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Expanding Horizons

Settlement Patterns and Outfield Land Use in the Norse North Atlantic

Dawn Elise Mooney, Lísabet Guðmundsdóttir, Barbro Dahl, Howell Roberts and Morten Ramstad (eds.)

UNIVERSITY OF BERGEN

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University Museum of Bergen (UM) and
Department of Archaeology, History, Cultural Studies, and Religion (AHKR)
Box 7800
5020 Bergen
Norway

ISBN 978-82-8436-004-1 (printed) UBAS 13
ISBN 978-82-8436-005-8 (online)
ISSN 2535-390X (printed)
ISSN 2535-3918 (online)

Editors of the series UBAS
Nils Anfinset
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Proofreading
Gwendolyne Knight Keimpema

Layout
Cover: Arkikon, www.arkikon.no
Material: Christian Bakke, Communication Division, University of Bergen

Reverse side photo
Photos: Lísabet Guðmundsdóttir
The wood artefacts on the left side are from Borgund, Norway while the artefacts on the right side are from Norse Greenlandic sites.

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Preface

This volume stems from the Expanding Horizons project, which began in 2018. The project was funded by a Workshop Grant from the Joint Committee for Nordic Research Councils in the Humanities and Social Sciences (NOS-HS), held by Orri Vésteinsson, Ramona Harrison, and Christian Koch Madsen. Funding was awarded for two workshops, as well as a subsequent publication of the material presented. Workshop organisation and grant administration were carried out by Morten Ramstad, Lísabet Guðmundsdóttir, Howell Roberts, Barbro Dahl, Birna Lárusdóttir, and Dawn Elise Mooney. The workshops gave researchers and practitioners from across the North Atlantic region an opportunity to forge new connections with each other, not only through academic presentations but also through shared experiences of archaeological sites, standing Medieval structures and their surrounding landscapes.

The first Expanding Horizons meeting took place in Norway, on June 1st–4th 2018. The program began in Bergen with a tour of the city's Medieval sites, led by Prof. Gitte Hansen, before travelling to Mo in Modalen for two days of presentations and discussions. The workshop was attended by 36 participants, 27 of whom gave presentations on topics including archaeological survey in mountain regions, driftwood, seaweed, stone, birds and feathers, and fishing and marine mammals. The two-day seminar was followed by an excursion visiting sites including the stave churches at Borgund, Hopperstad and Kaupanger, the Viking trading sites at Kaupanger and Lærdal, and Norway's oldest secular wooden building, Finnesloftet in Voss, built around AD 1300. In between archaeological sites, the excursion also took in the dramatic fjord landscape of western Norway. Here and in Iceland, both the upstanding structures and their surrounding landscape should be seen as key actors in the development of the settlement and subsistence practices discussed in this volume.

Just under a year later, on April 25th–28th 2019, the Expanding Horizons group met again in Iceland. Forty-one participants gathered in Brjánsstaðir for two more days of talks and discussions. While the first workshop had a main focus on remote wild resources, the second focused on settlement and land-use patterns, agricultural practices, and trade and exchange. Again, the workshop concluded with an excursion to local archaeological sites. Attendees visited the episcopal manor farm and church at Skálholt, the reconstructed Viking Age house at Stöng in Þjórsárdalur, the caves at Ægissíðuhellir, the archaeological site at the manor farm Oddi and the preserved medieval turf-built farm and museum at Keldur. Photographs of the participants of both workshops are presented on the following pages.

Partly due to the ongoing coronavirus pandemic, more time than anticipated has passed between these meetings and the publication of this volume. We thank the authors for their patience, and for their outstanding contributions to the archaeology of western Norway and the Norse North Atlantic diaspora. We are also very grateful to our colleagues who assisted the editors in the peer review of this volume. Lastly, we thank you, the reader, and we hope that you find inspiration in the papers presented here.

Stavanger/Reykjavík/Bergen, Spring 2022

Dawn Elise Mooney, Lísabet Guðmundsdóttir, Barbro Dahl, Howell Roberts and Morten Ramstad

Attendees of the first Expanding Horizons workshop at Mo in Modalen, June 2018.

Back row, left to right: Jennica Einebrant Svensson, Garðar Guðmundsson, Even Bjørdal, Orri Vésteinsson, Morten Ramstad, Jørgen Rosvold, James Barrett, Gísli Pálsson, Michael Nielsen, Christian Koch Madsen, Konrad Smiarowski, Howell Magnus Roberts, Ragnar Orten Lie; Middle row, left to right: Solveig Roti Dahl, Brita Hope, Ragnheiður Gló Gylfadóttir, Kristoffer Dahle, Douglas Bolender, Håkan Petersson; Front row, left to right: Mjöll Snæsdóttir, Birna Lárusdóttir, Lilja Laufey Davíðsdóttir, Irene Baug, Kristin Ilves, Jørn Henriksen, Kathryn Catlin, Lilja Björk Pálsdóttir, Gitte Hansen, Kristborg Þórsdóttir, Élie Pinta, Dawn Elise Mooney, Lísabet Guðmundsdóttir, Sólveig Guðmundsdóttir Beck, Ramona Harrison. *Photo: Kathryn Catlin.*

Attendees of the second Expanding Horizons workshop at Brjánsstaðir, April 2019.

Back row, left to right: Howell Magnus Roberts, Morten Ramstad, Kjetil Loftsgarden, Kristoffer Dahle, Douglas Bolender, Ragnheiður Gló Gylfadóttir, Hildur Gestsdóttir, Michael Nielsen, Orri Vésteinsson, Jennica Einebrant Svensson, Trond Meling, Knut Paasche, Anja Roth Niemi, Knut Andreas Bergsvik, Símun Arge; Middle row, left to right: Guðrún Alda Gísladóttir, Brita Hope, Håkan Petersson, Kathryn Catlin, Even Bjørdal, Ragnheiður Traustadóttir, Élie Pinta, Solveig Roti Dahl, Per Christian Underhaug; Front row, left to right: Kristborg Þórsdóttir, Sólveig Guðmundsdóttir Beck, Guðmundur Ólafsson, Gitte Hansen, Mjöll Snæsdóttir, Lisbeth Prøsch-Danielsen, Kari Loe Hjelle, Irene Baug, Christian Koch Madsen, Ramona Harrison, Barbro Dahl, Dawn Elise Mooney, Thomas Birch, Lísabet Guðmundsdóttir, Jørn Henriksen. *Photo: Lísabet Guðmundsdóttir.*

Jennica Svensson and Solveig Roti Dahl

Recent archaeological surveys in Ryfylke, with examples from Sandsa, Grasdalen and Forsandmoen

In 2015, Rogaland County Council began the most extensive archaeological surveys in the mountain areas of Ryfylke since the development of hydropower came to a halt in the 1980s. This article aims to demonstrate how such pre-development surveys can bring new knowledge to landscape use and exploitation of remote resources. It argues that by overlooking data produced by pre-development surveys, we will lose important knowledge of archaeology and prehistoric societies, particularly in remote areas. This topic is discussed and illustrated by examples from three areas that were included in the recent Ryfylke powerline surveys: Sandsa, Grasdalen and Forsandmoen.

Introduction

Over a period of five years, from 2015 to 2020, Rogaland County Council conducted archaeological surveys related to powerline upgrades in the mountains of Ryfylke. These surveys are the most comprehensive archaeological investigations done in the region in more than thirty years. In Norway, most pre-development surveys are carried out by the County Councils, and most of the results never enter the realm of research. However, in contrast to previous surveys and research, the recent surveys have identified a variety of sites dating mainly to the Iron Age and Medieval Period. While previous excavations have largely focused on sites related to Stone Age hunting grounds, it is studies of vegetation history that have provided the most information concerning landscape use during the Iron Age and Medieval Period. With this in mind, the aim of this article is to demonstrate how pre-development surveys can bring new knowledge and understanding to landscape use and the exploitation of remote resources during the Iron Age and Medieval Period. In addition, we hope to shed some light on the methods and practicalities of surveying, and how these affect the collected materials capacity to answer certain questions. With the ambition to take the reader along for part of the surveying process, we have chosen a local approach when presenting the results and examples.

The three areas selected as examples are Sandsa, Grasdalen and Forsandmoen (Figure 1). The surveys cover a total of approximately 223 km of powerline pathway, as well as construction sites and roads for access. In total, 124 cultural heritage sites have been surveyed in relation to these projects, of which 42 sites were previously unknown (Dahl 2015, 2016, Svensson 2018, 2020). The sites vary in size from a single cooking pit, to sites with several hundred features. The three example areas were chosen mainly based on the new results from the survey, which

included several sites dated to the Iron Age and Medieval Period. However, they also represent areas with different levels of previous knowledge, which will allow us to examine how the survey results interact with previous research in a given area. Last but certainly not least, all three happen to be resource areas that relate to large and well-known Iron Age settlement areas in the lowland of Ryfylke. When resource areas or remote resources are discussed in this article, these terms generally refer to the diverse use of natural resources outside the core settlement. A resource area thus includes everything outside the main farm and infield, which is also defined as Zone 2-4 in Øye's model of extensive farming (Øye 2012, p. 52).

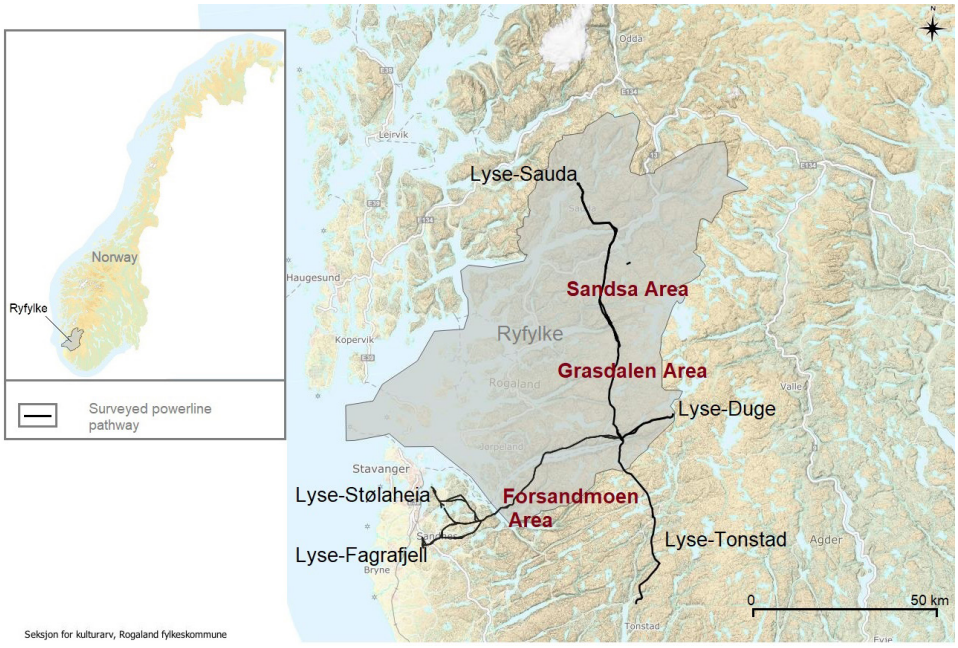

***Figure 1**. Overview of Ryfylke powerline surveys 2015-2020, including the example areas of Sandsa, Grasdalen and Forsandmoen.*

Archaeological surveys carried out by the County Councils in Norway generate a significant number of cultural heritage sites from all time periods and varying greatly in size. Taken together, these sites add up to a substantial body of potential research material that, with a few exceptions, has been left unexploited. Over the five years that the Ryfylke powerline surveys were carried out, a total of approximately 500 previously unknown heritage localities were registered in Rogaland County alone.

It is difficult for contractors to preserve and avoid conflict with protected heritage sites in more densely populated areas. This requires a dispensation from the protection given by Norwegian law, *The Cultural Heritage Act*. If dispensation is given, it is normally granted on the condition that the site is excavated. The excavations that follow are conducted by a research institution such as the regional museums or the Norwegian institute for Cultural Heritage Research (NIKU). As a result, the data from certain development-led projects can ease their way into the consciousness of research environments.

However, in less densely populated areas, such as Ryfylke, there is less development pressure and more room to make alterations in the projects and avoid conflict with cultural heritage sites. As a result, the surveys done in remote locations are more likely to be the only archaeological investigation carried out in that particular area. Out of the 124 sites registered during the recent powerline surveys, only four sites have been excavated as a consequence of the planned development. Based on this, we argue that by overlooking data produced by pre-development surveys, we not only stand to lose important knowledge of archaeology in remote areas in particular, but also undercut the comprehension of entire prehistoric and historic societies.

Previous research

Archaeological investigations in the mountain areas of Ryfylke got a virtual jump-start with the hydropower development in the 1960s. This construction led to archaeological excavations of several Stone Age sites at Storhiller and Nilsebu, along with the Iron Age shieling sites at Lyngsvatnet. Prior to this, archeological investigations in the district of Ryfylke, and Rogaland in general, mainly concentrated on lowland and coastal sites.

New reservoirs for hydropower production also triggered the comprehensive interdisciplinary research project Ulla-Førre. The fieldwork was carried out in the period 1972-1979 (Vinsrygg 1974a, Bang-Andersen 1975). 246 sites were registered during the surveys, of which ten per cent were further investigated through archaeological excavations (Lillehammer 2016, p. 122). Although a variety of sites were surveyed, the sites chosen for more comprehensive study were with few exceptions related to Stone Age hunting grounds. One of the exceptions is the Iron Age site excavated at Stråpa-Sandsa, which will be discussed in more detail below.

The projects in Kvanndalen and Tengesdal-Lingvang in 1983-1984 were also a result of hydropower development (Prøsch-Danielsen 1990, p. 21-70). These interdisciplinary research projects greatly contributed to new knowledge of grazing in heath and upland areas in the northern part of Ryfylke. In 1986, the Museum of Archaeology in Stavanger also led a collaborative project in Sauda with the ambition to study the use of resources around Sauda in a long-term perspective (Prøsch-Danielsen 1990, p. 9-20). The vegetation history in Kvanndalen indicates that it had been a marginal area in an agricultural context, taken into use relatively late in the Neolithic Period. The Tengesdal-Lingvang and Sauda projects overlap with the northernmost part of the recent Ryfylke powerline surveys. In these areas, the palynology displays an increase in grazing indicators in the Late Neolithic, and a visible increase from the Late Bronze Age to the Early Iron Age. As a general pattern, traces of increased grazing indicators were also found throughout the Viking Age and Medieval Period. There is, however, no evidence that indicates a change in grazing intensity as a consequence of the Black Death pandemic in the 14th century, nor in the 19th century when shieling activity is historically known to have increased (Prøsch-Danielsen 1990). The Tengesdal-Lingvang area is also one of the cases included in Lisbeth Prøsch-Danielsen's analysis of shieling practices in this volume. Since the completion of research in the mid-1980s, there have not been any research projects focusing on Iron Age landscape use in the mountain areas of Rogaland (Lillehammer 2016, p. 168-171).

Nevertheless, research has been done in relevant locations that can offer important insights on the recent surveys, such as Bang-Andersen (1983, 2015) and Løken (1982), who investigated hunting and trapping in Setesdal-Vesthei as a resource for the lowland farms. The old travel

routes, shieling routes and shelters are important for identifying nodes in the landscape and for understanding movement in Ryfylke. These elements have to a great extent been mapped and described by Holen (1968), Hageland (1998), Tjeltveit (1999) and Herstad *et al.* (2011). Finally, the massive iron production in Setesdal, Bykle and Hovden, also described by Løken (1982, 1991) and Loftsgarden (2017), represents another essential backdrop in the understanding of Iron Age activity in the mountains of southern Norway and Ryfylke. A general observation concerning previous research in this area is that while reports from early surveys and excavations describe various sites dating to all time periods, scientific publications mainly address the Mesolithic and the archaeobotanical material. Reflections concerning shieling sites are more commonly found in popular articles and local publications, such as *Stavanger turistforenings årbok* and *Frá haug ok heiðni*. This is also reflected in the bibliography of this article.

For the purpose of this publication, the collected data has been approached from a local perspective that also reflects how the landscape was examined during the pre-development surveys. In future research, however, it would be enlightening to see the survey results in a wider context. Despite an increasing interest in the subject of outfield archaeology and landscape use, both in other parts of Norway and in the North Atlantic region, the archaeology of shieling sites and the Iron Age use of heaths and uplands are still rather unexplored in Rogaland. The general image of Iron Age landscape use in these areas is predominantly based on studies of vegetation history Thus, the registered sites from the Ryfylke powerline surveys would benefit greatly from comparative perspectives provided by research projects such as Vestlandsgården, the outfield research network and DYLAN, along with the development-led research of Gråfjellprosjektet, to mention but a few projects that have explored the archaeology of remote resources (Øye 2002, Stene *et al*. 2005, Stene 2014, Austrheim *et al*. 2015, Indrelid *et al*. 2015). There have also been fruitful discussions on the theoretical aspects of outfield archaeology regarding how the landscape is perceived and referred to. Holm *et al*. (2009) provides a critical approach to the concepts of periphery and marginality, and explores the inherit liminal qualities of the landscape in a way that could be relevant for the surveyed areas. Last but not least, a number of relatively small projects, related to MA and Ph.D. theses, have made a notable contribution to the subject of outfield archaeology and resource use, particularly in western Norway (Øye 2012, p. 50-51).

Premises and Methods

As with most surveys carried out by the County Councils, the intention of the Ryfylke powerline surveys has been to identify conflict between the plans for development and protected cultural heritage sites. The construction of powerlines rarely leads to major excavations, as the plans can, in most cases, be adapted to avoid a direct conflict with cultural heritage sites. Hence, the trenches that are dug are relatively small and the number of samples analyzed from each site is often limited. One additional factor is that the developer cannot be expected to cover the costs of excessive work or expenses. However, the decision of how comprehensively each site should be examined is mainly balanced between getting enough data to determine the status of protection, and how much, potentially unnecessary, disturbance a site should be exposed to. The examination of sites where a direct conflict can be avoided is normally kept to a minimum, while sites where conflict cannot be avoided are more thoroughly examined, in order to provide enough information for the regional museum to estimate the research

potential and costs for a full excavation. This approach leads to a discrepancy in the data that is collected.

Standard methods for archaeological fieldwork and documentation were used during the survey. In short, test pits and small trenches were dug to retrieve information about natural stratigraphy and cultural remains, and to collect samples for carbon dating. The methods applied were adapted to different terrain and to the assessed potential of each area. The selection of sites and examined areas was based on studies of historical data, aerial photographs, previous research, place names and visual analysis of the locations. For more details on the priorities made, see Dahl (2016), Frækhaug (2016) and Svensson (2018, 2020).

In terms of method, it should also be mentioned that, due to logistics for most remote locations, archaeologists are only granted one opportunity to survey a given site. In this project, we were able to revisit some of the areas over a period of several years, partly because new alternatives were added to the project. However, the survey of each stretch of pathway was also planned to overlap, and to be accessed from two directions. To visit the same area repeatedly over a relatively long period of time, in different weather conditions and seasons, has proved very useful for the understanding of the landscape, and the resources available within the area. Not only do the surroundings change somewhat from one visit to the next, but an archaeologist will bring new knowledge and different perspectives to the site each time. It may lead to the discovery of a few more features, but most importantly it leads to a better understanding of how the features relate to each other and to the surrounding landscape.

The examples of Sandsa, Grasdalen and Forsandmoen

The Bronze- and Iron Age settlement area at Forsandmoen has been an object of research for several decades (Løken 2020), while the Sandsa area was the object of smaller archaeological excavations and interdisciplinary studies during the Ulla-Førre project in the 1970s (Vinsrygg 1974a, Bang-Andersen *et al.* 1975). Grasdalen, on the other hand, is an area that had only been partially surveyed prior to the surveys in 2016. This provides an opportunity to observe how survey data can be applied to and interact with different levels of previous knowledge. The vegetation zones and types of remains that are recorded in each of the three areas also vary. In that respect, the examples were chosen because they are different from each other, but also because they share some significant common ground. Forsandmoen, or in this case the surrounding heath and uplands to Forsandmoen, along with Grasdalen and Sandsa, are all historically known resource areas for large Iron Age settlement areas, namely Forsandmoen, Årdal and Suldalsosen. A common denominator between these settlement areas is that they are located along or at the end of main mountain travel routes between Ryfylke and Setesdal east of the mountains, and Haukeli and Hardangervidda further north.

Forsandmoen is the largest prehistoric settlement in Norway. If one were to look for other possible examples in Rogaland, Årdal and Suldalsosen would be good candidates to begin investigations with. Årdal and Forsandmoen are both coastal sites, while Suldalsosen is located 17 km upstream from the river estuary in Sand. The landscapes are characterized by wide plains of flat moraine riverbanks, surrounded by steep mountains. At Årdal, the river plains stretch from the great grave fields at Rivedal and Valheim, past Vadla, Lund and Kyrkhus, to the estuary between the large grave mounds at the farms Mæle and Svadberg. Finds indicate an increase in settlement activity in Årdal from AD 300 onwards, and several high status

finds from the Late Iron Age have also been identified (Espedal 1976, Lillehammer 1976). Suldalsosen is equally rich in Iron Age heritage sites. Many of the grave mounds were destroyed and flattened by farming in the 19th and 20th centuries; nevertheless, based on historical records and preserved remains, it has been estimated that there were originally approximately 250 grave mounds and no fewer than 25 Iron Age farms in the valley, with an expansion phase in the Roman Iron Age and the Late Iron Age (Lillehammer 1986).

Sandsa - background

The area around Sandsa, including the three shieling sites Haugastøl, Tjøstheim-Sandsa and Åmotsdalane, was surveyed during the Lyse-Sauda project in 2016 (Figure 2).

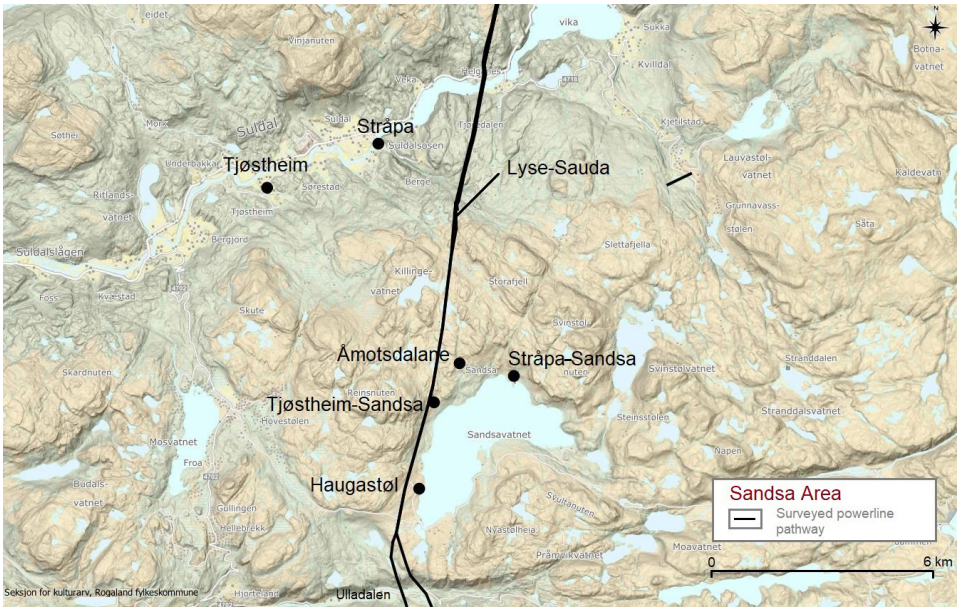

Figure 2. *Overview of the Sandsa area and surveyed sites.*

The shieling Tjøstheim-Sandsa was first recorded during the Ulla-Førre project, and the nearby sites at Stråpa-Sandsa, Lund and Haugastøl were also excavated as a part of this project (Vinsrygg 1974a, Bang-Andersen *et al.* 1975). The excavations at Lund uncovered three small ruins located on the south side of the lake, on the side opposite Stråpa-Sandsa. The site was very poor in finds and inconclusive in terms of dating results. One of the features, Tuft III, was interpreted as a small boat house (Bang-Andersen *et al.* 1975, p. 125-139).

Two km east of Tjøstheim-Sandsa we find the shieling Stråpa-Sandsa, with remains of settlement from the Iron Age and early Medieval Period. Stråpa-Sandsa and the surrounding area were surveyed in 1973 and partly excavated in 1974 (Vinsrygg 1974a, Bang-Andersen 1983). The excavated site revealed features within and around the historic shieling. Based on the plan drawings, the excavated area can be interpreted as a small building or part of a building, with four hearths concentrated at the northeastern end. Among the finds are 35 possible loom weights, some of them produced from local slate at the site. These could

indicate textile production, but can also be interpreted as net sinkers related to fishing. Other finds from the site include an unfinished bead of crystal quartz, two spindle wheels, a knife, an arrowhead and a fire starter made of iron. A rather large amount of slag from iron production was found spread all over the site. Diagnostic finds indicate that Stråpa-Sandsa was in use from around AD 750 and into the early Medieval Period, but there might have been earlier and later phases of usage. According to Vinsrygg (1974a), it is difficult to determine whether the dwelling was used seasonally or year-round. However, the material is considered to be more comprehensive than is normally found at seasonal locations, which could indicate that the settlement at Stråpa-Sandsa had been permanent already in the late Iron Age. The excavation did not produce any material to indicate animal husbandry or traditional shieling activity. The palynology research on material from the bog at Stråpa-Sandsa shows that birch had been cleared repeatedly over a long time-span. The area may have been cleared for grazing, but birch would have been a useful resource for iron production as well. There are also indications of at least one attempt to grow barley, though it was probably not very successful (Selsing 1978, p. 125). Traces of barley production have also been found at the shieling Hovestølen, 580 m above sea level, 5 km west of Sandsa (Lillehammer 1971).

Recent surveys

Tjøstheim-Sandsa is located at 715 m above sea level, and about 300 m northwest of the lake Sandsavatnet. The shieling at Tjøstheim-Sandsa has four standing buildings and nine ruins. Two previously unknown ruins were discovered in 2016, and the shieling infield was sampled for ^{14}C analysis. The samples were recovered from a small trench in the shieling infield. The earliest layer indicates a clearance phase dated to the Roman Iron Age, cal. AD 337-419. The early date corresponds well with the vegetation history of the area, and with research from other areas in Western Norway that have provided evidence for an increase in the exploitation of outfield resources during this period (Prøsch-Danielsen 1990, Øye 2012, Lillehammer 2016, p. 170).

The surveys in 2016 also led to the discovery of a shieling in Åmotsdalane. This shieling is located at 802 m above sea level, 1.2 km northeast of Tjøstheim-Sandsa and 1.5 km north of the Iron Age site at Stråpa-Sandsa. No shieling was previously recorded in this area. The two ruins were interpreted as the remains of a shieling with a small dwelling and byre. Floor layers from the dwelling and byre were dated to cal. AD 1271-1306 and cal. AD 1246-1290. A stone fence with enclosures and haystack features was also recorded next to the dwelling. At Haugastøl, ruins next to the standing building had been recorded during the Ulla-Førre project in the 1970s. In 2016, one of the ruins was examined and samples were taken from a floor layer, which could be dated to the late Medieval Period, cal. AD 1455-1525.

***Table 1**. Dated samples for the case study of Sandsa. OxCal v4.2.4 Bronk Ramsey (2013); r:5 IntCal 13.*

Sample no.	Name	ID Askeladden	Type	Periode	±2σ
ETH-71731	Tjøstheim-Sandsa	142809	Burn-layer	Roman Iron Age	337-419 AD
ETH-73289	Åmotsdalane 1	223513-1	Floorlayer	Medieval	1271-1306 AD
ETH-73290	Åmotsdalane 1	223513-2	Floorlayer	Medieval	1246-1290 AD
ETH-73288	Haugastøl	142866	Floor layer	Late Medieval	1455-1525 AD

Interpreting the Sandsa area

The Sandsa area has eastbound routes towards Setesdal, but would likely not have been situated along the main artery of movement, which is assumed to be along Suldalsvatnet and Kvanndalen. ^{14}C results from the recent surveys of Tjøstheim-Sandsa, Åmotsdalane and Haugastøl indicate that there was human activity on the shieling sites around Sandsa in the Roman Iron Age, as well as in the early and late Medieval Period. The previous results from excavations at Stråpa-Sandsa also indicated activity in the late Iron Age and early Medieval Period. The location that stands out as the most favorable in the area is Stråpa-Sandsa, and this impression is further strengthened by the fact that it was a permanent settlement during the 17th century (Vinsrygg 1974a). In a pioneer phase, it must be considered very likely that Stråpa-Sandsa was taken into use at the same time as Tjøstheim-Sandsa, if not earlier.

***Figure 3**. View of the shieling Tjøstheim-Sandsa and the lake Sandsavatnet. Photo: Solveig Roti Dahl.*

Historically, the farms in Ulladalen, 2.5 km south of Sandsa, had their shielings on the southern side of the lake, while the farms Tjøstheim and Stråpa in Suldalsosen, 7.5 km to the north, had access to the shielings on the northern side (Figure 3). Iron Age graves are known in both valleys, and the valleys were likely occupied in the Roman Iron Age, and quite possibly earlier. Both Tjøstheim and Stråpa have grave fields from the Iron Age, and there is also a hillfort at Tjøstheim, both of which demonstrate the farms' strategic location. Surveys in 2005 uncovered several cooking pits dated to the Bronze Age and Iron Age located between the largest concentration of grave mounds and the hillfort at Tjøstheim (Viste 2005). The placename Stråpa likely describes how Suldalsvatnet narrows into the small passage where

river Suldalslågen begins. The name is assumed to be an ancient word for estuary (Bakka 1978, p. 148).

Several slate weights, of the same type and material as those found during the excavation at Stråpa-Sandsa, are still kept at the farm Stråpa (Vinsrygg 1974b, p. 207). Other archaeological finds from the main farms Stråpa and Tjøstheim indicate settlement in the Iron Age. The importance of shieling rights, as documented in the earliest laws from the 10th century (Robbestad 1937, p. 103-105), makes it plausible that these relationships extend back into the Medieval Period, and may even go back to the Iron Age. Åmotsdalane, on the other hand, does not have a placename or features commonly associated with a late historical shieling. Thus, it is possible that this shieling was related to a permanent settlement at Stråpa-Sandsa during the early Medieval Period.

Grasdalen - background

The valley of Grasdalen is situated at 600-800 m above sea level in Hjelmeland municipality, and stretches 4.5 kilometers from the lake Gamlestølsvatnet in the north, down to the lake Futevatnet in the south (Figure 4). Grasdalen is characterized by rich grass plains along the river, while the sloping sides of the valley are dominated by thin vegetation and scattered with large boulders. The surveys in Grasdalen in 2016 included the site at Gamlestølen, Grasdalen 1 and 2, and the area east of Futevatnet.

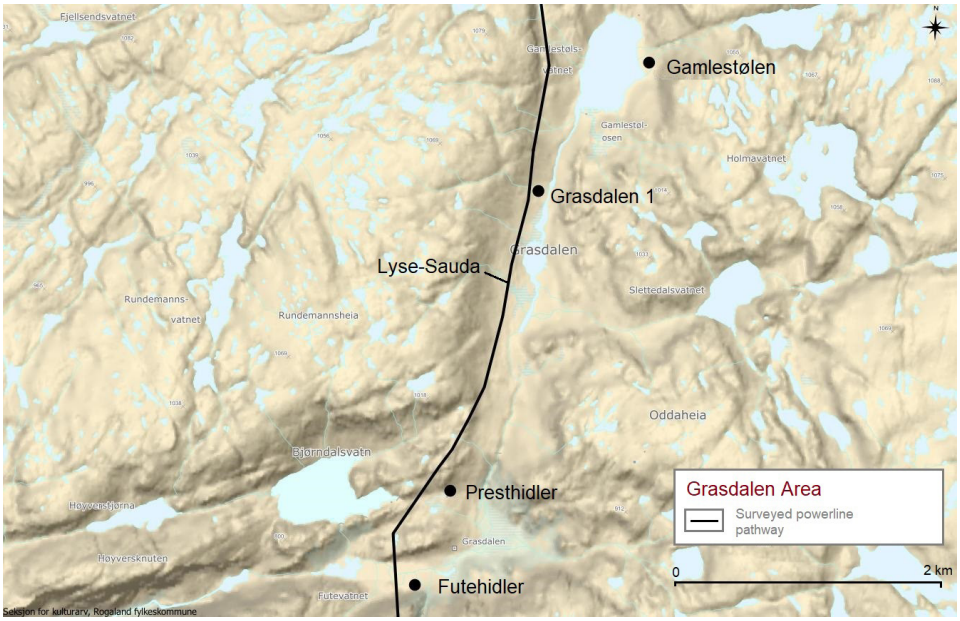

***Figure 4**. Overview of the Grasdalen area and surveyed sites.*

Grasdalen was partly surveyed in connection with the early hydropower development in the 1960s and 1970s. The sites at Gamlestølen and Futevatnet were previously registered as historical shielings as a part of the status report when the landscape conservation area was established in Setesdal Vesthei, Ryfylkeheiane and Setesdal Austhei (Herstad e*t al.* 2011). The

material registered in this report consists of 536 sites in Rogaland, and, so far, resources to verify the age or accurate location of these sites have not been available.

Previous surveys in Grasdalen have registered one Stone Age site, three shieling sites and three shepherd's shelters that were assumed to date to the 18th and 19th centuries AD. The shieling Gamlestølen was a functioning shieling until the 1840s, and was later used as a shepherd's shelter (Hageland 1998). The term 'shepherd's shelter' is in this case a translation of the Norwegian term *driftelege*, which points to the relatively modern use of rock shelters and old shielings as part of the commercial herding of livestock in the uplands. This was an activity that peaked during the 18th and 19th centuries, and many of the sites have been recorded and mapped by Torfinn Hageland (1998). Recent investigations of these shelters have revealed that many of them were in use long before the commercial livestock trade began.

In historical times, the farm Svadberg in Årdal owned the rights to the shieling Futeheller in Grasdalen. Court documents reveal a complex situation regarding the property rights and use of Grasdalen (Høyfjellskommisjonens kjennelser 1931, p. 80-85). Written sources show that people from the islands of Ryfylke sent their livestock to the uplands for grazing already in the Medieval Period (Reinton 1955, p. 133-135). Grasdalen was utilized for livestock grazing by farmers from the islands Sjernarøyene in Ryfylke from the middle of the 18th century, at the same time as the farm Svadberg had shieling privileges in the area (Eikeland 1966). Grasdalen also has a history of being utilized as common land (Hageland 1998).

Recent surveys

The shieling Gamlestølen is located northeast of Gamlestølsvatnet at 818 m above sea level. A relatively well-preserved ruin, interpreted as the main building during the latest phase of use, is surrounded by seven older overgrown ruins. Some features are so diffuse that it is difficult to tell whether they are ruins or clearance cairns without further investigation. In the rocky hillside north of the shieling, four storage features under big boulders were identified, and above the shieling there is a rock shelter in the side of the mountain. The shelter overlooks the shieling infield, and a hearth in this shelter was dated to the 16th century, cal. AD 1515-1597. Unfortunately, no samples from the shieling infield could be dated.

The site Grasdalen 1 is situated about a kilometer south of Gamlestølen, at 811 m above sea level. It is a shieling built on a hilltop surrounded by small rivers and stone fences (Figure 5). The area stretches from the mountainside down towards the river, where there is a flat grass plain used as the infield. A haystack site was also recorded on the other side of the river, across from the shieling, which indicates that hay was stored here until winter to be brought down to the main farm. During the recent survey in Grasdalen, the previously unknown remains of one house ruin and two clearance cairns were found. Furthermore, three ruins and a circular stone enclosure were mapped. These features were previously mentioned in connection with the surveys for the hydropower development of Årdalsvassdraget in the 1960s, as well as by Hageland (1998). A floor layer in the ruins was sampled in 2016 and could be dated to the High Medieval Period, cal. AD 1282-1316. A clearance cairn next to the ruins was constructed on top a layer dated to cal. AD 1170-1263.

The shelter and shieling site Presthidler is located further south in Grasdalen. ^{14}C-results from the shepherd's shelter show that it was in use during the 19th century AD. This indicates that both the shepherd's shelter and the shieling were in use at the same time.

***Figure 5**. Ruin at Grasdalen 1. Photo: Solveig Roti Dahl.*

Finally, Futehidler, in the southernmost end of Grasdalen, is situated by Futevatnet at 611 m above sea level. The shieling itself consists of several stone-built walls next to big boulders. Futehidler was a known shieling in 1648, and belonged to the farm Svadberg. Like Gamlestølen, it was in use as a shieling until the 1840s, when it became a shepherd's shelter (Hageland 1998). During the recent surveys, several contexts at Futehidler were dated. A floor layer from a ruin at Futehidlerstølen was dated to the Early Modern Period, cal. AD 1541-1635. A cultural deposit from the enclosure was dated to the Medieval Period, cal. AD 1277-1315, while the layer in the main structure, Futehidler, was dated to the 19th century. However, a waste flint flake and a flint fire striker were also discovered inside Futehidler, which may indicate prehistoric use.

***Table 2**. Dated samples for the area Grasdalen. OxCal v4.2.4 Bronk Ramsey (2013); r:5 IntCal 13.*

Sample no.	Name	ID Askeladden	Type	Periode	±2σ
ETH-71735	Gamlestølen	221513-9	Shelter	Medieval/Early Modern	1515-1597 AD
ETH-71737	Grasdalen1	221511-4	Floor layer	Medieval	1282-1316 AD
ETH-71738	Grasdalen1	221511-7	Activity layer	Medieval	1170-1263 AD
ETH-71743	Futehidler	142709-1	Floor layer	Early Modern	1541-1635 AD
ETH-71742	Futehidler	142709-1	Cultural deposit	Medieval	1277-1315 AD

Interpreting the Grasdalen area

Several old travel routes converge in Grasdalen. The mountain trails from Bykle in Setesdal are channeled into two main arteries that descend to the fjords in Årdal and Førre. The valley of Grasdalen runs north to south and becomes a hub for the alternative routes between east and west. There are also trails leading from Grasdalen, past the Iron Age farms at Trodla-Tysdal or Viglesdalen, to Årdal, located by the sea (Tjeltveit 1999).

The farm Svadberg is situated by Årdalsfjorden, and, similar to Tjøstheim and Stråpa in the Sandsa area, is a farm with several grave mounds and cultural heritage sites from the Iron Age. It is assumed that the waterways have played an important role in communication networks, and that the use of outfield resources is related to the prosperous Iron Age farms (Løken 1982, Mikkelsen 1989, p. 15). The strategic location by the fjord is likely one of the reasons for Svadberg's and Årdal's prosperity, as it becomes an important node and destination for the terrestrial travel routes between Årdal and Bykle in Setesdal. Svadberg had shieling privileges at Futehidlerstølen in Grasdalen from 1648 onwards (Hageland 1998). Because of the strong traditions and laws regarding shielings, outfield resources and trading routes displayed in *Gulatingslova* (Robbestad 1937, p 103-105, 108), we assume that shieling rights, and hence the farm's relation to resource areas, did not drastically change from the Middle Ages to the 16th century. When it comes to the Iron Age in Grasdalen, however, there are no conclusive finds dating to that period.

Figure 6. *Futehidler. Photo: Solveig Roti Dahl.*

The most likely explanation for not detecting Iron Age remains in Grasdalen might be a combination of the fact that the Medieval Period was a period with high activity in Grasdalen, and the fact that we have not found Iron Age deposits in our relatively small trenches. It is a matter of forced inconsistency in our sampling strategy. In rock shelters and within ruins, there is a higher probability of encountering mixed and redeposited cultural layers that date to later periods of use. In comparison, the stratigraphy in shieling infields is easier to control. However, the traces of human activity are very sparse at many of the remote mountain sites: there may not be an infield, and the only traces of activity are then concentrated inside the shelter or ruin itself. This is also the case with shielings located in stone screes, or in areas with very thin vegetation and natural deposits. In locations like Futehidler and Prestehidler in Grasdalen, it is known that shepherd's shelters of the 19th often had an earlier use, as the first buildings at the shielings (Figure 6). This also applies to shepherd's shelters in nearby areas like Stakken in Lyseheiane (Hageland 1998). Although the ^{14}C-analysis only indicates use in modern times at Presthidler, the possibility that these natural shelters were used in prehistoric times must still be considered very likely. The shelters used as main buildings in early shielings in Western Norway were often simple structures (Reinton 1961, p.10), similar to the shepherd's shelters in Grasdalen. Investigations of similar features in the Breheimen project also indicate use in prehistoric times (Randers 1986, p. 11). Carbon dating results from several known shepherd's shelters in Ryfylke also indicate use of similar features in the Iron Age and Medieval Period (Dahl 2017). The possibility of identifying the earliest use of these shelters archaeologically depends on the level of preservation and the scale of the excavation.

Forsandmoen - background

The area around Lysefjorden, including part of Forsandmoen, was surveyed in relation to the Lyse-Fagrafjell and Lyse-Stølaheia projects in the seasons 2015 to 2020 (Figure 7).

In contrast to the previous examples from Grasdalen and Sandsa, Forsandmoen has been subject to extensive interdisciplinary research for several decades. The large excavations at Forsandmoen took place in the 1980s and 1990s (Løken 2020). Since then, the site has been revisited as part of several pre-development excavations (Dahl 2008, 2009, 2019, Dahl *et al*. 2021). The excavations at Forsandmoen have uncovered the remains of more than 270 buildings from the early Bronze Age (1500 BC) to the Merovingian Period (AD 700). The Roman Iron Age and Migration Period represent the peak of the settlement, before it was abandoned around AD 700 (Løken 2020).

Numerous houses contemporary with the large settlement at Forsandmoen have been excavated at several sites at Forsandneset, 2 km northwest of Forsandmoen (Løken *et al*. 1996, Dahl *et al*. 2017, Dahl and Mooney 2020). During the excavations at Forsandmoen, a farm complex at Heia that lies a kilometer southeast of Forsandmoen, was the object of a minor investigation in 1988. A small trench was dug through the longhouse, and the earliest phase of the central hearth was sampled. This sample was dated to the transition between the Migration Period and the Early Merovingian Period (Løken 2003, Appendix 11). There is only one site in the surrounding area that dates to the Viking Age. At Rettedal, 1.5 km east of the large settlement at Forsandmoen, a Viking Age grave mound was excavated by Lars Tjøtta in 1908 (Petersen 1944).

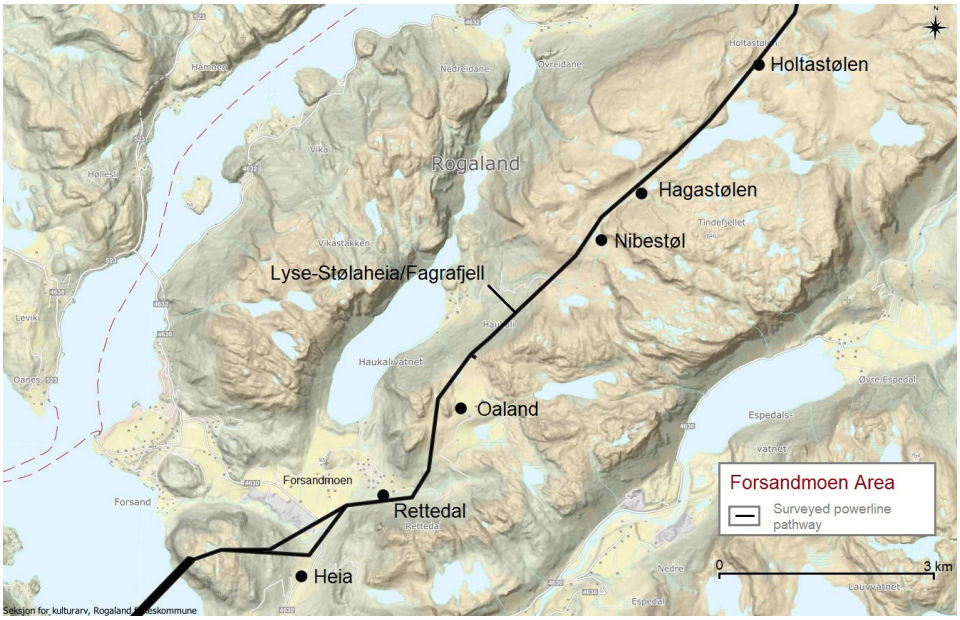

***Figure 7**. Overview of the Forsandmoen area and surveyed sites.*

The excavations at Forsandmoen are known for exploring new methods in Norwegian archaeology by using machine-assisted topsoil stripping at a large scale, but the interdisciplinary approach applied to the site was also new. Most relevant to the use of outfield resources are the prehistoric cattle trails identified through systematic phosphate sampling of the settlement area. The results revealed several trails with increased levels of phosphate, which could be traced within a few hundred meters of the core settlement (Prøsch-Danielsen 2005). However, as we move into the landscape beyond the settlement at Forsandmoen, the resource areas have not been archaeologically explored previously.

Recent surveys

Three shielings north of Forsandmoen were surveyed. Nibestøl is located about 5 km north of Forsandmoen at 595 m above sea level, and consists of four small rooms on the northwestern side of a big boulder (Figure 8). A sample from the hearth in the largest room was dated to the 13th century, cal. AD 1246-1288. Hagastølen is situated a kilometer northeast of Nibestøl, at 625 m above sea level, and has two visible occupational phases. The older phase is quite similar, and likely contemporary, with Nibestøl. Due to contamination by microscopic roots, the charcoal samples could not be dated.

The shieling Husmannsstølane is located 2.5 km further northeast at 720 m above sea level. The old name of the shieling is Holtastølen, which relates to the farm Holte. Based on linguistic analysis, local historians consider the origins of the farm to go back to the era of Norse language, approximately 700-1350 AD (Engen 1981, p. 829). The shieling is still used for grazing and hunting, and has been in frequent use by several farms since the 18th century, hence the later name Husmannsstølane. The samples sent for ^{14}C analysis were inconclusive

and could not confirm early activity at Holtastølen. In collaboration with the Museum of Archaeology, UiS, core samples from three bogs close to Hagastølen and Holtastølen were collected during the surveys. The carbon dating of the cores revealed that the earliest phase of the bog at Hagastølen dates to the Mesolithic, cal. 7589-7447 BC, while the earliest bog formation at Holtastølen began 3000 years later (Eilertsen *et al*. 2017, e-mail correspondence 26 Jan and 9 Nov 2020).

***Figure 8**. Nibestøl. Drawing, and sitting inside the ruin, H. Eltoft. Photo: Jennica Svensson.*

***Table 3**. Dated samples for the case study of Forsandmoen. Calibration method for ETH samples: OxCal v4.2.4 Bronk Ramsey (2013); r:5. IntCal13. Calibration method for Beta samples: BetaCal3.21: Data set INTCAL13. Calibration method for UBA samples: CALIB REV7.0.0, Data set: intcal13.14c*

Sample no.	Name	ID Askeladden	Type	Periode	±2σ
ETH-73896	Heia	14483	Burn-clearance	Neolithic	2137-2008 BC
ETH-96660	Heia	222896	Burn-clearance	Bronze Age	747-686 BC
ETH-102327	Rettedal	248269	Activity/Clearance	Pre Roman Iron Age	357-119 BC
ETH-102328	Rettedal	248269	Activity/Clearance	Pre roman Iron Age	358-168 BC
ETH-96659	Heia	222896	Activity/Clearance	Roman Iron Age	425-550 AD
Beta-548611	Oaland	229588	Longhouse	Migration Period	420-565 AD
Beta-548612	Oaland	229588	Longhouse	Roman Iron Age/ Migration period	382-538 AD
Beta-548613	Oaland	229588	Longhouse	Migration Period	420-565 AD
ETH-66719	Nibestøl	215790	Shieling	Medieval	1246-1288 AD
UBA-33501	Holtastølen	142062	Peat bog core samples	Mesolithic	4745- 4551 BC
UBA-33502	Hagastølen	215791	Peat bog core samples	Mesolithic	7589- 7447 BC

A new site was discovered at Oaland, located between the shielings and Forsandmoen. The farm complex consists of two visible longhouse ruins, stone fences and at least one large cairn in the adjacent forest. Since one of the longhouses had been damaged by tractor trails, the Museum of Archaeology, UiS, conducted a small rescue excavation in 2017 to assess the damages and secure the context. The remains turned out to be relatively well preserved under a layer of disturbed soil and turf. Samples from floor layers within the longhouse were dated to the late Roman Iron Age and the Migration Period, cal. AD 382-538 and 420-565 (Bjørdal 2017, Appendix 1).

When the entire area of Heia was surveyed in 2016, the number of localities increased from four to five, all localities increased in size and the number of visible features increased to a total of 283. Remains of buildings were found in three different locations, possibly representing three different farm units, and grave cairns as well as several hundred clearance cairns are scattered over the heath. During the surveys, two cairns at the northwesternmost end of Heia were deturfed and partially excavated to determine the earliest phase of activity (the cairns are located 450 m south of the settlement at Forsandmoen). A layer under cairn R56, interpreted as the earliest phase of clearance, was sampled. This sample was dated to the late Neolithic, cal. 2137-2008 BC. Under cairn R95, in the locality Brodane, the earliest phase of clearance was dated to the late Bronze Age, cal. 747-686 BC; however, the cairn was constructed on top of a layer dated to the Roman Iron Age, cal. AD 425-550.

Additionally, a small pasture at Rettedal, 0.8 km east of the settlement area at Forsandmoen, was surveyed in 2019. The five cairns recorded at Rettedal were interpreted as clearance cairns. The earliest clearance phase was dated to the Pre-Roman Iron Age, cal. 357-119 BC. A layer that had formed next to the cairn was dated to the same period, cal. 358-168 BC.

Interpreting the Forsandmoen area

One could argue that it is unfortunate that a modern powerline dictates the areas for survey and, hence, the collected data. However, in this terrain even powerline pathways must, to some extent, follow the same principles as the Iron Age traveler. The old travel routes are often the most cost-efficient way to move crew and equipment, and that applies to modern contractors as well. Through our surveys we were able to follow some of these old travel routes parallel to the Lysefjord, as well as the routes to Årdal and Suldal. The route Skinnveien, which runs from Lyse to Setesdal, was also surveyed during the Lyse-Duge project (Dahl 2015b).

The Bronze Age and Iron Age settlement at Forsandmoen was strategically located where Lysefjorden meets Høgsfjorden, and the closest access to the fjord for travel and transport was the estuary of Forsandåna, 1.5 km west of the settlement. However, in relation to our surveys, it was considered a key element that Forsandmoen is located where the old terrestrial travel routes descend from the mountains. Lysefjorden would have been the main artery for transport in the region; however, the weather and waters could be unpredictable, as could the people in control of boats and landings. The maritime route would likely depend on facilities controlled by farms at Lysebotn and along Lysefjorden. Agreements had to be made and paid for. The mountain trails, on the other hand, most likely offered a more independent way of traveling.

Trond Løken (1991) has previously explored the possibility of Forsandmoen being a central hub in a redistributive system between territorial chieftains in Jæren and Setesdal. He suggested that one of the resources Forsand and Ryfylke could offer, in comparison to Jæren, were the vast woodlands that provided fuel to process large quantities of iron from Setesdal into tools. The intention would have been to redistribute iron items to Jæren. At the opposite end, Jæren would have produced a surplus of grain, for export in return (Løken 1991, p. 219). Several buildings interpreted as workshops were identified within the village settlement in the Late Roman Iron Age and Migration Period, and many hearths in these buildings demonstrate traces of metalworking in the form of slag (Løken 1991, p. 215). He later describes these buildings as 'type 10' houses, multifunctional workshops with a narrow and elongated shape (Løken 2020, p. 185-191). Contrary to other types of houses in the settlement area, type 10 houses all have finds that indicate various metalworking activities and two of the buildings contained remains of smithies (Løken 2020, p. 190-191). It is however uncertain if these facilities could have been operating at such a scale that Forsandmoen could function as a center for redistribution of iron. Nevertheless, it appears likely that the organized trade and exchange between chieftains, particularly of heavy goods like iron, would have made use of the waterways whenever possible. It is, however, still reasonable to assume that other travelers and less organized trade, in addition to the transportation of other commodities in the organized exchange, would have utilized the mountain routes along Lysefjorden. In addition to the strategic location by Lysefjorden and Høgsfjorden, which provides access to Jæren and the inner parts of Ryfylke, Forsandmoen has direct access to the mountain routes that would have strengthened the settlement's position as a node in a redistributive network even further.

***Figure 9**. View towards Forsandmoen from cairn R56 at Heia. Photo: Jennica Svensson.*

Both valleys north of Forsandmoen would likely have been used to reach the mountain routes towards Setesdal. The western valley leads to the farms Haukali, Holte and Eide, which are all likely to have had prehistoric settlement (Engen 1981). For part of this route, over Haukalivatnet, the preferred mode of transportation would have been by boat. The alternative was to make one's way along the steep and unstable slopes surrounding the lake. Thus, it appears likely that the eastern route over Rettedal and Oaland would have been a safer option for most parts of the year.

During the Migration Period, the village settlement at Forsandmoen reached its maximum, with 20 contemporary farm units. The Migration Period farm discovered during the recent surveys at Oaland is located where the mountain trails descend to Forsandmoen. Within the village settlement, evidence of social stratification has been identified and a communal management of shared resources between the farm units has been suggested (Løken 1991, Dahl 2009, Løken 2020). This level of organization raises questions regarding the relationship between the village settlement and the mountain farm at Oaland, and whether it was based on cooperation or dependency.

The same question applies to the neighboring settlement at Heia, where the travel route over to Rossavik and Espedalen went across this wide pass. The cairns examined during the surveys in 2016 are located 200 m and 400 m across the valley from the longhouse that is dated to the transition between the Migration Period and the Merovingian Period (Løken 2003). The earliest phase of clearance, sealed under cairn R56, was dated to the late Neolithic, and predates the establishment of the settlement at Forsandmoen (Figure 9).

Grave cairn R95 was constructed on top of a layer dated to the Roman Iron Age. The north-facing location makes it likely that this was a cleared outfield at the time when the cairn was built. In comparison, the earliest clearance phase at Rettedal, 800 m east of Forsandmoen, was dated to the Pre-Roman Iron Age. The cairn at Rettedal was constructed in the same process as the initial clearing of the area. This small pasture appears to have gone out of use again rather soon, or at least seems to have been used in a less intensive way. In the Pre-Roman and early Roman Iron Age, from 500 BC to AD 200, the settlement at Forsandmoen consisted of seven to ten contemporary farm units (Løken *et al*. 1996, Løken 2020). This means that two rather poorly situated north-facing slopes at Heia and Rettedal were both taken into use, and had gone out of use again, before the village settlement had fully developed to its maximum.

Reflections on results, interpretations and methods

The survey results for the examples of Sandsa, Grasdalen and Forsandmoen have all contributed new data to their respective areas. The question that lingers is to what degree and certainty this new data actually translates into new knowledge in the interpretation of an area.

New radiocarbon dates from the Sandsa area revealed that the first clearing phase in the infield of Tjøstheim-Sandsa took place in the Roman Iron Age, cal. AD 337-419. Apart from a small number of Stone Age artefacts, this is the earliest known attempt to exploit resources in the Sandsa area. This result provides new knowledge that corresponds well with previous studies of the vegetation history of other sites in the northern part of Ryfylke (Prøsch-Danielsen 1990, Lillehammer 2016, p. 170). The result is also consistent with research in other areas of Western Norway that have shown an increase in the exploitation of outfield resources during this period (Øye 2012).

In the case of Tjøstheim-Sandsa, the stratigraphic relationships of the infield are rather straightforward. The uncertainty regarding this site concerns the interpretation of the clearance layer itself and whether it is a remnant of human clearing activity or the result of a natural event, such as a forest fire. The interpretation depends on the previous experience of the surveying archaeologist, and the visual and tactile observations that are done. The level of detail and certainty in the interpretation could be improved by a dedicated strategy of sampling for further scientific analysis such as entomology, palynology and micromorphological analysis. This type of sampling has so far not been common practice in the surveys that have been carried out. One reason is that the current level of accuracy is frequently perceived as relatively adequate for its purpose, which makes it difficult to justify the additional cost of analyzing such samples. Another reason is the logistics of working in remote locations with long distances to cover, lots of equipment to carry and several sites to sample on the way. The number and size of samples are normally kept to a minimum.

Previous knowledge of permanent settlement at Stråpa-Sandsa in the 17th century has most likely influenced the interpretation of the recent surveys of the Sandsa area. There is no definitive evidence of permanent settlement in the archaeological record from the excavation in 1974 (Vinsrygg 1974a). Such evidence can generally be very difficult to identify at shieling sites, particularly in small-scale interventions. The historical and archaeological records for the site describe several phases of occupation, where some of the phases may have been of a permanent nature, and others may have been seasonal. The alteration between permanent and seasonal use of shielings and mountain farms is not unique to Stråpa-Sandsa. The same dynamics are well known in other sites and is also described at Birkelandsstølen, to mention one example (Petersen 1936, p. 71-72).

The site Haugastøl, also located in the Sandsa area, has been radiocarbon dated to the late Medieval Period, cal. AD 1455-1525. This implies that the resources at Sandsa were of such high quality that they were preferred to many of the lowland farms left deserted during the Black Death. It is also interesting to note that the resources in Grasdalen were already in use by the early 16th century AD, before the general expansion in the use of shielings in the 18th century AD, and, similar to Sandsa, before many of the deserted lowland farms were taken into use. Although none of the surveyed sites, so far, indicate activity during the plague in the 14th century, it should be taken into consideration that previous research in the north of Ryfylke (Prøsch-Danielsen 1990) showed no apparent decrease in grazing markers in upland areas related to the Black Death pandemic.

Regarding the relations between the shielings at Sandsa and the contemporary Iron Age settlement in the lowlands at Tjøstheim and Stråpa, it is often difficult to know how far one should stretch the interpretations of the Iron Age based on historical records. There is no evidence of an Iron Age connection between the lowland farms and the shielings in our survey data, but there is potentially a direct link through the material from the excavations of Stråpa-Sandsa in 1974, where slate net sinkers kept at the farm Stråpa are identical to the ones found in the Viking Period context (Vinsrygg 1974b). It is perhaps not important to decide whether it was the Iron Age settlements in Ulladalen or Suldalsosen that first exploited the resources around Sandsa; regardless, the exploitation of resources in the Roman Iron Age at Tjøstheim-Sandsa underlines the importance of the remote resources as a prerequisite for the development of contemporary lowland settlements. So far, the use of shieling sites at Sandsa

corresponds with the expansion periods in the lowlands in the Roman Iron Age, Viking Period, early Medieval Period and the period after the Black Death.

Prior to the surveys in 2016, the archaeological knowledge of Grasdalen was very sparse. This means that all results from the surveys provide new knowledge, and yet, when it comes to the interpretation of these finds, it is difficult to know how representative they are. The data from the surveys, combined with previous knowledge from written sources, indicate extensive use of the mountain areas in Grasdalen in the early and High Medieval Period, as well as in the 16th century. So far, the radiocarbon dates from the sampled contexts in Grasdalen do not show any activity during the Iron Age, and hence no relation to the Iron Age farm at Svadberg. A few flint artefacts from Futehidler are the only indications of prehistoric activity in Grasdalen. The finds are however not diagnostic to a certain period. This raises questions concerning the Iron Age use of Grasdalen. Was there any Iron Age activity in Grasdalen, and if so, why have we not found preserved remains of it?

The most important resource in Grasdalen is, as its name implies, grass. Hence, it has been suggested that the growth in activity in Grasdalen may be related to an increased interest in sheep husbandry in the Medieval Period. This intense period of use would likely have disturbed any possible Iron Age deposits. The commercial herders in the 18th and 19th centuries are also known to have preferred to reuse the oldest features within the shielings (Hageland 1998). As previously mentioned, when excavating and sampling in small trenches, rock shelters or shieling ruins, it is difficult to fully grasp the phases and contexts of the site as a whole. In locations like this, there is a higher probability of encountering mixed deposits and cultural layers that date to later periods of use. The level of disturbance requires more specific examination and sampling strategies in order to pinpoint preserved prehistoric deposits in such contexts. The stratigraphy in shieling infields is easier to control, but there may not be an infield at many of the remote mountain sites, and in such cases the only traces of human activity are concentrated inside the visible ruins. Depending on the local conditions it can be difficult and sometimes impossible to maintain an infield sampling strategy.

Forsandmoen is an area that differs from the other two in many aspects. Although the resource areas around Forsandmoen have not previously been examined archaeologically, the lowland settlement has been an object of thorough and systematic research. The surveyed areas are located in the vicinity of the settlement and were known and used by the Bronze Age and Iron Age population. This means that there are excellent preconditions for understanding the wider archaeological context, including both the infield and remote areas, and for considering the representativity of the data. The recent surveys provide new insights into activities in the Forsand area which predate the known Bronze Age and Iron Age settlement on the plain. Clearing activity appears to have taken place in the late Neolithic at Heia, only a few hundred meters south of the Forsandmoen plain. In the adjacent field, also at Heia, the stratigraphy reveals a clearance phase in the late Bronze Age, contemporary with the settlement on the plain. A third clearance phase has been dated to the Roman Iron Age, followed by the construction of grave cairns in the same field, which overlook the village settlement on the plain. An additional outfield was cleared at Rettedal, a few hundred meters east of the settlement area, in the Pre-Roman Iron Age (Figure 10). It appears to have been a short period of usage. This reveals that a rather poor north-facing slope was taken into use, and probably went out of use again, in the same period that the Forsandmoen settlement was reorganised (Løken 2020), and long before the village settlement was fully developed.

While the largest farm complex at Heia was contemporary with the last stages of the Iron Age village (Løken 2003), the dating of the mountain farm Oaland was contemporary with the village settlement at its peak in the Migration Period. The recent radiocarbon dates from Oaland (Bjørdal 2017) provide an interesting line of thought concerning social organization and the control of remote resources along the mountain travel routes to Forsandmoen during the Migration Period.

***Figure 10**. View towards Forsandmoen from clearance cairn at Rettedal. Photo: Jennica Svensson.*

The solid previous knowledge of Forsandmoen provides excellent preconditions for comparison, but it might also influence the critical approach to the survey data. In this context, there may be a tendency to discuss results rather than method. For instance, the interpretation of layers, also discussed in relation to the clearance activity at Tjøstheim-Sandsa, should be equally valid in more densely populated agricultural areas, such as Forsandmoen. However, based on personal experience, there may be a tendency to be less critical concerning whether a layer or a feature is the result of human activity if the observation is done in an area with several known localities in the lowland, in contrast to the heath and mountain areas.

Finally, it should be mentioned that in all three areas discussed in this article, historical shieling sites are easily traced through local placenames. It is important to keep in mind that the archaeology of historical shieling sites does not necessarily translate to prehistoric shieling activity. However, research shows that historical shieling sites can be an indicator of locations for the diverse utilization of resources, and that the use of these sites often goes far back into prehistory (Øye 2012, p. 58-59, Austrheim 2015, p.162). Within the Forsand area,

the shieling site Nibestøl was carbon dated to the 13th century during the surveys, while the results from Hagastølen and Holtastølen came back inconclusive. However, further analysis of the bog core samples, collected during the surveys in 2016, could provide new and important insight to the vegetation history and remote resources around Forsandmoen, before, during and after the presence of the Iron Age village there.

Conclusions

Although the survey material is somewhat fragmented, it provides hitherto unknown information about the timeframe of and type of resources utilized in the areas of Sandsa, Grasdalen and Forsandmoen. It should be emphasized that the survey data is more compound and comprehensive than radiocarbon dates, as the survey itself depends on thorough studies beforehand to understand the cultural landscape and its natural preconditions and history.

The results from recent surveys in the Sandsa area to a large extent confirm earlier archaeobotanical research (Prøsch-Danielsen 1990). The survey data indicate an increase in the use of outfield resources in the Roman Iron Age and during the Late Iron Age and Early Medieval Period. The shieling Haugastøl in the Sandsa area was in use in the 15th and 16th centuries, similar to Futehidler and Gamlestølen in Grasdalen (Dahl 2016). This indicates that the quality of the remote resources in these areas was preferred to that of lowland farms, which had been deserted since the Black Death in the 14th century. In the area of Grasdalen, the survey results indicate an extensive use of resources in the Medieval Period, which can also be confirmed by the written sources. The results from the area around Forsandmoen provide new information on Neolithic clearing activity in the upland of Heia, a few hundred meters south of the large settlement site, which is earlier than any settlement identified on the plain. In the same area, survey results have also revealed clearing activity contemporary to the settlement in the Late Bronze Age and Roman Iron Age, before grave cairns were built in the same field overlooking Forsandmoen. The survey also discovered a relatively brief phase of clearing at Rettedal in the Pre-Roman Iron Age. The largest farm complex at Heia is dated to the Late Migration Period (Løken 2003, Appendix 11), and the mountain farm at Oaland was dated to the transition between the Roman Iron Age and Migration Period (Svensson 2015, Bjørdal 2017, Appendix 1, Svensson 2018). Both Iron Age farms provide an intriguing perspective on relationships with the village settlement on the plain, as well as discussions of social organization and control of remote resources along the terrestrial travel routes to Forsandmoen.

Regardless of the quantity and quality of previous research, the survey results in these three examples have all demonstrated their potential for producing new knowledge, and have pointed towards further research potential. However, the discussion of interpretation and method shows that there are certain aspects of survey data that demand extra care when data sets are interpreted and used in comparative studies. As mentioned previously, the purpose of archaeological survey can vary between sites, and hence the comprehensiveness of the investigation of each locality varies. This means that the number of finds, the type of data, and the interpretation of the sites can be affected. Improved sampling strategies can undoubtedly enhance the accuracy and detail of the survey results, and thus the certainty of the interpretation. As an example, shieling infields have been suggested as a preferred source of information for the long-term use of sites, in contrast to visible features such as ruins and rock shelters. A dedicated sampling strategy that allows us to explore the material

through archaeobotanical, entomological, palynological and micromorphological analysis would certainly benefit the research potential of the survey data and increase the accuracy of interpretation. However, the variation in local conditions, particularly with regard to disturbance by later cultural activity and naturally exposed sites, makes it difficult to maintain any sampling strategy consistently.

Archaeological survey data do not automatically add to the understanding of the surrounding area, as the data are not collected for that purpose. The results from surveys are not designed to answer a specific research question, but that does not mean that they cannot do so, provided the question is well formulated.

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From the 9th century AD onwards, Norse migration resulted in the spread across the North Atlantic of cultural traits originating in Norway. The challenging landscapes of this region rewarded resilience and adaptability, evidenced by complex subsistence strategies incorporating the exploitation of a variety of outfield resources. However, differing methodologies and approaches across the region have limited the extent to which the connections between western Norway and the North Atlantic have been explored in archaeological research. The Expanding Horizons project brought together junior and senior practitioners in archaeology and related fields, from both within and outside of academia, to address this. The papers in this volume present case studies of outfield resource use and its impact on settlement patterns, placed in the wider context of Norse settlement and subsistence across the North Atlantic.

ISBN: 978-82-8436-004-1