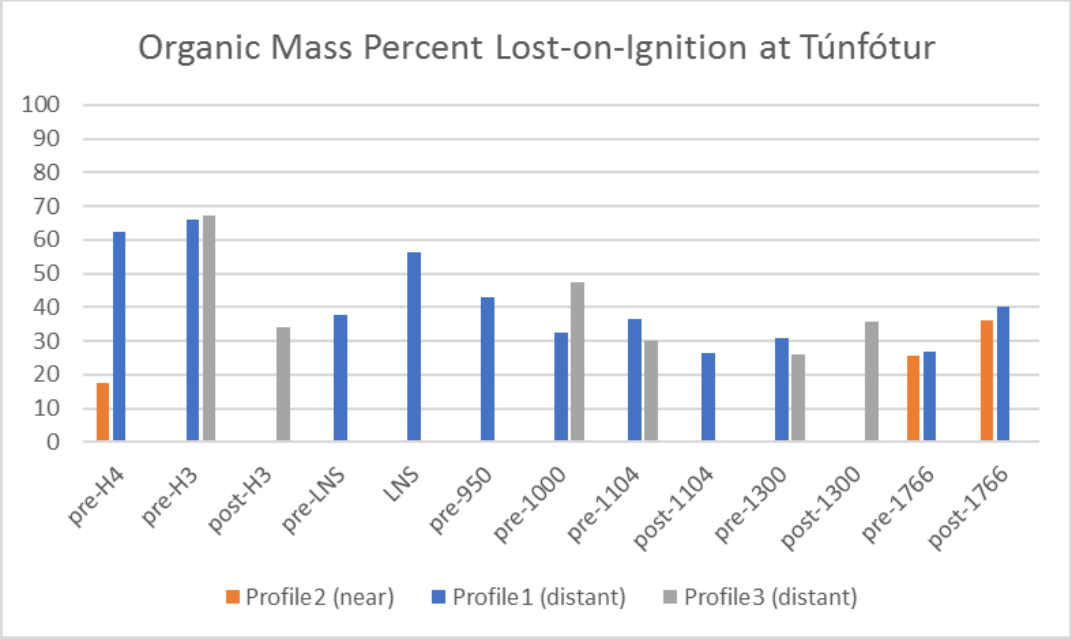


Figure 23. Loss-on-Ignition results at Túnfótur.

sequences, suggesting this area was not mined. Two profiles were sampled in this ditch for loss-on-ignition. Loss-on-ignition results at the distant profiles are consistent with the distant profiles at Minni-Ás and Næfurstaðir: generally decreasing organic content over the historic period, from about 60% to 25%, followed by a slight increase in the more modern sample. The lack of early historic tephra in the near profile makes comparison impossible for the medieval period. The pre/post-1766 percentages of organic content are similar to that in the distant profiles, again suggesting a more homogeneous landscape in recent centuries (Figures 22-24).

Figure 24. *Sarah Breiter beside Profile 2 at Túnfótur. The slight rise behind her is the western enclosure wall of the site, and the brown grass tops beyond are in the Túnfótur field. Photo facing northeast.*

Hegrastaðir

The story of the settlement of Hegranes tells of the first settler, Havarð Hegra (the Heron), setting up his *landnám* farm at a place called Hegrastaðir. Though Havarð is mentioned in the Landnámabók as living on Hegranes, the precise location of his farm is not described (Hermann Pálsson and Edwards 2007:90). The northern slope of the *ás* at Ás is given as the location for Hegrastaðir in the *Örnefnaskrá* and 1840 parish description (Hjalti Pálsson 2010:59; Jón Reykjalín 1954:120). The location in the *Jarðabók* is more ambiguous, describing only a "girðíng lítil" (Árni Magnússon and Vídalín 1930:65). The *Örnefnaskrá* describes a small near-circular turf enclosure with a small three-room longhouse and an outbuilding (Sigurður Ólafsson, et al. 1936:3, 6). Archaeologist Sigurður Vigfússon observed a similar set of ruins in 1886 (1888-1892:117), though he described a longhouse and two outbuildings. Vigfússon did not give a precise location for the site except that it north of the *ás*, west of the farm Ás, and apparently on his way between Hegranesþing and Ás. Other possible locations for Hegrastaðir include a site on Vatnskot that is also called Hegrastaðir (described below), Minni-Ás, Næfurstaðir, or the *landnám* farm at Hegranesþing (Steinberg, et al. forthcoming-b).

In 2015, SCASS extensively cored the southernmost field along the northern slope of the *ás* at Ás, and in association with Sarah Parcak, used satellite imagery to locate and partially excavate a turf wall of ambiguous, but likely early medieval, date (Catlin et al. 2016). Coring showed mostly post-1104 turf throughout the field, with one instance of pre-1104 turf and no midden material. No kite or drone photos have yet been taken of Hegrastaðir.

Coring

In 2017, 58 cores were recorded at this possible Hegrastaðir site, bringing the total number of cores here to 158 (Figure 25). The cores were intended to fill in gaps in the 2015 survey and to extend the survey to include the northernmost fields along the Ás slope. The northern field is heavily eroded

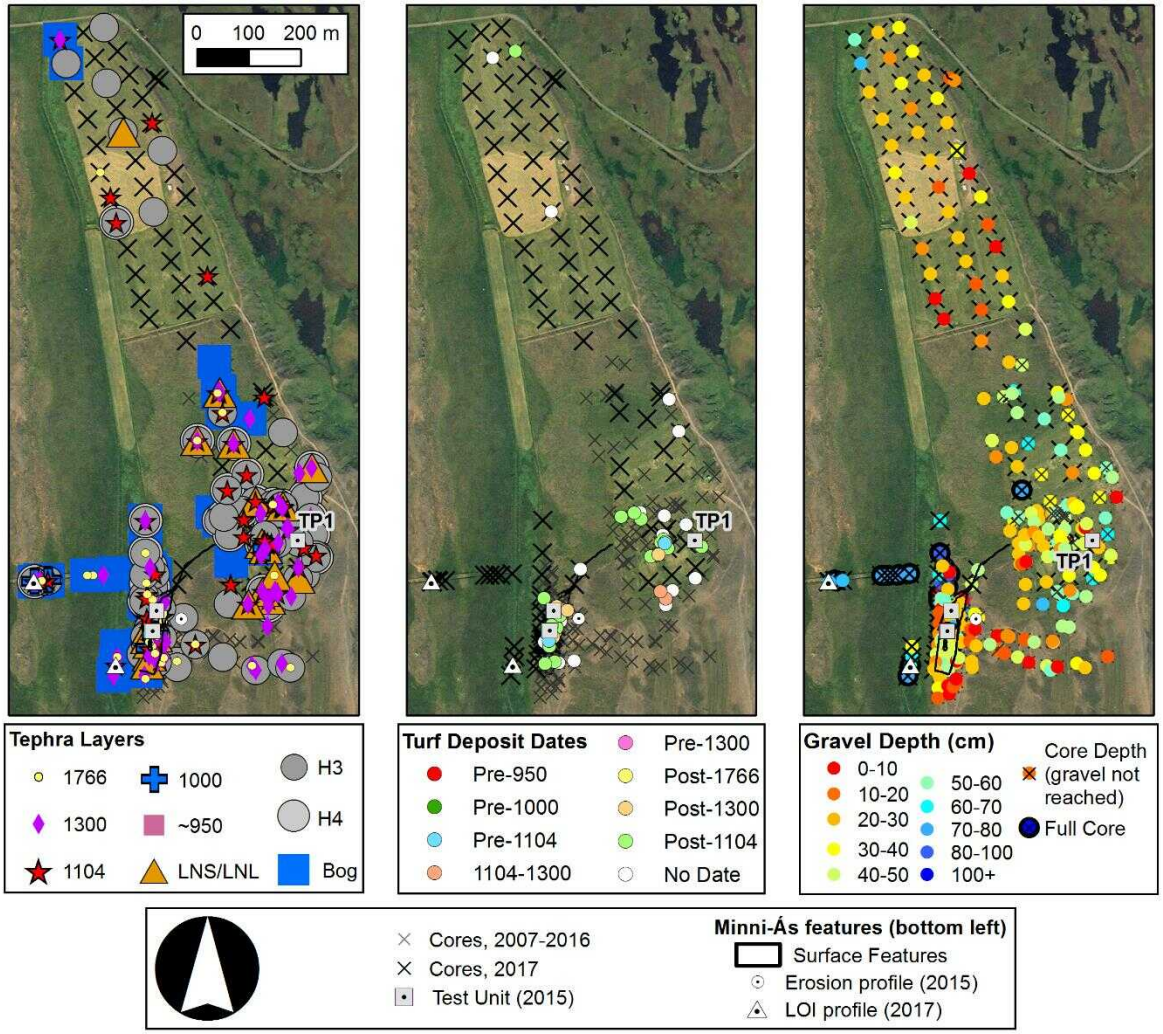


Figure 25. *Hegrastaðir (Ás) maps. (Note that Minni-Ás is included here at lower left.) Left: tephra and bog. Middle: turf dates. Right: gravel depths. Background: air photos from LMI.*

with little tephra and some wetland development along the edges. The survey revealed a few instances of ambiguously dated turf, with one spot near the northernmost extent containing turf of clear post-1104 date, likely the remnant of a bulldozed barn. The survey also followed up on one core that had been interpreted as midden in 2015 (150518), and verified it to have been misidentified iron-rich bog (173738). No evidence of midden was observed anywhere at the site, nor indeed any additional evidence of settlement beyond that already described in the 2015 report. If there was a *landnám* farm at this location prior to the late medieval barns and outbuildings, it has been removed from the landscape.

Svanavatn

Svanavatn is located directly to the west of Ás, just north of a lake near the eroded center of Hegranes, and is the only farm on the island that does not border on the river or the sea. A large portion of its holdings include the high rocky ridges in the center of Hegranes. Historically, the farm Vatnskot was located on this property, and in 1713 Vatnskot was described as a hjáleiga of Ás (Árni Magnússon and Vídalín 1930:65). Coring and excavation were carried out by SCASS at Svanavatn in 2017 (Bolender et al, forthcoming). One possible *fornbýli* is located on its landscape (Figure 26).

Coring: Outbuilding

As part of the survey, FLASH researchers identified a ruined four-room structure, likely a *stekkur*, near the southwest corner of the lake, about 20m x 25m (Figures 27 and 28). It is not unreasonable to suppose that sheep driven down from the Hegranes highland would have ended up here. Indeed, a 19th century stone *rétt* is located on a ledge 270m to the south, just over the border with Ás (Figure 29). Eighteen cores here dated the southernmost two rooms to post-1300, while the two rooms to the north may represent an earlier pre-1104 structure. No evidence of a midden was observed at this location. One core in the mire just east of the site suggests the wetland here was cut for turf or peat prior to 1766. This is likely the location that Hjalti Pálsson describes specifically as a *stekkur* and not a *beitarhus*, citing the propensity for snow to gather here (2010:67). The enclosure wall Pálsson describes was not noted in 2017.

Loss-on-Ignition in the Hegranes Highland

FLASH and SCASS researchers also cored in the eroded hills west of Svanavatn in search of a deep mire deposit with a complete tephra sequence, and loss-on-ignition samples were retrieved from a unit here on the top of Hegranes (Figure 30). Coring data is reported elsewhere (Bolender, et al. forthcoming). Results show a steep decline in organic mass percent over time, from nearly 70% organics prior to 870, to about 25-40% in the centuries after 1000 AD (Figure 31). This is consistent with values for the later medieval and historic period in the site-distant profiles in lower areas of Hegranes near FLASH sites. It seems likely that a decline in organic mass in bogs over time may be due to increased input of inorganic sediment in the hinterlands, due to higher levels of erosion after *landnám*. Areas closer to sites may have been protected from this influx by enclosure walls or by active maintenance of productive wetlands.

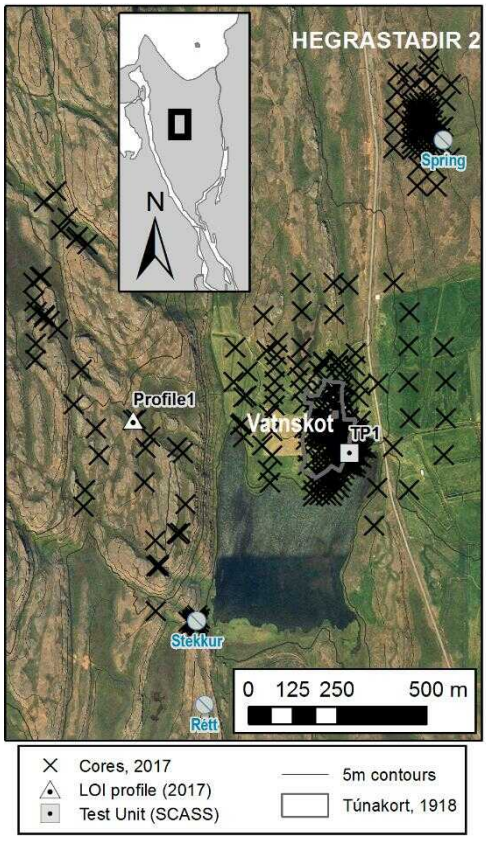


Figure 26. Landscape of Svanavatn (medieval Vatnskot). Background imagery provided by LMI.

Figure 27. The stekkur at Svanavatn. Top: northern rooms, view facing east. Bottom: Alicia Sawyer standing in the southern room, view facing southwest.

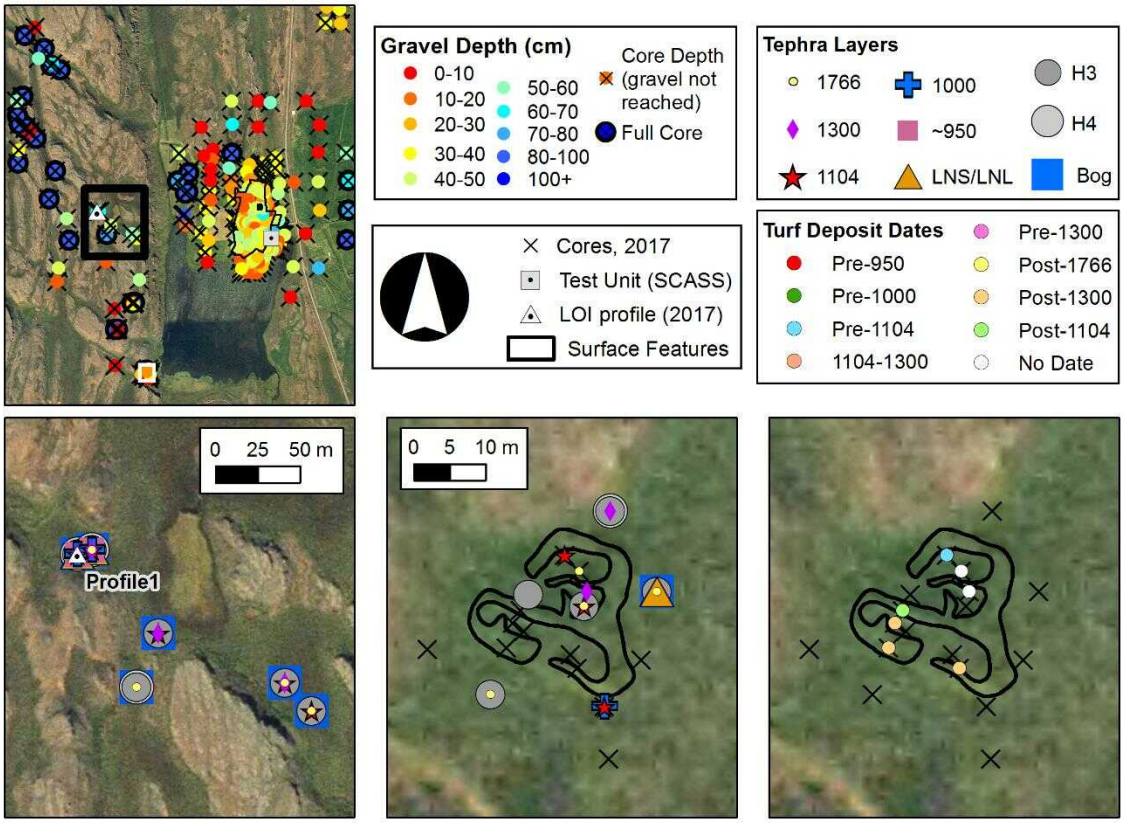


Figure 28. *Svanavatn maps. Left, top: gravel depth and extent indicators for the maps below. Left, bottom: tephra and location of LOI profile in the high central area. Middle: tephra near the stekkur. Right: dates for turf in the stekkur. Background imagery from LMI.*

Figure 29. *Stone rétt south of Svanavatn. View facing southwest.*

Figure 30. *Near the location of Profile 1 at Svanavatn. View facing west.*

Hegrastaðir

The landscape of Svanavatn also includes the location of a second possible identified spot for Hegrastaðir, the first settlement on Hegranes (see above discussion). These ruins consist of two structures on the eroded, east-facing hillside to the northeast of the Vatnskot farmstead and about a kilometer west-northwest of the proposed location for Hegrastaðir on Ás land across the wetland (see above and Catlin, et al. 2016; Hjalti Pálsson 2010:66-67) (Figure 32). No boundary wall is evident. The site is located in an area of slightly deeper soils surrounded by highly eroded and cryoturbated hillside. The site borders a wide mire to the east, and a spring is located to the southeast of the site (Figure 33). In 2017, GPS survey and 124 cores were carried out at Hegrastaðir to locate, date, and ascertain the size of any evidence of settlement, and to characterize the surrounding environment. No kite or drone photos have yet been taken at Hegrastaðir.

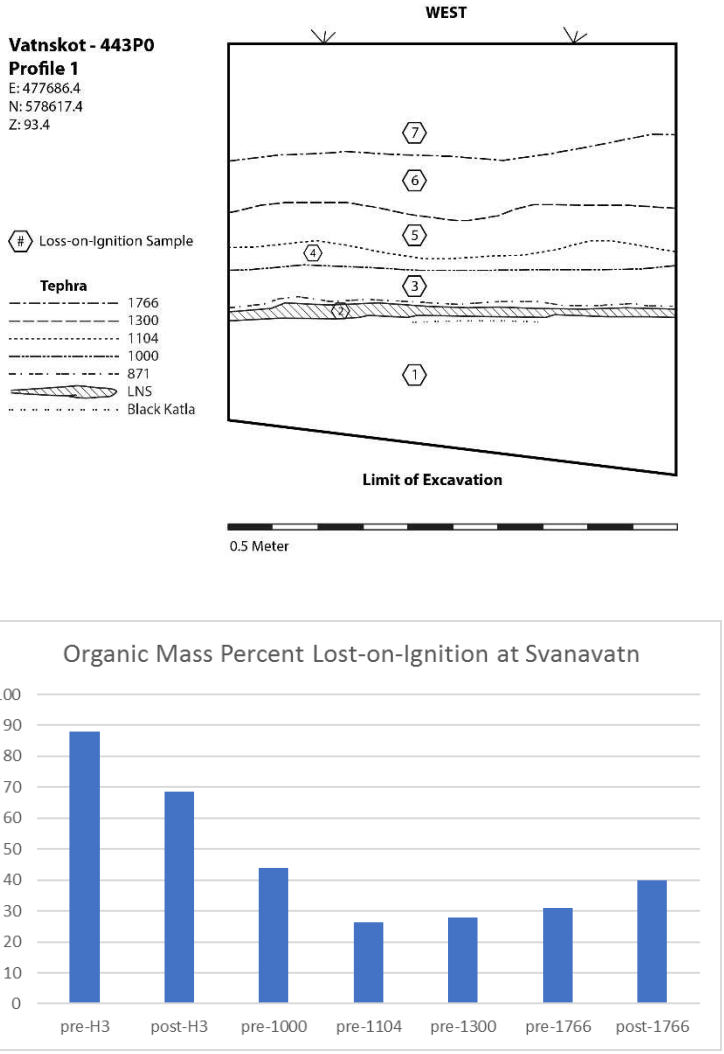


Figure 31. *Profile drawing (top) and loss-on-ignition results (bottom) from the Svanavatn bog profile.*

Coring

A total of 124 cores were performed at Hegrastaðir in 2017 (Figure 34). The southern structure, likely a *rétt* or animal pen/*kvía* at 16m x 8m, consists of two stalls at its southern end and a larger room or platform to the north. This structure showed evidence of repeated turf construction: prior to ~950, before 1104, and after 1104. It also contained one definite and a second probable observation of pre-950 floor layers, likely animal floors based on the color and texture – dark, laminated, and slightly fuzzy, as though of hay and dung, lacking ash, burnt bone, or charcoal, but not very compact (Figure 35). The northernmost structure consists of one small room with thick turf walls, about 6m x 13.5m. This structure likewise included turf from pre-1104, post-1104, and post-1300, with two pre-1104 animal floor layers and one indistinct pre-1104 low-density cultural layer. One core south of the site contained undated turf, and no other evidence of settlement was observed. This site was likely used to house animals over the long term, perhaps in outdoor pens, starting shortly after the landnám, and appears never to have been inhabited by people for significant periods. This is almost certainly not the site of the first *landnám* farm on Hegranes. On the slight chance that the floors and low-density layers represent some kind of early settlement, the total pre-1104 "farmstead" size of Hegrastaðir has been estimated as 100 m^2.

Where glacial gravel was reached, the average soil depth was 42.3cm. Thirteen cores at the site contained the 1766 tephra layer, 15 contained the 1300 layer, 28 included H1, 4 included the ~1000

layer, with one ~950 layer and 7 cores with the LNL or LNS layers. Fifty-one contained either the H3 or H4 layers. Outside of the site core, the most common tephra layer was the 1300, suggesting that significant erosion occurred here prior to that date, and likely also after 1766. The 1104 layer was more common near the core of the site, and in general most of the historic tephra layers were observed in association with cultural deposits. The presence of turf structures and consistent use of the site over time likely contributed to the retention of tephra nearer the core of the site. There was no clear enclosure wall around the site, though a rough boundary was traced with a GPS delineating the division between more eroded and less eroded soils.

The mire to the east of the site was edged by a clear drop-off: possible evidence of peat cutting. Indeed, a core on the ledge contained H3, 1000, H1, and 1766 tephra, while a core just off the ledge contained only the H3 and 1766 layers, suggesting that the bog was most recently cut for turf or peat prior to 1766, and likely after 1300.

Figure 32. Guðný Zoëga and John Steinberg stand atop the southernmost ruin at Hegrastaðir on Svanavatn. View facing south.

Figure 33. Kody Shugars and Sarah Breiter beside the spring, east of Hegrastaðir on Svanavatn. View facing north.

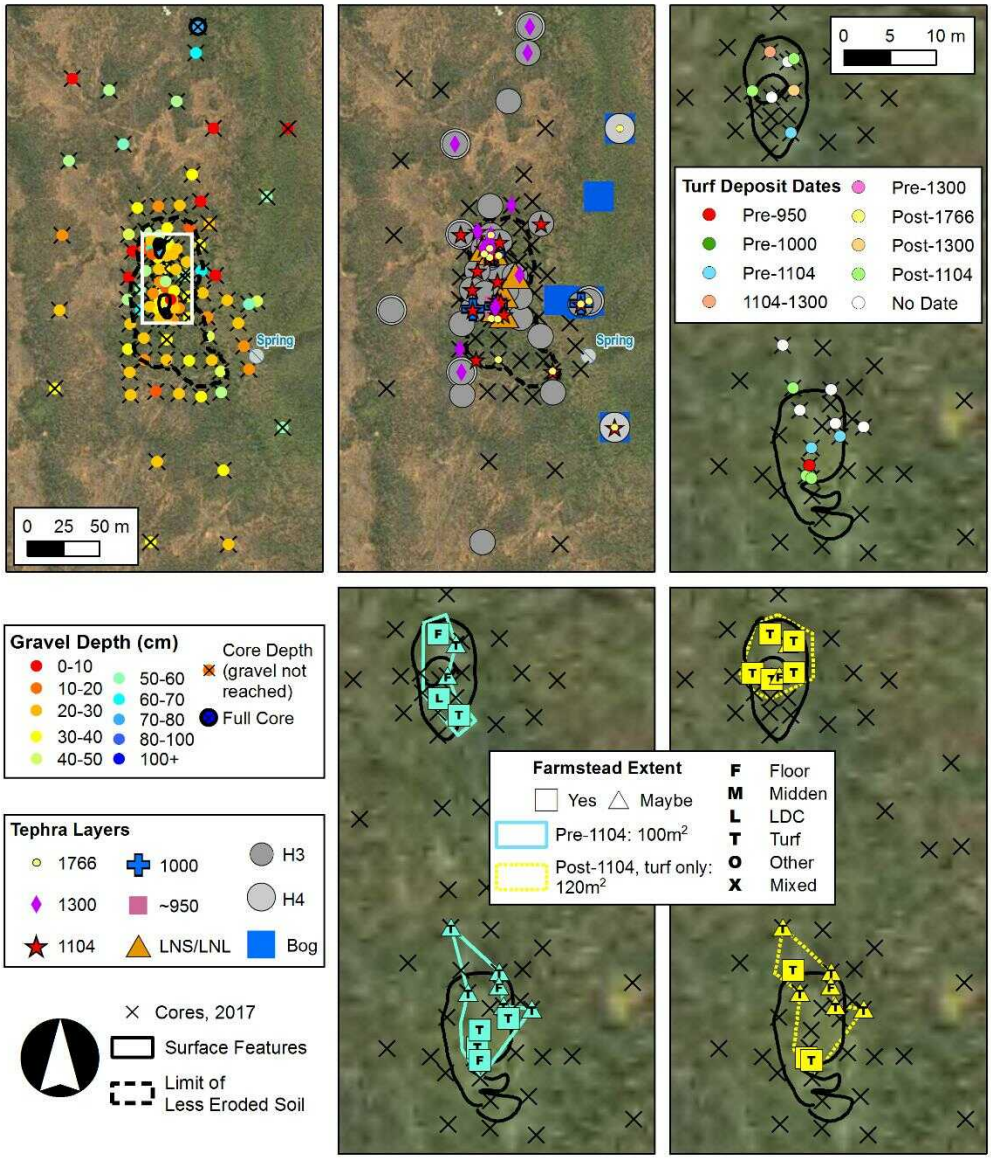


Figure 34. Hegrastaðir-Svanavatn maps. Top left: gravel depth and extent indicator for other maps. Top center: tephra and bog. Top right: turf dates for structures. Bottom: pre- and post-1104 "farmstead" sizes. Note, neither set includes midden deposits. Background imagery from LMI.

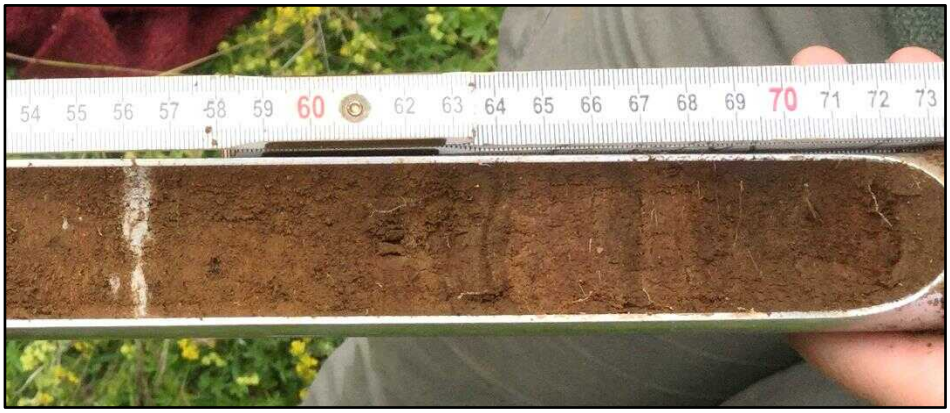


Figure 35. Core 170306 at Hegrastaðir on Svanavatn, showing the striated, likely animal floor layer, below 62 cm. The 1104 tephra layer is at 56 cm.

Keflavík

The farm at Keflavík is located at the northern edge of Hegranes, in a north-south valley that borders on the fjörð, channeling the wind when it blows from the north or south. There are two major medieval farmsteads at the center of the property, at least one of which is associated with a cemetery. Excavations and geophysical survey at the farm mound, cemetery, and older farmstead (Lower Keflavík) were carried out in 2015, 2016, and 2017 and have been reported elsewhere (Bolender, et al. 2016; Catlin, et al. 2016; Catlin, et al. 2017; Guðný Zoëga, et al. 2016; Steinberg, et al. 2017; Steinberg, et al. forthcoming-a). Four *fornbýli* place-names are associated with the landscape of Keflavík: Kriki, Þrælagerði, Grænakot, and Vík (Hjalti Pálsson 2010:35-37) (Figure 36). In 2008, the medieval farmstead as well as Þrælagerði and Kriki were surveyed and mapped by archaeologists from the Skagafjörður Heritage Museum (Guðný Zoëga and Guðmundur S. Sigurðarson 2009). Small test trenches were also excavated in the field walls at both *fornbýli* sites. Survey data from this work is displayed on several of the maps below.

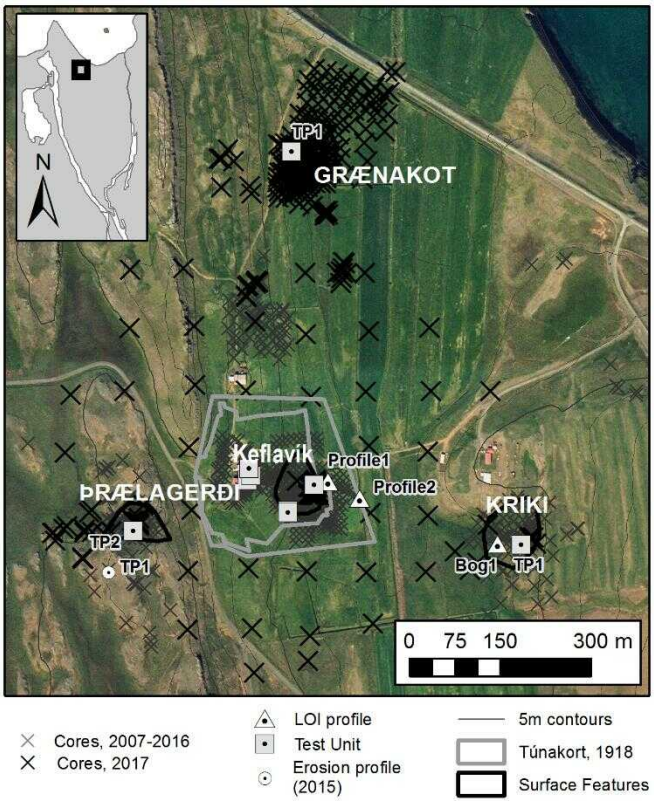


Figure 36. *Landscape of Keflavík showing fornbýli, cores, and excavations. Background imagery via LMI.*

Kriki

Kriki, sometimes called Litla-Keflavík, is located approximately 430 meters to the east of the medieval cemetery at Keflavík, in a field just to the southeast of the modern farmhouse. No record of habitation is known from here. The *Örnefnaskrá* mentions the site but gives little detail aside from a small ruin (Sigurður Ólafsson and Magnús frá Utanverðunes n.d.). The existence of the site is also mentioned in the *Jarðabók*, though not by name; it is lumped together with Þrælagerði, and it was assumed that no one lived at either site based on the small size of the enclosures (Árni Magnússon and Vídalín 1930:63; Hjalti Pálsson 2010:35). The 1840 parish description includes Minni-Vík, but seems to describe a location closer to the sea than Kriki (Jón Reykjalín 1954:119). The site includes at least one structure, likely a grazing house/*beitarhús*, 12m x 7m, and the partial remains of a bounding wall, though they are difficult to distinguish on the surface. The site slopes dramatically from east to west, and is heavily eroded in its higher portion, cryoturbated in the middle, and very wet at the bottom.

Survey and excavation was carried out at Kriki in 2015 and 2016 (Catlin, et al. 2016; Catlin, et al. 2017). Along with museum survey in 2008, these data date the earliest, short-term habitation of the site to before ca. 950 CE and the later agricultural use to post-1104, and perhaps post-1766.

Coring

In 2017, eight additional cores were recorded to verify the dates of architecture and fill in a gap in the data along the southwest corner of the site, bringing the total number of cores at Kriki to 120. The

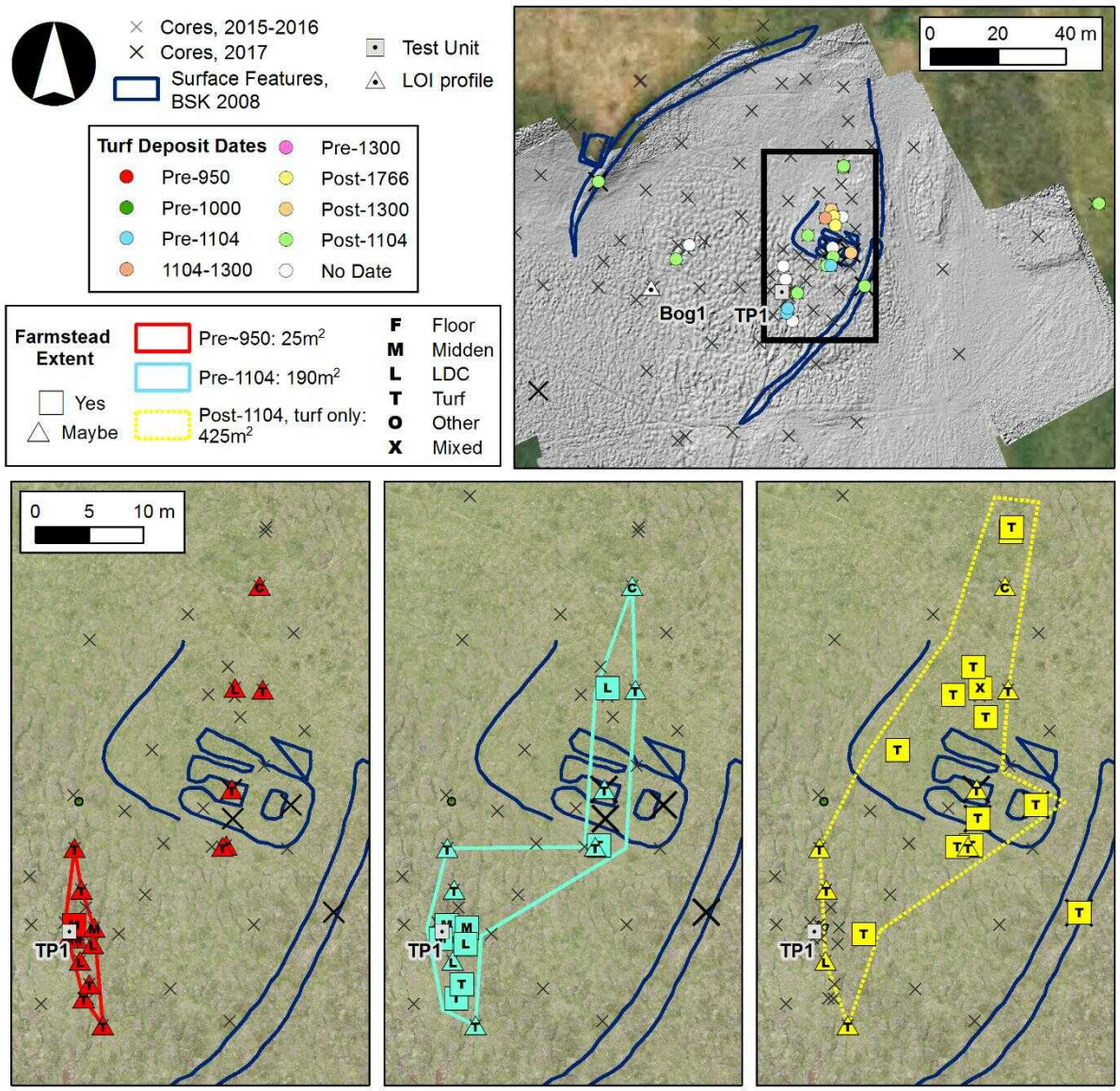


Figure 37. *Kriki maps. Top: turf dates for surface features, background: hillshaded DEM from 2015 kite photo. Bottom: "farmstead" deposit dates and sizes, background imagery: 2015 kite photo.*

enclosure wall was shown to date to post-1104, and the visible turf structure at the site dates to post-1300. As a result of these cores and more detailed analysis of previous years' data, the size of the farmstead pre-1104 has been revised to 190m^2 (Figure 37).

Loss-on-Ignition

Loss-on-ignition samples were obtained from Profile 2 at Lower Keflavík, which had been exposed but not sampled in 2016. This was intended to be the distant-site sample for comparison with Kriki. As at many other sites, the Lower Keflavík profile showed a dramatic decrease in organic content from over 80% prehistorically to about 25% after 1104, then rising to more than 50% after 1300. Loss-on-ignition samples from the wetland unit (Bog 1/Profile 1) excavated at Kriki in 2016 show a similar trajectory, though these near-site samples had slightly higher organic content than the distant samples from Profile 2 before and after 1104 (Figures 38-39). This is consistent with the pattern of wetland development seen at other sites. The 1766 tephra sample from this unit (Sample #9) has been examined by Brian Damiata and verified as 1766.

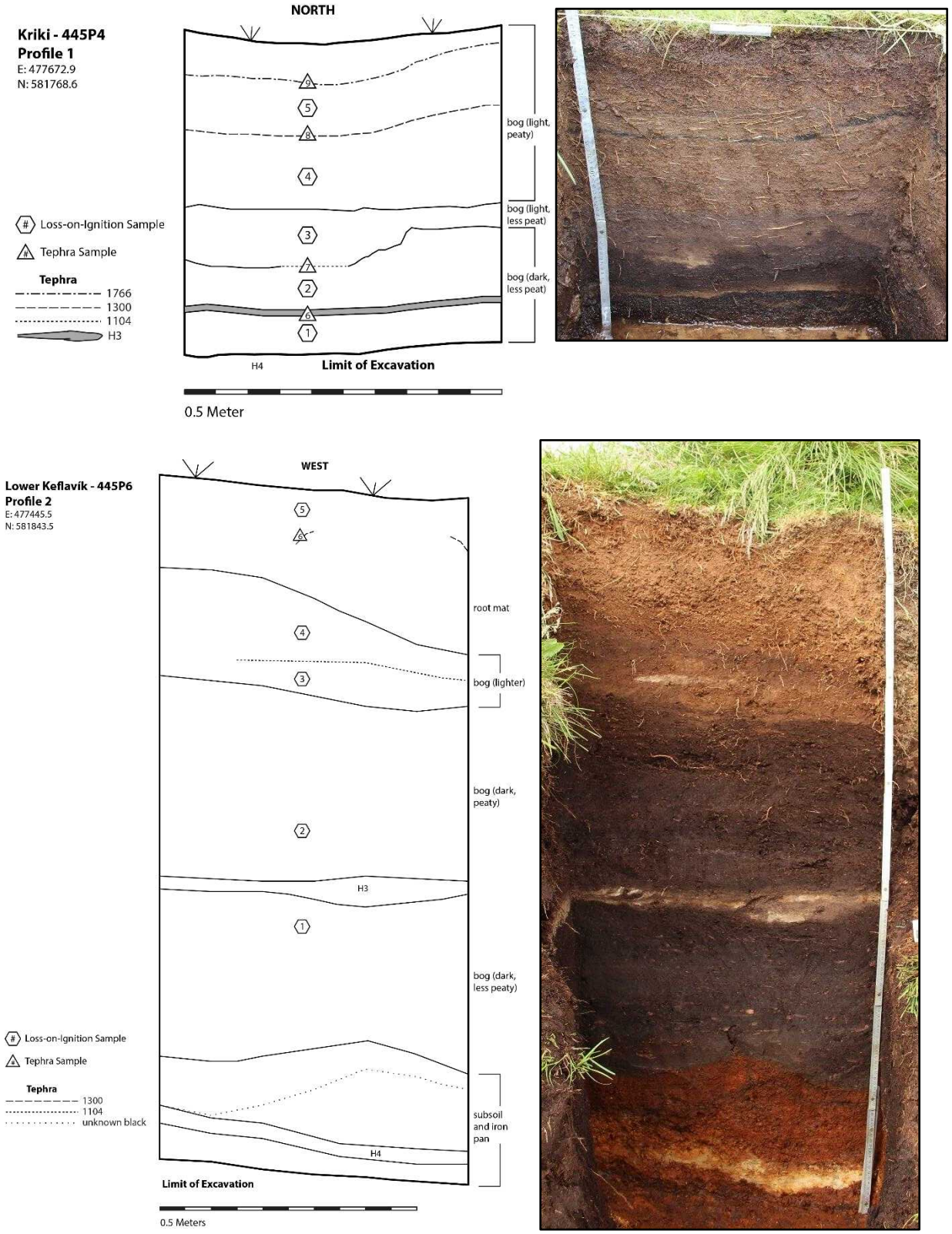


Figure 38. Loss-on-Ignition sampling from Profile 1 (BOG1) at Kriki (top) and Profile 2 at Lower Keflavík (bottom). Photos taken in 2016.

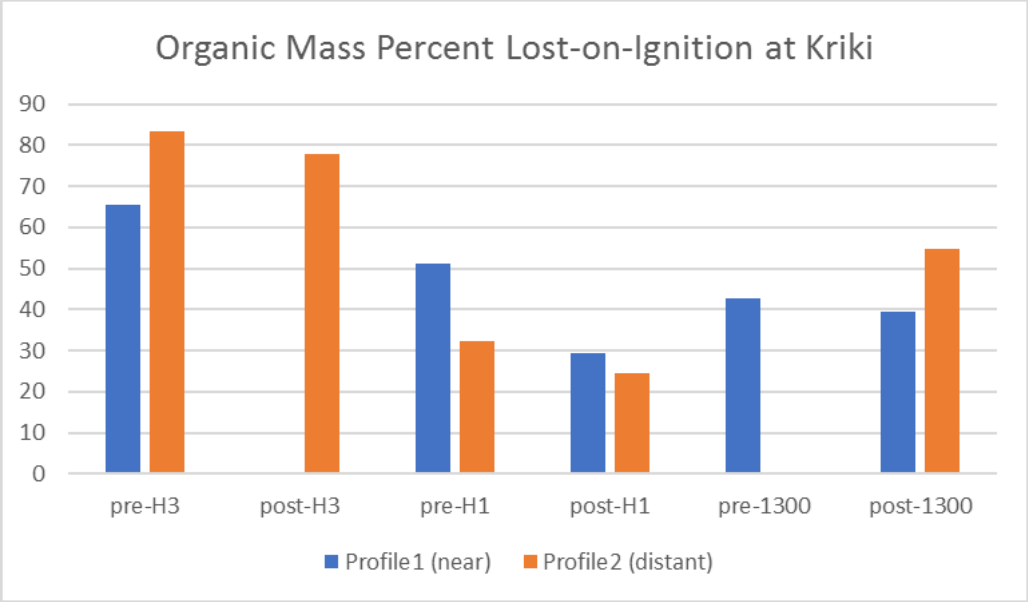


Figure 39. Loss-on-Ignition results at Kriki. Profile 2 results shown; to be updated when Profile 1 results are available.

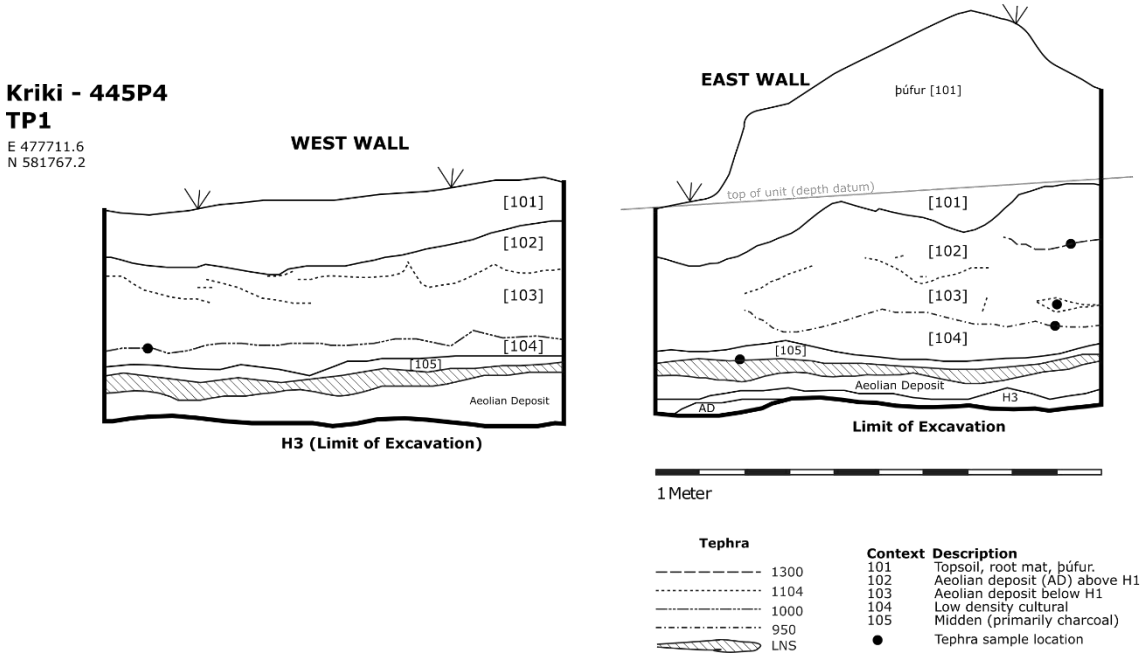


Figure 40. Profile drawing for TP1 at Kriki, with new tephra dates. Updated from Catlin, et al. 2017.

<u>Update from TP1: Tephra</u>

Tephra from Test Pit 1 at Kriki, also excavated in 2016, has also been analyzed by Damiata. Sample #7 from the west wall, identified in the field as the 1000 layer, is indeed 1000; Sample #10 from the east wall, also identified in the field as 1000, is in fact more consistent with the ~950 layer; and Sample #11 from the east wall, identified in the field as LNL, is more probably the Black Katla layer. Sample #8, a 1300 tephra sample from the east wall, may have been contaminated as it returned a Grimsvötn signature rather than Hekla; but it is still probable that the layer is ca. 1300. Figure 40 provides an updated profile drawing.

Þrælagerði

Þrælagerði is about 200 m west of the medieval cemetery excavation at Keflavík. It was already in ruins by the time of the *Jarðabók* survey in 1713, where its existence is mentioned in the same sentence as another unnamed site (probably Kriki). The *Jarðabók* describes both sites as "*sem men halda þrælagerði*" ("which people think were thralls' enclosures"), and this reference may be the origin of Þrælagerði's name (Hjalti Pálsson 2010: 35-36). Both sites are described as never having been inhabited, based on the small size of the enclosures (Árni Magnússon and Vídalín 1930:63). Þrælagerði is also briefly mentioned in the Keflavík *Örnefnaskrá* (Sigurður Ólafsson and Magnús frá Utanverðunes n.d.), as well as in the *Örnefnskrá* for Utanverðunes – it is south of Nesvatn and thus makes sense that it might be included with that farm; the authors speculate that not only might slaves have lived at this place, but that they might have been killed there (Margeir Jónsson 1935:5). The 1840 parish description does not mention the site.

Þrælagerði is located in a cryoturbated bowl between rocky outcrops to the north, east, and south, with a lower wetland area to the west. Þrælagerði is close to medieval Keflavík but is not visible from the main farm, and reaching the site requires climbing over or walking around a rocky ridge. Utanverðunes is visible in the distance to the northwest. The mire shows evidence of having been cut for peat, and it is possible that water diverted from these wetlands was used by the medieval farm at Keflavík. Ruins still visible at the site include two structures inside the large turf enclosure wall: the southern, two-room structure (12.3m x 7m) is likely a relatively recent *stekkur*, while the structure to the north, also two rooms (11m x 5.5m), is oriented in the opposite direction and may be an older *stekkur*, though it also contained post-1104 turf. There are also several turf structures in the near vicinity, beyond the wall.

The Skagafjörður Heritage Museum carried out a survey of Þrælagerði and excavated a trench through the enclosure wall in 2008, concluding that the wall had been constructed between 1104 and 1300 (Guðný Zoëga and Guðmundur S. Sigurðarson 2009). FLASH conducted coring survey and excavation in 2015 and 2016, which shows that the site was inhabited in the late 9th or early 10th century, and reused for agricultural purposes after ca. 1104.

Coring

In 2017, 23 additional cores were recorded at Þrælagerði, to verify architecture dates and suggest possible dates for turf and peat cutting, bringing the total number of cores at the site to 168. The main turf structure at the site was verified to date to after 1104, while midden and low-density cultural material observed in a few placed could not be dated (Figure 41).

Three outbuildings on the outcrop to the southwest of the site had been identified by the museum survey in 2008 but not dated. These are small, U-shaped structures, no more than 5m in diameter, that may be pens or perhaps shepherd's huts. The two northernmost structures both post-date 1300, while the structure south of them contained turf will no dating information.

Wetlands

The mire to the west of the site is outlined by a ledge, which is often evidence for turf or peat cutting. The tephra is ambiguous, however; there is no clear pattern of tephra seen outside the mire but not within it, except that the H3/4 layers are more often seen outside the mire. It is possible that the mire was cut for turf or peat prior to 1104 and perhaps prior to 1000, with sporadic, less systematic exploitation over the following centuries.

Due to time constraints, no loss-on-ignition samples were collected at Þrælagerði.

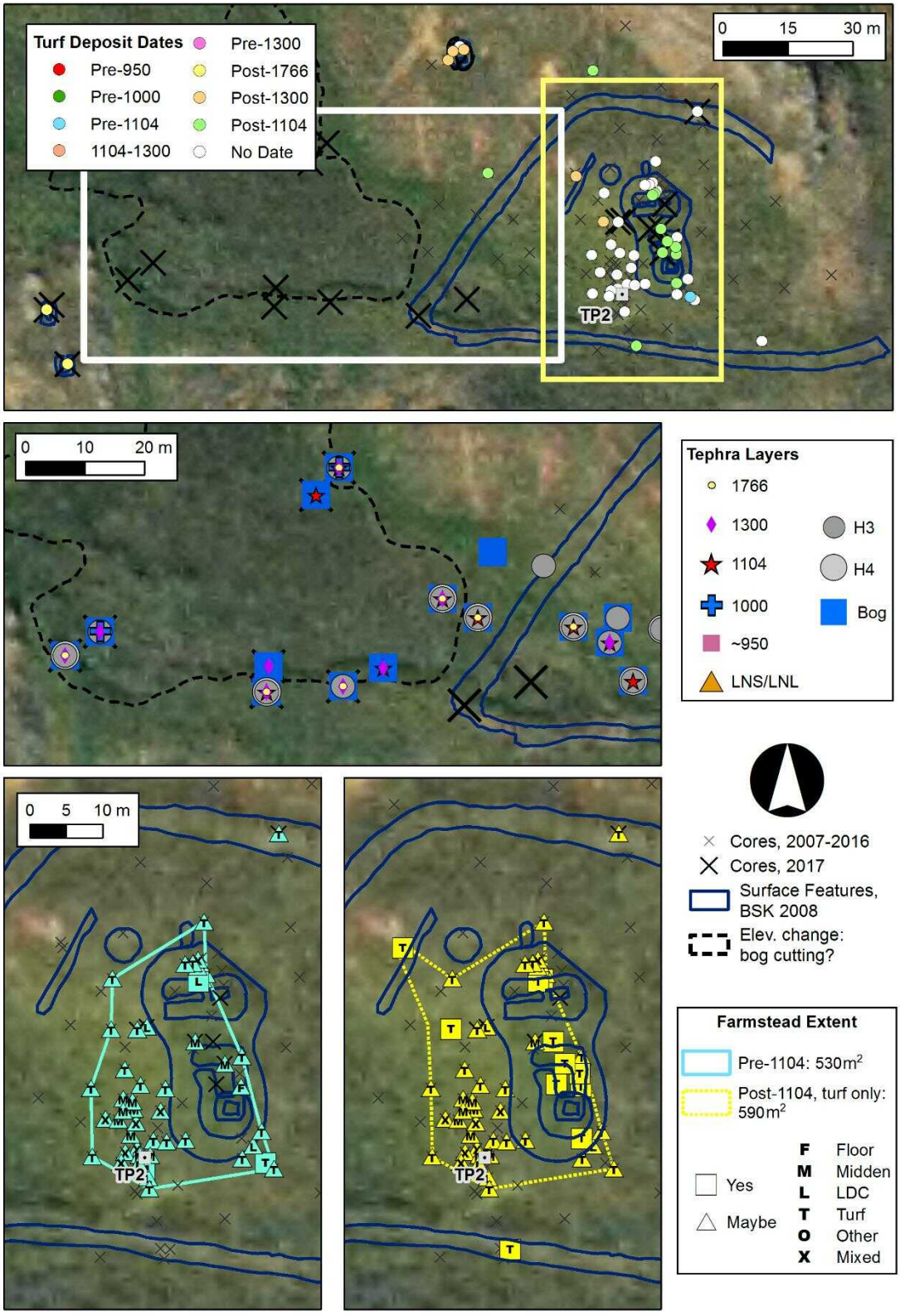


Figure 41. *Þrælagerði maps. Top: turf dates for surface features. Middle: tephra layers in the bog. Bottom: "farmstead" deposit dates and sizes. Background imagery from LMI.*

Figure 42. CMD-mini grid at Þrælagerði. View facing southwest.

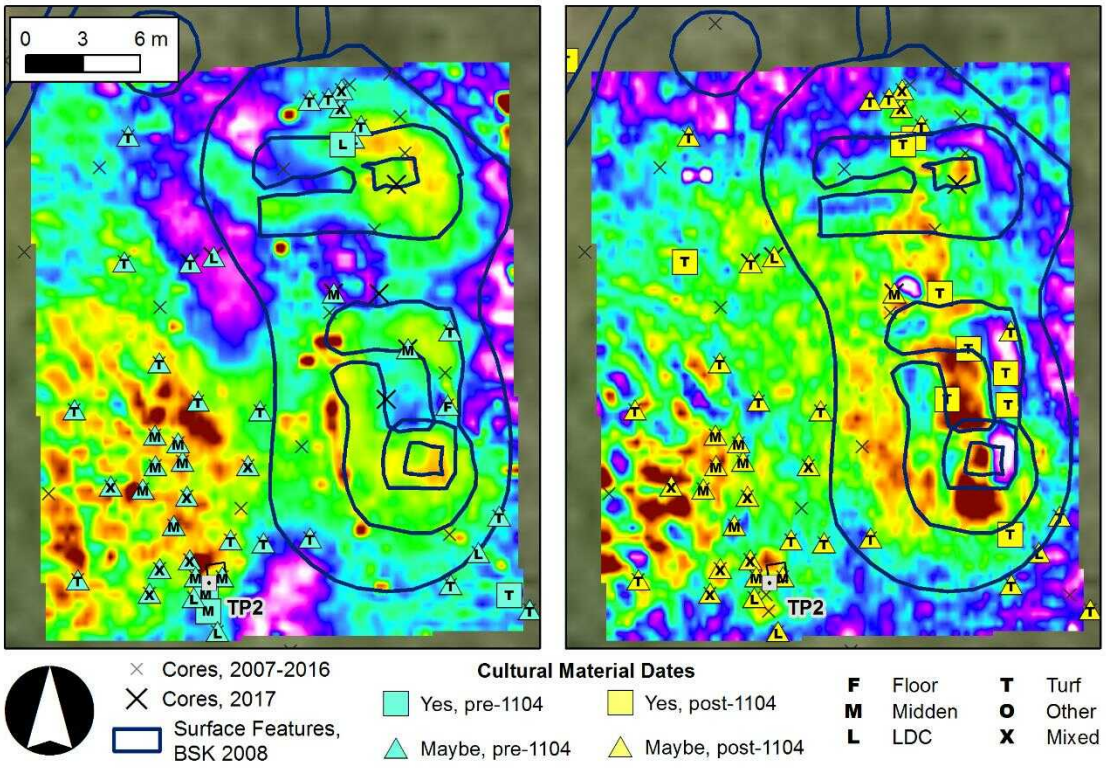


Figure 43. CMD-mini results at Þrælagerði. Left: In-phase readings using the middle dipole (IP2). Right: Bulk conductivity using the longest dipole (C3). High=red, low=white.

Geophysics

Electrical conductivity survey was performed at Þrælagerði in 2017 to determine whether buried architecture was present in association with the medieval midden (Figures 42 and 43). While the modern architecture is clearly visible as areas of lower conductivity, and the area of the known midden appears as a roughly circular area of higher conductivity, no additional likely architectural targets could be clearly seen, though this does not preclude the possibility that an older structure may be buried beneath the more recent one. A small area of somewhat higher conductivity/lower in-phase a few meters north of the midden was investigated with a core and proved to include a low density cultural layer that could not be dated.

Grænakot/Vík

Historical surveys of Keflavík include a site called Grænakot/Grænagerði or Vík, or perhaps two sites with both of those names. The location of the site was not known until 2017, though it was assumed to be in one of the eroded slopes west of the modern cultivated fields. The *Jarðabók* describes 'Vijk' as an abandoned cottage in a heavily eroded field (Árni Magnússon and Vídalín 1930:63). Minni-Vík is described in the 1840 parish description as ruins by the sea, a base for boats and fishing (Jón Reykjalín 1954:119); this seems to correspond to a set of ruins now heavily eroded into the sea, north of the farmstead, that were surveyed by the museum but not included in FLASH (see also Bryndís Zoëga 2017; Hjalti Pálsson 2010:36). In the *Örnefnaskrá*, Grænagerði or Grænakot is described as an abandoned farm, ruined and eroded, south and east of Trollaskarð, the pass through the hills where the main road across Hegranes now runs (Sigurður Ólafsson and Magnús frá Utanverðunes n.d.:1, 2).

Coring survey in 2015 and early in the season in 2017 concentrated in the eroded slopes west of Keflavík and the field just north and east of the modern sheep barn. This survey had not revealed any evidence of habitation – or indeed, much clear evidence of later use by way of turf structures, aside from scattered and mixed turf at the north end of the field north of the cemetery (Catlin, et al. 2016).

Figure 44. *Detail of a 1956 air photo showing a field wall and structures at Grænakot/Vík (top right). Also visible are Kriki (bottom right) and Þrælagerði (middle left). Top of photo is slightly west of north. Image courtesy LMI.*

In 2017 aerial photography from 1956 was obtained from Landmælingar Íslands, which clearly showed a large field boundary enclosing multiple structures in the northeastern corner of the modern hayfield, just south of the modern road (Figure 44). The location does correspond very well to the description given in the *Örnefnaskrá*, which was written prior to the 1950s – south and east of Trollaskarð. At the time of the air photos, ditches had already been dug through the southern extent of the enclosure, forming the two long drained fields to the south that still exist today, which further suggests that the area was not in active use in the late 1950s. In a later air photo from 1976, the area has clearly been bulldozed.

Due largely to the ditches that now exist on three sides of the site, this area had previously been dismissed as drained wetlands and had not been included in the survey. Activity reported here includes coring survey in the fields and slopes to the south and west of the site, coring in and around the site for environmental reconstruction and to locate and date evidence of settlement, excavation, and multiple drone flights. Infrared drone imagery for the site has not yet been processed.

Coring

In 2017, 235 cores were recorded at Grænakot/Vík, bringing the total number of cores associated with the site and with earlier searches for it to 288 (Figure 45). Early in the season, survey along the eroded hillside to the west of the site by Kathryn Catlin, Bryndís Zoëga, and Grace Cesario hinted at the possible presence of settlement or at least turf structures, including one core with undated, indistinct low-density cultural material on the southern slope and a possible post-1104 structure on the slope to the west. Cores on the eroded slope west of the site contained little tephra between the H3 and 1766 layers, suggesting major erosion events both before and after 1766. After an apparent circular feature was observed in drone imagery in one of the drained fields to the south of the site, this area was also investigated with cores, but did not contain evidence of architecture or other sign of cultural material. However, these cores in wetland lacked tephra prior to ca. 1300, which suggests the area may have been exploited for turf or peat prior to that date. In contrast, cores in wetlands closer to the site mostly lacked tephra prior to ca. 1104, suggesting wetlands near the site were exploited earlier while more distant areas were in use later, perhaps by inhabitants of Keflavík rather than Grænakot. Since the site was discovered so late in the season, time did not permit the collection of loss-on-ignition samples here.

The average depth to gravel of cores in the fields near the site was 35.4 cm. Of cores collected in 2017 (excluding the previously surveyed area to the south), the 1766 tephra layer was observed 14 times, the 1300 layer 29 times, and the 1104 layer 51 times. The 1000 and 950 layers were each observed twice, and the LNL/LNS was seen 11 times, plus 78 observations of the H3, 8 H4 layers, and three unknown tephra. Of locations where H1 was observed, 24 occurred inside the homefield as observed from the 1956 aerial photo, while only 9 occurred in non-wetland areas outside the homefield. The LNL and H3 layers are likewise more prominent within the enclosure. The same cannot be said of the 1766 and 1300 layers, which are sparse overall and are not concentrated within the enclosure. This is interesting as we know the wall was present in the 1950s. One possible explanation is that an enclosure wall in this approximate location after ca. 1104 protected the area temporarily from erosion, but fell into disuse sometime later, and was rebuilt after the late 18th century.

Turf located in cores at the site in some cases corresponds to features evident on the 1956 air photo, but in other cases it does not. The resolution of the scanned image is not very high and it is hoped that when higher-quality scans become available, a correspondence will be more clear. An oval structure in the eastern half of the homefield corresponded to only one undated turf, while closer to the excavation unit, structures seem to be present in the air photo but their outlines are much more indistinct. Turf that could be dated was scattered through the enclosure, primarily post-1104, while one core in the enclosure wall itself contained probable post-1300 turf. No cultural material could be

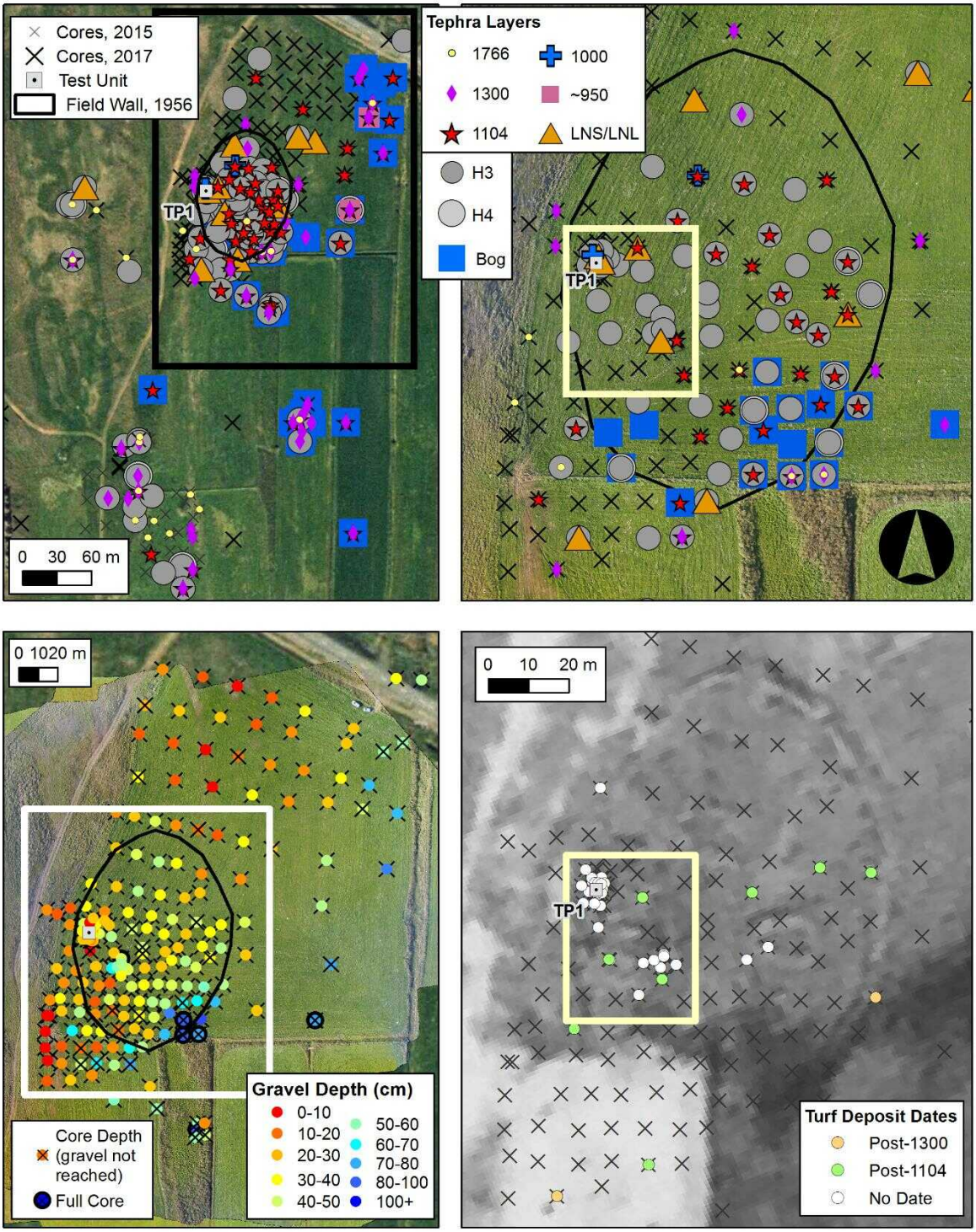


Figure 45. Grænakot/Vík maps. Top left: Tephra and bog in all cores around Grænakot, background from LMI. Top right: Detail of tephra and bog in the Grænakot field, background: 2017 drone photo. Bottom left: Depth to gravel, background: 2017 drone photo. Bottom right: Turf dates superimposed on the 1956 air photo from LMI. Extent indicators in the right-hand maps show locations of maps in Figure 47.

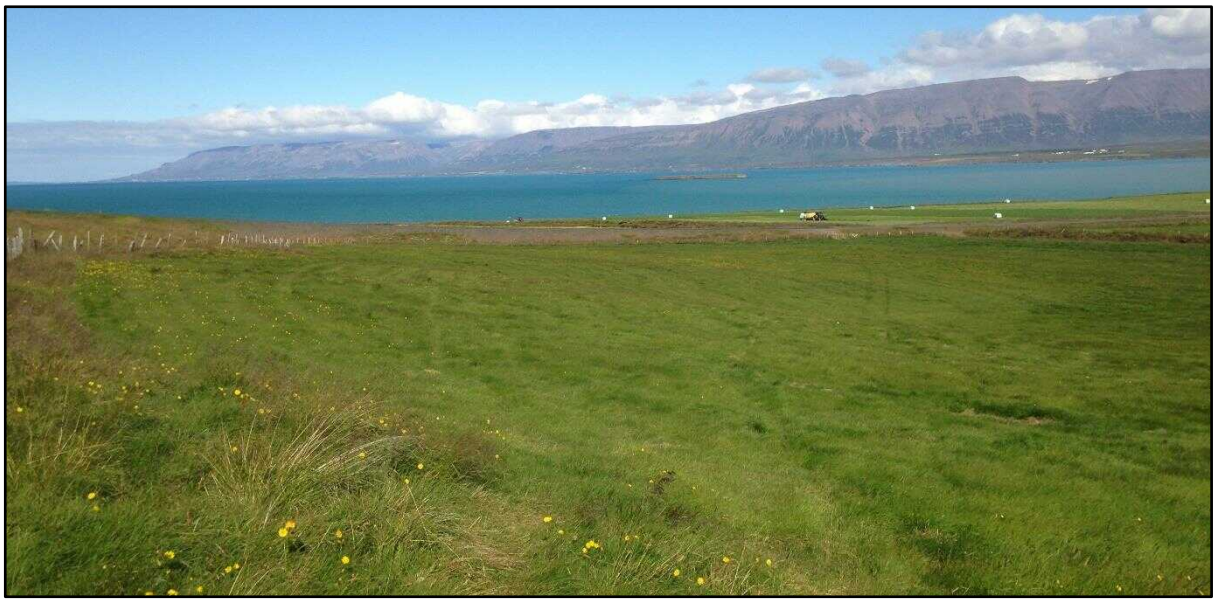


Figure 46. The Grænakot/Vík field, view facing northeast from near the highest point (southwest corner) of the field.

definitively dated to post-1766. However, many cores contained turf with no dating information, and it is possible that many of these correspond to the structures present in the 1950s. It is also of course possible that all evidence of them has been bulldozed away, as not even a hint of the enclosure or structures is visible on the surface today or in modern air photos (Figure 46).

Two small clusters of largely undated midden and low-density cultural material were observed near the southwestern corner of the field, along the hill that dominates the formerly enclosed area. Four cores along the slope of the hill contained dark, indistinct midden and low density cultural material, beneath and surrounded by turf that was either undated or post-1104. Nearer the top of the hill, about 8m east of the former enclosure wall and 16m east of the present fence, another cluster of mixed midden, turf, and low density cultural material was present. Historic tephra layers were present in only one core, 174104, in which the 1000 tephra was observed in the middle of a low-density cultural layer. In many cases midden was observed beneath or even between layers of turf that contained the LNS layer. Based on this data, the extent of the farmstead before ca. 1104 (and before ca. 1000) is estimated at 135m^2 (Figure 47).

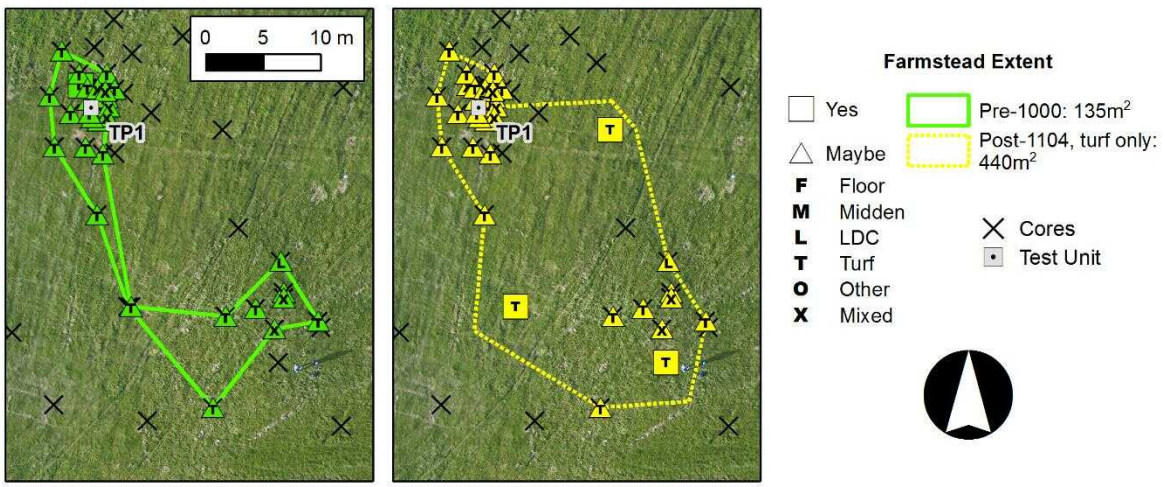


Figure 47. Farmstead size at Grænakot/Vík, pre-1000, and turf extent post-1104. Map extents are marked in Figure 45.

*Table 3. Contexts for Test Pit 1 at Grænakot/Vík. Dates are unknown as no tephra was observed during excavation. *All troweled, shoveled, and sieved unless noted. **Average of all corners, in cm.*

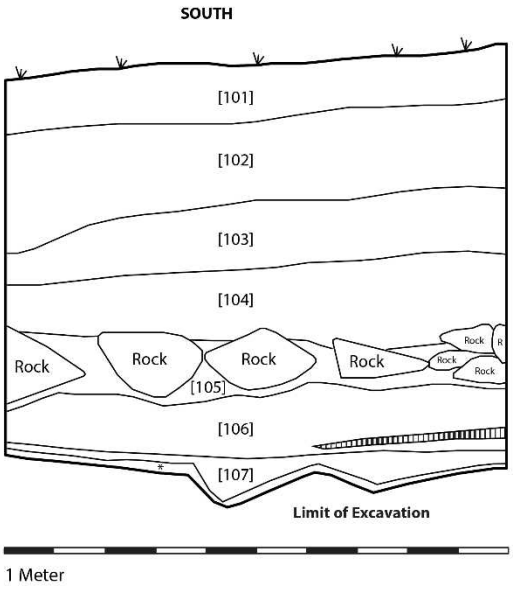
Context	Class	Description*	Color	Compact-ion & Comp-osition	Homo-geneity	Boundary	Inclusions	Opening Depth **	Thickness **
101	Topsoil	Root mat. Not sieved.	Mid brownish brown	Soft silt	Uniform	Sharp	Cobbles	0	14.25
102	Aeolian deposit / Collapse	Aeolian sediment with remobilized LNS, H3 and turf lenses	Mid brownish brown	Soft silt	Lensed	Sharp	Turf, cobbles, fire-cracked rock Find: white pebbles	14.25	11.5
103	Midden	Peat ash midden layer. Fewer stones than [102].	Mid brownish pink	Soft clayey silt	Lensed	Sharp	Peat ash, wood ash, charcoal, burnt bone, pebbles, cobbles, fire-cracked rock	26	8.5
104	Fill	Fill layer with H3, gravel, and turf	Mid yellowish brown	Soft sandy silt	Uniform	Gradual	Charcoal, gravel, pebbles, turf	34.5	9.25
105	Pavement	Stone floor layer. Single course of mostly rounded cobbles and larger stones. More fire-cracked in NE corner.	Mid greyish grey	Rocks	Uniform	Sharp	Gravel, pebbles, cobbles, fire-cracked rock	43.75	9.25
106	Midden	Peat ash midden.	Mid brownish pink	Soft clayey silt	Lensed	Sharp	Peat ash, wood ash, charcoal, burnt bone, pebbles, gravel, fire-cracked rock, slag Finds: white stone, slag	53	12
107	Subsoil	Thin clayey lens between midden and sandy glacial deposits.	Mid greyish brown atop dark grey	Soft clayey silt atop sand.	Uniform	Sharp	Gravel. Some white stones. Some midden material impressed from [106].	65	1.25

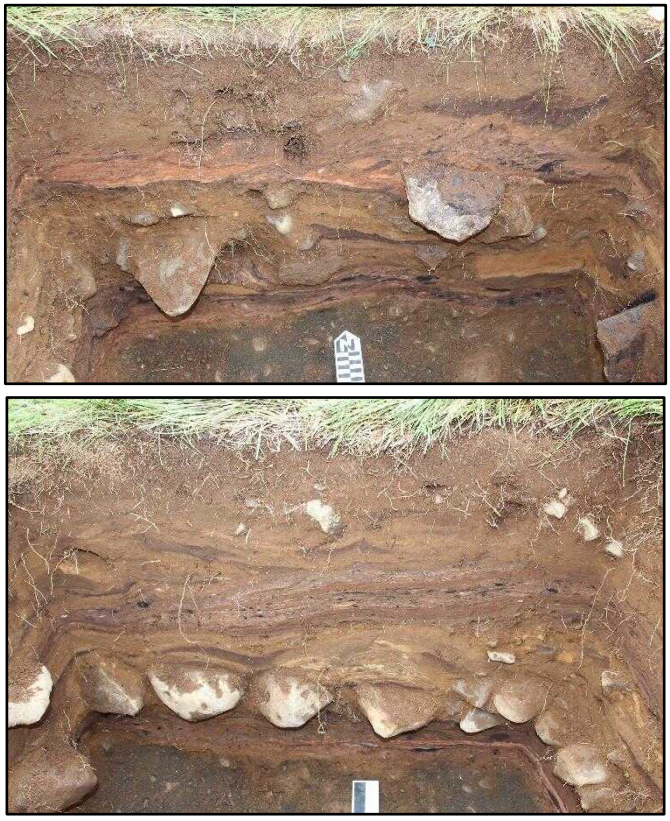
Excavation

Test Pit 1 (TP1) was placed near cores 174107 and 174053. We expected to hit midden at 17cm below the surface, which would continue for about 18cm, ending in sterile soil by 50cm, with perhaps some turf in the upper levels. The unit was excavated with both shovel and trowel, and all contexts below the root mat were sampled for macrobotanical flotation (Figure 48, Table 3). The unit was excavated on 7-9 August by Kathryn Catlin and Megan Sheehan.

The root mat ([101]) gave way to a layer of primarily aeolian deposit with some cultural inclusions [102], mostly turf lenses, with some fire cracked rock as well as unburnt cobbles. The layer is probably partially turf collapse. Three small white stones were retrieved as Find #1 (Figure 49).

The midden began directly beneath this turfy layer in context [103]. The midden was primarily composed of peat ash with charcoal inclusions and small pieces of burnt bone, with fewer stones than [102]. An apparent fill layer beneath the midden, context [104], was made up of about half aeolian deposit and half gravel, with some charcoal specks, remobilized H3, and lenses of the landnám tephra that were most likely in turf. The layer closely resembled grave fill, an indication that it was probably backfill from a hole that had been purposely excavated nearby. It may also have been partially turf collapse, mixed with the fill.





Grænakot - 445P3
TP 1
E: 477332.52
N: 582417.89
Z: 32.31

Key

Laminated, possible floor

Context	Description
101	Root mat with gravel inclusions
102	Cultural layer with turf lenses, gravel, and fire-cracked rock - possible wall collapse
103	Midden with peat ash, bone, charcoal, gravel, and fire-cracked rock
104	Fill layer with turf lenses, H3 specks, gravel, and charcoal - possible wall collapse
105	Cobble layer - possible floor
106	Midden with peat ash, bone, charcoal, gravel, and fire-cracked rock. Partially laminated and floor-like
107	Subsoil and glacial gravel
*	Subsoil: grey sand and gravel

Figure 48. Profile drawing of the south side wall of Test Pit 1 at Grænakot/Vík (left), with photos of the north (top right) and south (bottom right) side walls.

Figure 49. Finds from Test Pit 1 at Grænakot/Vík. Top left: white stones from [102] (F#1), top right: white stone from [106] (F#3), bottom: slag from [106] (F#2).

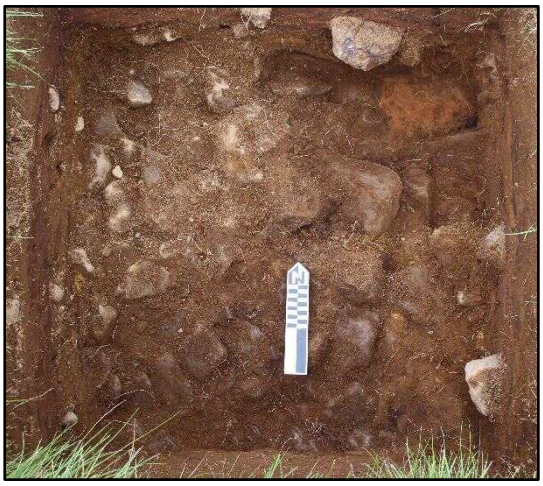


Figure 50. Top of context [105] – probable cobble floor.

Beneath the fill layer, large cobbles covered the entire unit and were assigned context [105] (Figure 50). The stones were initially interpreted as a landslide event, but their single, well-sorted course, too-regular size, and smooth angles mean they are unlikely to have come from the hill above the site. This is most probably a floor, perhaps in a storage room, or an outdoor pavement. In the northwest corner of this layer, instead of a rock, what appeared to be a block of sterile soil with inverted H3 and LNS was underneath the midden (Figure 48). This may be a chunk of fill from a shovel, but is also may be a block of low-quality turf placed at the edge of the stone floor. The northwestern corner also contained more fire-cracked rock than the rest of the context.

Figure 51. *Tephra sample (#16) location in north side wall (white line).*

As we were cleaning the rocks for a photo, it became clear that another midden layer was present beneath the rocks. Context [106] was also primarily peat ash with some charcoal, fire-cracked rock, and bone fragments, along with two pieces of slag and a small white stone (Figure 49). There are some lenses of aeolian deposit within the midden, and in places, especially along the western side, it appeared heavily trampled and laminated, similar to a floor though less friable and dense than might have been expected. A thin layer of gravel subsoil under the midden was excavated as [107] in case it proved not to be the end of the deposit, however, beneath the gravel the unit gave way to a deep layer of dark grey sand and gravel, and here we stopped excavating. A small test hole in the center of the unit indicated the sand continued at least 10cm beyond the limit of excavation.

Figure 52. *Charred barley retrieved from flotation sample #14, context [106]. The sample has been sent for AMS dating.*

No tephra was observed during excavation, aside from LNL/LNS and H3 layers in turf. We collected a tephra sample (#16) from the north wall of the unit near the top of context [106] (the lower midden) that was white to grey in color – this might be the H1 layer, or it also resembles some 1000 layers as seen in middens (Figure 51). In short, it is difficult to say how old these deposits are, until this tephra sample is analyzed, or charred barley retrieved from flotation sample 14 in [106] has been AMS dated (Figure 52). Also of note, very few identifiable bones were retrieved from either midden context.

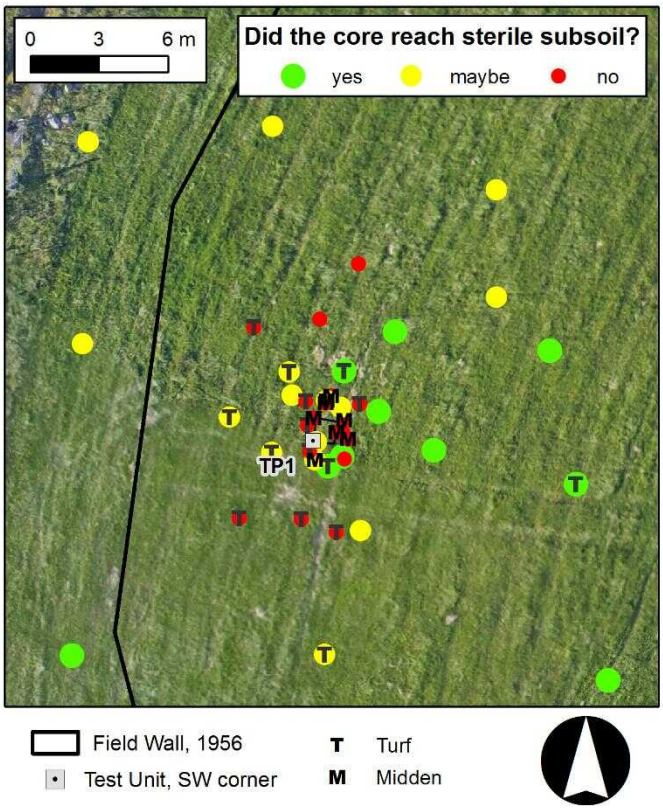


Figure 53. *Analysis of cores near Test Pit 1 at Grænakot/Vík to determine the probable extent of the buried structure and underlying midden.*

To summarize, a pit was dug here into the glacial subsoil, probably for the specific purpose of trash disposal. A building or pavement was later constructed atop this midden, and the structure in turn was later demolished and filled, first with collapsed turf and backfill, and later with another extended episode of midden deposition. Finally, another structure that had stood nearby partially collapsed and its turf fell or was pushed over the midden, where it mixed with aeolian sediment.

This raises the immediate question of how large the building was, and whether the midden beneath the cobble floor extends beyond the building. Did we fully measure the extent of the midden with the cores, or were we stopped from accessing it by an impenetrable cobble floor layer? This is difficult to answer. The H3 layer is present in some cores around the midden, but in many places it is difficult to say whether the layer is in situ or in turf. No cores in the vicinity were deeper than 50cm below ground surface, but the lower midden [106] was from 49-71cm, which suggests the buried floor may be quite extensive. From a survey of cores around the unit, we appear to have bounded it to the east, as cores directly east of the unit reached subsoil without evidence of midden or turf (Figure 53). We do not know if the midden extends beyond the turf to the south, and cores to the north are more inconclusive, as we failed to reach subsoil for several meters to the north of the unit. Turf in cores to the west suggests that the structure may have abutted the enclosure wall on this side, so it is likely that we have at least bounded it on two sides.

Utanverðunes

Utanverðunes is the northernmost farm on Hegranes, and it controls the grazing land north of the road to the lighthouse at Landsendi. Utanverdunes was surveyed by SCASS in 2013, 2016, and 2017 (Bolender, et al. 2017; Bolender, et al. forthcoming). The only fornbýli known on Utanverðunes land is Naustavík, a historic harbor site (Figure 54).

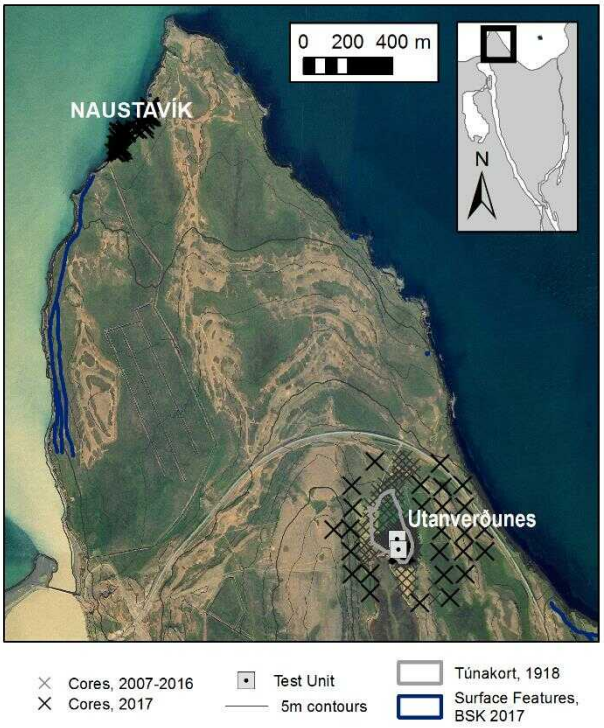


Figure 54. *Northern portion of Utanverðunes landscape showing location of Naustavík, cores, and excavations. Background imagery via LMI.*

Naustavík

Naustavík is heavily eroded into the sea, leaving only remnants of the site at the edge of the cliffs. The landscape around Naustavík is eroded and cryoturbated, and a small stream bordered by wetlands drains into the sea near the middle of the site. The area is regularly grazed by horses and is a nesting ground for terns. The *Jarðabók* describes a harbor here where fish were sold, though the text suggests it was no longer in active use in 1713 (Árni Magnússon and Vídalín 1930:62). The 1840 parish description likewise describes seabooths and sheds as well as sheephouses, and suggests that people from the region came here to fish and kill seals, and sea ice was causing damage to the site in the 19th century (Jón Reykjalín 1954:119). The site was re-inhabited early in the 20th century by Jóstein Jónasson and Guðmunda Sigurrós Sigurðardóttir from 1915-1937 (Hjalti Pálsson 2010:183-185; Jón Normann n.d.; Margeir Jónsson 1935; Sigurður Ólafsson n.d.-b; Þjóðskjalasafn Íslands 2017). Coring survey and drone photography were carried out at Naustavík out on a single day in 2017 (Figures 55-58), and museum archaeologists had previously surveyed the architecture with a GPS (Bryndís Zoëga 2017).

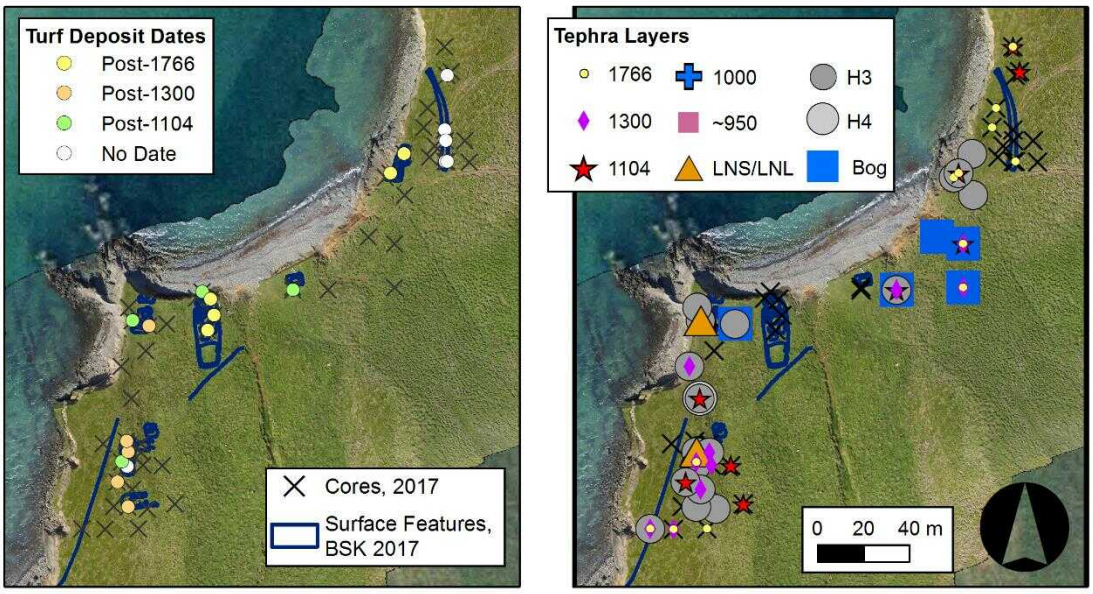


Figure 55. Naustavík maps. Left: Turf dates of visible architecture. Right: Tephra and bog observed in cores. Background: 2017 drone photos.

Coring

The northernmost feature of the site is a partial field boundary wall, which previously enclosed a multi-room structure that is now half eroded into the sea. Bryndís Zoëga (2017:143) identified this structure as an early 20th century sheephouse. Coring in the structure and examination of the cliff face showed that both the turf construction and underlying midden deposits post-date 1766. The enclosure wall could not be dated but is probably significantly older than the sheephouse. To the south, the land dips down to the stream and then rises again; additional structures, likely seabooths, are also late. A post-1766 multi-room structure, oriented north-south and just west of the stream, is as yet complete but in imminent danger of succumbing to erosion. Bryndís Zoëga (2017:139-141) has identified this structure and the partially destroyed buildings to either side of it as part of the early 20th century settlement. A cluster of buildings on the hill at the southern extent of the site may be slightly earlier, having been constructed after 1300 but perhaps before the 18th century, and is in less immediate danger. Midden observed in the cliff face here was not in association with tephra but appeared likewise to be of a later date.

No evidence of a medieval midden deposit or settlement was observed. While a more systematic coring survey here might yet reveal such evidence, it seems altogether more likely that any settlement prior to the 14th century was to the east of the present ruins, closer to what would then have been the coastline, and has long since eroded into the sea. As such, no estimates of farmstead size were made for Naustavík in any time period.

Tephra at Naustavík is sparse. The area appears to have experienced significant erosion throughout its history, with differential preservation across the site. Nine 1766 layers, 10 1300 layers, 9 H1 layers and two landnám tephra were observed, along with 18 H3 and a single H4 layer. Most of the observed tephra were in wetlands or in close proximity to structures that may have aided in soil preservation, especially the post-1300 and 20th century buildings near the south end of the site. A roughly 3x4.5-m trench east of the structure may be evidence of turf or peat-cutting after 1300. The area is not boggy, though there are wetlands very close by that were also exploited for turf; nonetheless, a dried root mat might have provided serviceable fuel in extremis.

Figure 56. Naustavík photos. Top: turf and midden eroding from the undercut bank beside the northernmost structure at Naustavík, view facing northeast. Middle: Sarah Breiter recording a GPS point in front of the early 20th century house ruins, view facing east. Bottom left: Possible area of turf cutting beside the southernmost structure, view facing south. Bottom right: Doug Bolender and Sarah Breiter coring in the wall remnant at the northern edge of the site – likely the oldest extant structure at Naustavík, view facing south.

Figure 57. *Midden eroding from the bank below the 20th century ruins at Naustavík. View facing south.*

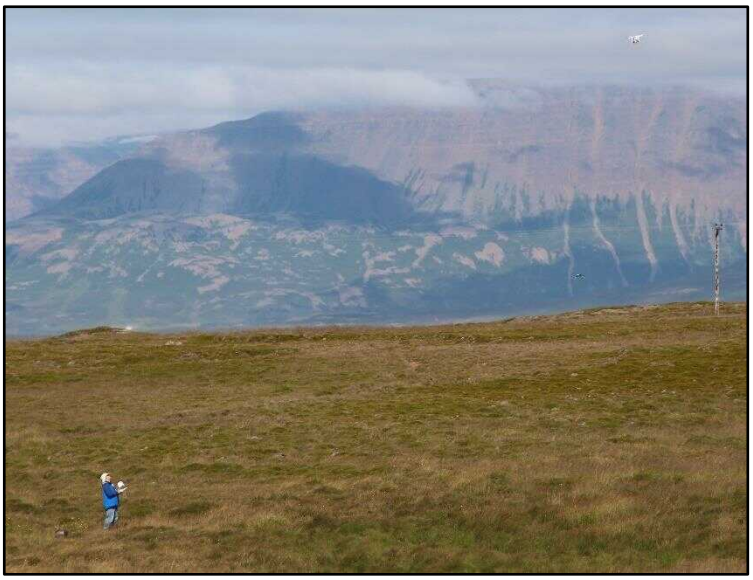


Figure 58. *John Schoenfelder flying a drone to take air photos at Naustavík. View facing northeast.*

Hamar

Hamar is located on the southeastern side of Hegranes. SCASS conducted a coring survey and midden excavation at Hamar in 2016 and 2017, and dated the occupation to before 1104 (Bolender, et al. 2017; Bolender, et al. forthcoming). Hendilkot is the only known *fornbýli* on Hamar land (Figure 59).

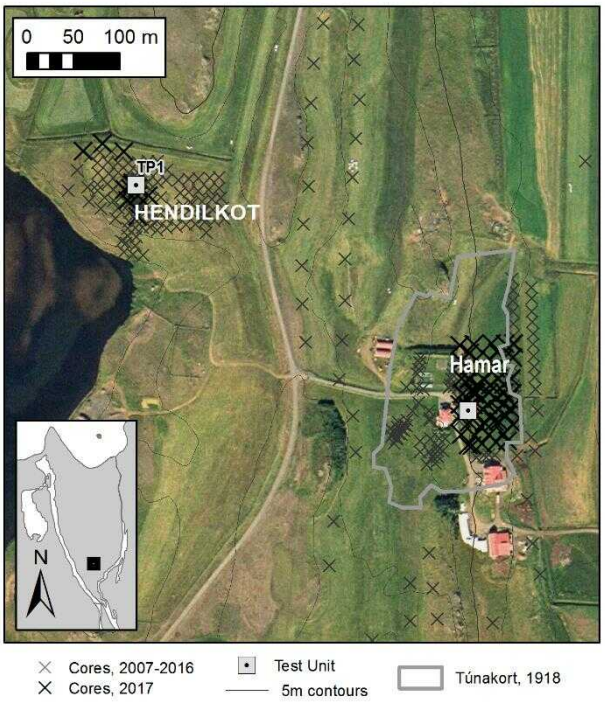


Figure 59. *Landscape of Hamar and Hendilkot, showing cores and test units. Background from LMI.*

Hendilkot

Hendilkot is located west of the Hegranes road, about 400 m northwest of the main farm at Hamar. It features in the story of the first settler of Hegranes: Havarð's brother, Hendil, is said to have been given a farm here. The historical sources describe sheep-houses, meadowland, and an enclosure, and the *Örnefnaskrá* mentions house ruins (Árni Magnússon and Vídalín 1930:67; Hjalti Pálsson 2010:90; Jón Normann n.d.; Jón Reykjalín 1954:121; Sigurður Ólafsson n.d.-a:1, 2). Today, the visible architecture at the site consists of two late medieval or early modern (post-1104) structures atop a hill to the northeast of Hendilkotsvatn lake (Figure 60). The easternmost structure, likely a *rétt*/corral, is about 10m x 7.5m, while the two-room structure to the west (12m x 7.5m) may be the remains of a dwelling. The main part of the field has been bulldozed and flattened, removing evidence of earlier structures. Coring survey and excavation were carried out at Hendilkot in 2016, dating the architecture to post-1104 and showing significant evidence of settlement prior to 1104, but little to no activity of any kind prior to the ~950 tephra (Catlin, et al. 2017). Evidence of turf-cutting along the lakeshore just south of the site is probably associated with the recently-constructed turf shed just north of the modern summerhouse.

Figure 60. *View of Hendilkot from the Hegranes road. Facing northwest. The ruins are in the area of dry grass just beyond the green field.*

In 2017, some additional cores were recorded in an attempt to re-locate observations of midden under the ~950 tephra layer, to better date the earliest habitation at the site (Figure 61). These attempts were unsuccessful and a second unit was not excavated, leaving the earliest date for habitation at Hendilkot to be the late 10th or into the 11th century. In fact, the absence of the 1000 tephra may indicate the surface was truncated after ca. 1000, which would suggest 11th century settlement. No AMS dates are yet available to resolve the date. The coring did lead to a modification in the shape and size estimates of the medieval farmstead, now updated to 1305 m^2 prior to 1104. Architecture at the site was traced with a GPS and air photos were taken via drone. Infrared imagery from the drone has not yet been processed.

Helluland

The farm at Helluland is located along the western side of Hegranes. The landscape of Helluland and the two farms to the south (Kárastaðir and Hróarsdalur) includes some of the rockiest land on Hegranes, glacier-scraped bedrock cut by long, green dales. Of the land that was owned by Helluland in 2006, the largest open green space is occupied by the main farmstead, which was surveyed by SCASS in 2016 (Bolender, et al. 2017).

There are four known abandoned sites on Helluland: Ásgrimsstaðir, Háagerði, Kotið, and Grænagerði (Figure 62). Ásgrimsstaðir is a large abandoned farm (*eyðibýli*) that was inhabited from the medieval period through 1927 (Hjalti Pálsson 2010). The site was surveyed in 2016 as part of SCASS (Bolender, et al. 2017).

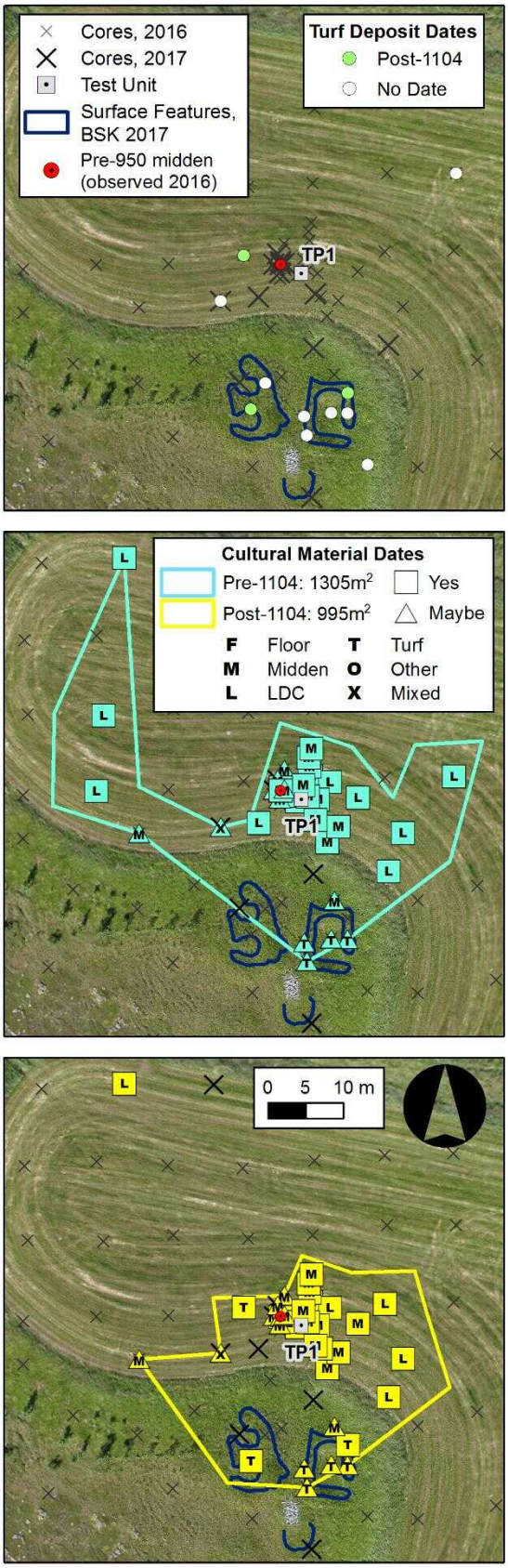


Figure 61. *Maps of Hendilkot. Top: turf dates. Middle: Farmstead pre-1104. Bottom: Farmstead post-1104. Background: 2017 drone photos.*

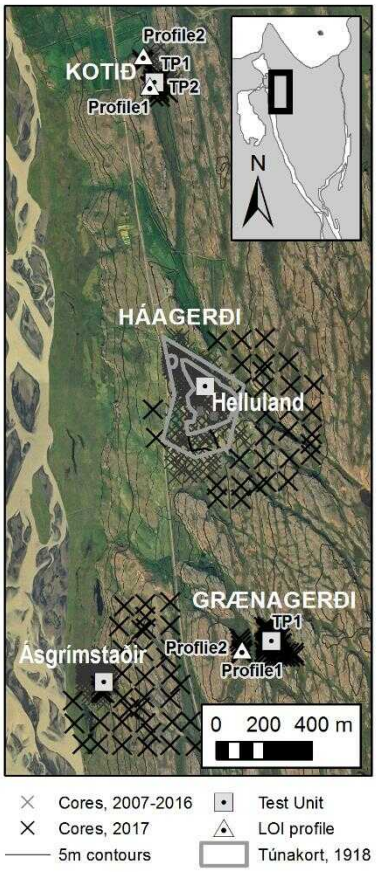


Figure 62. Landscape of Helluland and Hulduland, showing fornbýli, farms, cores and test units. Background from LMI.

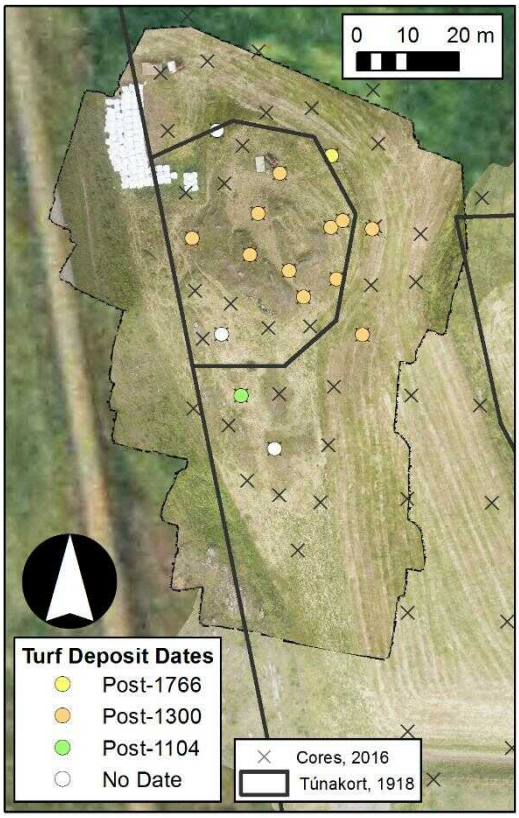


Figure 63. Turf dates at Háagerði shown over 2016 kite photo.

Háagerði is the name given to a ruined *beitarhús* atop a hill in the northwest corner of the homefield at Helluland. Háagerði was surveyed in 2016, revealing no evidence of early habitation below the post-1300 sheephouse. Air photos recorded at Háagerði during 2016 have been processed and are shown here in an updated map (Figure 63).

Following subdivision of the landscape over the last few years, Kotið is now once again owned by the farmers at Helluland. Survey and excavation were carried out at Kotið in 2016, and additional work in 2017 included an extended trench, a geophysical survey, and loss-on-ignition sampling. Grænagerði is near the southern end of the original Helluland extent, on property called Hulduland that is now separately owned. Preliminary coring survey at Grænagerði in 2015 was followed up with additional coring, excavation, loss-on-ignition, and survey in 2017.

Kotið

Kotið is located about 1.4 km north of the modern farmhouse at Helluland, not far to the east of the main Hegranes road and just south of the border with Utanverðunes. The hill directly to the north of the site is heavily eroded, as is much of the landscape to the east. The immediate surroundings of the architecture have deeper soils and deep grassy *þúfur*, with boggy deposits in places. Its visible architecture consists of a single two-room structure atop a hill, likely a large *stekkur* at 14m x 5m, between an eroded outcrop and low-lying bog. A flat space below and to the south of the *stekkur* may have been a work area. Oddly, the existing historical sources do not directly mention Kotið; it may have undergone a name change in the late 20th century and one of the stekkir described in the Örnefnaskrá may refer to this site, though connections are unclear (Hjalti Pálsson 2010:169; Jón Normann n.d.; Sigurður Ólafsson and Hróbjartur Jónasson 1934).

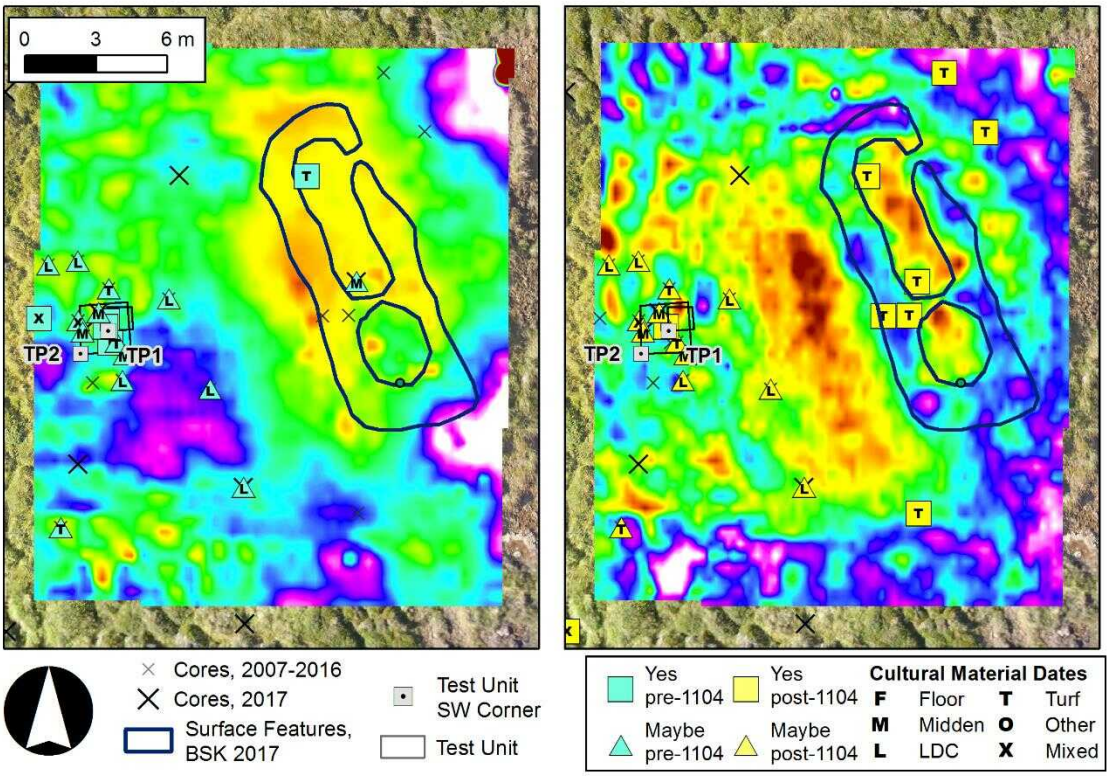


Figure 64. CMD-mini results at Kotið. Left: In-phase readings using the middle dipole (IP2). Right: Bulk conductivity using the longest dipole (C3). High=red, low=white.

Survey and excavation were carried out at Kotið in 2016 (Catlin, et al. 2017). In 2017, a small area was surveyed with a CMD conductivity meter to determine whether any buried architecture was present that might be associated with the midden. Following the geophysical survey, the 2016 excavation unit was expanded to a 2x2, and some additional coring was carried out, along with GPS survey of the architecture and drone photography. Infrared imagery from the drone has not yet been processed. Two profiles were sampled for Loss-on-Ignition analysis.

Geophysical survey

In 2017, electrical conductivity survey was performed at the site to determine whether buried architecture was present in association with the medieval midden. As at Þrælagerði, the modern architecture is visible as areas of lower conductivity, and the midden appears as an area of higher conductivity/lower in-phase (Figure 64). No additional architectural targets were visible, though this does not preclude the possibility that an older structure may be buried beneath the more recent one.

Coring survey

Twenty-eight additional cores carried out in 2017 were intended to extend the survey slightly to the south, to refine the farmstead size estimate, to further date the architecture, and to place loss-on-ignition sampling trenches. The total number of cores at the site is now 97 (Figure 65).

Two cores in the *stekkur* did not change the post-1300 date of the visible architecture. However, a layer of sterile soil separates the recent *stekkur* from earlier (pre-1104) turf and (pre-1300) midden deposits. It is likely that this earlier construction is associated with the excavated early midden. A trench through the architecture is therefore a good candidate for future research to verify the presence of a dwelling associated with the midden. These and other cores in the area have extended pre-1104 farmstead size estimate to 160m^2.

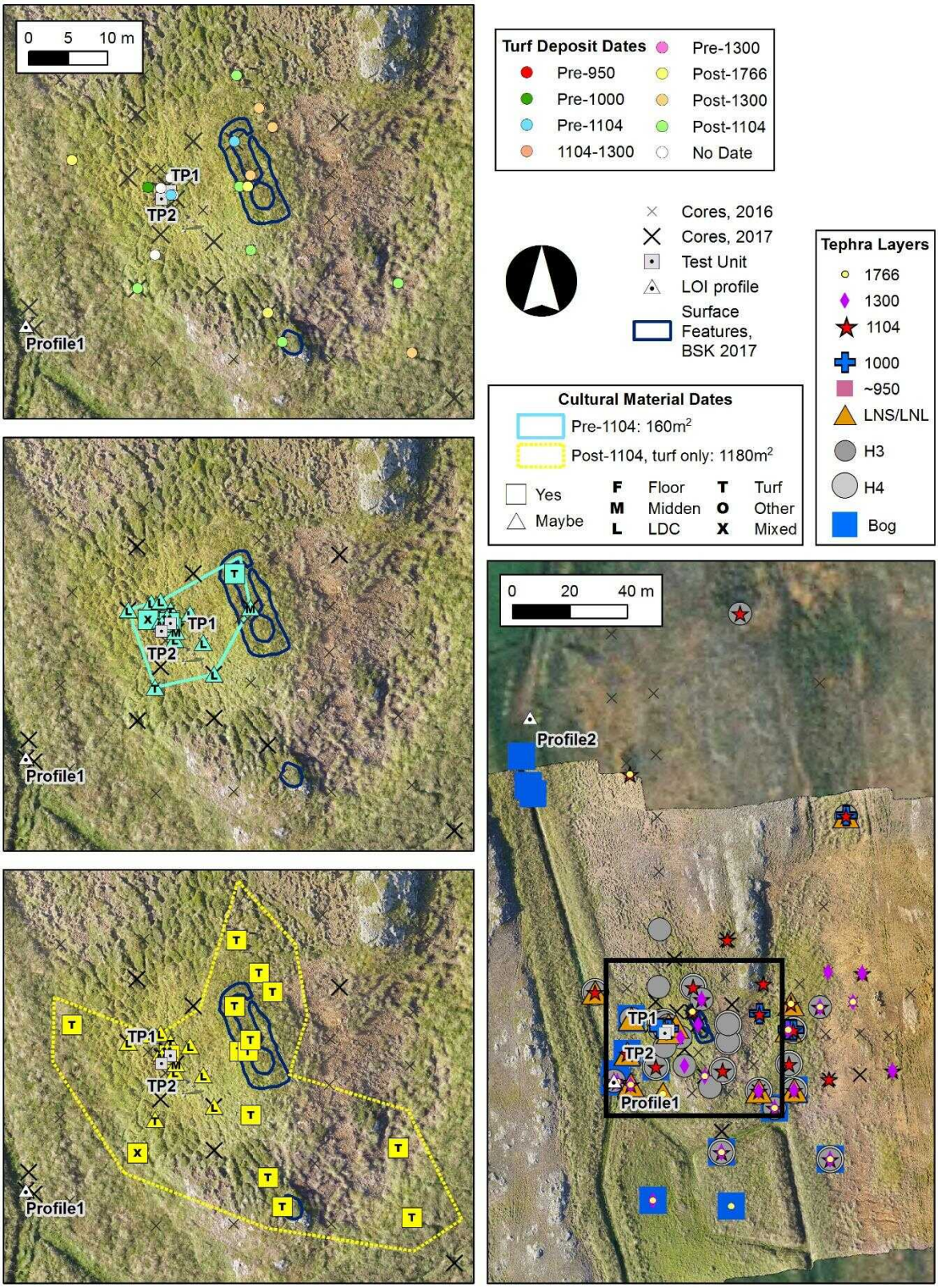


Figure 65. *Kotið maps. Top left: Turf dates. Middle left: Farmstead size, pre-1104. Bottom left: Turf extent, post-1104. Bottom right: Tephra and bog in cores, with locations of LOI profiles. Background: 2017 drone photo.*

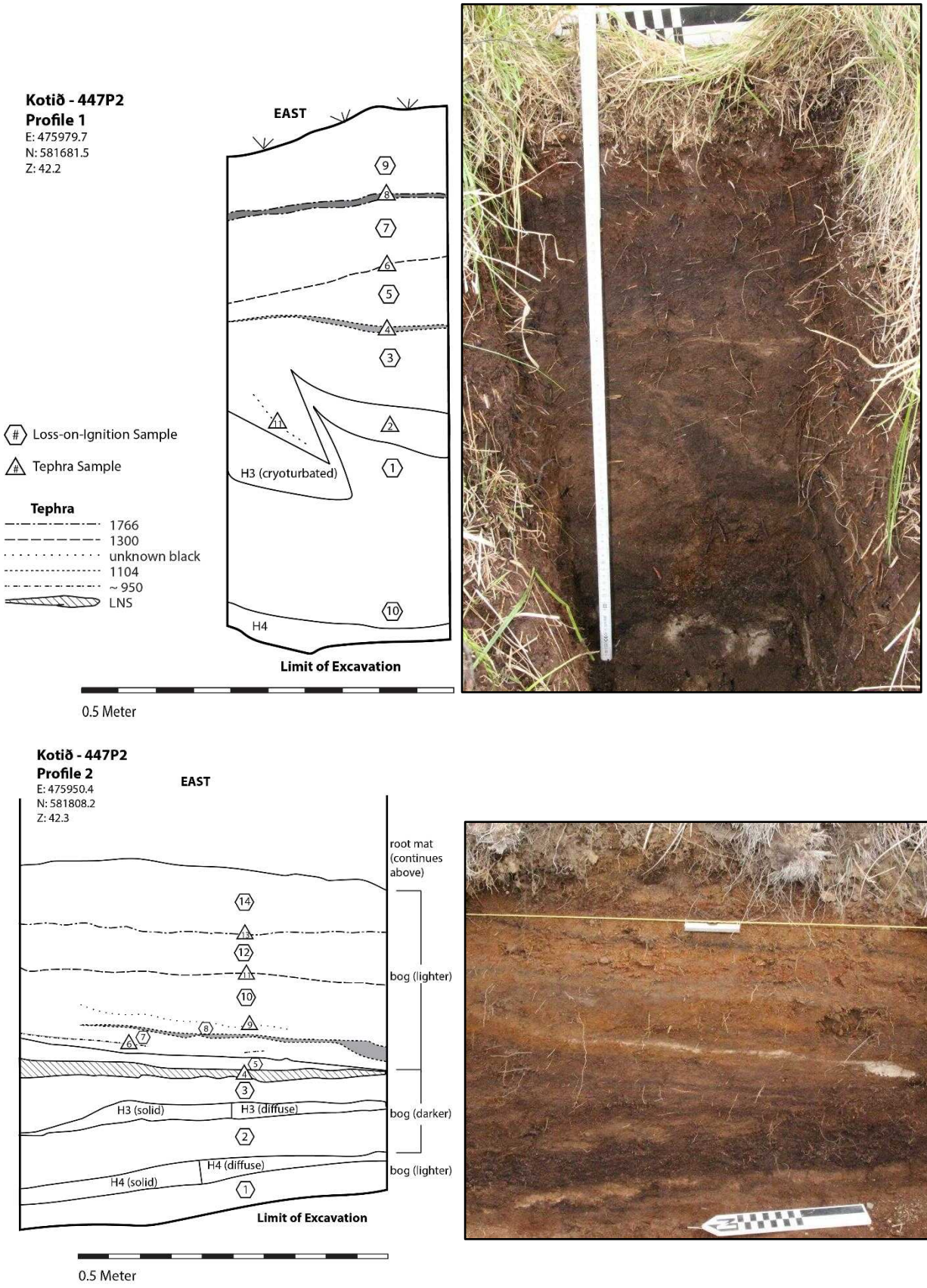


Figure 66. Loss-on-Ignition sampling from Kotið, Profile 1 (top) and Profile 2 (bottom).

Figure 67. Location of LOI profiles at Kotið. Left: Profile 1, facing northeast. The ruins are the green mound on the horizon at top. Right: Profile 2, facing southeast. The ruins are barely visible as green lump on the horizon, right of center.

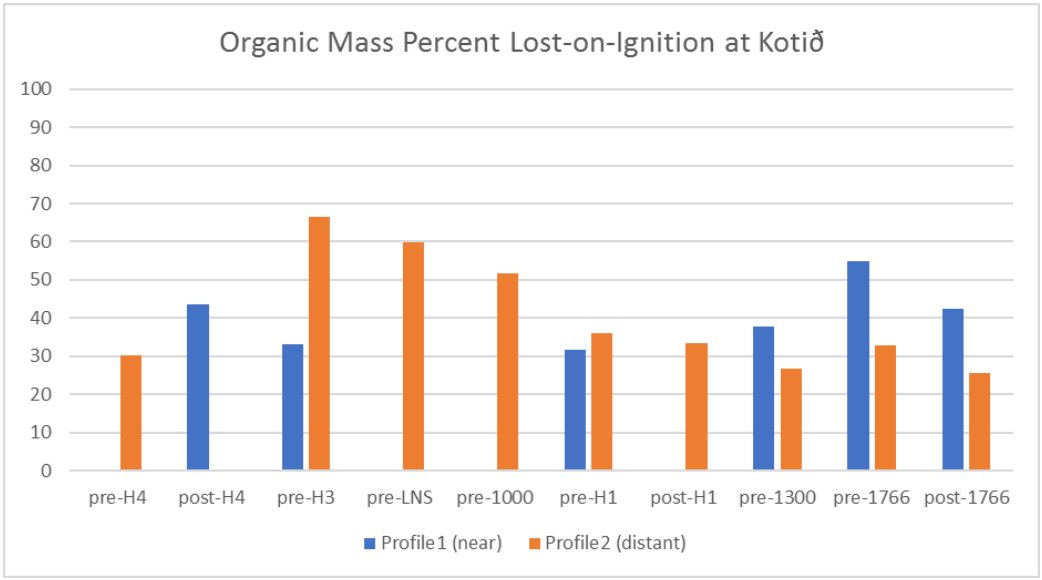


Figure 68. Loss-on-ignition results at Kotið.

Loss-on-Ignition and Wetlands

Cores in the wetlands south of the site consistently lacked historic tephra prior to 1104, suggesting the possibility of peat or turf cutting prior to that date. No clear ledges were observed that might delineate cut areas, though these signs might have been obscured by excavation of the ditches. Cores along the ditch west of the site, especially to the northwest, also lacked tephra in many places, suggesting that this long, thin wetland area may have been a preferred source for peat.

Two profiles were sampled in the ditch west of the site for loss-on-ignition (Figures 66-68). The near profile, about 30m southwest of the site, lacked historic tephra prior to H1, so comparison is difficult. Organic content increased from about 31% just before 1104 to about 55% before 1766. The distant profile, about 120m northwest of the site, followed the general trend observed elsewhere on Hegranes of decreasing organic content over time, from about 75% prehistorically to 26% after 1766. Kotið thus follows the general trend of decreasing organic content distant from sites, while nearby wetlands tend to hold steady or increase in organic percentage by mass.

*Table 4. Contexts for Test Pit 2 at Kotið. *All troweled, shoveled, and sieved unless noted. **Average of all corners, in cm.*

Context	Class	Description*	Color	Comp-action & Comp-osition	Homo-geneity	Bound-ary	Inclusions	Date	Opening Depth **	Thick-ness **
101	Topsoil	Root mat. Cryoturbated. Lower 10% sieved. Corresponds to [101] in TP1.	Mid brownish brown	Soft silt	Uniform	Sharp	Pebbles. Charcoal and bone near base of context. Find: iron fragments.	Pre- and post-1766	0	13.2
104	Midden	Dark charcoal midden. Cryoturbated. Corresponds to [102] and the top portion of [103] from TP1.	Dark brownish black	Soft silt	lensed	Sharp	Charcoal, ash, turf, faunals (domestic & wild), gravel, pebbles, fire-cracked rock. Finds: iron fragments, white and black stones, bone bead, possible whetstone fragment	Unknown, likely ca. 950	13.2	17.4
105	Midden	Charcoal midden mixed with h3, LNS at base of context. Cryoturbated. Corresponds to the bottom of [103] from TP1.	Mid orangish brown	Soft sandy silt	Mottled	Sharp	Charcoal, bone, turf, pebbles, fire-cracked rock Find: iron fragment	Unknown, likely ca. 870	30.6	13.8

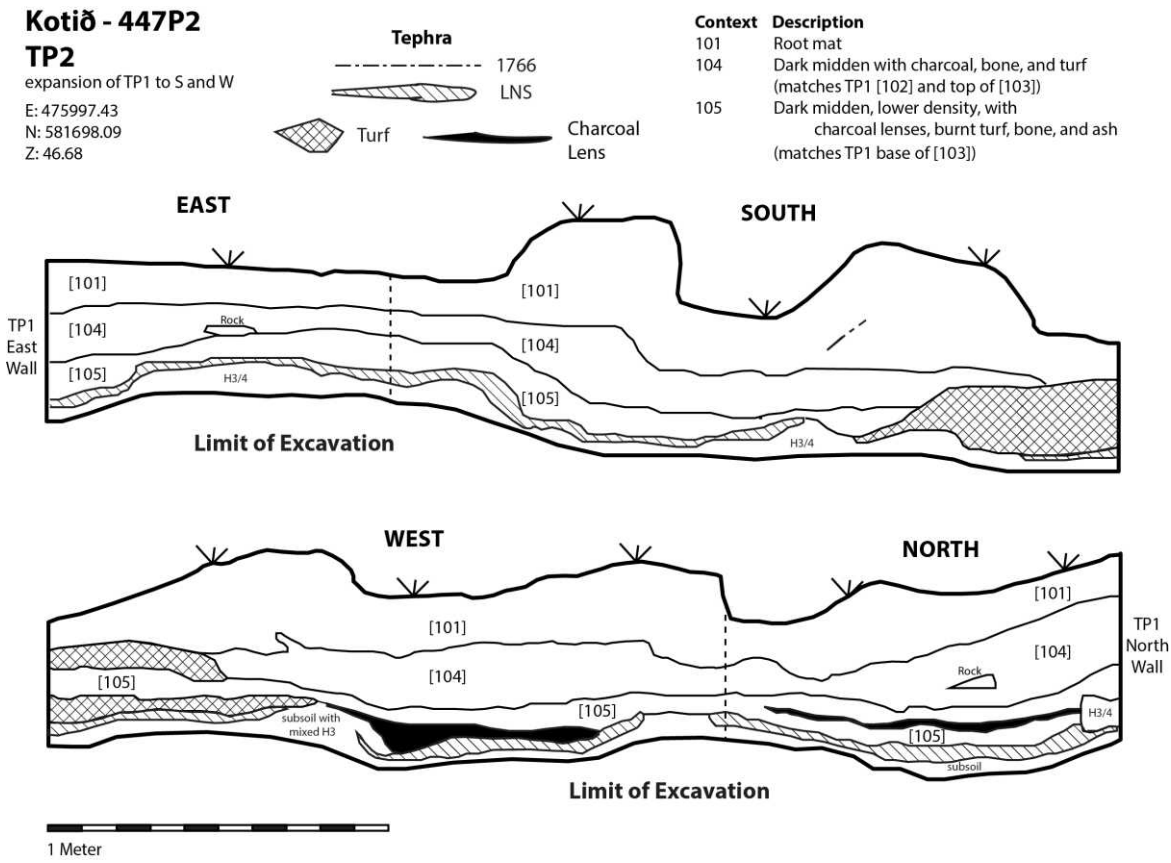
Excavation

Test Pit 2 (TP2) expanded 2016's TP1 by one meter to the south and one meter to the west for a complete excavated area of 2x2 meters (Table 4, Figure 69). The primary objective of the unit expansion was to obtain additional faunal material for analysis, laying groundwork for Grace Cesario's planned dissertation research at CUNY. The excavation was carried out by Kathryn Catlin and Grace Cesario between 26 and 30 June.

The cryoturbated root mat [101] was removed with shovels. Some bone and charcoal were observed at the base of the root mat. No tephra was observed during excavation, but a small line of probable 1766 was later observed in the south wall and sampled for analysis (Figure 70). All contexts below [101] were screened and sampled for macrobotanical flotation. Shovel was the primary excavation method through the unit, supplemented occasionally by trowel.

The underlying context [104] is dark charcoal-based midden corresponding to context [102] and the top of [103] from TP1. The context included lenses of peat ash, some fire-cracked rock, and turf. Numerous bird, fish, and mammal bones were recovered, some of which may show evidence of working, along with some shells and likely cetacean bones. The faunal materials are currently undergoing analysis by Cesario at CUNY. Other finds include iron and slag fragments (Finds #1, 2, and 5), small white stones (Finds #3 and 6), and a carved bone bead (Find #4) (Figure 71).

Context [105] is lower density midden, primarily soil and remobilized H3 mixed with charcoal, including many animal bones and charcoal lenses. This context corresponds to the base of [103] in TP1. Aside from many faunal remains and some fire-cracked rock, the only find from the context was a single metal rivet (Find #7) found while wet-screening, likely of a set with those retrieved from TP1



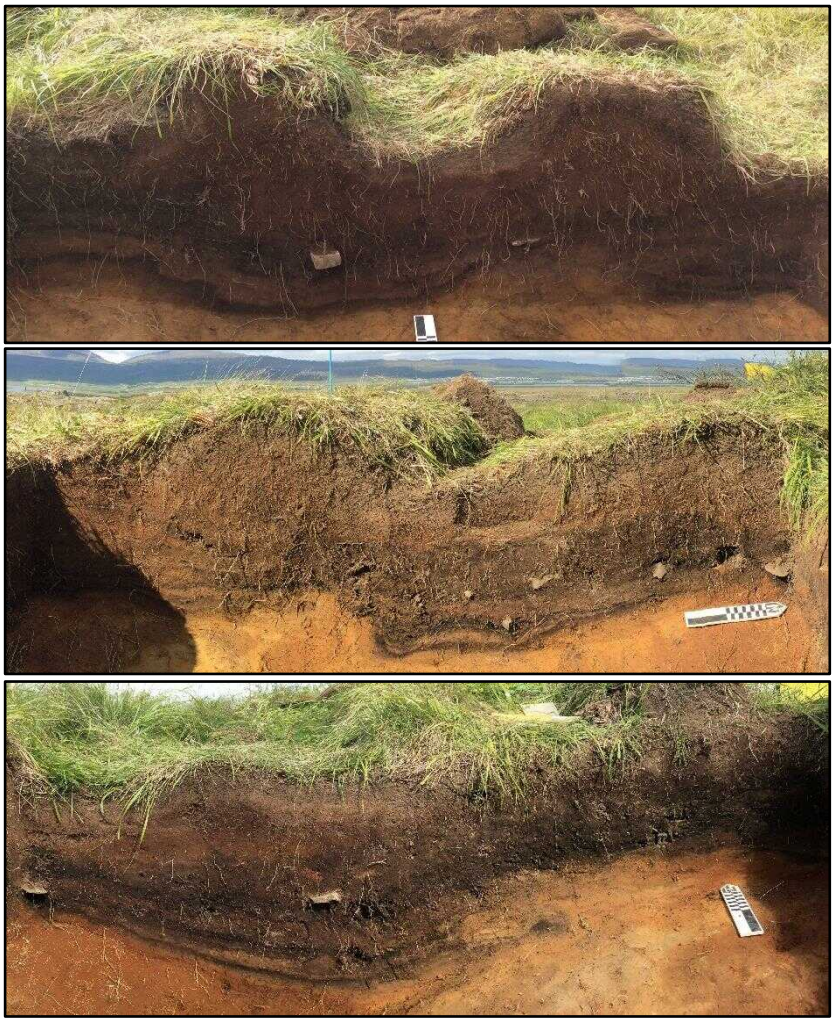


Figure 69. Profile drawing of the side walls of Test Pit 2 at Kotið (above), with photos of the south (left, top), west (left, middle), and north (left, bottom) side walls. The northeast quadrant was previously excavated in 2016 as TP1 (see Catlin et al., 2017).

Figure 70. Location of 1766 tephra sample from south wall (Sample #9).

Figure 71. Finds from Test Pit 2 at Kotið. Left top: iron fragments from the base of [101] (F#1). Left middle, left bottom, and center top: iron fragments, rivets, and slag from [104] (F#2, #5, #9). Center middle: Iron rivet or nail from [105] (F#7) (found in wet screen). Center bottom: bone bead from [104] (F#4). Right top and right middle: white and black stones from [104] (F#3, F#6, F#10). Right bottom: possible whetstone fragment from [104] (F#8). Conservation and photos by Josiah Wagener.

in 2016 (Figure 70). Some burnt turf in the southwest corner of the unit and along the south wall does not appear to be structural, but may be worth investigating further in future excavations. The context concludes with lenses of charcoal and burnt bone just atop the cryoturbated LNS layer, which was excavated as part of the context to a closing depth of less than 50cm through most of the unit. Sterile subsoil and in-situ H3 underlay the LNS. The unit expansion verified that the slight dip that had been observed in the northwest corner of TP1 was the result of natural topography or cryoturbation, not a cultural feature. No additional tephra was observed during excavation or in the profile.

<u>Updates from TP1: Dating (Tephra and AMS)</u>

Brian Damiata's analysis of the 1000 tephra (Sample #9) collected from the south wall of TP1, near the top of [103], has shown that it was not tephra but rather a mix of charcoal and organic material. However, the field identification of ~950 (Sample #10) from a similar depth in the north wall appears to be accurate.

Figure 72. Charred ericoid (heather) from Kotið TP1 Context [871] Sample #5, radiocarbon dated to cal. 775-884 CE.

Three charred barley seeds and an ericoid (heather) fragment (Figure 72)were obtained from the LNS flotation sample in TP1. The ericoid was selected for AMS dating and returned a calibrated date of 775-884 CE (1190+-15 uncal). Kotið therefore appears to have been established concurrently with the earliest settlement of Hegranes ca. 870, and continued in use until at least the late 10th century.

Figure 73. *Grænagerði landscape in early spring. Bryndís Zoëga stands at the break in the hillslope. To her right is the circular structure; the longhouse is behind her to the left. The stekkur is visible at the bottom of the slope, center left of the photo. The modern ditch is visible in the background, and beyond it, just below the rock face, a slight ledge at the edge of the mire suggests turf or peat mining. View facing west.*

Grænagerði

Grænagerði is near the southern extent of the former Helluland property, on separately owned land now called Hulduland. Grænagerði is probably the site called Lysukot in some historical sources, which describe its location as good land with an unclear ruin, perhaps *beitarhús*, *stekkur*, or *skáli*, and an even less clear enclosure wall (Árni Magnússon and Vídalín 1930:61; Hjalti Pálsson 2010:168-169; Jón Normann n.d.; Jón Reykjalín 1954:119; Sigurður Ólafsson and Hróbjartur Jónasson 1934:2-3, 4).

The site is in a vegetated gap between glacier-scoured bedrock outcrops. A ruined *stekkur* (23m x 5.5m) sits at the base of a slope along the eastern edge of a wetland area (Figure 73). The two rooms in the southern 7.5m of the structure more clearly define a *stekkur,* and this appears to be of more recent construction; its walls are much more visible and the turf dates to post-1300. The older, longer, undated structure under it may have had a different function. To the east of the *stekkur* a two-room probable *skáli* (22m x 5m) and ring-shaped structure (about 5.5m diameter, Figure 74) sit halfway up a drier, cryoturbated hillside that gives way to bare rock at the top. The longhouse and circular structure are separated by a dip in the landscape that allows for water run-off in times of heavy rain. The remnants of a turf wall are

Figure 74. *Bryndís Zoëga stands beside the unusual circular feature at Grænagerði. View facing northwest.*

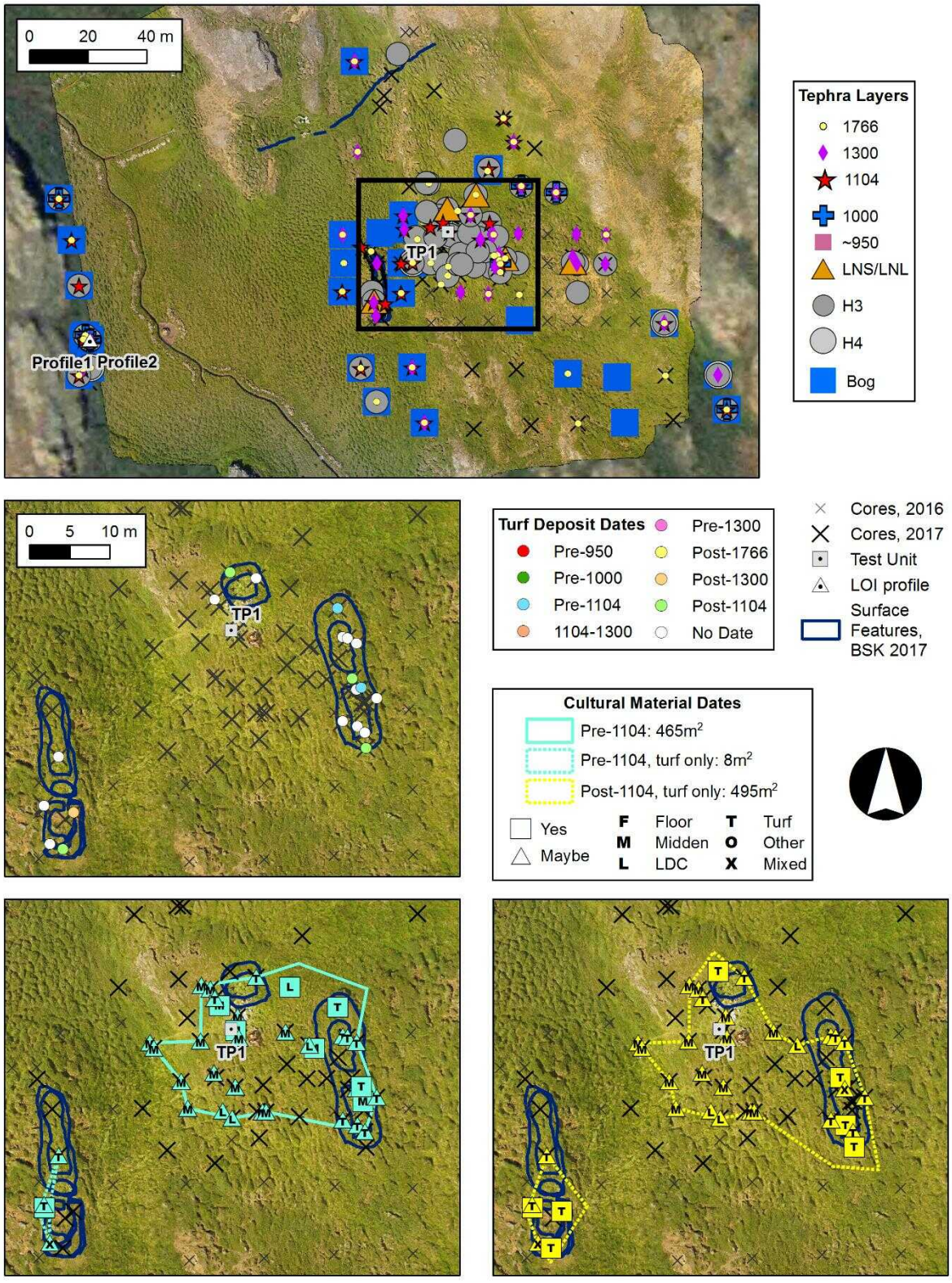


Figure 75. Grænagerði maps. Top: Tephra layers and bog in cores, with location of LOI cores. Middle: Turf dates. Bottom left: Farmstead size, pre-1104. Bottom right: Turf extent, post-1104. Background: 2017 drone photo.

visible at the north end of the site, from hillside to hillside across the bog. A drainage ditch has recently been excavated through the middle of the mire west of the site, though it has not yet had much effect on the water level.

Grænagerði was first surveyed by FLASH in 2015, when coring identified an undated charcoal-and-bone midden along the slope of the hill, west of the longhouse (Catlin, et al. 2016). Additional coring, GPS survey, drone photography, a test excavation, and loss-on-ignition sampling were performed in 2017. Infrared imagery from the drone has not yet been processed.

Coring

Ninety-eight cores were recorded at Grænagerði in 2017, bringing the total number of cores at the site to 155 (Figure 75). The cores were intended to extend the 2015 coring grid to the north and south, obtain better dating estimates on the midden and architecture, better delineate the extent of the farmstead, and place loss-on-ignition columns.

Coring in the *stekkur* at the base of the hill showed that it was constructed after 1300. Earlier observations of pre-1104 low density cultural material near the ruin could not be reproduced and were likely misidentified organic precipitate. The round structure on the hill post-dates 1104. The longhouse was constructed after 1000 with some modifications after 1104, and the southern room lies atop a portion of the midden. This structure, or at least a portion of it, may be a contemporary residence associated with part of the midden. No turf was observed in association with the visible field boundary, but we may have been coring a few meters to the north of the surveyed location, so limited additional coring may provide a date for this boundary wall. The midden starts just west of the longhouse and falls down to the base of the slope where the wetland begins. In most places no tephra was observed in association with the midden, except for three cores where midden was observed below the H1 layer. Based on this updated survey, the pre-1104 farmstead extent estimate has been revised to 465m^2.

Figure 76. Sarah Breiter near the location of the LOI sampling core. Note the sharp elevation change at the edge of the wetland. View facing south.

Wetlands and Loss-on-Ignition

The south and west sides of the wetland, west of the site, show evidence of turf or peat cutting in the form of a 20-50cm elevation difference along the edge. In most places, historic tephras prior to 1104 are not present, suggesting an early date for mining. In one location a core along the ledge included the 1766, 1300, and H1 layers, while a core a few meters into the mire included only the 1766, suggesting that the bog was at least occasionally mined in the intervening years. Nearly every core in the mire included the 1766, so it seems likely that the area has been less exploited over the last 250 years than previously.

The new ditch through the wetland is still too wet and soggy to be cleaned for LOI sampling, and due to time constraints it was

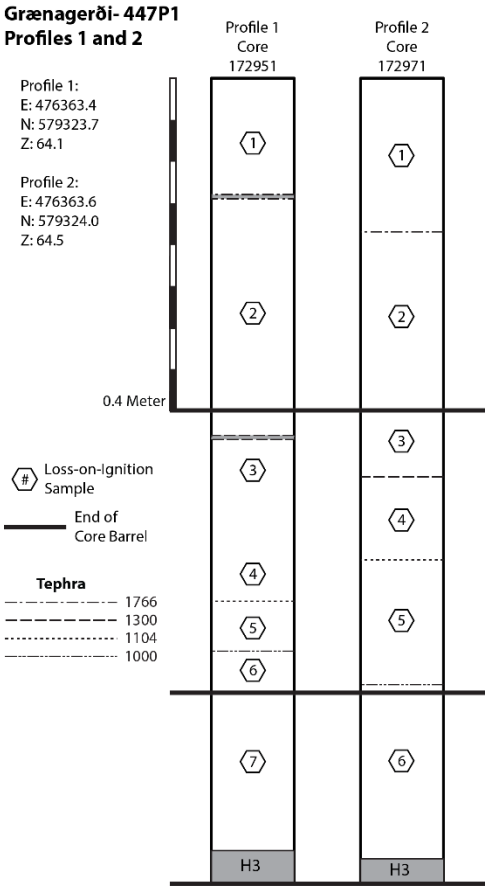


Figure 77. Loss-on-ignition sampling columns at Grænagerði.

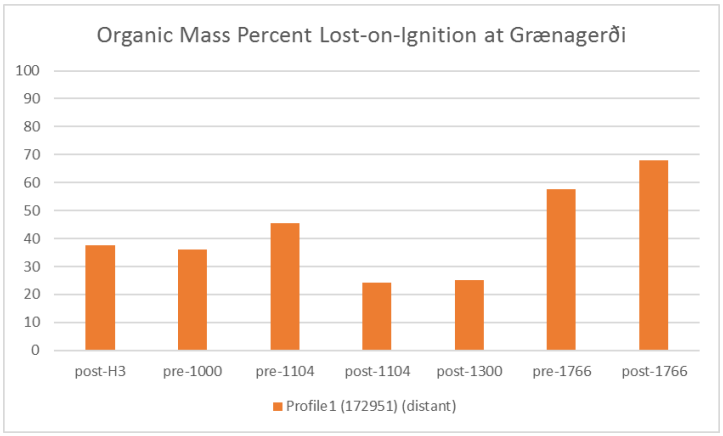


Figure 78. Loss-on-ignition results at Grænagerði.

not possible to dig a sampling trench in a drier part of the mire. Instead, samples were obtained directly from two neighboring cores at the western side of the mire, 140m west of the site (172951 and 172971) (Figures 76-78). Only the samples from 172951 have been processed. The results are consistent with that seen at distant profiles at the other sites: more organic material early in the sequence, decreasing during the medieval period perhaps as a result of increased erosion and silting of wetlands, and finally a return to higher organic content in recent centuries. After a relatively stable 37% organic material prior to ca. 1000, the organic percent spikes to 45% just prior to 1104 before dropping precipitously to 25%. More recently, before and after 1766, the organic mass has increased to nearly 70%.

Excavation

The 1x1m excavation unit (TP1) was placed near one of only three locations where the 1104 tephra was observed above the midden, just at the top of the steep hill on the south side of the channel between the longhouse and circular structure, at core 171860 (Table 5, Figures 79 and 80). We expected to find a 34cm-thick midden layer starting at about 24cm below the ground surface, with the 1766 and H1 tephra above the midden and sterile subsoil about 10cm below it. TP1 was excavated by Kathryn Catlin, Sarah Breiter, Lauren Welch O'Connor, and Sean Deryck on 26-27 July.

We removed the root mat [101] with shovels to the top of a cryoturbated 1104 tephra layer. Burnt bone and charcoal inclusions were visible at the base of the root layer. Contexts below [101] were removed by a combination of trowel and shovel, sieved, and sampled for macrobotanical flotation.

Figure 79. Lauren Welch O'Connor, Sarah Breiter, and Sean Deryck excavate Test Pit 1 at Grænagerði. Note the slope of the hillside above the mire. View facing east.

*Table 5. Contexts for Test Pit 1 at Grænagerði. *All troweled, shoveled, and sieved unless noted. **Average of all corners, in cm.*

Context	Class	Description*	Color	Comp-action & Comp-osition	Homo-geneity	Bound-ary	Inclusions	Date	Opening Depth **	Thick-ness **
101	Topsoil	Topsoil and aeolian deposit, heavily cryoturbated. Includes 1766 and part of 1104 tephras. Not sieved.	Mid orangish brown	Soft silt	Uniform	Unclear / Cryo-turbated	Charcoal and small burnt bone fragments.	ca. 1104 to present	0	21.5
102	Aeolian deposit	Mostly sterile aeolian sediment between cryoturbated H1 and top of midden. Entirely troweled.	Mid yellowish brown	Soft silt	Uniform	Sharp	Charcoal, some bone. Find: white stone.	pre-1104	21.5	3.75
103	Midden	Dark charcoal midden above remobilized H3. Cryoturbated at top. Profile showed probable 1000 layer near base of context.	Dark brownish black.	Soft clayey silt	Uniform	Sharp	Charcoal, bone, pebbles, fire-cracked rock Finds: white stones, iron pieces.	1000-1104	25.25	20.25
104	Midden	Slightly less dense charcoal midden under remobilized H3. Mixed with h3. Atop LNS.	Mid greyish-black	Soft clayey silt	Mottled	Sharp	Charcoal, bone, turf, fire-cracked rock. Finds: white stone, iron pieces.	pre-1000	45.5	20.5

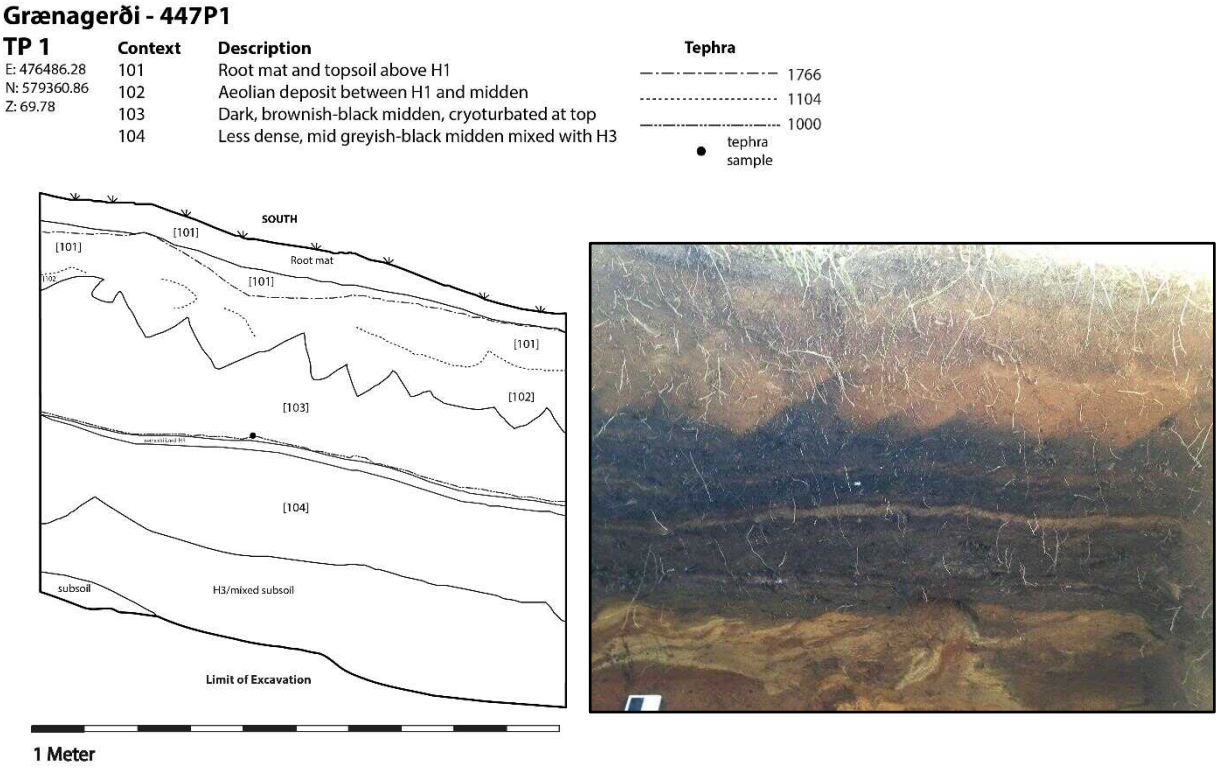


Figure 80. Drawing and photograph of the south side-wall of Test Pit 1 at Grænagerði.

Context [102] consisted of mostly sterile aeolian soil from the cryoturbated H1 to the top of the midden layer. Some bone and charcoal inclusions were observed and a single white round stone was collected from the context (Find #1, Figure 81). The midden itself, context [103], was primarily charcoal with numerous bones, some fire-cracked rocks, and a few round white stones (Find #2). Several iron fragments, including a rivet, were later obtained when the remnants from the field screen were wet sieved (Finds #4 and 6, Figure 81). Flotation samples from [103] were found to contain charred *Avena* (oat) seeds, and a charred *Hordeum* (barley) seed from the top of [103] has been sent for AMS dating (Figure 82).

Figure 81. *Finds from Test Pit 1 at Grænagerði. White stones: Top left: [102]F#1; middle left: [104]F#3; top right: [103]F#2. Iron pieces: Bottom left: [103]F#4; middle center: [104]F#5; middle right: [104]F#6 (found in wet screen); bottom right: [103]F#6 (found in wet screen). Conservation and photos by Josiah Wagener.*

We encountered what appeared to be LNS lenses atop an intact H3 layer after about 20 cm of midden and ended the context here. However, this was not the bottom of cultural deposits: the midden continued for another 20cm under the remobilized tephra. The lenses we observed may have been the 1000 tephra, remobilized LNS, or perhaps in turf, and the H3 layer probably resulted from a very localized, extreme erosion event.

Figure 82. Charred barley retrieved from flotation sample #3 (top of [103]), sent for AMS dating.

The lower midden, context [104], was also primarily charcoal, but less dense than [103] and more mixed with H3. More fire-cracked rock was observed in [104], as well as some discarded turf. Faunal remains in this lower midden tended more towards bird and fish than in the later deposit. Finds included only one white stone (Find #3), plus several iron fragments retrieved from the wet screen (Finds #5 and 7) (Figure 81). The lowest levels of [104] merged with an intact LNS layer, atop subsoil and an in situ H3 layer. A large rock was embedded in the subsoil in the west half of the unit but appeared to have no connection to later settlement. Several charred *Empetrum* (crowberry) seeds from [104] have been sent for AMS dating.

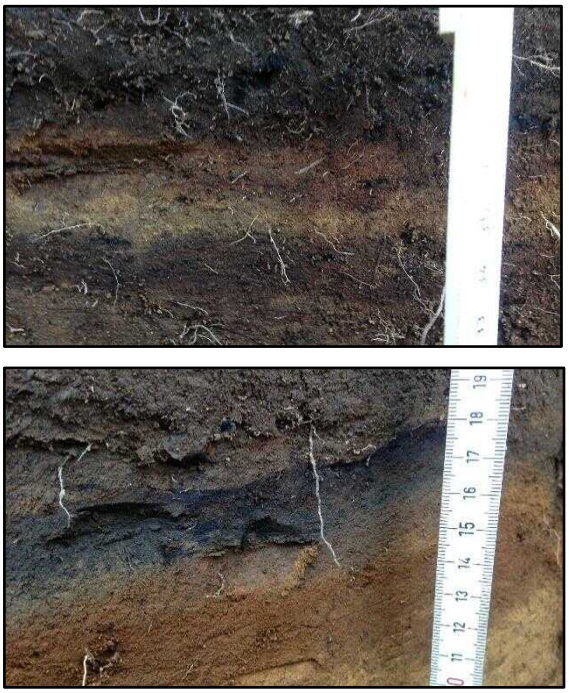


Figure 83. Tephra sampling locations at Grænagerði TP1. Left: 1000 (S #13) from south wall. Right: LNL (S#11) and Katla (S#10) from east wall. H1 (S#12, not shown) was also sampled from the east wall.

In profile, the 1104 tephra layer and the top of the midden [103] were clearly heavily cryoturbated. A ~1000 tephra layer was visible just above the remobilized H3 that had not been visible during excavation, and a sample was extracted from the south side wall (Figure 83). The landnám layer and Black Katla were more visible on the other walls and were sampled from the east wall (Figure 83). The H1 layer was also sampled from the east wall, in case it should turn out to be more remobilized H3.

Grænagerði appears to have been inhabited from shortly after the landnám to after ca. 1000 CE, and later reused for livestock management. As at many places on Hegranes, the early inhabitants were primarily burning charcoal rather than peat as fuel, and ate a large amount of birds and fish in addition to livestock. The large proportion of oats in the macrobotanical assemblage suggests arable agricultural may have been practiced here for a short time during the 11th century.

The location of the site and the remnant of a boundary wall suggest it may have been a shieling, perhaps associated with Ásgrimsstaðir, though this is uncertain. The only known shieling on Hegranes, Kárastaðasel, was not part of the FLASH survey, but was surveyed by museum archaeologists in late 2016. Kárastaðasel is about 2.7 km south of Grænagerði, in a similar location, near wetlands in a vegetated hollow between bedrock outcrops along the center of Hegranes. This shieling includes many more structures and an evident boundary wall, although most are estimated to date to after ca. 1500 (Bryndís Zoëga pers. com.). It is possible that both sites were established as shielings shortly after the *landnám*, but only Kárastaðasel continued in use as a shieling through the historic period.

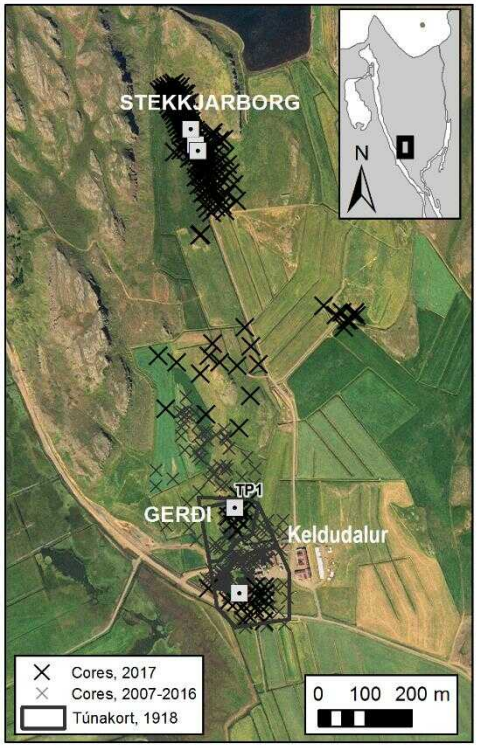


Figure 84. Landscape of Keldudalur, showing fornbýli, cores, and test units. Background from LMI.

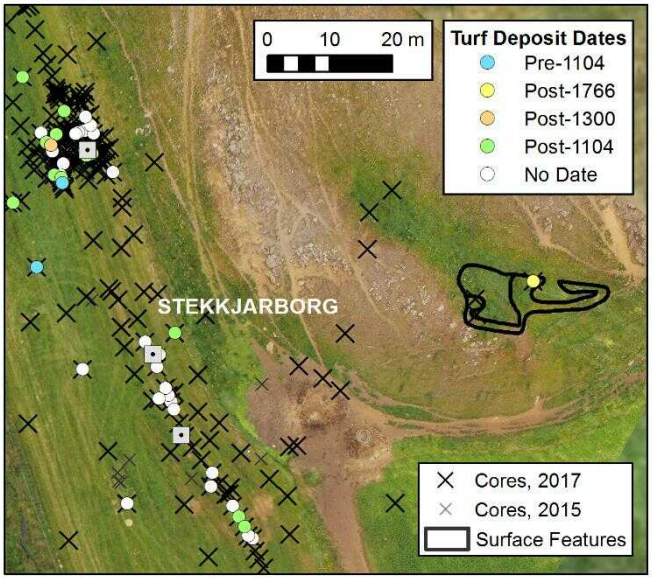


Figure 85. Stekkjarborg, showing location, form, and turf date of the eponymous stekkur on the hillside. See Zeitlin (forthcoming) for more details. Background: georeferenced drone photo from 2017.

Keldudalur

Keldudalur is located on the southern end of the main body of Hegranes, in an area that is more rolling hills than rocky outcrops. Both pagan burials and a Christian cemetery were excavated here by museum archaeologists in the early 2000s (Guðný Zoëga 2008; Guðný Zoëga 2015; Guðný Zoëga and Murphy 2015). In 2015, SCASS researchers carried out coring survey and midden excavations at Keldudalur, and some additional coring took place in 2017 to fine-tune the farmstead size estimate (Bolender, et al. 2016; Bolender, et al. forthcoming; Catlin, et al. 2016).

There are two known fornbýli on the landscape of Keldudalur: Stekkjarborg and Gerði (Figure 84). Both were previously surveyed in 2015 and were followed-up with additional survey and excavation in 2017.

Stekkjarborg

Stekkjarborg, also known as Járngerðárhóll, appears to have been a site that specialized in iron processing. Some sources mention it by name while others state only that a smith lived on Keldudalur land, or that the hidden people make their home here (Hjalti Pálsson 2010:135; Jón Normann n.d.; Jón Reykjalín 1954:118; Margeir Jónsson, et al. n.d.:2). The *Jarðabók*

Figure 86. The stekkur at Stekkjarborg. The pink flag (center left) marks the location of turf with 1766 (see Fig. 85). View facing south.

makes no specific mention of the site. Coring, geophysics, and excavations at Stekkjarborg/Járngerðárhóll in 2015 were followed up in 2017 with significant additional coring, excavation, and geophysics as part of Nicholas Zeitlin's MA thesis at UMass Boston, and will be reported elsewhere (Catlin, et al. 2016; Steinberg, et al. forthcoming-a; Zeitlin, et al. forthcoming). Although the 2015 survey seemed to indicate the presence of an additional early habitation phase at the site to the east of the known midden area, coring by FLASH researchers in 2017 did not locate any evidence of further settlement. Radiocarbon from the 2015 excavations has returned a date of ca. 870-900 CE for settlement at the site.

The ruined *stekkur* on the hillside to the east of the site, presumably the structure after which the site is named, was last constructed after 1766 and is likely not associated with any midden deposits (Figure 85 and 86). The hillslope around the *stekkur* is heavily eroded to glacial bedrock.

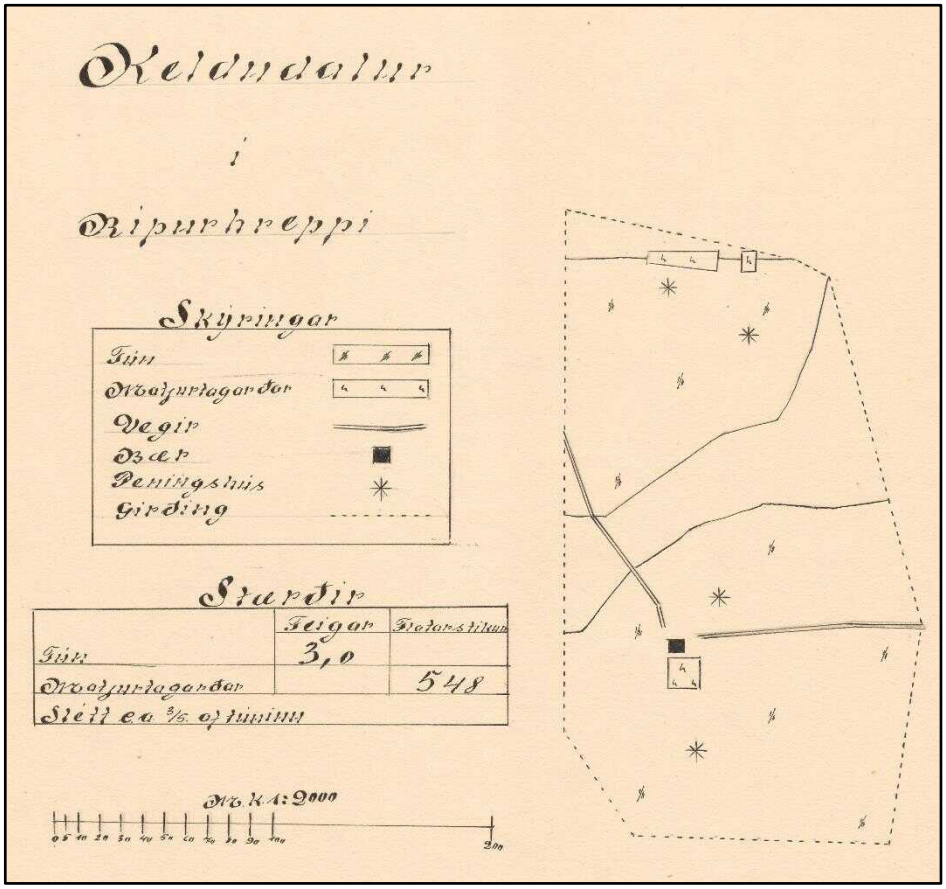


Figure 87. *1918 Túnakort map of Keldudalur. Gerði, the small midden observed in cores and in Test Pit 1, is near the location of the "Peningshús" (outbuildings) and "Matjurtagarðar" (kitchen gardens) at the north end of the field.*

Gerði

Gerði is at the northern edge of the historic homefield of Keldudalur, in a modern field under hay cultivation. The *Jarðabók* mentions an enclosure, possibly a *þrælsgerði*, likely referring to this place (Árni Magnússon and Vídalín 1930:59). The 1840 parish description does not describe any ruins in or near the homefield, but the *Örnefnaskrá* says that a part of the homefield north of the farmstead with a sheepshed/*fjarhús* on it is known as Gerði (Margeir Jónsson, et al. n.d.:2, 3).

Cores in the field, north and east of the ditch and extending northward, are associated with the FLASH survey of Gerði. The entire field has been plowed and bulldozed, including a sheep shed that formerly

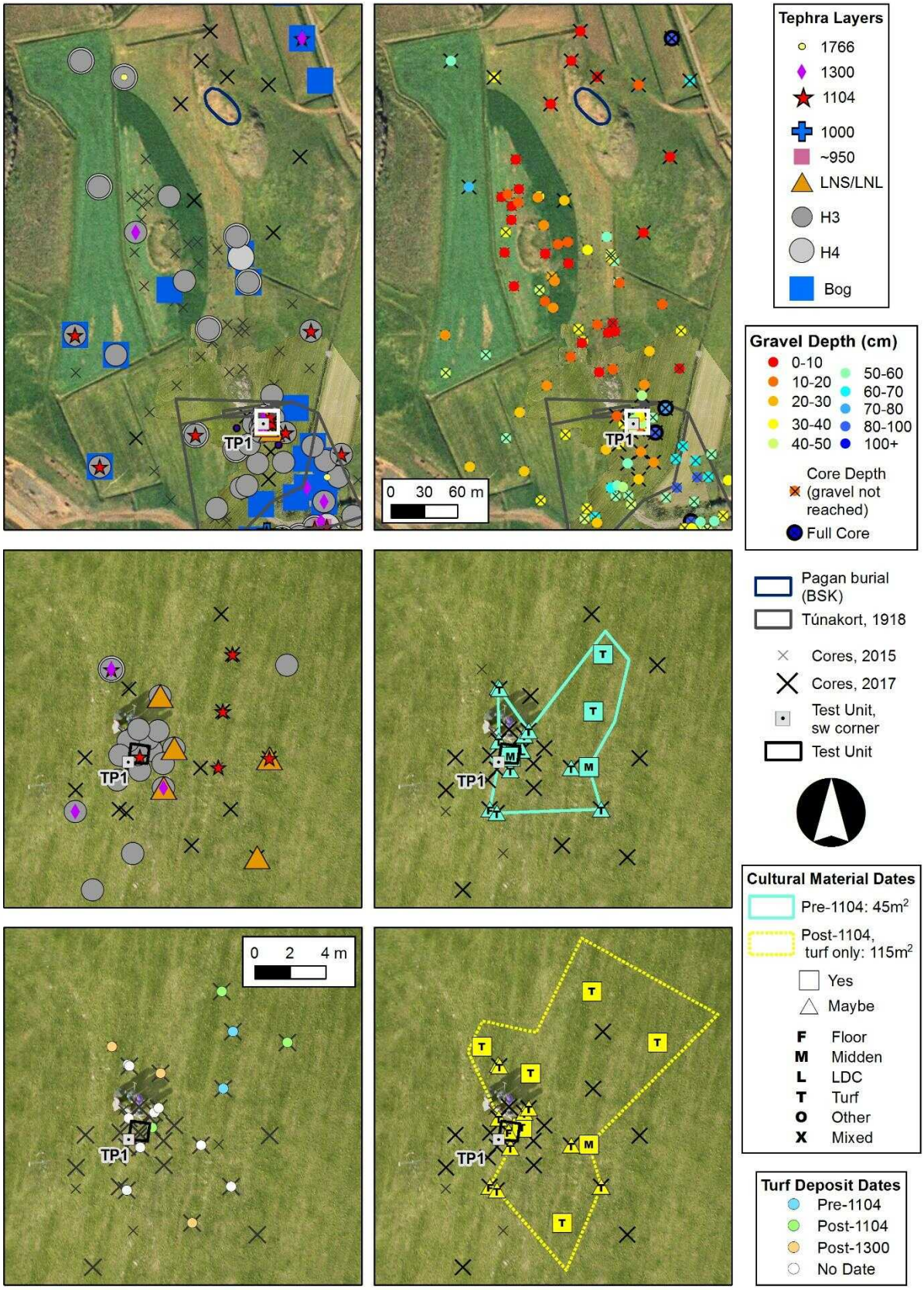


Figure 88. Gerði maps. Left, top and middle: Tephra layers and bog in cores. Top right: sediment depth. Bottom left: Turf deposit dates. Right middle: Farmstead extent, pre-1104. Right bottom: Turf extent, post-1104. Background: LMI and 2015 kite photos.

stood near the site of the excavation, which the farmer recalls was bulldozed in the mid-20th century, matching the *Örnefnaskrá* description. This *fjarhús* may also correspond to one of the '*Peningshús*' marked in Guðm. Sveinsson's 1918 *túnakort* map (Figure 87).

Kite aerial photography, collected in 2015, has now been processed and appears in maps in this report.

Coring

Coring in 2015 revealed some evidence of post-1104 and post-1300 turf in the field nearest to the Keldudalur farmstead and the next field to the north, as well as one very small area of peat ash midden just south of the rock outcrop that dominates the field (Catlin, et al. 2016). In 2017, the midden was re-located and excavated. Additional coring was also carried out in the field to the north of the excavation, in the direction of Stekkjarborg and in the fields around the pagan burial site. No additional evidence of settlement was located. As a result of coring near the midden, the pre-1104 extent of the farmstead has been revised to 45m^2, nearly the smallest of all sites (only Minni-Egg is smaller) (Figure 88, Appendix F).

Fourteen cores were recorded in the field to the north, in a rough ring around the outcrop where pagan burials were previously excavated by museum archaeologists. Soils here are extremely shallow, often less than 10cm to bedrock. This is consistent with shallow soils and limited tephra observed in 2015 around the outcrop in the field between the pagan burials and the Gerði excavation, as well as the northern portion of the Gerði field. Where soil exists, primarily to the west of the outcrops, the H3 and H4 tephras were common, and one core also included 1766. These fields have all experienced significant erosion, except where protected by turf or midden deposits or by wetland development (in a few places near the field edges). Due to time constraints, no loss-on-ignition samples were collected from ditches around the site.

Excavation

The excavation (Test Pit 1, TP1) was placed near the only core that contained an H1 tephra layer in situ above the midden (171517) (Table 6, Figures 89 and 90). (This is likely also where 151316 was located, though due to the limited accuracy of the onboard iPad GPS used in 2015, the location as shown is inaccurate by 4.5m. The people in the 2015 air photos Figure 88 were inspecting the midden in the core.)

We expected to find the H1 layer at about 28cm below the ground surface, with midden starting about 15cm below that and continuing for 12 cm, atop sterile subsoil. The unit was excavated by Kathryn Catlin, Nicholas Zeitlin, and Kody Shugars on 19-21 July. All contexts were excavated with a combination of shovel and trowel, and macrobotanical flotation samples were retrieved for all contexts below [102].

The root mat ([101]) was removed with a shovel, and the last few shovelfuls were screened after we began to observe charcoal mixed in. One piece of slag was retrieved from the screen as Find #1 (Figure 91), and some fire-cracked rock was encountered. Remobilized H1 tephra was mixed throughout the context. Under the root mat, a very thin context was excavated as [102]; it appeared during excavation to be a turf layer, possibly the top a wall with a line of mold/fill between two turves. However, upon excavation and examination of the side walls, [102] was determined instead to be a worm-eaten layer that included a bioturbated, but otherwise in situ, H1 tephra around most of the unit. The context lacked cultural material aside from a very small bone fragment and some charcoal.

A very low density cultural layer [103] followed the bioturbated soil. H3 was remobilized throughout the layer, suggesting it may have been fill from an area dug up on the farm nearby, possibly intended

Figure 89. Nicholas Zeitlin and Kody Shugars sit beside the excavation at Gerði, along the slope of the hill between a rock outcrop (right) and Keldudalur (left). View facing southwest.

*Table 6. Contexts for Test Pit 1 at Gerði. *All troweled, shoveled, and sieved unless noted. **Average of all corners, in cm.*

Context	Class	Description*	Color	Comp-action & Comp-osition	Homo-geneity	Bound-ary	Inclusions	Date	Opening Depth **	Thick-ness **
101	Topsoil	Disturbed topsoil. Sieved last few cm.	Mid orangish brown	Friable silt	Uniform	Sharp	Pebbles, fire-cracked rock, charcoal, remobilized H1. Find: slag.	post-1104	0	20
102	Aeolian Deposit	Very thin, bioturbated layer below root mat. Appeared turf-like during excavation but not in profile.	Mid yellowish brown	Firm silt	Uniform	Sharp	Charcoal, turf, bone fragments. Disturbed H1.	ca. 1104	20	5.25
103	Low density cultural	Possibly fill. Includes turf debris.	Mid yellowish brown	Firm silt	Mottled	Unclear	Charcoal, turf, bone fragments. H3 clumps. Finds: white stone, slag	likely post-1000	25.25	8.25
104	Low density cultural	More dense LDC/fill layer above midden. Includes turf with 10th c. tephra in it. Rock cluster along E-W center line above midden.	Mid greyish brown	Firm silt	Mottled	Unclear	Charcoal, turf, bone fragments, wood ash, cobbles, fire-cracked rock	likely post-1000	33.5	5.75
105	Midden	Peat ash midden layer with charcoal lenses. Compacted and floor-like in southwest corner. In northern third of unit, quickly tapered to subsoil, suggesting midden may have been slightly dug down. At center, a large rock had been dug into the subsoil. Spade marks and a possible post-hole in the subsoil.	Dark greyish brown (mixed with many colors)	Firm clayey silt	Lensed	Sharp	Charcoal, bone fragments, peat ash, wood ash, fire-cracked rock.	likely pre-1000	39.25	8.75

to fill in the landscape atop the midden. Scattered inclusions of turf, bone, and charcoal were observed. When we began to see dark tephra layers, either 1000, 950, or perhaps fragments of LNL, we switched to a new context [104], though the general character of the low-density cultural material had not changed – continuing with turf smears, charcoal lenses, and burnt bone, with remobilized H3. Some wood ash and fire-cracked rock were also observed. Examination of the side walls after excavation suggested that the tephra was in turf: not structural turf, but chunks of old material in the fill layer. A cluster of large rocks, some of them fire-cracked, appeared at the base of [104], roughly E-W in the center of the unit. A cluster of more rounded rocks was in the west while a single, flat rock lay in the eastern half (Figure 92).

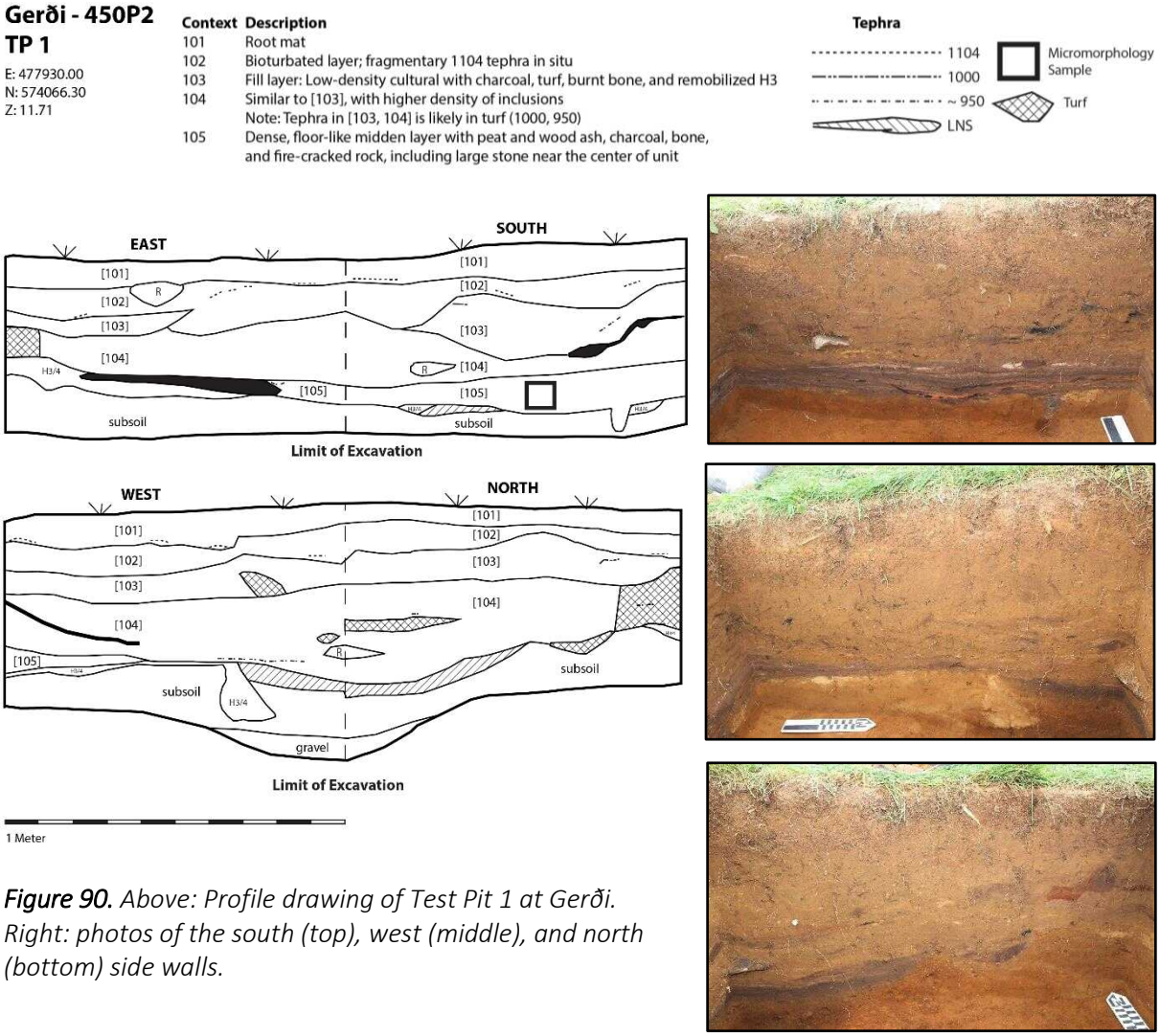


Figure 90. Above: Profile drawing of Test Pit 1 at Gerði. Right: photos of the south (top), west (middle), and north (bottom) side walls.

Beneath the rocks, the southern half of the unit transitioned to midden [105] while the northern half went directly from low-density cultural and fill into subsoil: the midden tapered to nothing just north of where the rock cluster had been (Figure 92). The midden was highly laminated and dense, mainly a peat-ash matrix with some charcoal lensing and inclusions of wood ash, burnt bone fragments, and fire cracked rock. In the southwest corner of the unit, the midden material was especially laminated and floor-like. If this was not a floor it was certainly regularly trampled. At the end of excavation, Alicia Sawyer retrieved a micromorphological sample of the midden from the south wall of the unit, and it is currently undergoing analysis at Newcastle University.

At the base of [105], a large rock was set into the subsoil (Figure 92). Midden material had been packed in between the rock and the subsoil, almost like a builder's trench, although it is more likely that people had dug around the edges of the rock when excavating a pit for the midden, rather than that a hole was dug and the rock placed into it. A possible posthole was also excavated near the southwest corner of the unit. Both the "trench" around the rock and the "postholes" may be spade cuts made during alterations to the site while it was in use. The rock was too large to move during excavation.

H3 was observed under portions of the midden, while the landnám sequence was observed in the northern half of the unit, above subsoil and glacial gravel. It seems likely that a pit was dug here prior to midden deposition, through the LNS, and the H3 near the midden is remobilized from elsewhere.

Though the farmstead extent is small, the size is mostly driven by turf (Figure 88). The actual size of the midden is probably not much more than a square meter, as cores to all sides of the unit did not contain midden material. The rocks at the base of [104] may have delineated the edge of the midden before it was filled in; or, it is possible but unlikely that the excavation was inside a structure, with the midden as the central aisle and the rocks forming the foundation of a bench. The lack of turf nearby makes this unlikely, but it is possible the turf was removed when the building went out of use. A charcoal lens along the eastern edge of the unit at the top of [105] was briefly considered to be the edge of a hearth, but coring just outside the unit did not reveal any additional charcoal as would have been expected of a hearth. It seems most probable that this is a small midden, perhaps associated with the pre-1104 turf seen in cores just to the southeast, deposited in a dug-down area and trampled, later filled in, all before ca. 1104.

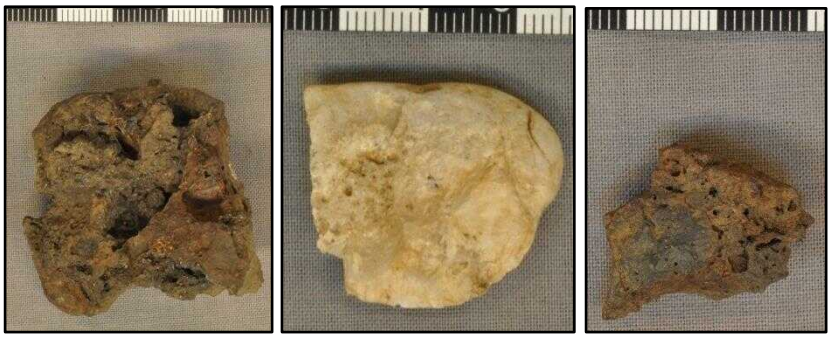


Figure 91. Finds from Test Pit 1 at Gerði. Left: Slag from [101] (F#1). Center: White stone from [103] (F#2). Right: Slag from [103] (F#3). Conservation and photos by Josiah Wagener.

A turf block in the northeast corner, containing the ~950 tephra, appears to have been cut through, suggesting an older structure here (or at least an older turf block) may have been truncated as part of this digging activity; the H3 layer beneath this turf in the northeast corner may likewise be partially in situ. This would place the excavation and deposition of the midden to after ca. 950 CE. In the fill layer ([103, 104]), ~1000 CE tephra layers in turf mean the midden went out of use and the hole was filled sometimes after ca. 1000 but well before the 1104 eruption. AMS dates may soon be available to refine this estimate: a charred barley seed from the base of [105] has been retrieved from flotation sample #9

Figure 92. Mid-excavation photos of Test Pit 1 at Gerði. Top: Excavation of the rock cluster at the base of [104]. Bottom left: midden tapering to subsoil between [104] and [105]. Bottom right: Rock dug into subsoil at the base of [105].

and sent for analysis (Figure 93). Additional excavation and/or geophysical survey might resolve the question of whether this was a very small midden or a very small dwelling space, and the nature of its association with nearby turf.

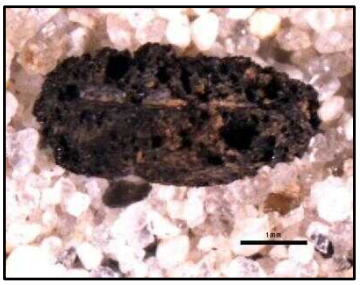


Figure 93. *Charred barley seed from the bottom of [105] in TP1 at Gerði (flotation sample #9). Sent for AMS dating.*

Egg

Egg is located near the southern end of Hegranes on its western side. Egg was a major farm during the medieval period, and survey and excavation were carried out by SCASS in 2016 (Steinberg, et al. 2017). Two abandoned sites are known to exist within the current property (Hjalti Pálsson 2010:128) (Figure 94). Rein, to the east, is a large abandoned farm or *eyðibýli*, with numerous visible ruined structures. Rein was surveyed as part of SCASS in 2016 (Bolender, et al. 2017), and some additional coring and survey was carried out at both Egg and Rein in 2017 (Bolender, et al. forthcoming). Minni-Egg is located to the south of Egg and west of Rein, and was surveyed by FLASH in 2015 and 2016. A small midden area was finally located and excavated in 2017 (Catlin, et al. 2016; Catlin, et al. 2017).

Minni-Egg

Minni-Egg is located about 650 meters to the south of the modern farm at Egg, south of Eggjarborg, the long rocky outcrop that gives Egg its name. There are no records describing Minni-Egg in use, though it was most likely used as a sheepfold and possibly a small farm at some point in the past (Hjalti Pálsson 2010: 128). The 1713 *Jarðabók* describes Minni-Egg as an abandoned cottage (*eyðikot*), with a turf fence and some ruins (Árni Magnússon and Vídalín 1930:58), while the 1840 parish description only makes note of its existence (Jón Reykjalín 1954:117). The *Örnefnaskrá* refers to the place as Litla-Egg or Minni-Egg, describing it as an ancient farm with a small field fenced with turf, where there were later sheephouses and more recently *stekkir* (Gísli Magnússon, et al. 1974; Jón Normann n.d.; Margeir Jónsson n.d.).

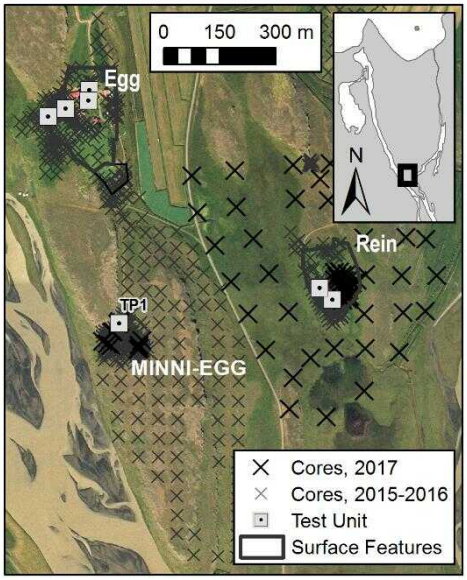


Figure 94. *Landscape of Egg, showing abandoned sites, cores, and test units. Background from LMI.*

Minni-Egg is bordered by a rocky outcrop to the northwest, eroded areas to the east and south, and a sharp drop to the river to the west. The entire site is highly cryoturbated, covered in very tall grass, boggy, and steeply sloping down from east to west and north to south. The site includes two visible, concentric enclosure walls that incorporate the high rocky ridge as a northwest edge. The inner wall is more prominent and likely more recent than the outer wall. There are two visible ruined structures, one in the southeast corner of the homefield between the walls, and another just outside of the northwest corner. Both date to post-1300 and are likely *stekkir*. Two additional clusters of turf in cores inside the field, one before and one after ca. 1104, suggest the presence of additional outbuildings. Low areas inside the homefield and just outside of it to the west suggest cutting of either bog or dry pasture, for building materials or fuel. Atop a hill to the north of the enclosure wall are the remains of a garden that surrounded a now-demolished mid-20th-century summer house, and it is here that a very small area of midden was discovered and excavated in 2017. Coring performed in 2015 and 2016 have been reported elsewhere (Catlin, et al. 2016; Catlin, et al. 2017). The 2017 work reported here consists of some additional coring, GPS survey, a 1x1 midden excavation, and drone photography.

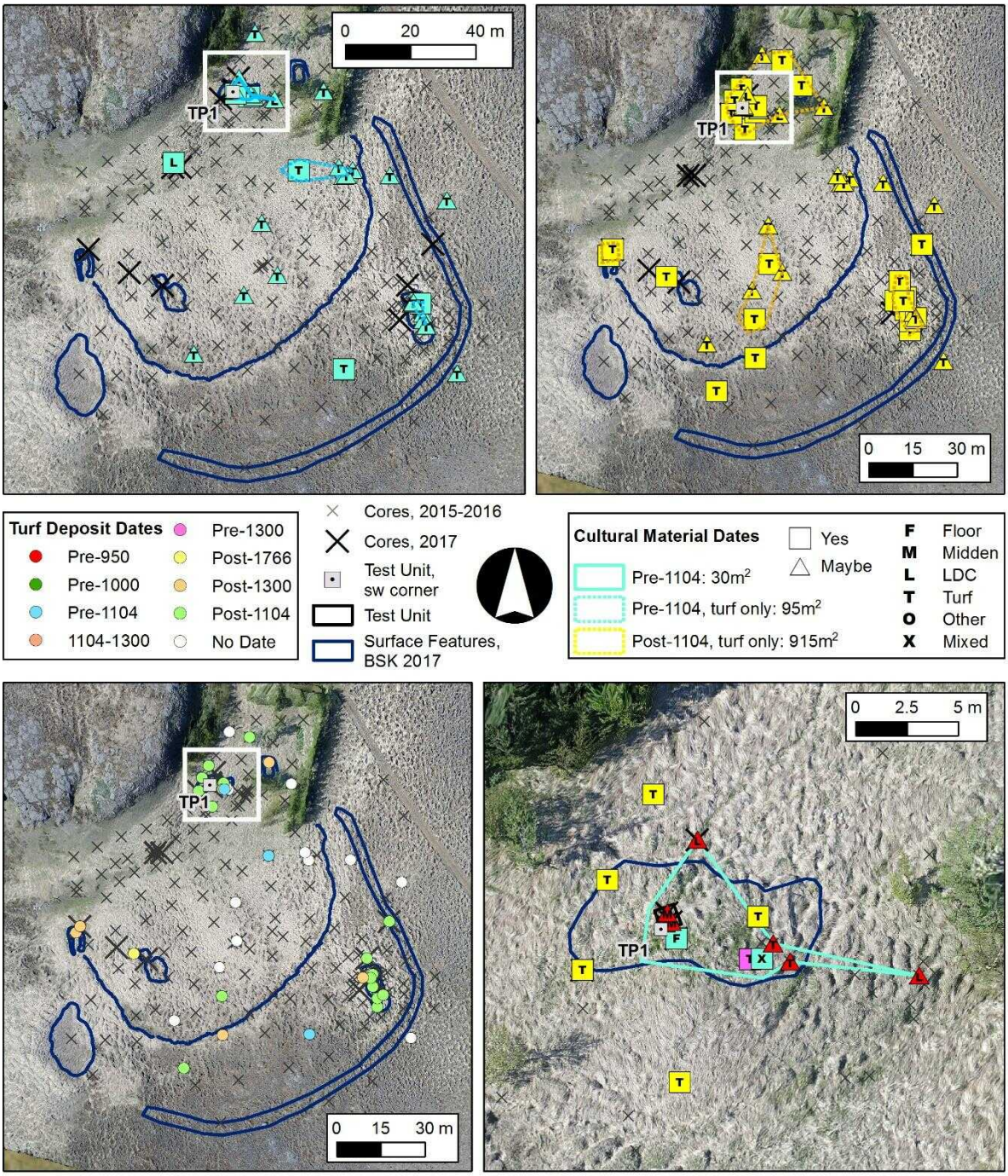


Figure 95. *Minni-Egg maps. Top left: Site extent, pre-1104. Top right: Extent, post-1104. Bottom right: Turf deposit dates. Bottom right: Close-up of the area near the excavation, showing deposit dates, pre-1104 extent, and the slightly raised, turfy feature. Background: Drone photos, spring 2017.*

Coring

Fifteen cores were carried out in 2017, most of them on 26 April by Kathryn Catlin, John Steinberg, and Guðný Zoëga. This brings the total number of cores at Minni-Egg to 197 (Figure 95). Coring near the *stekkur* in the southeast corner of the enclosure verified that the structure was built after 1104 (and probably after 1300), and that a portion of the outer turf wall along the eastern side was also built after 1104, but did not locate any midden deposits in these locations. A post-1300 date was likewise confirmed for the *stekkur* along the western enclosure wall, and coring in the homefield

Figure 96. Northern portion of the enclosure at Minni-Egg, taken in May 2017. The flags (right) mark the location of the eventual test unit. View facing southwest.

where post-1766 turf had been previously identified did not locate additonal evidence of a building here. We were also unable to reproduce earlier observations of low-density cultural material in the middle of the northern slope. However, a small amount of midden and possible floor was finally located at the top of the slope at the northern edge of the site, just south of the modern garden and copse. The site size pre-1104 has been updated to 30m^2. If two areas of pre-1104 turf inside the enclosure and near the large *stekkur* are included, the farmstead size becomes 125m^2.

A description of wetland use based on coring can be found in the report on the 2016 work. Due to time and logistics constraints, no loss-on-ignition samples were taken from Minni-Egg.

Excavation

Test Pit 1 (TP1) was exavated at the location of core 170002, at the north end of the site near the crest of the hill (Table 7, Figures 96 and 97). We expected to encounter a possible floor at 37 cm below ground surface, above about 35cm of midden starting around 40cm below the surface. While there was no tephra in the core, nearby cores contained the H1 layer, so we hoped to also see this layer in the unit above the midden. TP1 was rapidly excavated on 4 July by Kathryn Catlin, Grace Cesario, and Alicia Sawyer. All contexts were excavated by shovel and trowel, and all contexts below the root mat were sampled for macrobotanical flotation.

We observed some charcoal inclusions while removing the heavily bioturbated topsoil [101]. At the base of the context a large rock emerged in the southern half of the unit (Figure 98). There appeared to be a change in the soil on either side of the rock, so the next layer was exacvated as two contexts: [102] north of the rock, and [103] south of the rock. We thought the rock might be part of the foundation wall of a structure, but this turned out not to be the case. Both contexts were bioturbated, but slightly less so than [101], with a few inclusions of charcoal and bone fragments. There were also a few turfy inclusions observed in [103]. The H1 tephra was observed in a few places near the top of both contexts.

The remainder of the unit was excavated as a single context, [104], though in retrospect it likely represents two or three distinct depositional episodes. The topmost section of the context was a low density cultural layer across the entire unit, both north and south of the large rock, with some charcoal and burnt bone. The middle layer was a heavily bioturbated low density cultural layer, which may be what had been interpreted a floor layer in the core, again both north and south of the rock. The lowest level was true midden, primarily charcoal with some peat ash lenses. The midden

*Table 7. Contexts for Test Pit 1 at Minni-Egg. *All troweled, shoveled, and sieved unless noted. **Average of all corners, in cm.*

Context	Class	Description*	Color	Comp-action & Comp-osition	Homo-geneity	Bound-ary	Inclusions	Date	Opening Depth **	Thick-ness**
101	Topsoil	Bioturbated topsoil. Not sieved.	Mid brownish brown	Soft silt	Uniform	Sharp	Charcoal, pebbles.	post-1104	0	44.25
102	Aeolian Deposit	North portion of unit, outside large rock. Less disturbed aeolian sediment. Fragmented H1 near top of context.	Mid brownish brown	Soft silt	Uniform	Unclear	Charcoal, bone fragments	pre-1104	44.25	14.25
103	Aeolian Deposit	South portion of unit. Unlikely to be structure interior.	Mid brownish brown.	Soft silt	Uniform	Unclear	Charcoal	pre-1104	44.25	5.25
104	Midden	Three levels apparent in profile, less apparent during excavation. Flotation samples taken from each level. Top: low density cultural. Middle: Low density cultural, extremely bioturbated. Bottom: midden, primarily charcoal, atop LNS layer. May include specks of 1000 tephra. The large rock sits above the midden but had no clear structural function.	Mid brownish brown	Soft silt	Uniform (top and middle) Lensed (bottom)	Unclear	Charcoal, bone fragments Find: iron fragment	pre-1104	54	53

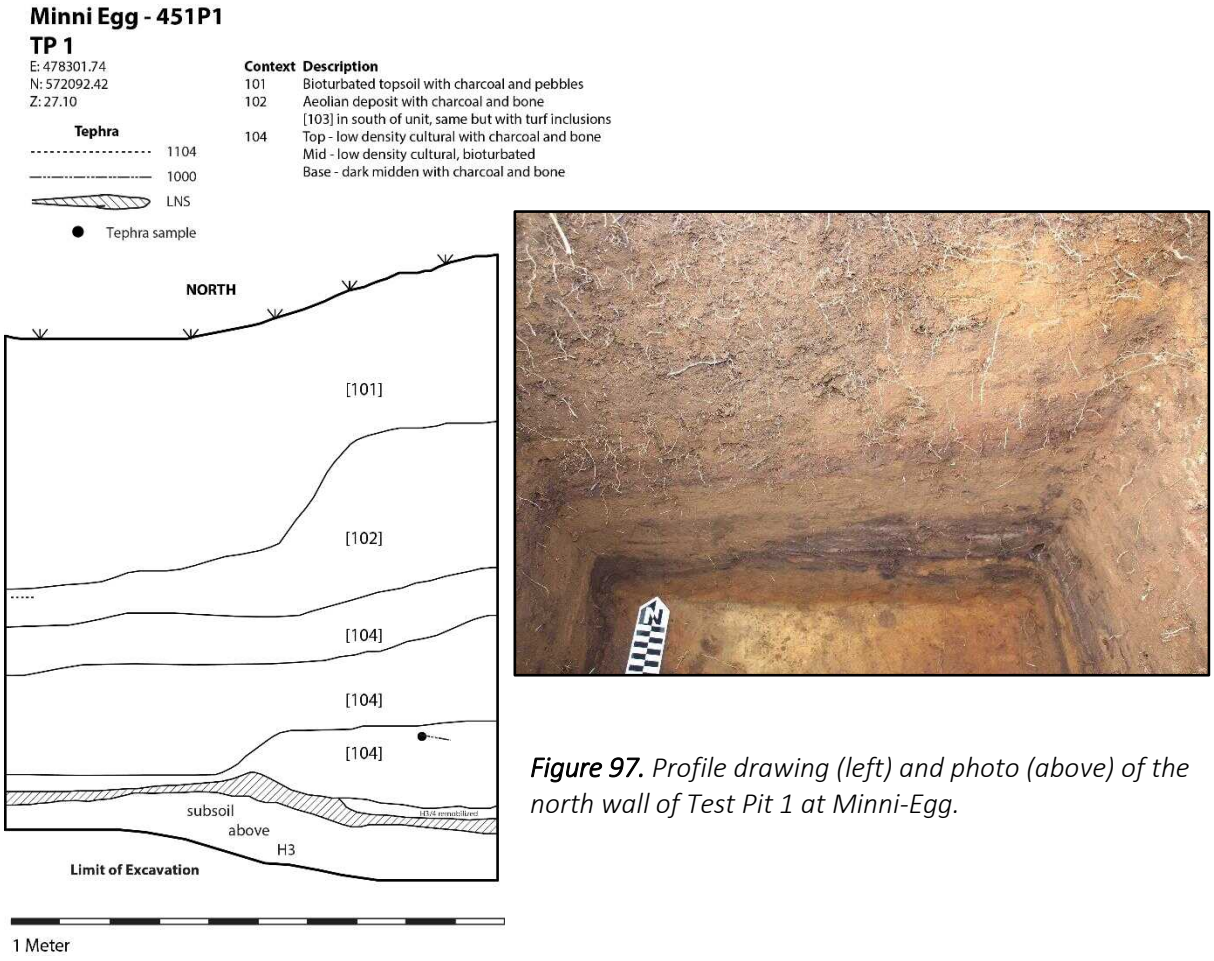


Figure 97. Profile drawing (left) and photo (above) of the north wall of Test Pit 1 at Minni-Egg.

Figure 98. *The large rock above the midden level in TP1 at Minni-Egg.*

extended across the entire unit, including underneath the rock. The rock was too large to move so the material underneath it was not excavated, but it was clear that the rock had been placed on top of the midden, before the low density cultural layers were deposited (Figure 98). It did not appear to be part of a structure, though bioturbation may have removed evidence of associated turf.

Although these three cultural layers were excavated as a single context, flotation samples were collected from the top, middle, and bottom of the layer. Barley obtained from the lowest level of [104] (Sample #6) (Figure 99) has been sent for AMS dating. The midden was resting directly atop an LNS layer, which gave way to sterile subsoil. We stopped excavation when H3 began to emerge across the unit. The only finds from the unit were from [104]: a small lump of iron-working slag (Find #1) (Figure 100) and a very small amount of animal bones, most of them too small to identify. In addition to the fragments of H1 tephra observed near the top of [102] and [103], a small line of possible ~1000 tephra was observed and sampled from the north side wall near the top of [104] after excavation.

Figure 99. *Barley from the midden (bottom of [104], S#6) at TP1 at Minni-Egg. Sent for AMS dating.*

Figure 100. *Find #1 (slag) from [104] in Test Pit 1 at Minni-Egg.*

In short, Minni-Egg appears to have had very short-lived early habitation, probably starting in the 10th century through the early 11th century. After trash had ceased to be actively deposited, the space was filled in with debris, perhaps including a large rock, prior to 1104. After abandonment, the site continued to be used for livestock control, including weaning of lambs, with perhaps turf or peat mining nearby.

Conclusion

The 2017 season marked the conclusion of major activities for the FLASH project. The most significant result of this project is the identification of small, marginal settlements in a settled, lowand region of Iceland that date to the *landnám*. Such sites have not previously been systematically investigated in Iceland on a regional scale. While final interpretations of the work are ongoing, it is clear that these sites represent an early phase of landscape domestication, with settlement organization that was both diverse and dense. Likewise, the abandonment of the sites prior to 1104 marks a significant change in social organization, from more distributed household settlements towards consolidation, and it is likely that this transition also marks a shift towards greater control of the landscape on the part of elites, including the rise of tenant farms and rent extraction as the major source of wealth. The persistence of agricultural infrastructure at these named focal points through the ensuing centuries futher supports the long-term importance of early settlement patterns in shaping land use and ecological practice.

The results of the FLASH project have raised a series of additional questions that may be answered with future fieldwork. First, it would be worthwhile to learn more about the extent of architecture at the site, to understand the activities that took place there beyond the limited information available from a small test excavation. While the current results suggest several possible purposes for the marginal sites, including independent farms, specialized work stations, and enforcement of land claims, only a full open excavation of one or more sites including their architectural sequence has the potential to resolve the issue. Geophysical survey should be an integral part of this process. Although the geophysical surveys at Kotið and Þrælagerði did not reveal additional buried architecture, the sites in flattened fields might better lend themselves to geophysical survey – especially Grænakót and Túnfótur, where excavations have already revealed the present of buried architecture invisible on the surface, of unknown extent.

Second, while many sites have enclosure walls, it is often unclear whether the walls are contemporary with the early settlement or with later agricultural buildings. Whether these early sites were enclosed or not, and the size of the enclosure if they were, has implications for the use of the site, especially its potential to have been a fully operating independent farm. A series of trenches through the enclosure walls could resolve this question.

Third, the macrobotanical and faunal collections raise new questions that may be resovled by more targeted midden excavations. The presence of a large number of oat (*Avena*) seeds from Grænagerði suggests that arable agriculture may have been practiced at the site later than anticipation, and additional work could indicate a specialized, distributed network of agricultural production at marginal sites. This work is being partially addressed in MA theses by Melissa Ritchey, and Zeitlin's ongoing MA research at Stekkjarborg may also shed light on specialized use of the site. Likewise, while the faunal collects suggest that wild foods were disproportionately consumed at marginal sites, the sample sizes at present are too small for detailed statistical analysis, and this additional work will be partially taken up by Grace Cesario's PhD research.

Finally, the second possible location for Gunnlaugsgerði in the center of modern Ás should be investigated, and to increase the comparative potential between sites, a 1x1 test excavation in the charcoal/bone midden at Minni-Ás should be carried out; it is hoped that these final activities will be performed in the summer of 2018 as part of the final season of SCASS research.

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APPENDICES

Appendix A: Finds Register

Finds were conserved in the field by Josiah Wagener.

SITE	EXC.	CXT.	FIND	RETRIEVAL	MAT. TYPE	DESCRIPTION	EXC. ID	EXC. DATE	CONS. DATE
Gerði	TP1	101	1	Screen	Slag	Slag, 45.5mm.	KWS	19 Jul 2017	25 Jul 2017
Gerði	TP1	103	2	Screen	Stone	White crystalline stone, 28.4x 25.5mm	NZ	19 Jul 2017	25 Jul 2017
Gerði	TP1	103	3	Screen	Slag	Slag, 25.7mm.	NZ	19 Jul 2017	25 Jul 2017
Grænagerði	TP1	102	1	Hand	Stone	White stone with grey inclusions. 23.4mm.	SJB	26 Jul 2017	27 Jul 2017
Grænagerði	TP1	103	2	Hand	Stone	8 white stones. 2nd largest may be smoothed due to human use, 29x 21.9x 16.2mm	KAC	26 Jul 2017	28 Jul 2017
Grænagerði	TP1	103	4	Wet Screen	Iron	5 iron pieces from [103] screen remainders: 1 bent rivet, shaft 25.5x 4.7mm, head 20.1mm; 1 rivet head, 1 square bar, 2 flat fragments	GMC	26 Jul 2017	5 Aug 2017
Grænagerði	TP1	103	6	Wet Screen	Iron	3 iron pieces from [103] Sample #4: 1 nail, 57.8mm; 1 flat bar, 48.3mm; 1 nail head: 15.9mm	GMC	26 Jul 2017	5 Aug 2017
Grænagerði	TP1	104	3	Screen	Stone	White crystalline stone with grey inclusions, 21.5mm	SJB	26 Jul 2017	29 Jul 2017
Grænagerði	TP1	104	5	Wet Screen	Iron	2 iron pieces from [104] screen remainders: 1 rivet head, 14.0mm; 1 flat strip, 23.3mm	GMC	26 Jul 2017	29 Jul 2017
Grænagerði	TP1	104	7	Wet Screen	Iron	1 unidentified iron piece from [104] Sample #8, 43.5x 3.1mm	GMC	26 Jul 2017	25 Jul 2017
Grænakot	TP1	102	1	Screen	Stone	3 white stones	MES	7 Aug 2017	8 Aug 2017
Grænakot	TP1	106	2	Screen	Slag	Possible slag, likely pumice	MES	8 Aug 2017	10 Aug 2017
Grænakot	TP1	106	3	Screen	Stone	White stone, 19.8mm	MES	8 Aug 2017	8 Aug 2017
Kotið	TP2	101	1	Screen	Iron	3 iron pieces: 1 nail in two pieces, 38.5x 13.2mm; 1 unidentified	GMC	26 Jun 2017	25 Jul 2017
Kotið	TP2	104	2	Screen	Iron	3 iron pieces: 2 nails, 21.3 and 21.1mm; 1 square rivet head, 21.4x 16.9mm	GMC	27 Jun 2017	25 Jul 2017
Kotið	TP2	104	3	Screen	Stone	5 white stones, possible quartz, black or grey inclusions, 13.6-35.4mm	KAC	27 Jun 2017	29 Jul 2017
Kotið	TP2	104	4	Screen	Bone	Bone bead, 6.5mm thick, diameter: 9.5mm outer, 3.1mm inner	GMC	28 Jun 2017	27 Jul 2017

SITE	EXC.	CXT.	FIND	RETRIEVAL	MAT. TYPE	DESCRIPTION	EXC. ID	EXC. DATE	CONS. DATE
Kotið	TP2	104	5	Screen	Iron	2 iron rivets	KAC	28 Jun 2017	5 Aug 2017
Kotið	TP2	104	6	Screen	Stone	White stone with grey inclusions, 46.7x 36.7x 21.4mm	GMC	28 Jun 2017	25 Jul 2017
Kotið	TP2	104	8	Screen	Stone	White with longitudinal layering, possible whetstone, 42x 25.1x 8.7mm	KAC	28 Jun 2017	25 Jul 2017
Kotið	TP2	104	9	Screen	Iron	2 iron pieces. Not yet conserved.	KAC	28 Jun 2017	N/A
Kotið	TP2	104	10		Stone	Black stone	KAC	26 Jun 2017	25 Jul 2017
Kotið	TP2	105	7	Screen	Iron	Iron rivet from [105] Sample #5, shaft 28.7x 5.1mm, head 14.6mm	GMC	1 Jul 2017	25 Jul 2017
Minni-Egg	TP1	104	1	Screen	Slag	Slag, 27.5mm	GMC	4 Jul 2017	5 Aug 2017
Næfurstaðir	TP1	102	5	Wet Screen	Bone	Bone comb fragment from [102] Sample #1, 16.2x 15.3x 2.7mm	GMC	28 Jul 2016	24 Jul 2017

Appendix B: Sample Register

Bones are undergoing analysis by Grace Cesario at CUNY and will be reported in a separate, forthcoming document. Tephra is undergoing analysis by Brian Damiata at UCLA. Floatation samples are undergoing analysis by MA students at UMB under the direction of Heather Trigg (Appendix C). Loss-on-Ignition samples have been processed by Kathryn Catlin and Lauren Welch O'Connor at UMB (Appendix D).

SITE	EXC.	CXT.	SAMPLE	TYPE	BAGS	DESCRIPTION	ID	DATE
Gerði	TP1	102	1	Bone, Animal	1	Fragment	NZ	19 Jul 2017
Gerði	TP1	103	2	Flotation	2		NZ	19 Jul 2017
Gerði	TP1	103	3	Bone, Animal	1		KWS	19 Jul 2017
Gerði	TP1	104	4	Flotation	2	Circa 950/1000	NZ	19 Jul 2017
Gerði	TP1	104	5	Bone, Animal	1		NZ	19 Jul 2017
Gerði	TP1	105	6	Flotation	2		NZ	19 Jul 2017
Gerði	TP1	105	7	Bone, Animal	1		NZ	19 Jul 2017
Gerði	TP1	105	8	Charcoal	1		NZ	19 Jul 2017
Gerði	TP1	105	9	Flotation	1	Base context	NZ	19 Jul 2017
Gerði	TP1	105	10	Flotation	1	Fill around rock in bottom of 105	NZ	20 Jul 2017
Grænagerði	Profile1	172951	1	LOI	1	Post-1766	KAC	27 Jul 2017
Grænagerði	Profile1	172951	2	LOI	1	Pre-1766	KAC	31 Jul 2017
Grænagerði	Profile1	172951	3	LOI	1	Post-1300	KAC	31 Jul 2017
Grænagerði	Profile1	172951	4	LOI	1	Post-H1	KAC	31 Jul 2017
Grænagerði	Profile1	172951	5	LOI	1	Post-1000/Pre-H1	KAC	31 Jul 2017
Grænagerði	Profile1	172951	6	LOI	1	Pre-1000	KAC	31 Jul 2017
Grænagerði	Profile1	172951	7	LOI	1	Post-H3/Pre-1000	KAC	31 Jul 2017
Grænagerði	Profile2	172971	1	LOI	1	Post-1766	KAC	27 Jul 2017
Grænagerði	Profile2	172971	2	LOI	1	Pre-1766	KAC	31 Jul 2017
Grænagerði	Profile2	172971	3	LOI	1	Post-1300	KAC	31 Jul 2017
Grænagerði	Profile2	172971	4	LOI	1	Post-H1/Pre-1300	KAC	31 Jul 2017
Grænagerði	Profile2	172971	5	LOI	1	Post-1000/Pre-H1	KAC	31 Jul 2017
Grænagerði	Profile2	172971	6	LOI	1	Post-H3/Pre-1000	KAC	31 Jul 2017
Grænagerði	TP1	102	1	Bone, Animal	1		SKD	26 Jul 2017
Grænagerði	TP1	102	2	Flotation	1		LWO	26 Jul 2017
Grænagerði	TP1	103	3	Flotation	2	Top context	KAC	26 Jul 2017
Grænagerði	TP1	103	4	Bone, Animal	1		KAC	26 Jul 2017
Grænagerði	TP1	103	5	Flotation	2	Mid/base context	KAC	26 Jul 2017
Grænagerði	TP1	103	6	Flotation	1	Very base context	KAC	26 Jul 2017
Grænagerði	TP1	104	7	Flotation	2	Top context	KAC	26 Jul 2017
Grænagerði	TP1	104	8	Bone, Animal	2		SJB	26 Jul 2017
Grænagerði	TP1	104	9	Flotation	1	Base context	KAC	26 Jul 2017
Grænagerði	TP1	N/A	10	Tephra	1	Katla, East wall	KAC	27 Jul 2017

SITE	EXC.	CXT.	SAMPLE	TYPE	BAGS	DESCRIPTION	ID	DATE
Grænagerði	TP1	N/A	11	Tephra	1	LNL, East wall	KAC	27 Jul 2017
Grænagerði	TP1	N/A	12	Tephra	1	H1, East wall	KAC	27 Jul 2017
Grænagerði	TP1	N/A	13	Tephra	1	1000, South wall	KAC	27 Jul 2017
Grænakot	TP1	102	1	Flotation	1	Top context	MES	7 Aug 2017
Grænakot	TP1	103	2	Flotation	2	Top context	MES	7 Aug 2017
Grænakot	TP1	103	3	Flotation	2	Mid/base context	MES	7 Aug 2017
Grænakot	TP1	103	4	Bone, Animal	1		MES	7 Aug 2017
Grænakot	TP1	103	5	Flotation	1	Base context	MES	8 Aug 2017
Grænakot	TP1	103	6	Flotation	1	Dark lens at base context	KAC	8 Aug 2017
Grænakot	TP1	104	7	Flotation	1	Top context	MES	8 Aug 2017
Grænakot	TP1	104	8	Flotation	1	Base context - above cobbles	MES	8 Aug 2017
Grænakot	TP1	105	9	Flotation	2	Matrix between cobbles	MES	8 Aug 2017
Grænakot	TP1	106	10	Flotation	2	Top context	MES	8 Aug 2017
Grænakot	TP1	106	11	Charcoal	1		MES	8 Aug 2017
Grænakot	TP1	106	12	Flotation	2	Mid/base context	MES	8 Aug 2017
Grænakot	TP1	106	13	Bone, Animal	1		MES	8 Aug 2017
Grænakot	TP1	106	14	Flotation	2	Base context	MES	8 Aug 2017
Grænakot	TP1	106	16	Tephra	1	H1, North wall (possible)	KAC	9 Aug 2017
Grænakot	TP1	107	15	Flotation	1	Top context, likely sterile sub	MES	9 Aug 2017
Kotið	Profile1	N/A	1	LOI	1	Pre-H3	KAC	30 Jun 2017
Kotið	Profile1	N/A	2	Tephra	1	H3	KAC	30 Jun 2017
Kotið	Profile1	N/A	3	LOI	1	Pre-H1	KAC	30 Jun 2017
Kotið	Profile1	N/A	4	Tephra	1	H1	KAC	30 Jun 2017
Kotið	Profile1	N/A	5	LOI	1	Pre-1300	KAC	30 Jun 2017
Kotið	Profile1	N/A	6	Tephra	1	1300	KAC	30 Jun 2017
Kotið	Profile1	N/A	7	LOI	1	Pre-1766	KAC	30 Jun 2017
Kotið	Profile1	N/A	8	Tephra	1	1766	KAC	30 Jun 2017
Kotið	Profile1	N/A	9	LOI	1	Post-1766	KAC	30 Jun 2017
Kotið	Profile1	N/A	10	LOI	1	Post-H4	KAC	30 Jun 2017
Kotið	Profile1	N/A	11	Tephra	1	Unknown black	KAC	30 Jun 2017
Kotið	Profile2	N/A	1	LOI	1	Pre-H4	KAC	30 Jun 2017
Kotið	Profile2	N/A	2	LOI	1	Pre-H3	KAC	30 Jun 2017
Kotið	Profile2	N/A	3	LOI	1	Pre-LNS	KAC	30 Jun 2017
Kotið	Profile2	N/A	4	Tephra	1	LNS/LNL	KAC	30 Jun 2017
Kotið	Profile2	N/A	5	LOI	1	Pre-950/1000	KAC	30 Jun 2017
Kotið	Profile2	N/A	6	Tephra	1	950/1000	KAC	30 Jun 2017
Kotið	Profile2	N/A	7	LOI	1	Pre-H1	KAC	30 Jun 2017
Kotið	Profile2	N/A	8	LOI	1	Post-H1 / Pre-Unknown	KAC	30 Jun 2017
Kotið	Profile2	N/A	9	Tephra	1	Unknown black	KAC	30 Jun 2017
Kotið	Profile2	N/A	10	LOI	1	Pre-1300	KAC	30 Jun 2017
Kotið	Profile2	N/A	11	Tephra	1	1300	KAC	30 Jun 2017
Kotið	Profile2	N/A	12	LOI	1	Pre-1766	KAC	30 Jun 2017
Kotið	Profile2	N/A	13	Tephra	1	1766	KAC	30 Jun 2017
Kotið	Profile2	N/A	14	LOI	1	Post-1766	KAC	30 Jun 2017

SITE	EXC.	CXT.	SAMPLE	TYPE	BAGS	DESCRIPTION	ID	DATE
Kotið	TP2	101	1	Bone, Animal	1		KAC	27 Jun 2017
Kotið	TP2	104	2	Bone, Animal	1		GMC	27 Jun 2017
Kotið	TP2	104	3	Flotation	2	Mid context	KAC	27 Jun 2017
Kotið	TP2	104	4	Flotation	2	Base context	KAC	27 Jun 2017
Kotið	TP2	105	5	Bone, Animal	1		GMC	28 Jun 2017
Kotið	TP2	105	6	Flotation	2	Top context	KAC	28 Jun 2017
Kotið	TP2	105	7	Flotation	1	Base context - LNS?	KAC	28 Jun 2017
Kotið	TP2	105	8	Flotation	1	Charcoal lens, NW corner	KAC	29 Jun 2017
Kotið	TP2	N/A	9	Tephra	1	1766, South wall	KAC	29 Jun 2017
Minni-Ás	Profile1	N/A	1	LOI	1	Pre-H3/H4	KAC	14 Jul 2017
Minni-Ás	Profile1	N/A	2	Tephra	1	H3/H4	KAC	14 Jul 2017
Minni-Ás	Profile1	N/A	3	LOI	1	Post-H3/H4	KAC	14 Jul 2017
Minni-Ás	Profile1	N/A	4	LOI	1	Pre-LNS	KAC	14 Jul 2017
Minni-Ás	Profile1	N/A	5	Tephra	1	LNL?	KAC	14 Jul 2017
Minni-Ás	Profile1	N/A	6	LOI	1	Post-LNS	KAC	14 Jul 2017
Minni-Ás	Profile1	N/A	7	LOI	1	Pre-950/1000	KAC	14 Jul 2017
Minni-Ás	Profile1	N/A	8	Tephra	1	950/1000	KAC	14 Jul 2017
Minni-Ás	Profile1	N/A	9	LOI	1	Post-950/1000	KAC	14 Jul 2017
Minni-Ás	Profile1	N/A	10	LOI	1	Pre-H1	KAC	14 Jul 2017
Minni-Ás	Profile1	N/A	11	LOI	1	Post-H1	KAC	14 Jul 2017
Minni-Ás	Profile1	N/A	12	Tephra	1	1300	KAC	14 Jul 2017
Minni-Ás	Profile1	N/A	13	LOI	1	Post-1300	KAC	14 Jul 2017
Minni-Ás	Profile2	N/A	1	LOI	1	Pre-H4	KAC	18 Jul 2017
Minni-Ás	Profile2	N/A	2	LOI	1	Pre-H3	KAC	31 Jul 2017
Minni-Ás	Profile2	N/A	3	LOI	1	Post-H3	KAC	31 Jul 2017
Minni-Ás	Profile2	N/A	4	LOI	1	Pre-1000	KAC	31 Jul 2017
Minni-Ás	Profile2	N/A	5	Tephra	1	1000	KAC	31 Jul 2017
Minni-Ás	Profile2	N/A	6	LOI	1	Post-1000	KAC	31 Jul 2017
Minni-Ás	Profile2	N/A	7	LOI	1	Pre-H1	KAC	31 Jul 2017
Minni-Ás	Profile2	N/A	8	LOI	1	Pre-1300	KAC	31 Jul 2017
Minni-Ás	Profile2	N/A	9	Tephra	1	1300	KAC	31 Jul 2017
Minni-Ás	Profile2	N/A	10	LOI	1	Pre-1766	KAC	31 Jul 2017
Minni-Ás	Profile2	N/A	11	Tephra	1	1766	KAC	31 Jul 2017
Minni-Ás	Profile2	N/A	12	LOI	1	Post-1766	KAC	31 Jul 2017
Minni-Ás	Profile2	N/A	13	LOI	1	Post-1300	KAC	31 Jul 2017
Minni-Egg	TP1	102	1	Flotation	1	Top context	KAC	4 Jul 2017
Minni-Egg	TP1	103	2	Flotation	1	Top context	KAC	4 Jul 2017
Minni-Egg	TP1	104	3	Flotation	2	Top context	KAC	4 Jul 2017
Minni-Egg	TP1	104	4	Bone, Animal	1		GMC	4 Jul 2017
Minni-Egg	TP1	104	5	Flotation	2	Mid context	AHS	4 Jul 2017
Minni-Egg	TP1	104	6	Flotation	2	Base context	KAC	4 Jul 2017
Minni-Egg	TP1	104	7	Tephra	1	100, North wall	KAC	4 Jul 2017
Næfurstaðir	Profile1	N/A	1	LOI	1	Pre-H4	KAC	17 Jul 2017

SITE	EXC.	CXT.	SAMPLE	TYPE	BAGS	DESCRIPTION	ID	DATE
Næfurstaðir	Profile1	N/A	2	LOI	1	Pre-H3	KAC	17 Jul 2017
Næfurstaðir	Profile1	N/A	3	LOI	1	Pre-LNL	KAC	17 Jul 2017
Næfurstaðir	Profile1	N/A	4	Tephra	1	LNL	KAC	17 Jul 2017
Næfurstaðir	Profile1	N/A	5	LOI	1	Pre-950	KAC	17 Jul 2017
Næfurstaðir	Profile1	N/A	6	Tephra	1	950	KAC	17 Jul 2017
Næfurstaðir	Profile1	N/A	7	LOI	1	Pre-1000	KAC	17 Jul 2017
Næfurstaðir	Profile1	N/A	8	Tephra	1	1000	KAC	17 Jul 2017
Næfurstaðir	Profile1	N/A	9	LOI	1	Pre-H1	KAC	17 Jul 2017
Næfurstaðir	Profile1	N/A	10	LOI	1	Pre-1300	KAC	17 Jul 2017
Næfurstaðir	Profile1	N/A	11	Tephra	1	1300	KAC	17 Jul 2017
Næfurstaðir	Profile1	N/A	12	LOI	1	Pre-1766	KAC	17 Jul 2017
Næfurstaðir	Profile1	N/A	13	Tephra	1	1766	KAC	17 Jul 2017
Næfurstaðir	Profile1	N/A	14	LOI	1	Post-1766	KAC	17 Jul 2017
Næfurstaðir	Profile2	N/A	1	LOI	1	Pre-H3	KAC	17 Jul 2017
Næfurstaðir	Profile2	N/A	2	LOI	1	Post-H3	KAC	17 Jul 2017
Næfurstaðir	Profile2	N/A	3	LOI	1	Pre-H1	KAC	17 Jul 2017
Næfurstaðir	Profile2	N/A	4	LOI	1	Pre-1300	KAC	17 Jul 2017
Næfurstaðir	Profile2	N/A	5	Tephra	1	1300	KAC	17 Jul 2017
Næfurstaðir	Profile2	N/A	6	LOI	1	Pre-1766	KAC	17 Jul 2017
Næfurstaðir	Profile2	N/A	7	Tephra	1	Pre-1766	KAC	17 Jul 2017
Næfurstaðir	Profile2	N/A	8	LOI	1	Post-1766	KAC	17 Jul 2017
Næfurstaðir	Profile2	N/A	9	Tephra	1	1000	KAC	17 Jul 2017
Næfurstaðir	Profile2	N/A	10	LOI	1	Pre-H3	KAC	17 Jul 2017
Túnfótur	Profile1	N/A	1	LOI	1	Pre-H4	KAC	12 Jul 2017
Túnfótur	Profile1	N/A	2	LOI	1	Pre-H3	KAC	12 Jul 2017
Túnfótur	Profile1	N/A	3	LOI	1	Pre-LNS	KAC	12 Jul 2017
Túnfótur	Profile1	N/A	4	LOI	1	LNS	KAC	12 Jul 2017
Túnfótur	Profile1	N/A	5	Tephra	1	LNL	KAC	12 Jul 2017
Túnfótur	Profile1	N/A	6	LOI	1	Pre-950	KAC	12 Jul 2017
Túnfótur	Profile1	N/A	7	Tephra	1	950	KAC	12 Jul 2017
Túnfótur	Profile1	N/A	8	LOI	1	Pre-1000	KAC	12 Jul 2017
Túnfótur	Profile1	N/A	9	Tephra	1	1000	KAC	12 Jul 2017
Túnfótur	Profile1	N/A	10	LOI	1	Pre-1104	KAC	12 Jul 2017
Túnfótur	Profile1	N/A	11	LOI	1	Post-1104	KAC	12 Jul 2017
Túnfótur	Profile1	N/A	12	LOI	1	Pre-1300	KAC	12 Jul 2017
Túnfótur	Profile1	N/A	13	Tephra	1	1300	KAC	12 Jul 2017
Túnfótur	Profile1	N/A	14	LOI	1	Pre-1766	KAC	12 Jul 2017
Túnfótur	Profile1	N/A	15	Tephra	1	1766	KAC	12 Jul 2017
Túnfótur	Profile1	N/A	16	LOI	1	Post-1766	KAC	12 Jul 2017
Túnfótur	Profile2	N/A	1	LOI	1	Gley	KAC	12 Jul 2017
Túnfótur	Profile2	N/A	2	LOI	1	Pre-1766	KAC	12 Jul 2017
Túnfótur	Profile2	N/A	3	Tephra	1	1766	KAC	12 Jul 2017
Túnfótur	Profile2	N/A	4	LOI	1	Post-1766	KAC	12 Jul 2017
Túnfótur	Profile3	N/A	1	LOI	1	Pre-H3	KAC	12 Jul 2017
Túnfótur	Profile3	N/A	2	LOI	1	Post-H3	KAC	12 Jul 2017

SITE	EXC.	CXT.	SAMPLE	TYPE	BAGS	DESCRIPTION	ID	DATE
Túnfótur	Profile3	N/A	3	LOI	1	Pre-1000	KAC	12 Jul 2017
Túnfótur	Profile3	N/A	4	Tephra	1	1000	KAC	12 Jul 2017
Túnfótur	Profile3	N/A	5	LOI	1	Pre-H1	KAC	12 Jul 2017
Túnfótur	Profile3	N/A	6	LOI	1	Pre-1300	KAC	12 Jul 2017
Túnfótur	Profile3	N/A	7	Tephra	1	1300	KAC	12 Jul 2017
Túnfótur	Profile3	N/A	8	LOI	1	Post-1300	KAC	12 Jul 2017
Vatnskot	Profile1	N/A	1	LOI	1	Post-H3/Pre-Katla	AHS	28 Jul 2017
Vatnskot	Profile1	N/A	2	LOI	1	Pre-H3 (Typo? Pre-LNL?)	AHS	28 Jul 2017
Vatnskot	Profile1	N/A	3	LOI	1	Post-LNL/Pre-1000	AHS	28 Jul 2017
Vatnskot	Profile1	N/A	4	LOI	1	Post-1000/Pre-H1	AHS	28 Jul 2017
Vatnskot	Profile1	N/A	5	LOI	1	Post-H1/Pre-1300	AHS	28 Jul 2017
Vatnskot	Profile1	N/A	6	LOI	1	Post-1300/Pre-1766	AHS	28 Jul 2017
Vatnskot	Profile1	N/A	7	LOI	1	Post-1766	AHS	28 Jul 2017

Appendix C: Flotation & Seeds Register

All samples were floated in Sauðárkrókur in 2017 and are undergoing analysis by MA students at UMass Boston under the direction of Heather Trigg.
*includes *Hordeum* (barley) ⁺includes *Avena* (oats)

					Float		Analysis									
SITE	EXC.	CXT.	Sample	Liters	ID	Date	ID	Date	Charcoal %	Total Seeds	Caryo-phyll-aceae	Po-aceae	Cyper-aceae	Eric-aceae	Polygon-aceae	Sent for AMS	Other
Gerði	TP1	103	2	16.5	MMR	25 Jul 2017	LWO	8 Mar 2018	80	6	5	1					
Gerði	TP1	104	4	14.5	MMR	25 Jul 2017			85	3	2	1					
Gerði	TP1	105	6	13	LWO	25 Jul 2017			90	372	15	7*	314	3	7		
Gerði	TP1	105	9	13	LWO	25 Jul 2017			90	263	14	16*	178	4	9	Yes	
Gerði	TP1	105	10	4	LWO	25 Jul 2017			50	0							Beetles.
Grænagerði	TP1	102	2	7.5	NZ	31 Jul 2017	MMR	15 Jan 2018	50	19	9	2*		2			
Grænagerði	TP1	103	3	16	NZ	31 Jul 2017	MMR	19 Jan 2018	90	159	67	48*⁺	50	26		Yes	
Grænagerði	TP1	103	5	13	NZ	31 Jul 2017	MMR	17 Jan 2018	90	102	10	17⁺	40	27	1		Bone fragments.
Grænagerði	TP1	103	6	7	NZ	31 Jul 2017	NZ	15 Jan 2018	90	17	2	6⁺	3		3		
Grænagerði	TP1	104	7	14.5	NZ	31 Jul 2017	MMR	18 Jan 2018	90	31	2	1⁺	7	14		Yes	
Grænagerði	TP1	104	9	6.5	NZ	31 Jul 2017	MMR	17 Jan 2018	80	5	1		3				7 Bone fragments.
Grænakot	TP1	102	1	9	MMR	10 Aug 2017	MMR	22 Jan 2018		1			1				
Grænakot	TP1	103	2	18.5	MMR	10 Aug 2017	MMR	22 Jan 2018	90	232	8		95	50			Numerous leaves.
Grænakot	TP1	103	3	15	MMR	10 Aug 2017	NZ	22 Jan 2018	20	73	9	12		13	31		
Grænakot	TP1	103	5	6.5	LWO	10 Aug 2017	MMR	22 Jan 2018	5	97	6		52	5			
Grænakot	TP1	103	6	6.5	LWO	10 Aug 2017	MMR	22 Jan 2018	50	106	6		37	13	3		Numerous leaves.
Grænakot	TP1	104	7	16.5	LWO	10 Aug 2017	MMR	22 Jan 2018	20	9			4	2			
Grænakot	TP1	104	8	7	LWO	10 Aug 2017	MMR	22 Jan 2018	10	6			4				Burnt bone fragments.
Grænakot	TP1	105	9	16	MMR	10 Aug 2017	MMR	22 Jan 2018	80	72	4		59	8			Numerous roots.
Grænakot	TP1	106	10	16.5	MMR	10 Aug 2017	MMR	24 Jan 2018	90	935	26		832	77			
Grænakot	TP1	106	12	16	MMR	10 Aug 2017	MMR	26 Jan 2018	90	797	72	3	565	131	1		
Grænakot	TP1	106	14	14.5	MMR	10 Aug 2017	MMR	25 Jan 2018	95	465	64	3*	309	65		Yes	

					Float		Analysis										
SITE	EXC.	CXT.	Sample	Liters	ID	Date	ID	Date	Charcoal %	Total Seeds	Caryo-phyll-aceae	Po-aceae	Cyper-aceae	Eric-aceae	Polygon-aceae	Sent for AMS	Other
Grænakot	TP1	107	15	8	LWO	10 Aug 2017	MMR	22 Jan 2018	60	7			2				Uncharred grain chaffs.
Kotið	TP2	104	3	15	NZ	17 Jul 2017			90	310	5	5	224	41	11		
Kotið	TP2	104	4	15	NZ	17 Jul 2017			90	92	6	11	47	17			
Kotið	TP2	105	6							1		1*				Yes	Not fully analyzed.
Kotið	TP2	105	7	6	NZ	10 Jul 2017			80	40		20	7				
Kotið	TP2	105	8	5	KWS	10 Jul 2017			90	190	17	47*	65	17		Yes	
Minni-Egg	TP1	102	1	5	NZ	17 Jul 2017											Not yet analyzed.
Minni-Egg	TP1	103	2	6	NZ	17 Jul 2017											Not yet analyzed.
Minni-Egg	TP1	104	3	14	NZ	17 Jul 2017											Not yet analyzed.
Minni-Egg	TP1	104	5	12	KWS	17 Jul 2017											Not yet analyzed.
Minni-Egg	TP1	104	6	13	KWS	17 Jul 2017				1		1*				Yes	Not fully analyzed.

Appendix D: Loss-on-Ignition Data

SITE	EXC.	SAMPLE	Time period	ID	Date	Color	Munsell	Texture	Description	Bulk Density	% LOI
Grænagerði	Profile1	7	post-H3	KAC	2 Sep 2017	black	10YR2/1	clayey silty peat	about 50% small roots	1.76	37.52
Grænagerði	Profile1	6	pre-1000	KAC	2 Sep 2017	black	10YR2/1	clayey silty peat	more than 50% small roots	1.79	36.16
Grænagerði	Profile1	5	pre-1104	KAC	2 Sep 2017	black	7.5YR2.5/1	clayey silty peat	more than 50% small roots	1.80	45.39
Grænagerði	Profile1	4	post-1104	KAC	2 Sep 2017	black	7.5YR2.5/1	clayey silty peat	more than 50% small roots	2.80	24.33
Grænagerði	Profile1	3	post-1300	KAC	2 Sep 2017	reddish black	2.5YR2.5/1	clayey silty peat	more than 50% small and medium roots	2.52	25.13
Grænagerði	Profile1	2	pre-1766	KAC	5 Sep 2017	black	7.5YR2.5/1	silty peat	wet but not clayey,70% small and medium roots	1.22	57.65
Grænagerði	Profile1	1	post-1766	KAC	5 Sep 2017	black	7.5YR2.5/1	silty peat	wet but not clayey, 70% small and medium roots	1.31	67.82
Kotið	Profile1	10	post-H4	LWO	9 Oct 2017	very dark brown	10YR2/2	sandy clayey peaty silt	some visible light sand particles. less than 50% small roots	2.32	43.59
Kotið	Profile1	1	pre-H3	KAC	7 Sep 2017	reddish black	2.5YR2.5/1	clayey silt	some roots, less than 50%	1.78	33.09
Kotið	Profile1	3	pre-1104	KAC	2 Sep 2017	very dark brown	7.5YR2.5/3	peaty clayey silt	about 50% small and medium roots	1.89	31.60
Kotið	Profile1	5	pre-1300	KAC	2 Sep 2017	very dark brown	7.5YR2.5/2	clayey silty peat	more than 50% small roots	1.82	37.80
Kotið	Profile1	7	pre-1766	KAC	5 Sep 2017	reddish black	2.5YR2.5/1	clayey silty peat	more than 50% small roots	1.46	55.04
Kotið	Profile1	9	post-1766	KAC	5 Sep 2017	reddish black	2.5YR2.5/1	clayey silty peat	more than 50% small to medium roots	1.54	42.35
Kotið	Profile2	1	pre-H4	LWO	9 Oct 2017	very dark brown & black (mottled)	7.5YR2.5/1 and 2.5/3	peaty clayey silt	mottled (wormeaten?), less than 50% small roots	2.95	30.20
Kotið	Profile2	2	pre-H3	LWO	9 Oct 2017	black	10YR2/1	silty peat	about 50% small roots	1.45	66.59
Kotið	Profile2	3	pre-LNS	KAC	2 Sep 2017	reddish black	2.5YR2.5/1	peaty silt	about 50% small roots	1.21	59.73
Kotið	Profile2	5	pre-950	KAC	2 Sep 2017	very dark brown	7.5YR2.5/2	peaty silt	less than 50% small roots	1.64	51.78
Kotið	Profile2	7	pre-1104	KAC	2 Sep 2017	very dark brown	7.5YR2.5/3	peaty silty	about 50% small roots	2.16	35.91
Kotið	Profile2	8	post-1104	KAC	2 Sep 2017	very dark brown	7.5YR2.5/3	peaty silt	less than 50% small roots	2.33	33.34
Kotið	Profile2	10	pre-1300	KAC	2 Sep 2017	very dark brown	7.5YR2.5/3	peaty silt	about 50% small roots	2.77	26.79
Kotið	Profile2	12	pre-1766	KAC	5 Sep 2017	dark reddish brown	7YR2.5/3	silty peat	more than 50% small roots	2.43	32.86

SITE	EXC.	SAMPLE	Time period	ID	Date	Color	Munsell	Texture	Description	Bulk Density	% LOI
Kotið	Profile2	14	post-1766	KAC	5 Sep 2017	dark brown	7.5YR3/3	silty peat	more than 50% small and medium roots	2.61	25.62
Kríki	Profile1	1	pre-H3	LWO	8 Mar 2018	ND	ND	ND	ND	1.20	65.48
Kríki	Profile1	2	pre-1104	LWO	8 Mar 2018	ND	ND	ND	ND	1.91	51.19
Kríki	Profile1	3	post-1104	LWO	8 Mar 2018	ND	ND	ND	ND	2.95	29.51
Kríki	Profile1	4	pre-1300	LWO	8 Mar 2018	ND	ND	ND	ND	1.90	42.76
Kríki	Profile1	5	post-1300	LWO	8 Mar 2018	ND	ND	ND	ND	2.20	39.60
Kriki	Profile2	1	pre-H3	LWO	9 Oct 2017	reddish black	10YR2.5/1	clayey silty peat	more than half small roots	1.09	83.38
Kriki	Profile2	2	post-H3	KAC	7 Sep 2017	black with a hint of red	10YR2/1	clayey silty peat	more than 50% small and medium roots	1.20	77.90
Kriki	Profile2	3	pre-1104	KAC	7 Sep 2017	very dark brown	7.5YR2.5/2	peaty silt	about 50% small roots	2.46	32.30
Kriki	Profile2	4	post-1104	KAC	7 Sep 2017	very dark brown	7.5YR2.5/2	peaty silt	less than 50% small roots	2.66	24.46
Kriki	Profile2	5	post-1300	KAC	7 Sep 2017	very dark brown	7.5YR2.5/3	silty peat	about 70% small roots that clump	1.59	54.60
Minni-Ás	Profile1	1	pre-H3	LWO	9 Oct 2017	black	10YR2/1	silty peat	wet but not very clayey, 70% small rooty clumps	1.04	81.21
Minni-Ás	Profile1	3	post-H3	LWO	9 Oct 2017	black	10YR2/1	clayey silty peat	wet, 70% small and medium roots	1.74	43.93
Minni-Ás	Profile1	4	pre-LNS	KAC	3 Sep 2017	black	10YR2/1	clayey peaty silt	wet, about 50% small roots	0.69	71.31
Minni-Ás	Profile1	6	post-LNS	KAC	3 Sep 2017	black	10YR2/1	clayey silty peat	more than 50% small roots and wood bits	0.86	84.50
Minni-Ás	Profile1	7	pre-1000	KAC	3 Sep 2017	black	10YR2/1	clayey peaty silt	less than 50% small roots	1.36	53.41
Minni-Ás	Profile1	9	post-1000	KAC	3 Sep 2017	very dark brown	10YR2/2	clayey silty peat	about 50% small roots	1.23	49.39
Minni-Ás	Profile1	10	pre-1104	KAC	3 Sep 2017	reddish black	2.5YR2.5/1	silty peat	about 70% small and medium roots	1.19	57.95
Minni-Ás	Profile1	11	post-1104	KAC	3 Sep 2017	reddish black	2.5YR2.5/1	silty peat	70% small roots in clumps	1.42	57.32
Minni-Ás	Profile1	13	post-1300	KAC	3 Sep 2017	very dusky red	2.5YR2.5/2	silty peat	70% small and medium roots	1.50	50.68
Minni-Ás	Profile2	1	pre-H4	LWO	9 Oct 2017	black	10YR2/1	peaty clayey silt	few small roots	2.57	27.28
Minni-Ás	Profile2	2	pre-H3	LWO	9 Oct 2017	black	10YR2/1	clayey peaty silt	less than 50% small roots	2.37	30.03
Minni-Ás	Profile2	3	post-H3	KAC	6 Sep 2017	black	10YR2/1	clayey silt	few roots	1.31	49.47

SITE	EXC.	SAMPLE	Time period	ID	Date	Color	Munsell	Texture	Description	Bulk Density	% LOI
Minni-Ás	Profile2	4	pre-1000	KAC	3 Sep 2017	black	10YR2/1	peaty clayey silt	less than 50% small roots	1.51	47.41
Minni-Ás	Profile2	6	post-1000	KAC	3 Sep 2017	very dark brown	10YR2/2	clayey peaty silt	less than 50% small and medium roots	1.75	40.25
Minni-Ás	Profile2	7	pre-1104	KAC	3 Sep 2017	dark yellowish brown	10YR3/4	clayey silty peat	more than 50% small and medium roots	1.60	40.07
Minni-Ás	Profile2	8	pre-1300	KAC	3 Sep 2017	dark yellowish brown	10YR3/4	clayey silty peat	more than 50% small to medium roots	2.21	29.93
Minni-Ás	Profile2	13	post-1300	KAC	3 Sep 2017	dark brown	10YR3/3	clayey silty peat	some few sand particles, more than 50% small roots	2.22	30.95
Minni-Ás	Profile2	10	pre-1766	KAC	6 Sep 2017	very dark brown	10YR2/2	clayey silty peat	more than 50% small and medium roots	2.26	32.95
Minni-Ás	Profile2	12	post-1766	KAC	6 Sep 2017	very dark brown	7.5YR2.5/2	clayey silty peat	more than 50% small to medium roots	1.88	41.85
Næfursstaðir	Profile1	1	pre-H4	LWO	8 Oct 2017	Black	10YR2/1	clayey silt	some roots	1.40	48.92
Næfursstaðir	Profile1	2	pre-H3	LWO	8 Oct 2017	black	10YR2/1	clayey silt	many small roots	1.56	48.51
Næfursstaðir	Profile1	3	pre-LNS	KAC	4 Sep 2017	black	7.5YR2.5/1	clayey peaty silt	less than 50% small roots	1.24	54.24
Næfursstaðir	Profile1	5	pre-950	KAC	4 Sep 2017	very dark brown	7.5YR2.5/2	clayey peaty silt	less than 50% small roots	1.67	42.47
Næfursstaðir	Profile1	7	pre-1000	KAC	4 Sep 2017	dark reddish brown	5YR2.5/2	clayey silt	wet, numerous small roots	1.64	43.86
Næfursstaðir	Profile1	9	pre-1104	KAC	4 Sep 2017	dark reddish brown	5YR2.5/2	clayey silt	many small roots	2.20	29.18
Næfursstaðir	Profile1	10	pre-1300	KAC	4 Sep 2017	very dark brown	7.5YR2.5/2	clayey silt	some small roots	2.92	19.51
Næfursstaðir	Profile1	12	pre-1766	KAC	6 Sep 2017	very dark brown	7.5YR2.5/2	silty peat	more than 50% small roots	2.86	20.37
Næfursstaðir	Profile1	14	post-1766	KAC	6 Sep 2017	very dusky red	2.5YR2.5/2	silty peat	almost entirely roots, fuzzy and did not want to break apart	1.59	51.71
Næfursstaðir	Profile2	1	post-H4	LWO	8 Oct 2017	reddish black	10R2.5/1	clayey silt	few roots	2.45	34.25
Næfursstaðir	Profile2	10	pre-H3	LWO	8 Oct 2017	black	10YR2/1	clayey silt	many wood bits and roots	1.29	79.84
Næfursstaðir	Profile2	2	post-H3	KAC	6 Sep 2017	very dark brown	7.5YR2.5/2	silty clay	some small roots	1.61	43.43
Næfursstaðir	Profile2	3	pre-1104	KAC	4 Sep 2017	very dark brown	7.5YR2.5/2	silty peat	more than 50% small roots	1.57	50.26
Næfursstaðir	Profile2	4	pre-1300	KAC	4 Sep 2017	Dark reddish brown	5.5YR2.5/2	peaty silt	less than 50% small roots	1.47	55.93

SITE	EXC.	SAMPLE	Time period	ID	Date	Color	Munsell	Texture	Description	Bulk Density	% LOI
Næfursstaðir	Profile2	6	pre-1766	KAC	6 Sep 2017	dark reddish brown	2.5YR3/3	silty peat	more than 50% small roots	1.48	56.06
Næfursstaðir	Profile2	8	post-1766	KAC	6 Sep 2017	Dark reddish brown	5YR3/3	silty peat	more than 50% small roots	1.77	49.77
Túnfótur	Profile1	1	pre-H4	LWO	8 Oct 2017	reddish black	2.5YR2.5/1	peaty silt	many small roots, tends to break into clods rather than stick together	1.44	62.42
Túnfótur	Profile1	2	pre-H3	LWO	8 Oct 2017	reddish black	2.5YR2.5/1	silty peat	more than 50% small roots	1.25	66.18
Túnfótur	Profile1	3	pre-LNS	KAC	4 Sep 2017	very dusky red	2.5YR2.5/2	silty sand	small amount of small roots.	1.96	37.90
Túnfótur	Profile1	4	LNS	KAC	4 Sep 2017	reddish black	2.5YR2.5/1	silt	some small roots	1.53	56.26
Túnfótur	Profile1	6	pre-950	KAC	4 Sep 2017	reddish black	2.5YR2.5/1	silt	numerous small roots	1.81	42.82
Túnfótur	Profile1	8	pre-1000	KAC	4 Sep 2017	dark reddish brown	5YR2.5/2	peaty silt	about 50% small roots	2.39	32.61
Túnfótur	Profile1	10	pre-1104	KAC	4 Sep 2017	dark reddish brown	5YR3/4	silty peat	more than 50% small roots	2.01	36.38
Túnfótur	Profile1	11	post-1104	KAC	5 Sep 2017	very dark brown	7.5YR2.5/3	peaty silt	less than 50% small roots	2.94	26.48
Túnfótur	Profile1	12	pre-1300	KAC	5 Sep 2017	very dark brown	7.5YR2.5/3	peaty silt	about 50% small roots that clump	2.40	30.87
Túnfótur	Profile1	14	pre-1766	KAC	6 Sep 2017	dark brown	7.5YR3/4	peaty silt	about 50% small roots with some medium sized roots	2.93	26.87
Túnfótur	Profile1	16	post-1766	KAC	6 Sep 2017	very dark brown	7.5YR2.5/3	peaty silt	about 50% small roots with some larger roots	2.20	39.99
Túnfótur	Profile2	1	pre-H4	LWO	8 Oct 2017	dark yellowish brown	10YR3/3	clayey silt	few roots	3.79	17.56
Túnfótur	Profile2	2	pre-1766	KAC	6 Sep 2017	very dark brown	7.5YR2.5/3	silty peat	more than 50% small roots	2.92	25.70
Túnfótur	Profile2	4	post-1766	KAC	6 Sep 2017	very dark brown	7.5YR2.5/2	silty peat	more than 50% small and medium roots	2.49	36.01
Túnfótur	Profile3	1	pre-H3	LWO	8 Oct 2017	reddish black	2.5YR2.5/1	clayey peaty silt	about half small roots	1.42	67.26
Túnfótur	Profile3	2	post-H3	KAC	7 Sep 2017	very dark brown	7.5YR2/2	peaty silt	about half small roots	2.10	33.95
Túnfótur	Profile3	3	pre-1000	KAC	5 Sep 2017	very dark brown	10YR2/2	peaty silt	less than 50% small roots	1.94	47.27
Túnfótur	Profile3	5	pre-1104	KAC	5 Sep 2017	dark yellowish brown	10YR3/4	silty peat	more than 50% small root clumps	2.54	29.86

SITE	EXC.	SAMPLE	Time period	ID	Date	Color	Munsell	Texture	Description	Bulk Density	% LOI
Túnfótur	Profile3	6	pre-1300	KAC	5 Sep 2017	dark yellowish brown	10YR3/4	peaty silt	less than 50% small roots	2.52	26.22
Túnfótur	Profile3	8	post-1300	KAC	5 Sep 2017	dark yellowish brown	10YR3/4	silty peat	more than 50% small roots that tend to clump together	2.35	35.84
Vatnskot	Profile1	2	pre-H3	LWO	9 Oct 2017	black	10YR2/1	clayey peaty silt	less than 50% small roots	1.22	87.95
Vatnskot	Profile1	1	post-H3	KAC	7 Sep 2017	very dark brown	10YR2/2	clayey silty peat	more than 50% small roots	1.26	68.51
Vatnskot	Profile1	3	pre-1000	KAC	7 Sep 2017	very dark brown	10YR2/2	clayey silty peat	more than 50% small roots	2.03	43.78
Vatnskot	Profile1	4	pre-1104	KAC	7 Sep 2017	very dark grayish brown	10YR3/2	clayey silty peat	more than 50% small roots	2.92	26.19
Vatnskot	Profile1	5	pre-1300	KAC	7 Sep 2017	dark brown	10YR3/3	clayey silty peat	more than 50% small roots	2.49	27.77
Vatnskot	Profile1	6	pre-1766	KAC	7 Sep 2017	very dark brown	10YR2/2	clayey silty peat	more than 50% small and medium roots	2.30	31.04
Vatnskot	Profile1	7	post-1766	KAC	7 Sep 2017	very dark brown	10YR2/2	clayey silty peat	more than 70% small roots	1.92	39.92

Appendix E: Photo Register

The iPhone 5c is Kat's, the iPhone 6 is Ceecee's, Canon = Kat's Canon EOS Rebel T5i, KatIPad = Kat's iPad Mini 2. All photos are in .JPG format and are located on the SCASS server in \SCASS\FIELD_SEASONS\2017_Field_Season\PHOTOS\Kat photos\ sorted in folders by site. Other photos from 2017 are located in the parent folder. Representative photos of excavation levels and profiles have also been uploaded to the SCASS FileMaker server.

			Image Range						
SITE	EXC.	CXT.	Start	End	DATE	ID	Camera	DESCRIPTION	Facing
Gerði	N/A	N/A	5739	5744	20-Jul-2017	KAC	iPhone 5c	Ditch near the site	N, S
Gerði	N/A	N/A	5751	5752	21-Jul-2017	KAC	iPhone 5c	Landscape	N
Gerði	N/A	N/A	5757	5758	21-Jul-2017	KAC	iPhone 5c	Landscape	W
Gerði	N/A	N/A	6269	6270	19-Jul-2017	KAC	Canon	Candids - Nika, Kody	NE, E, S
Gerði	N/A	N/A	6276	6280	19-Jul-2017	KAC	Canon	Landscape & candids - Nika, Kody	W
Gerði	N/A	N/A	6281	6282	19-Jul-2017	KAC	Canon	Landscape towards Glaumbær	W
Gerði	N/A	N/A	6293	6295	19-Jul-2017	KAC	Canon	Landscape	W
Gerði	N/A	N/A	6306	-	20-Jul-2017	KAC	Canon	Candid - Ceecee, Kat	E
Gerði	N/A	N/A	6343	6348	20-Jul-2017	KAC	iPhone 5c	Candids - Nika, Ceecee, Kody	S
Gerði	TP1	102	6265	6268	19-Jul-2017	KAC	Canon	top context	N
Gerði	TP1	103	6272	6275	19-Jul-2017	KAC	Canon	top context	N
Gerði	TP1	104	6283	6286	19-Jul-2017	KAC	Canon	top context	N
Gerði	TP1	104	6287	6289	19-Jul-2017	KAC	Canon	rock cluster during excavation	N
Gerði	TP1	105	6290	6293	19-Jul-2017	KAC	Canon	top context	N
Gerði	TP1	105	6296	6305	19-Jul-2017	KAC	Canon	near base of context	N
Gerði	TP1	105	6307	6310	19-Jul-2017	KAC	Canon	midden patch near SE corner	N
Gerði	TP1	N/A	5753	5756	21-Jul-2017	KAC	iPhone 5c	Micromorph sampling	S
Gerði	TP1	N/A	6311	6318	20-Jul-2017	KAC	iPhone 5c	north profile	N
Gerði	TP1	N/A	6319	6326	20-Jul-2017	KAC	iPhone 5c	west profile	W
Gerði	TP1	N/A	6327	6334	20-Jul-2017	KAC	iPhone 5c	south profile	S
Gerði	TP1	N/A	6335	6342	20-Jul-2017	KAC	iPhone 5c	east profile	E
Grænagerði	N/A	N/A	4888	4950	22-May-2017	KAC	Canon iPhone 5c	Pre-season site visit, Kat & Bryndís	
Grænagerði	N/A	N/A	5891	5892	25-Jul-2017	KAC	iPhone 5c	Highland panoramas, candid	N, S
Grænagerði	N/A	N/A	5893	5899	25-Jul-2017	KAC	iPhone 5c	Landscape & Candids	
Grænagerði	N/A	N/A	5900	5903	26-Jul-2017	KAC	iPhone 5c	Landscape	
Grænagerði	N/A	N/A	5905	-	26-Jul-2017	KAC	iPhone 5c	Candid - JWS, Lauren	N
Grænagerði	N/A	N/A	5946	5947	27-Jul-2017	KAC	iPhone 5c	Landscape	N, E
Grænagerði	N/A	N/A	6600	6607	25-Jul-2017	KAC	Canon	Landscape & Candids - Kody, Sarah	
Grænagerði	N/A	N/A	6608	6620	25-Jul-2017	KAC	Canon	Highland views & candid - Sarah, Sean, Ceecee	
Grænagerði	N/A	N/A	6636	6648	26-Jul-2017	KAC	Canon	Candids - Sean, Sarah, Lauren	
Grænagerði	N/A	N/A	6649	6659	26-Jul-2017	KAC	Canon	Landscapes	

			Image Range						
SITE	EXC.	CXT.	Start	End	DATE	ID	Camera	DESCRIPTION	Facing
Grænagerði	N/A	N/A	6660	6672	26-Jul-2017	KAC	Canon	Landscapes & Candids - Sean, Sarah, Lauren	
Grænagerði	Profile1	N/A	5946	5956	27-Jul-2017	KAC	iPhone 5c	Sample core	
Grænagerði	Profile1	N/A	5957	5960	27-Jul-2017	KAC	iPhone 5c	Landscape near LOI cores	S, E, N
Grænagerði	TP1	101	6621	6624	26-Jul-2017	KAC	Canon	top context	N
Grænagerði	TP1	102	6625	6630	26-Jul-2017	KAC	Canon	top context	N
Grænagerði	TP1	103	6631	6635	26-Jul-2017	KAC	Canon	top context	N
Grænagerði	TP1	104	6673	6678	26-Jul-2017	KAC	Canon	top context	N
Grænagerði	TP1	N/A	5904	-	26-Jul-2017	KAC	iPhone 5c	Excavation panorama	W
Grænagerði	TP1	N/A	5908	5913	27-Jul-2017	KAC	iPhone 5c	north profile	N
Grænagerði	TP1	N/A	5914	5922	27-Jul-2017	KAC	iPhone 5c	east profile	E
Grænagerði	TP1	N/A	5923	5928	27-Jul-2017	KAC	iPhone 5c	west profile	W
Grænagerði	TP1	N/A	5929	5938	27-Jul-2017	KAC	iPhone 5c	south profile	S
Grænagerði	TP1	N/A	5939	-	27-Jul-2017	KAC	iPhone 5c	tephra sample - 1104?	
Grænagerði	TP1	N/A	5940	5941	27-Jul-2017	KAC	iPhone 5c	tephra sample - LNL and katla?	E
Grænagerði	TP1	N/A	5942	-	27-Jul-2017	KAC	iPhone 5c	tephra sample - 1104?	E
Grænagerði	TP1	N/A	5943	5944	27-Jul-2017	KAC	iPhone 5c	tephra sample - 1000?	S
Grænagerði	TP1	N/A	5945	-	27-Jul-2017	KAC	iPhone 5c	south profile	S
Grænakot	N/A	N/A	4403	-	3-May-2017	KAC	Canon	Pre-season site visit	
Grænakot	N/A	N/A	4408	4409	3-May-2017	KAC	Canon	Pre-season site visit	
Grænakot	N/A	N/A	4508	4510	3-May-2017	KAC	Canon iPhone 5c	Pre-season site visit	
Grænakot	N/A	N/A	5011	5034	23-May-2017	KAC	Canon	Pre-season site visit, Kat & Bryndís	
Grænakot	N/A	N/A	6066	6075	5-Aug-2017	KAC	iPhone 5c	Landscapes, panoramas, candids - Sarah	
Grænakot	N/A	N/A	6088	6090	7-Aug-2017	KAC	iPhone 5c	Landscapes	
Grænakot	N/A	N/A	6093	6108	9-Aug-2017	KAC	iPhone 5c	Landscapes & Candid - Meg	
Grænakot	N/A	N/A	6109	6110	10-Aug-2017	KAC	iPhone 5c	Landscape - from Keflavík	NW
Grænakot	N/A	N/A	7022	7029	7-Aug-2017	KAC	Canon	Candids - Eric, Sean, Sarah	N
Grænakot	N/A	N/A	7045	7047	8-Aug-2017	KAC	Canon	Candids - Meg, Sarah	
Grænakot	N/A	N/A	7050	-	8-Aug-2017	KAC	Canon	Candid - Meg, Sarah	
Grænakot	N/A	N/A	7057	7060	8-Aug-2017	KAC	Canon	Candids - Sarah	S
Grænakot	TP1	101	7008	7011	7-Aug-2017	KAC	Canon	Top context	N
Grænakot	TP1	102	7014	7017	7-Aug-2017	KAC	Canon	Top context	N
Grænakot	TP1	103	7018	7023	7-Aug-2017	KAC	Canon	Top context	N
Grænakot	TP1	104	7030	7034	8-Aug-2017	KAC	Canon	Top context	N
Grænakot	TP1	105	7035	7040	8-Aug-2017	KAC	Canon	Top context	N
Grænakot	TP1	106	7042	7044	8-Aug-2017	KAC	Canon	mid context	N
Grænakot	TP1	106	7048	7049	8-Aug-2017	KAC	Canon	Top context	N
Grænakot	TP1	106	7051	7056	8-Aug-2017	KAC	Canon	mid context	N
Grænakot	TP1	107	7061	7071	8-Aug-2017	KAC	Canon	top context	N

			Image Range						
SITE	EXC.	CXT.	Start	End	DATE	ID	Camera	DESCRIPTION	Facing
Grænakot	TP1	107	7072	7076	8-Aug-2017	KAC	Canon	base context	N
Grænakot	TP1	N/A	6993	7007	7-Aug-2017	KAC	Canon	Landscape - excavation area	W, SW
Grænakot	TP1	N/A	7077	7084	9-Aug-2017	KAC	Canon	east profile	E
Grænakot	TP1	N/A	7085	7095	9-Aug-2017	KAC	Canon	north profile	N
Grænakot	TP1	N/A	7096	7098	9-Aug-2017	KAC	Canon	tephra sample	N
Grænakot	TP1	N/A	7099	7109	9-Aug-2017	KAC	Canon	west profile	W
Grænakot	TP1	N/A	7110	7120	9-Aug-2017	KAC	Canon	south profile	S
Gunnlaugsgerði	N/A	N/A	4870	4888	20-May-2017	KAC	Canon	Pre-season site visit - Kat & Guðný	
Gunnlaugsgerði	N/A	N/A	5725	5736	18-Jul-2017	KAC	iPhone 5c	Landscape, with Lauren	
Hegrastaðir (Ás)	N/A	N/A	4831	4844	16-May-2017	KAC	iPhone 5c	pre-season site visit	
Hegrastaðir (Ás)	N/A	N/A	6052	6054	2-Aug-2017	KAC	iPhone 5c	Landscapes	
Hegrastaðir (Svanavatn)	N/A	N/A	890	901	11-Jul-2017	KAC	iPhone 5c	Landscapes, with Lauren, Sarah, Kody	
Hegrastaðir (Svanavatn)	N/A	N/A	4417	4426	26-Apr-2017	KAC	iPhone 5c	Pre-season site visit - Kat, John, Guðný	
Hegrastaðir (Svanavatn)	N/A	N/A	5647	-	7-Jul-2017	KAC	iPhone 5c	Candid - Lauren, Sarah	
Hegrastaðir (Svanavatn)	N/A	N/A	5651	-	8-Jul-2017	KAC	iPhone 5c	Candid - Kody, Sarah	
Hendilkot	N/A	N/A	4531	4536	4-May-2017	KAC	iPhone 5c	Landscape	E
Hendilkot	N/A	N/A	4591	4599	4-May-2017	KAC	Canon	Landscape	N
Hendilkot	N/A	N/A	4618	-	4-May-2017	KAC	Canon	Landscape	N
Hendilkot	N/A	N/A	4620	4628	4-May-2017	KAC	Canon	Landscape	W
Hendilkot	N/A	N/A	4947	4951	23-May-2017	KAC	iPhone 5c	Pre-season site visit - Kat & Bryndís	
Hendilkot	N/A	N/A	5035	5046	23-May-2017	KAC	Canon	Pre-season site visit - Kat & Bryndís	
Hendilkot	N/A	N/A	5053	5059	23-May-2017	KAC	Canon	Pre-season site visit - Kat & Bryndís	
Hendilkot	N/A	N/A	5991	-	31-Jul-2017	KAC	iPhone 5c	Candid - Sarah	E
Hendilkot	N/A	N/A	6001	-	31-Jul-2017	KAC	iPhone 5c	Candid - Doug, Sarah	W
Hendilkot	TP1	N/A	5992	-	31-Jul-2017	KAC	iPhone 5c	Site of TP1	N
Kotið	N/A	N/A	1368	1376	10-Aug-2017	KAC	KatIPad	Landscape & candids - Sean, Tyler, Meg	
Kotið	N/A	N/A	4938	5001	23-May-2017	KAC	Canon	Pre-season site visit - Kat & Bryndís	
Kotið	N/A	N/A	5543	5547	26-Jun-2017	KAC	iPhone 5c	Landscape & candids - Ceecee	
Kotið	N/A	N/A	5549	5550	28-Jun-2017	KAC	iPhone 5c	Landscape	N
Kotið	N/A	N/A	5592	-	30-Jun-2017	KAC	iPhone 5c	Panorama	E
Kotið	N/A	N/A	6111	-	10-Aug-2017	KAC	Canon	Landscape	
Kotið	Profile1	N/A	862	864	30-Jun-2017	GMC	KatiPad	Candids - Kat	N
Kotið	Profile1	N/A	3910	-	30-Jun-2017	GMC	iPhone 6	Candid - Kat	N
Kotið	Profile1	N/A	5949	5960	30-Jun-2017	KAC	Canon	Profile	E
Kotið	Profile1	N/A	5978	5983	30-Jun-2017	KAC	Canon	Landscape	N, E, S
Kotið	Profile2	N/A	865	867	30-Jun-2017	GMC	KatiPad	Landscape and candid - Kat	

			Image Range						
SITE	EXC.	CXT.	Start	End	DATE	ID	Camera	DESCRIPTION	Facing
Kotið	Profile2	N/A	5961	5964	30-Jun-2017	KAC	Canon	profile pre-sampling	E
Kotið	Profile2	N/A	5965	5971	30-Jun-2017	KAC	Canon	Landscape photo + Ceecee	SE
Kotið	Profile2	N/A	5972	5975	30-Jul-2017	KAC	Canon	profile after sampling	E
Kotið	TP2	101	1	-	26-Jun-2017	KAC	KatIPad	Top of unit	N
Kotið	TP2	101	2	-	26-Jun-2017	KAC	KatIPad	Top of unit	E
Kotið	TP2	101	3890	-	26-Jun-2017	GMC	iPhone 6	Candid - Kat	W
Kotið	TP2	101	5941	5948	26-Jun-2017	KAC	Canon	Base 101	N, E
Kotið	TP2	104	3	-	27-Jun-2017	GMC	KatIPad	Middle of 104 before float samples	N
Kotið	TP2	105	4	-	28-Jun-2017	KAC	KatIPad	Top context	N
Kotið	TP2	105	5	-	28-Jun-2017	KAC	KatIPad	Top context	E
Kotið	TP2	N/A	799	804	26-Jun-2017	KAC	KatiPad	Ceecee coring	
Kotið	TP2	N/A	809	815	29-Jun-2017	GMC	KatiPad	Candids - Kat	S
Kotið	TP2	N/A	816	824	29-Jun-2017	KAC	KatIPad	south profile	
Kotið	TP2	N/A	825	835	29-Jun-2017	KAC	KatIPad	west profile	
Kotið	TP2	N/A	836	844	29-Jun-2017	KAC	KatIPad	north profile	
Kotið	TP2	N/A	845	853	29-Jun-2017	KAC	KatIPad	east profile	
Kotið	TP2	N/A	854	860	29-Jun-2017	KAC	KatIPad	tephra sample - 1766?	S
Kotið	TP2	N/A	3905	-	29-Jun-2017	GMC	iPhone 6	Candid - Kat	S
Kotið	TP2	N/A	5551	5560	29-Jun-2017	KAC	iPhone 5c	south profile	S
Kotið	TP2	N/A	5561	5569	29-Jun-2017	KAC	iPhone 5c	west profile	W
Kotið	TP2	N/A	5570	5579	29-Jun-2017	KAC	iPhone 5c	north profile	N
Kotið	TP2	N/A	5580	5591	29-Jun-2017	KAC	iPhone 5c	east profile	E
Kriki	N/A	N/A	1363	-	10-Aug-2017	KAC	KatIPad	Candid - Sean, Tyler	W
Kriki	N/A	N/A	4358	4361	3-May-2017	KAC	Canon	Pre-season site visit	
Kriki	N/A	N/A	4366	4390	3-May-2017	KAC	Canon	Pre-season site visit	
Kriki	N/A	N/A	4399	4412	3-May-2017	KAC	Canon	View from Keflavík	E
Kriki	N/A	N/A	4459	4465	3-May-2017	KAC	Canon	View from Þrælagerði	E
Kriki	N/A	N/A	4500	4507	3-May-2017	KAC	iPhone 5c	Pre-season site visit	
Minni-Ás	N/A	N/A	4133	4145	26-Apr-2017	KAC	Canon	Photos from road	E
Minni-Ás	N/A	N/A	4629	4635	4-May-2017	KAC	Canon	Photos from road	E
Minni-Ás	N/A	N/A	4758	4830	16-May-2017	KAC	Canon	Pre-season site visit	
Minni-Ás	Profile1	N/A	6224	6233	14-Jul-2017	KAC	Canon	Profile & landscape, with Lauren	E
Minni-Ás	Profile2	N/A	6252	6258	18-Jul-2017	KAC	Canon	Profile	S
Minni-Ás	Profile2	N/A	6259	6264	18-Jul-2017	KAC	Canon	Landscape, with Lauren	
Minni-Ás	TP4	N/A	5722	-	18-Jul-2017	KAC	iPhone 5c	Site of 2015 profile, TP4	N
Minni-Egg	N/A	N/A	4397	4416	26-Apr-2017	KAC	iPhone 5c	Pre-season site visit - Kat, John, Guðný	
Minni-Egg	N/A	N/A	4485	4602	4-May-2017	KAC	Canon iPhone 5c	Pre-season site visit	
Minni-Egg	TP1	101	5990	-	4-Jul-2017	KAC	Canon	pre excavation photo	N
Minni-Egg	TP1	102	5993	6001	4-Jul-2017	KAC	Canon	top of context 102 and 103	N
Minni-Egg	TP1	104	6002	6004	4-Jul-2017	KAC	Canon	Top of context	N

			Image Range						
SITE	EXC.	CXT.	Start	End	DATE	ID	Camera	DESCRIPTION	Facing
Minni-Egg	TP1	104	6016	6019	4-Jul-2017	KAC	Canon	End of excavation & south profile	S
Minni-Egg	TP1	N/A	5625	-	4-Jul-2017	KAC	iPhone 5c	candid - Ceecee	
Minni-Egg	TP1	N/A	5984	5989	4-Jul-2017	KAC	Canon	Cores	
Minni-Egg	TP1	N/A	5991	5992	4-Jul-2017	KAC	Canon	Candids - Alicia & Ceecee	
Minni-Egg	TP1	N/A	6005	6009	4-Jul-2017	KAC	Canon	Profile photo	N
Minni-Egg	TP1	N/A	6010	6015	4-Jul-2017	KAC	Canon	Profile photo	E
Minni-Egg	TP1	N/A	6020	6023	4-Jul-2017	KAC	Canon	Profile photo	W
Næfurstaðir	N/A	N/A	4754	-	15-May-2017	KAC	Canon	Landscape, from Ás II	W
Næfurstaðir	N/A	N/A	4865	4868	20-May-2017	KAC	Canon	Pre-season site visit, Kat & Guðný	NW
Næfurstaðir	N/A	N/A	4870	4887	22-May-2017	KAC	Canon	Pre-season site visit, Kat & Bryndís	
Næfurstaðir	N/A	N/A	4921	4923	22-May-2017	KAC	Canon	Pre-season site visit, Kat & Bryndís	
Næfurstaðir	Profile1	N/A	5718	-	17-Jul-2017	KAC	iPhone 5c	Profile and landscape, with Lauren	
Næfurstaðir	Profile1	N/A	6234	6244	17-Jul-2017	KAC	Canon	Profile and landscape, with Lauren	E
Næfurstaðir	Profile2	N/A	6245	6251	17-Jul-2017	KAC	Canon	Profile and landscape, with Lauren	W
Naustavík	N/A	N/A	6004	6051	1-Aug-2017	KAC	iPhone 5c	Landscape & coring candids, Sarah, Eric, Doug	
Naustavík	N/A	N/A	6971	6992	1-Aug-2017	KAC	Canon	Landscape & candids, Sarah, Eric	
Svanavatn - rétt	N/A	N/A	6165	-	17-Jul-2017	KAC	Canon	Landscape	S
Svanavatn - rétt	N/A	N/A	6168	6170	17-Jul-2017	KAC	Canon	Landscapes	S
Svanavatn - Stekkur	N/A	N/A	6103	6106	17-Jul-2017	KAC	Canon	Landscapes	
Svanavatn - Stekkur	N/A	N/A	6159	6164	17-Jul-2017	KAC	Canon	Landscape & candids, Meg	
Svanavatn - Stekkur	N/A	N/A	6174	6181	17-Jul-2017	KAC	Canon	Landscape & candids, Meg, John, Alicia	
Þrælagerði	N/A	N/A	4416	4458	3-May-2017	KAC	Canon	Pre-season site visit	
Þrælagerði	N/A	N/A	4498	4476	3-May-2017	KAC	Canon	Pre-season site visit	
Þrælagerði	N/A	N/A	4512	4525	3-May-2017	KAC	iPhone 5c	Pre-season site visit	
Þrælagerði	N/A	N/A	5612	5622	3-Jul-2017	KAC	iPhone 5c	Landscape & coring candids - Ceecee	
Túnfótur	N/A	N/A	1364	1367	10-Aug-2017	KAC	KatIPad	Landscape & coring candids, Sean, Tyler, Meg	
Túnfótur	N/A	N/A	4733	4824	15-May-2017	KAC	Canon	Pre-season site visit	
Túnfótur	N/A	N/A	4831	4869	15-May-2017	KAC	Canon	Pre-season site visit - Kat & Bryndís	
Túnfótur	N/A	N/A	4911	4913	15-May-2017	KAC	Canon	Pre-season site visit - Kat & Bryndís	

			Image Range						
SITE	EXC.	CXT.	Start	End	DATE	ID	Camera	DESCRIPTION	Facing
Túnfótur	N/A	N/A	4917	4918	15-May-2017	KAC	Canon	Pre-season site visit - Kat & Bryndís	
Túnfótur	Profile1	N/A	6093	6098	12-Jul-2017	KAC	Canon	Profile & landscape, with Sarah	E
Túnfótur	Profile2	N/A	902	907	12-Jul-2017	KAC	KatIPad	Profile and landscape, with Kat, Lauren, Sarah, Kody	E
Túnfótur	Profile3	N/A	908	915	12-Jul-2017	KAC	KatIPad	Profile and landscape, with Lauren, Sarah, Kody	N, S
Túnfótur	Profile2	N/A	5677	-	12-Jul-2017	KAC	iPhone 5c	Ditch near the site	N

Appendix F: Farmstead and Homefield Sizes for All Hegranes Sites

Site	'Farmstead' size ca. 1104	Homefield size
Minni-Egg	30	7045~
Gerði	45	N/A
Hegrastaðir (Svanavatn)	95	N/A
Grænakot	135	6840+
Kotið	160	N/A
Kríki	190	7770~
Túnfótur	260	10840~
Grænagerði	465	N/A
Minni-Ás	480	4070~
Þrælagerði	535	4495~
Stekkjarborg	740	N/A
Rein	910	21625*
Beingarður	1140	22930*
Hendilkot	1305	N/A
Ríp 2	1400	N/A
Næfurstaðir	1965	7505~
Hegranesþing South	2085	7650~
Keta	2305	25090*
Hegranesþing North	2415	N/A
Vatnskot	3540	27945*
Lower Keflavík	3750	5454~
Hamar	4360	30310*
Utanverðunes	4375	37420*
Garður	4680	37710*
Ásgrímsstaðir	4825	35590~
Keflavík	4865	36915*
Hróarsdalur	5885	22055*
Helluland	12020	49815*
Ás	12165	141720*
Keldudalur	13040	31860*
Ríp	15150	55054*
Egg	15265	43350*
Gunnlaugsgerði	N/A	N/A~
Háagerði	N/A	N/A~
Hegrastaðir (Ás)	N/A	N/A~
Naustavík	N/A	N/A~
Kárastaðasel	nd	4215~,+
Hvammkot	nd	5755+
Kárastaðir	nd	29020*
Eyhildarholt	nd	48155*
Brúnklukkustaðir	nd	N/A+
Káragerði	nd	N/A+

Sizes rounded to nearest 5m^2.

Farmstead sizes determined from coring.

Homefield sizes determined from:
*1918 *Túnakort* maps
+Air photos, various dates
~Field survey, SCASS/FLASH/BSK

grey: classified as *fornbýli* (*kot*/marginal site/FLASH site)

N/A: No habitation ca. 1104, or no homefield observed.

nd: site not surveyed.

References: (Bolender, et al. 2016; Bolender, et al. 2017; Bolender, et al. forthcoming; Catlin, et al. 2016; Catlin, et al. 2017; Guðný Zoëga and Guðmundur S. Sigurðarson 2009)

Appendix G: Coring Data

Data for all cores can be found in the accompanying PDF file Coring_Register_2017_SCASS_FLASH.pdf (142 pages, A3, includes data from all SCASS and FLASH sites in 2017).