FARM – MANOR – ESTATE: AGRICULTURAL LANDSCAPE AND SETTLEMENT AT HUNDVÅG, SOUTHWEST NORWAY

TROND MELING

Museum of Archaeology, University of Stavanger trond.meling@uis.no

ABSTRACT

This article discusses the results of a comprehensive assembly and analysis of agricultural settlement evidence which has been excavated on the island of Hundvåg in Rogaland, SW Norway. The settlement sites date from the Late Neolithic Period to the Viking Age, and the main objective of this review is to examine their organization throughout this long period. This study reveals that activity on Hundvåg bears many similarities to the general patterns of subsistence-settlement along the coast of western Norway during the period and was not significantly influenced by the natural limitations of the island. The oldest traces of agriculture on Hundvåg date from the beginning of the Late Neolithic, and the whole island seems to have been exploited for agricultural purposes shortly thereafter. In the latter part of the Late Neolithic, and throughout the Bronze Age and Early Iron Age, there is evidence of relatively dense and stable settlement on Hundvåg. The most distinct change in how settlements were organized took place around the birth of Christ. At this time, the farms became concentrated on areas of high ground in the central part of the island, and the first manor houses were established. Settlements continued to be situated in similar locations throughout the Late Iron Age and Viking Age, and both archaeological evidence and historical sources suggest that Hundvåg became part of an estate during this period.

INTRODUCTION

The island of Hundvåg, in Stavanger municipality, is one of several areas in Rogaland where numerous archaeological excavations have been carried out since the late 1980s using the mechanical topsoil stripping method (Fig. 1). The results of some excavations, where material dating to the Late Neolithic

and onwards was discovered, have been published in short articles over the years (i.e. Tsigaridas 1997; 2000b, Meling 2001a; 2001b). However, most of the data is only accessible in excavation reports stored in the topographic archive at the Museum of Archaeology, University of Stavanger and has not been previously consolidated for analysis.

The main goal of this article is to examine the structure of settlement on Hundvåg from the Late Neolithic to the end of the Viking Age. Since Hundvåg is an island, it provides an ideal opportunity to study agricultural settlement from a long-term perspective in an area with clear physical boundaries. After reviewing the archaeological evidence, I will examine the character and organization of settlement over time and attempt to determine if this was influenced by the island's natural constraints. The focus will be on the excavated settlement areas, but stray finds, rock carving sites and graves will also be considered. Various historic sources will be central to the interpretation of the Late Iron Age/ Viking Age settlement on the island.

HUNDVÅG

Hundvåg covers an area of 4.7 km², and is the main island in an archipelago of several small islands and islets situated just northeast of the town centre of Stavanger (Fig. 1, Fig. 2). Most of the small islands have very poor soil, and in historic times were utilized as grazing areas for the farms on Hundvåg (Lindanger 2003). There are numerous inlets and sheltered bays along the coastline of Hundvåg which offer naturally protected harbours and the narrow straits on the east and south of the island are rich in fish and other marine resources. The name Hundvåg may in fact reflect the importance of the sea to the island's earlier inhabitants, the first part of the name, Hund, probably derives from a word for 'catch' (as in fish catch), while våg is most likely related to the Norwegian word vake, which translates as 'feed near the surface' (Særheim 2007: 110). Hundvåg's geographical position in the southern part of the Boknafjord area is also likely to have been considered an advantage in the past. From the island, there is a broad view overlooking several fjords stretching inland towards the north and east, and in the west, there is only a short distance to the open sea (Fig. 1). The undulating landscape of Hundvåg resembles the Jæren-coastline of southern Rogaland. The highest points on the island are only around 30 m a.s.l. In the south, there is a rather steep slope towards the sea, while the rest of the island possesses a relatively smooth and gentle coastline. The island's fertile Quaternary deposits, particularly prominent in the central areas, present favourable conditions for cultivation (Bergstrøm *et al* 2010). Four historic farms are located on Hundvåg: Husabø in the west, Austbø in the southeast and Skeie and Lunde in the north (Fig. 2).

ARCHAEOLOGICAL EXCAVATIONS ON HUNDVÅG

Traces of settlement dating from the Late Neolithic Period to the Late Viking Age have been identified at nine excavated areas on Hundvåg (Fig. 2). Archaeological surveys have revealed an additional four areas with settlement remains from the same period. Surveys have been carried out at all the historic farms on Hundvåg, but the majority of the excavations have taken place at Austbø. Altogether, archaeological investigations have covered nearly one-quarter of the island.

The first excavation project to employ the mechanical topsoil stripping method on Hundvåg took place in the southeast part of Austbø between 1987 and 1990 (Gjerland 1989a; 1989b; Juhl 2001). An area of 450 acres was examined prior to the development and 27 sites were revealed (Fig. 2, No. 1). Though the identification of agricultural settlement was not a priority (Juhl 2001: 89), traces of settlement-related activity from the Late Neolithic to the Viking Age were documented at ten localities. Most of these sites were clustered in the southern part of the examined area.

Numerous development instigated archaeological excavations were carried out on Hundvåg between 1997 and 2002 (Tsigaridas 1997; 1998; 2000a; 2000b;

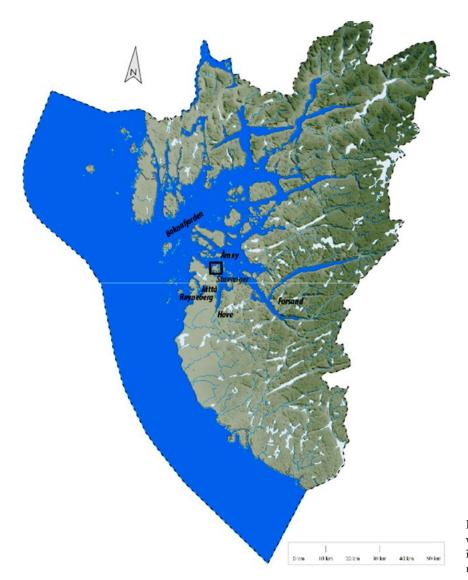


Figure 1. Rogaland County with place names mentioned in the article. Hundvåg is marked with a black square.

Skare 1998a; 1998b; Aakvik 2000; 2001; Meling 2001a; 2001b; 2006; Hemdorff 2006). The basis of this work was an extensive survey, completed in 1994, which examined 750 acres of land in the central part of the island (Juhl and Hemdorff 1994; Hemdorff 1994; 2003). The investigations identified many previously unknown sites in the northern part of

Austbø, as well as settlement localities at Skeie and Husabø. The remains of multi-period settlements were comprehensively excavated at Austbø and Skeie, while most of the settlement evidence at Husabø was not subjected to further investigation. However, even with only the survey material as a reference, long-term settlement in the central part of Husabø



Figure 2. Hundvåg with historic farm names and farm borders. The red circles and lines marks excavated areas, the green circles marks surveyed areas where traces of settlement have been found, and the blue circles marks surveyed areas where no traces of settlement have been found. The numbers refers to the different excavation and survey projects. The same numbers are also used in Table 1 and Table 2.

(Fig. 2, No. 2) is apparent from the large number and great variety of structures observed, as well as the presence of thick cultural layers (Hemdorff 1994; 2003).

Since 2009 minor excavations at Husabø (Fyllingen 2009) and Lunde (Fyllingen 2011; Pedersen 2013) have revealed traces of settlement from the Early Bronze Age to the Migration Period.

Comprehensive macrofossil sampling programs have been undertaken at a number of sites and allowed for paleobotanical analysis of house structures, cultural layers and other settlement related features (Griffin and Sandvik 2000; Juhl 2001; Sandvik 2002; 2003; Soltvedt 2013). Unfortunately, efforts to collect pollen samples from Hundvåg have been unsuccessful due to the absence of suitable

sampling locations (Prøsch-Danielsen and Simonsen 2000: 40; Juhl 2001: 20).

THE SETTLEMENT ON HUNDVÅG FROM THE LATE NEOLITHIC TO THE MEDIEVAL PERIOD

The main goal of the archaeological excavations on Hundvåg has been to investigate houses and other forms of settlement evidence from the prehistoric period. In total, 62 structures interpreted as houses have been documented; just over two-thirds of these are dated (Tabell 1). Dating has typically been achieved through radiocarbon analysis; when this was not possible, typological features of the houses and associated artefacts were used to estimate age. All ¹⁴C-datings are presented below with 1σ calibrations.

2300-1100 BC: THE LATE NEOLITHIC AND EARLY BRONZE AGE

One of the oldest ¹⁴C-dated cereals in Norway, a carbonized naked barley grain (*Hordeum vulgar var. nudum*), was sampled from the eastern part of Austbø (Fig. 3, No. 1, Table 2, No. 1 Loc. 20). This was found in a fireplace, and has been dated to

the Late Neolithic (LN), 2390-2060 BC (Sandvik 2003). There was no contemporary building on the site, but several cooking pits and a cultural layer from the same period were recorded nearby (Table 2, No. 1 Loc. 4, 21, and 22). This combination of features suggests that the fireplace was part of a Late Neolithic (LN) dwelling site. Further north at Austbø, several carbonized cereals of LN/EBA (Early Bronze Age) date (Table 2, No. 5 and 9) have been found (Fig. 3, No. 5, 9), mainly naked barley and wheat (Triticum). Most of the cereal remains originate from cultural layers rather than buildings. However, a possible wall ditch ¹⁴C-dated to the LN, along with several post holes, was recorded close to one of the cultural layers (Fig. 3, No. 9, Table 2, No. 9 Loc. 2). The features probably represent the remains of one, or possibly several, building(s) contemporary with the layers (Meling 2001b). LN/ EBA ¹⁴C-dates have also been obtained from Early Mesolithic sites in the area (Table 2, No. 9 Loc. 4, 7 and 5). These are associated with layers containing Early Mesolithic stone artefacts (as opposed to structures) and most likely reflect a resumption of activity during later prehistoric periods.

Table 1.

No.	Farm	House no.	House type	Length	Width	Dating method	Dating	Literature
1	Austbø (Loc. 20)	No. I	Three-aisled	23m	7,5m	Typological/ 14C-dating	EBA (BA II)	Juhl 2001
1	Austbø (Loc. 20)	No. II	Three-aisled	23m	7,5m	Typological/ 14C-dating	EBA (BA II)	Juhl 2001
1	Austbø (Loc. 20)	No. III	Square building	3,3m	3,3m	¹⁴ C-dating	VA	Juhl 2001
1	Austbø (Loc. 21)	No. IV	Three-aisled	12m	4-5m	Typological/ 14C-dating	LBA/ PRIA	Juhl 2001
1	Austbø (Loc. 21)	No. VI	U-shape	3,5m	4,5m	Typological	LBA/ PRIA	Juhl 2001
3	Skeie	No. I	Three-aisled	> 16m	-	14C-dating	VA	Tsigaridas 1997
3	Skeie	No. II	Three-aisled	17,5m	4m	¹⁴ C-dating	VA	Tsigaridas 1997
3	Skeie	No. III	Three-aisled	> 10m	-	14C-dating	LIA	Tsigaridas 1997
3	Skeie	No. IV	Three-aisled	> 17m	4,5m	Artefacts/ 14C-dating	VA	Tsigaridas 1997
3	Skeie	No. V	Three-aisled	> 14m	-	-	-	Tsigaridas 1997

No.	Farm	House no.	House type	Length	Width	Dating method	Dating	Literature
3	Skeie	No. VI	Two-aisled	17m	7m	Typological	LN/EBA	Tsigaridas 1997
3	Skeie	No. VII	Three-aisled	> 12m	-	¹⁴ C-dating	VA	Tsigaridas 1997
3	Skeie	No. VIII	Three-aisled	> 13m	5-6m	-	-	Tsigaridas 1997
3	Skeie	No. IX	Three-aisled	> 17m	5-6,5m	Stratigraphically	LIA	Tsigaridas 1997
3	Skeie	No. X	Three-aisled	17m	6,5-7m	14C-dating	LIA	Skare 1998
3	Skeie	No. XI	Three-aisled	35m	5,5m	Typological/ 14C-dating	PRIA/ ERA	Skare 1998
3	Skeie	No. XVI	Three-aisled	>12m	5m	Typological/ 14C-dating	PRIA	Skare 1998
3	Skeie	No. XVII	Three-aisled	> 11m	-	-	-	Skare 1998
3	Skeie	No. XVIII	Three-aisled	> 10m	-	¹⁴ C-dating	LBA/ PRIA	Skare 1998
3	Skeie	No. XIX	Circular	5,7m	-	14C-dating	LIA	Skare 1998
3	Skeie	No. XX	Three-aisled	> 17m	-	¹⁴ C-dating	LBA	Skare 1998
3	Skeie	No. XXI	Two-aisled	15m	6m	Typological	LN/EBA	Skare 1998
3	Skeie	No. XXII	Three-aisled	28m	-	-	-	Skare 1998
3	Skeie	No. XXIII	Three-aisled	20m	5,5m	-	_	Skare 1998
3	Skeie	No. XXIV	Two-aisled	13m	5m	Typological/ 14C-dating	LN II-BA II	Skare 1998
3	Skeie	No. XXV	Three-aisled	16m	6,5m	14C-dating	LIA	Skare 1998
3	Skeie	No. XXVI	Three-aisled	15-18m	5-7,5m	-	-	Skare 1998
4	Austbø	No. I	Three-aisled	25m	-	Typological/ 14C-dating	PRIA/ ERIA	Tsigaridas 2000
4	Austbø	No. II	Three-aisled	12-31m	4-5m	¹⁴ C-dating	PRIA/ ERIA	Tsigaridas 2000
4	Austbø	No. III, phase A	Three-aisled	18-19m	5,5m	¹⁴ C-daing	LRIA/ MiP	Tsigaridas 2000
4	Austbø	No. III, phase B	Three-aisled	-	-	-	-	Tsigaridas 2000
4	Austbø	No. IV	Three-aisled	25-26m	6m	Artefacts	LRIA/ MiP	Tsigaridas 2000
4	Austbø	No. V	Two-aisled	10-19m	7m	-	-	Tsigaridas 2000
4	Austbø	No. VI	Three-aisled	-	-	¹⁴ C-dating	LBA/ PRIA	Tsigaridas 2000
4	Austbø	No. VIII, phase A	-	-	-	-	-	Tsigaridas 2000
4	Austbø	No. VIII, phase B	Two-aisled	-	-	¹⁴ C-dating	EBA (BA I-II)	Tsigaridas 2000
4	Austbø	No. VIII, phase C	Three-aisled	> 17m	6,5m	Artefacts/ 14C-dating	LRIA/ MiP	Tsigaridas 2000
5	Austbø	No. I	Square building	2m	1,9m	-	-	Meling 2006
5	Austbø	No. II	Three-aisled	50m	7-7,5m	Typological/ Artefacts/ ¹⁴ C-dating	RIA	Meling 2006
5	Austbø	No. III	Three-aisled	25m	7-7,5m	Typological	RIA	Meling 2006
5	Austbø	No. IV	Three-aisled	25-30m	7,7,5	Typological	RIA	Meling 2006
5	Austbø	No. VI	Three-aisled	15-20m	6m	Artefacts/ 14C-dating	RIA	Meling 2006
5	Austbø	No. VII	_	15m	5,5-6m	-	-	Meling 2006
6	Austbø	No. I	Three-aisled	23-30m	5,5m	Typological/ 14C-dating	LRIA	Hemdorff 2006
6	Austbø	No. II	Three-aisled	18m	5,5m	Typological	RIA	Hemdorff 2006
6	Austbø	No. III	Three-aisled	-	5m	-	-	Hemdorff 2006
6	Austbø	No. IV	Three-aisled	41m	7,5m	Typological/ 14C-dating	ERIA	Hemdorff 2006

No.	Farm	House no.	House type	Length	Width	Dating method	Dating	Literature
6	Austbø	No. V	Three-aisled	25m	6m	Typological/ 14C-dating	LRIA	Hemdorff 2006
6	Austbø	No. VI	Three-aisled	20m	6,5m	Typological/ 14C-dating	ERIA	Hemdorff 2006
6	Austbø	No. VII	Square building	3m	3m	-	-	Hemdorff 2006
7	Husabø		Three-aisled	-	-	Artefacts	RIA/MiP	Fyllingen 2009
7	Husabø		Three-aisled	-	-	Artefacts	RIA/MiP	Fyllingen 2009
8	Husabø	No. I	U-shape	2,8m	3,1m	Typological	LBA/ PRIA	Aakvik 2001
8	Husabø	No. II	Square building	2,8m	2,8m	-	-	Aakvik 2001
8	Husabø	No. III	Circular	5,5m	-	Typological	LIA	Aakvik 2001
9	Austbø	No. I	Three-aisled	> 15m	5-6m	-	-	Meling 2001
9	Austbø	No. II	Three-aisled	> 20m	5-6m	-	-	Meling 2001
10	Lunde	No. I	Three-aisled	> 12m	7m	14C-dating	EBA	Pedersen 2013
10	Lunde	No. II	Three-aisled	> 19m	6,5m	¹⁴ C-dating	PRIA	Pedersen 2013
10	Lunde	No. III	Three-aisled	> 11m	-	14C-dating	EBA	Pedersen 2013
12	Lunde		Three-aisled	-	-	¹⁴ C-dating	RIA	Fyllingen 2011

Table 1. House structures from Hundvåg. The numbers in the left column refers to the excavation/survey projects. The same numbers are used in the maps.

Table 2.

No.	Farm	Locality	Structure/layer	Dating method	Dating	Literature
1	Austbø	Loc. 16		Artefacts	LN/EBA	Juhl 2001
1	Austbø	Loc. 20	Fireplace	14C-dating	LN I	Juhl 2001
1	Austbø	Loc. 20	Cooking pit	14C-dating	LN II-BA II	Juhl 2001
1	Austbø	Loc. 20	Cooking pit	¹⁴ C-dating	LBA (BA IV-VI)	Juhl 2001
1	Austbø	Loc. 20	Cooking pit	14C-dating	VA	Juhl 2001
1	Austbø	Loc. 4	Cultural layer/Cooking pits	14C-dating	LN I-BA II	Juhl 2001
1	Austbø	Loc. 4	Cooking pits/Fireplace	14C-dating	LBA/PRIA	Juhl 2001
1	Austbø	Loc. 4	Fireplaces	14C-dating	RIA	Juhl 2001
1	Austbø	Loc. 21	Fireplace	14C-dating	LN II-BA II	Juhl 2001
1	Austbø	Loc. 22	Fireplaces	14C-dating	LN II-BA III	Juhl 2001
1	Austbø	Loc. 22	Fireplaces/Wall ditch?	14C-dating	LBA	Juhl 2001
1	Austbø	Loc. 22	Fireplace	14C-dating	RIA	Juhl 2001
1	Austbø	Loc. 2	Cooking pit	14C-dating	LBA	Juhl 2001
1	Austbø	Loc. 23	Fireplace	14C-dating	PRIA	Juhl 2001
1	Austbø	Loc. 3	Cooking pit	14C-dating	PRIA	Juhl 2001
1	Austbø	Loc. 27	Fireplaces	14C-dating	PRIA/ERIA	Juhl 2001
1	Austbø	Loc. 15	Fireplaces/Cooking pits	¹⁴ C-dating	RIA	Juhl 2001
4	Austbø	Loc. 1	From unspecified layer	14C-dating	LN I-II	Tsigaridas 2000
4	Austbø	Loc. 3	Fireplace?	14C-dating	LN I-BA I	Tsigaridas 2000
5	Austbø	Loc. 1	Cultural layer	14C-dating/	LN I-BA I	Meling 2006
			,	Artefacts		0
9	Austbø	Loc. 1	Cultural layer	14C-dating/	LN II	Meling 2001
	A .1	T 2	•	Artefacts	TAIT	
9	Austbø	Loc. 2	Wall ditch	¹⁴ C-dating	LNII	Unpublished
9	Austbø	Loc. 2	Post hole	¹⁴ C-dating	LBA/PRIA	Unpublished
9	Austbø	Loc. 4	From unspecified layer	14C-dating	LN II-BA I	Unpublished

No.	Farm	Locality	Structure/layer	Dating method	Dating	Literature
9	Austbø	Loc. 7	From unspecified layer	¹⁴ C-dating	LN I	Unpublished
9	Austbø	Loc. 5	From unspecified layer	14C-dating	LN I	Unpublished
9	Austbø	Loc. 5	From unspecified layer	14C-dating	BA IV	Unpublished
14	Lunde		Fireplace	14C-dating	LRIA	Rønne 2001

Table 2. ¹⁴C-dated structures and layers from different sites at Hundvåg. The numbers in the left column refers to the excavation/survey projects. The same numbers are used in the maps.

The oldest known buildings on Hundvåg are three two-aisled houses found at Skeie (Fig. 3, No. 3). The structures are 13-17 m in length and 5-7 m in width (Table 1). One of the buildings (House XXIV) has been ¹⁴C-dated to 1780-1625 BC (Skare 1998); age determinations for the other buildings (Houses VI and XXI) were inferred through typological comparison of structural elements (Børsheim 2005: 113). Traces of two similar buildings (Table 1, No. 4 Houses V and VIII) were documented in the northern part of Austbø (Fig. 3, No. 4), one of which has been ¹⁴C-dated to around 1500 BC (Tsigaridas 2000a; 2000b). Both buildings were, unfortunately, only partly preserved, and as such their former sizes and shapes are uncertain (Tsigaridas 2000a).

The first three-aisled houses appear on Hundvåg in the EBA, between 1500 BC and 1400 BC. A total of four houses from this period are recorded on the island (Gjerland 1989b; Juhl 2001: 45; Pedersen 2013), two in the eastern part of Austbø (Fig. 3, No. 1, Table 1, No. 1 Houses I and II), and two at Lunde (Fig. 3, No. 10, Table 1, No. 10 Houses I and III). The two houses at Austbø display remarkable similarities. In addition to their near contemporaneous ¹⁴C-dates, both were 23 m long by 7 m wide and had several post holes replaced during their life span (Juhl 2001: 48). It was not possible to record the full extent of the two houses at Lunde, but they are both estimated to have been over 12 m long, and one of them 7 m wide. The ¹⁴C-dates obtained from the structures indicate that they were probably not

contemporary, although the time gap between them would have been short (Pedersen 2013).

1100-0 BC: THE LATE BRONZE AGE AND PRE-ROMAN IRON AGE

There are few traces of settlement from the period between 1400 BC and 700 BC on Hundvåg. In the eastern part of Austbø (Fig. 4, No. 1, Table 2, No. 1 Loc. 22), a ditch that might belong to a building has been ¹⁴C-dated to 900-815 BC. Elsewhere in the area, there are only a few cooking pits and some fireplaces which can be related to this period (Juhl 2001). However, this lack of settlement evidence changes towards the end of the Late Bronze Age (LBA), when numerous houses start appearing at all the historic farms at Hundvåg.

From Skeie (Fig. 4, No. 3) there are three houses (Table 1, No. 3 Houses XVI, XVIII and XX) which have been ¹⁴C-dated to the LBA or Pre-Roman Iron Age (PRIA) (Skare 1998a; 1998b). Two of the structures returned very similar dates, but since they overlapped horizontally they cannot have been contemporary. The precise dimensions of the three houses were not established, but one example was estimated to have been over 17 m long. At Lunde, a house measuring 19 m long by 6.5 m wide, was excavated in 2013 (Fig. 4, No. 10, Table 1, No. 10 House II) and has been ¹⁴C-dated to 510-400 BC (Pedersen 2013).

In the northern part of Austbø (Fig. 4, No. 4, Table 1, No. 4 House VI), the remains of a three-aisled

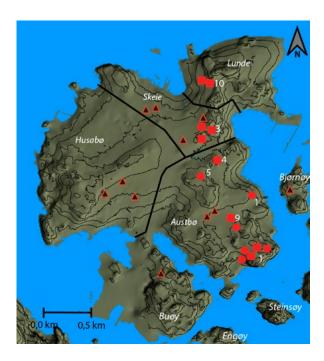


Figure 3. Areas on Hundvåg with traces of settlement from LN and EBA. The red squares mark house structures and possible house structures, the red dots mark cultural layers and structures, and the triangles mark stray finds. The numbers refer to the different excavation projects.

house have been ¹⁴C-dated to the transition between the LBA and the PRIA (Tsigaridas 2000a). From the eastern part of Austbø (Fig. 4, No. 1, Table 1, No. 1 Houses IV and VI), there are records of two buildings from the same period (Gjerland 1989b; Juhl 2001: 51). House IV was a three-aisled structure, approximately 12 m long by 4-5 m wide in use between 790-400 BC. The other building in this part of Austbø has not been dated directly, but its shape indicates that it belongs to the LBA or early PRIA (Juhl 2001: 51). The remains of the building covered an area of approximately 20m², and consisted of a U-shaped wall trench which opened towards the south. In the centre of the structure was a redcoloured patch, probably the remains of a fireplace. A building of similar size and construction was

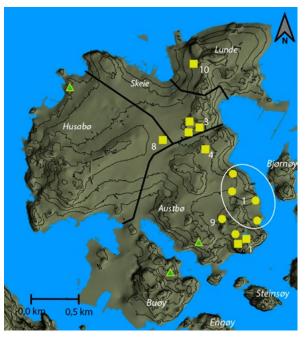


Figure 4. Areas on Hundvåg with traces of settlement from the LBA and PRIA. The yellow squares mark houses, the yellow dots mark structures and the triangles mark rock carvings. The numbers refer to the different excavation projects and the circle marks an area at Austbø where only cooking pits and fireplaces have been found.

excavated at Husabø in 2000 (Fig. 4, No. 8, Table 1, No. 8 House I). Unfortunately, there are no ¹⁴C-dates available, but both the size and shape of the building indicate that it was contemporary with the U-shape building at Austbø (Aakvik 2000; 2001).

Cooking pits and fireplaces are documented at several sites in the eastern part of Austbø (Fig. 4, No. 1, Fig. 5, No. 1). These features usually occur in isolation or as small clusters of 2-4 pits and most have been ¹⁴C-dated to the PRIA and the Roman Iron Age (RIA) (Juhl 2001).

AD 0-550: THE ROMAN IRON AGE AND THE MIGRATION PERIOD

A total of 15 three-aisled houses with dates from the RIA and the Migration Period (MiP) are

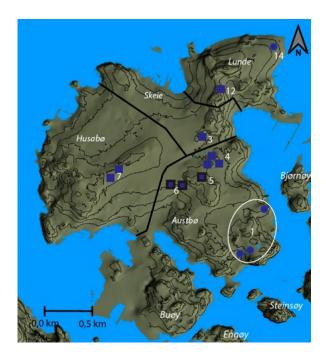


Figure 5. Areas on Hundvåg with traces of settlement from the Roman Iron Age and Migration Period. The blue squares mark houses, the blue squares with a black border mark farm complexes with several houses and phases, and the blue dots mark structures. The numbers refers to the different excavation and survey projects, and the circle marks an area at Austbø where only cooking pits and fireplaces have been found.

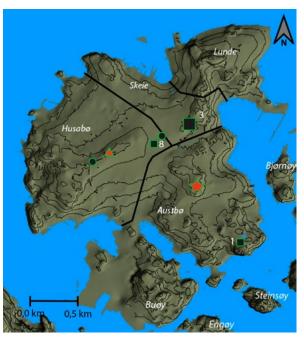


Figure 6. Areas on Hundvåg with traces of settlement and other structures from the LIA/VA and the Medieval Period. The black squares are buildings, the black dots are grave mounds dated to the LIA/VA and the triangle is a stone cross from the late VA. The red star marks the position of a stone church from the Medieval Period. The numbers refer to the different excavation projects.

documented on Hundvåg (Fig. 5, Table 1). A single example comes from Skeie (Fig. 5, No. 3), while the rest were situated in the northern part of Austbø (Fig. 5, No. 4-6).

The house at Skeie (Table 1, No. 3 House XI), and two of the houses from Austbø (Table 1, No. 4 Houses I and II) date to the transition between the PRIA and the RIA. The house at Skeie measured nearly 35 m long by 5.5 m wide (Skare 1998a). One of the houses at Austbø was found in a fragmented state, and its dimensions were estimated as 20 m long by 5 m wide. The second house was approximately 25 m long (Tsigaridas 2000a; 2000b).

Eleven of the houses from the RIA at Austbø constitute three farm complexes, with each complex containing two parallel long houses and a farmyard between them. Two of these farms, located in the northwest part of Austbø (Fig. 5, No. 6), approximately 30 m from each other, were found to have at least two phases (Hemdorff 2006). The best-preserved farm complex consists of a 41 m long by 7.5 m wide main building, and a 20 m long by 6.5 m wide secondary building (Table 1, No. 6 Houses IV and VI). Both structures were ¹⁴C-dated to the early Roman Iron Age. Several fireplaces and cooking pits were recorded in the farmyard between

the two houses, and in the western part of the yard, there was a small square building (Table 1, No. 6 House VII). In the late RIA, the main building was replaced by a 25 m long by 6 m wide long house (Table 1, No. 6 House V).

The second farm complex in this area consisted of a nearly 30 m long by 5.6 m wide main building, and an 18 m long, 5.5 m wide secondary building (Table 1 No. 6 Houses I and II). The main building was ¹⁴C-dated to the late RIA. A few meters to the northeast of the main building, the remains of a third building were uncovered (Table 1, No. 6 House III). It was not possible to establish the structure's age or size, but most probably, it represents an older phase of the farm (Hemdorff 2006: 8).

The third farm complex at Austbø was located c. 350 m east of the two complexes mentioned above (Fig. 5, No. 5). It consisted of a main building, rebuilt at least two times on the same spot (Table 1, No. 5 Houses II, III and IV), and a secondary building (Table 1, No. 5 House VI) with two overlapping phases (Meling 2001a; 2006). At one point, the main building may have been nearly 50 m long by around 7 m wide. It was not possible to establish the full length of the two other phases of the building, but it does not seem to have exceeded 25-30 m. The secondary building, situated 7 m west of the main building, was approximately 15-20 m long by 6 m wide in both phases. There is one ¹⁴C-dating from the main building, and two from the secondary building. All are Roman Iron Age, and correspond well with some of the ceramics found in the main building (Meling 2001a: 26).

In the northern part of Austbø (Fig. 5, No. 4, Table 1, No. 4 Houses III, IV and VIII) there are two, possibly three, buildings dated to the transition between the late RIA and the MiP (Tsigaridas 2000a; 2000b). One of the houses is estimated to have been around 25 m long by 6 m wide, while the other was over 17 m long by 6.5 m wide. The

two structures overlap horizontally and thus cannot have been contemporary.

In addition, partial remains of houses from this period have been investigated at Lunde (Fig. 5, No. 12) and Husabø (Fig. 5, No. 7). At Lunde, a large fireplace was ¹⁴C-dated to AD 80-130. The presence of several post holes on either side of the fireplace led the excavator to interpret this assemblage of features as part of a three-aisled building from the early RIA (Fyllingen 2011). A small excavation carried out at Husabø in 2009, revealed several post holes, fireplaces and cultural layers. It was possible to distinguish the remains of at least two buildings amongst these features, and ceramics of RIA and MiP type found in the various features, indicates that most of the settlement activity at the site can be attributed to this period (Fyllingen 2009).

AD 550-1050: THE LATE IRON AGE AND VIKING AGE

A total of nine houses with dates corresponding to the Late Iron Age (LIA) and the Viking Age (VA) are known from Skeie (Fig. 6, No. 3). Five of the buildings are of late seventh- to eighth- century date (Table 1, No. 3 Houses III, IX, X, XIX and XXV) while the remainder were in use during the late ninth- to the tenth- century (Table 1, No. 3 Houses I, II, IV and VII). All but one were three-aisled. Most of the buildings were only partly preserved, but it seems that the majority had a length of around 15-20 m and a width between 4 m and 7 m. The best-preserved house (Table 1, No. 3 House X) was 17 m long by around 7 m wide (Skare 1998). Artefacts typical of the LIA and VA, (i.e. a fire steel, a loom weight, and a number of slate hones) were recovered from some of the buildings.

One of the buildings at Skeie was circular in shape with a diameter of approximately 6 m (Table 1, No. 3 House XIX). This was situated c. 50 m to the southwest of the other buildings from LIA/VA

and consisted of a wall trench outlining the plan of the building, two post holes in each corner and a large stone in the middle. The number and position of the post holes indicates that the building had two phases, both of which have been ¹⁴C-dated to the Late Iron Age (Skare 1998a; 1998b). Pieces of slag retrieved from the fill of one of the post holes indicate that the building probably functioned as a smithy during at least in one of its phases (Skare 1998b: 19).

A similar circular building was excavated at Husabø in 2000 (Fig. 6, No. 8, Table 1, No. 8 House III). This structure was not ¹⁴C-dated, and there were no finds from any of the associated features to inform interpretation of its function (Aakvik 2000; 2001). Both its form and size, however, suggest that it is of the same age as the circular building from Skeie. In the eastern part of Austbø (Fig. 6, No. 1, Table 1, No. 1 House III), a small 10m² rectangular building, probably related to outfield exploitation, has been ¹⁴C-dated to the VA (Juhl 2001: 99).

DISCUSSION

The first agricultural settlement

Although there are no pollen diagrams from Hundvåg, the general vegetation history shows that this part of Rogaland was gradually deforested throughout the Neolithic and Bronze Age leading to the eventual formation of heathland (Prøsch-Danielsen and Simonsen 2000: 40). One of the most pronounced clearance phases took place during the transition between the LN and EBA (1900-1400 BC). This corresponds with the dates for two-aisled houses in Rogaland and an increase in the number of carbonised cereals related to houses and other settlement structures (Soltvedt 2000; Høgestøl and Prøsch-Danielsen 2006: 27). A similar pattern is also seen along the coast further north, and both the botanical data and the archaeological evidence

suggests that the deforestation phase corresponds with the establishment of an agrarian economy throughout most of western Norway (Bakka and Kaland 1971; Prescott 1996; Soltvedt 2000; Hjelle et al. 2006; Høgestøl and Prøsch-Danielsen 2006). The LN and EBA settlement on Hundvåg is part of this picture, and the dates of cereals from Austbø implies that the shift towards a new economy on the island took place in the first half of the Late Neolithic. The locations of the sites suggests the same. The oldest dated cereal from Hundvåg comes from a site in the eastern part of Austbø (Fig. 3, No. 1). This site is located on a ridge with good conditions for cultivation, but also close to the sea, an area where human activity had been focused during the Early and Middle Neolithic (Juhl 2001: 39-43). This suggests that although farming had become part of the economy, fishing and hunting requirements were still important influences on settlement patterns. In the middle of the LN, around 2000 BC, however, we see a shift in the location of settlements, as new dwelling sites begin to be established in the central part of the island (Fig. 3, No. 5, 9). These were situated at a greater distance from the sea and at places with no Early or Middle Neolithic settlement. Sites from this period are typically located in areas with good drainage and fertile soils, and it is obvious that the agricultural potential of the land was the main factor governing the choice of location. The changing settlement patterns are even more apparent in the record from the Early Bronze Age (1800-1400 BC), a period when the number of dwelling sites situated in these types of locations increases (Fig. 3, No. 3, 4, 10).

The distribution of stray-finds (i.e. flint daggers, shaft-hole axes and flint sickles) paints a similar picture of life during the LN and EBA. Such finds are often interpreted as indicators of an agricultural economy, and assumed to be representative of the size and location of settlements (Bakka and Kaland

1971; Solberg 1993; Hjelle *et al.* 2006). On Hundvåg the majority of the stray-finds are from the inner part of the island (Fig. 3). A number occur close to known LN/EBA dwelling sites, confirming that their distribution approximately reflects the location of contemporary settlements and fields. It is also worth noting that all of the typologically classified flint daggers from Hundvåg are of the types IV, V and VI (Zinsli 2007) dating to the end of the LN and EBA (Vankilde 1996).

It has been suggested that early agricultural practice in parts of Scandinavia was based on a rotating system in which both cultivation patterns and the choice of settlement location, were structured around movement within the borders of defined territories (Björhem 2003; Björhem and Staaf 2006; Olsen 2013). In spite of its emphasis on mobility, this lifeway is viewed as inherently sedentary since the same settlement sites were inhabited on multiple occasions and at regular intervals. This theory is primarily based on the observation that several LN/ EBA settlement sites have two or more overlapping house structures. Often, there is also a minor time gap between the houses, indicating that it took some time before a new house was built at the same place (Olsen 2013: 143-144). On Hundvåg, evidence of settlement continuity during the LN and EBA is seen at several sites. This is most apparent in the eastern part of Austbø, where a number of structures, as well as cultural layers, date to this period. Several ¹⁴C-dates from cultural layers in the north of Austbø add additional weight to this interpretation (Table 2). However, since there are no known houses from the LN and the earliest part of the EBA at any of these sites, it is difficult to determine whether this material reflects continuous settlement at the same place, or is the product of a rotating settlement system based on repeated visits to the same locales. It has not been possible to establish an internal chronology for the two-aisled houses from Skeie

(Fig. 3, No. 3) and Austbø (Fig. 3, No. 4) but their relative abundance and the frequently encountered evidence of rebuilding/replacement indicates that there was a more permanent settlement structure on the island at this time, where the houses have been replaced on a regular basis. The two early threeaisled houses from the eastern part of Austbø (Fig. 3, No. 1) demonstrate that this was in place during the later portion of EBA period II (1500-1400 BC). These houses have identical ¹⁴C-datings and overlap horizontally. Evidence of post hole replacement was observed in both structures, indicating that each had a long life span. One house most likely succeeded the other since there is nothing suggesting that the site was abandoned for a period. Similar continuity of settlement is also probable at Lunde (Fig. 3, No. 10) where two Early Bronze Age houses were found to be of a very similar age.

In general, there seems to have been rather stable, agriculturally based settlement on Hundvåg from at least the latter part of the Late Neolithic onwards. This pattern can also be seen in other parts of western Norway (Diinhoff 2005a). Within Rogaland, well established and enduring settlements have been found at Kvåle in Time, and Jåttå and Røyneberg in Stavanger (Børsheim 2005). At these places, overlapping house structures from the LN and EBA suggest that the same spots were occupied continuously for hundreds of years.

Short-lived houses and permanent ritual places

At several places in southern Norway, especially along the western coast, there is evidence of a distinct expansion of settlement towards the end of the LBA and into the early PRIA (i.e. Løken *et al* 1996; Løken 1998; Diinhoff 2005b; Myhre 2004). As established habitation zones widened, land was cleared to facilitate farming and the construction of settlements. Such an expansion is not evident on Hundvåg, but there is a concentration of both

buildings and structures ¹⁴C-dated to BC 700-400 (Table 1 and 2), indicating that the settlement went through a similar development and was structured in the same way as in the rest of southern Norway.

The majority of the three-aisled houses from this period on Hundvåg were discovered in a fragmented state, but based on their length (Table 1) they seem to have been of the common type with separate rooms for animals and people. A family based unit who had ownership of the livestock probably occupied such houses (Løken 1998; Myhre 2004: 46-47). Along with the signs of settlement expansion, the houses are seen by some as a reflection of a more egalitarian society, in which colonizing and investment in new land became easier (Skoglund 1999; Myhre 2004; Feldt 2005; Björhem and Staaf 2006; Herschend 2009). Another explanation for the large number of farms and houses from this period is that houses usually lasted for just one generation. The settling of new land was probably not related to family or inheritance, but strictly regulated and organized by the community (Herschend 2009: 170), and in such a society, it is possible that not everyone had the right to build a house or establish a farm. It is also reason to believe that this stratification, where certain families/groups had limited rights and a poorer social position, was expressed through the size and shape of house construction (Herschend 2006: 169). For instance, the two U-shaped buildings from Austbø and Husabø differ from the uniform three-aisled longhouses of the time. Similar small buildings are also found elsewhere in Rogaland (Løken 1997; 1998), and it has been suggested that they express this kind of diversity in society and were homes for families with no rights to keep animals (Løken 1998: 119).

Three rock carving sites have been recorded on Hundvåg, one at Husabø and two at Austbø (Fig. 4). The carving at Husabø is a ship figure and one of the carvings at Austbø consists of a single panel with

two ships (Myhre N. 2004: 142). The second carving at Austbø is a composition of assorted lines framing what appear to be upturned ships (Myhre, N. 2004: 119). It is difficult to date the carvings more precisely than to the Bronze Age. The sites on Hundvåg are located in a rock art rich area of Rogaland (Myhre, N. 2004); one of the most extensive concentrations of such material is situated on the island of Amøy, 3.5 km north of Hundvåg (Fig. 1). The highly variable iconography on display at Amøy is the cumulative result of activity throughout the Bronze Age. The density and variety of rock art found here, along with its strategic location in the southern part of the Boknafjord basin, suggests that the island served as a ritual sanctuary for a large social catchment. In contrast, smaller and less prominently positioned sites, such as those on Hundvåg, most probably served as local ritual places. Their location close to the seashore and inter-visibility with other similar sites, however, linked them to the wider rock art landscape (Myhre, N. 2004: 142).

Myhre (2004: 59) emphasizes that the most common motif in Rogaland, the ship, and the close relation between the rock art sites and the sea, signal mobility and communication. Although Myhre's theory is a criticism of the traditional association between rock art, settlement and centre-periphery models, her theory is, in my opinion, consistent with the general settlement pattern in the Bronze Age. In a society characterized by extensive clearance of new land, farms scattered around the landscape and the need to "re-establish" the farm every new generation, rock-carving sites and their motifs may have symbolised the importance of mobility and communication while at the same time serving as permanent and stable places in the landscape.

From farm to manor

Around the birth of Christ, there is a distinct change in the organization of settlement on Hundvåg.

Several places, which had been occupied since the Late Neolithic, seem to be more or less abandoned, at least as habitation areas, and settlement becomes concentrated in the central part of the island (Fig. 5). The first farm complexes with two parallel buildings are also established at this time, and by the late Roman Iron Age, three contemporary farms existed in the northern part of Austbø. At least two of these were in use throughout the whole Roman Iron Age, and at one point the main buildings were 40-50 m in length. These large buildings resemble, in both size and construction, several large manor houses found elsewhere in western Norway (Diinhoff 2011). One example is a 50 m longhouse from the early Roman Iron Age which was discovered at Forsandmoen in Forsand municipality (Løken 1997: 176; 2001: 59). This is likely to have been a multifunctional building on a chieftain's farm, and a large room in the central part of the house is interpreted as a hall for feasts and ceremonies (Løken 2001: 66). It was not possible to define a hall in the two large houses from Austbø, but their substantial size suggests that they were manor houses and as such served as the residences of leading families with political and economic power. It is unlikely that the two farm complexes at Austbø were contemporary, presumably they represent different phases of the same farm.

In the late Roman Iron Age, around AD 200, there is a restructuring of the settlement at Forsandmoen, and a dense village like settlement with a main farm in the centre surrounded by smaller farms was established (Løken *et al.* 1996). So far, there are no direct parallels for this on Hundvåg, however, the amount and density of farms at Austbø suggests that organized and planned settlements existed in the area at this time. These were probably founded and controlled by a leading family. Most likely, the farms were organized as a multi-yard farm, where the different farm complexes had a common infield. A fence probably enclosed the infield, similar to those

seen at several well-preserved farm complexes on Jæren from the RIA and the MiP (Myhre 2004: 51). This kind of organization must have led to rather stable fields, and the clear division of the infield and the outfield illustrates the economic importance of cattle at the time (Myhre 2004: 56-57). Due to the limited space available on the island, cattle, or more precisely the need for grazing and hay fields, was most likely a significant influence on the restructuring of settlement beginning in the latter part of the Pre-Roman Iron Age. Unfortunately, it has not been possible to detect any fields or fences on Hundvåg. However, individual and small assemblages of fireplaces and cooking pits not directly related to any contemporary settlements have been found at several sites in the southern part of Austbø and at Lunde (Figs. 4 and 5). Most of these date from the latter part of the or the RIA (Table 2), and could represent traces of activity or small camps in outfield areas related to cattle herding and grazing (Tesch 1993: 137).

During the Migration Period, changes in settlement on Hundvåg seem to have taken place. At Austbø, at least two overlapping houses are ¹⁴C-dated to the transition between the RIA and the MiP (Fig. 5, No. 4), but otherwise there is little settlement evidence from the period in this area. However, it is not likely that the settlement was restructured, and no houses from the Migration Period have been found at sites closer to the coast. One possibility is that the settlement became concentrated in the central part of Husabø, where comprehensive traces of settlement have been found. Unfortunately, these traces are not dated, so only future excavations will be able to address this.

There are no rich grave finds of RIA or MiP date on Hundvåg. The only object that can be related to the high status milieu of the time is a gold finger ring from the Migration Period which was found in an anonymous ravine around 1850 (Bøe 1922:

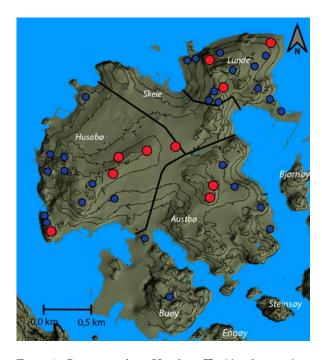


Figure 7. Gravemounds on Hundvåg. The blue dots mark mounds with a diameter of less than 15 m, while the red dots mark mounds with a diameter of 15 m or more (after Helliesen 1901).

37). A number of gravemounds have been recorded on the island (Helliesen 1901), but most have been destroyed over the years as a result of farming activity and construction projects. Just two mounds have been professionally excavated. With the exception of Skeie, grave mounds could once be found at all the historic farms on Hundvåg (Fig. 7). Smaller mounds (10-13m diameter) were generally located close to the coastline (Helliesen 1901). The largest mounds (>15 m diameter), however, were situated in the central part of the island (Fig. 7), in close proximity to the settlements from the Roman Iron Age and onwards. A large mound at Husabø, excavated in 2000, has been dated to the LIA (Aakvik 2000; 2001), and it has been suggested that a second mound at

the farm, the largest on the island, dates from the Bronze Age (Hemdorff 2003). This date, however, is based solely on the mound's exceptional size (c. 30 m in diameter and 6 m high). Helliesen reports that farmers found pottery, burnt bones and several grave chambers when they removed the two big mounds at Austbø (Helliesen 1901: 38). We cannot assign an accurate date based solely on this information, but the presence of pottery indicates that the mounds are older than the LIA/VA. Additionally, the occurrence of several grave chambers in each mound suggests that these monuments were used over a period of time.

Several places, there is a clear association between RIA/MiP farm complexes and large grave mounds with rich burials. At Forsandmoen, for instance, three of the biggest grave mounds in the area were located close to a chieftain's farm from the early Roman Iron Age (Løken 2001: 68-69). At Hove in Sandnes (Fig. 1), several rich Roman Iron Age burials were situated adjacent to a large farm complex from the same period (Myhre 1997; Bjørdal 2014). On Hundvåg, the biggest grave mounds were separated from Roman Iron Age farm complexes by a distance of 200-500 m. There is no direct evidence that any of these mounds are from the Roman Iron Age. As noted above, excavation work has in fact revealed that at least one example is Late Iron Age in date. However, based on their close spatial association with settlements from the Roman Iron Age and onwards, I would argue that the larger grave mounds on Hundvåg are related to the restructuring of the settlement on the island in the latter part of the Pre-Roman Iron Age. By placing the mounds in the centre of the island, adjacent to settlements, the ruling families substantiated their territorial rights and the ancestral bonds to their predecessors (Bukkemoen 2014). A similar association between graves and the farm structure is also evident in the Late Iron Age on Hundvåg.

Estate and administrative functions

Although the Late Iron Age/Viking Age houses from Skeie were discovered in a fragmented state, both their size and associated artifact assemblages, suggest that they represent different phases of a farm. The circular smithy, placed in a distance from rest of the buildings, indicates the same. The location of the house structures demonstrates that settlement in the LIA/VA, as in the previous period, was concentrated in the central part of the island. There is also some evidence that the boundaries of Hundvåg's historic farms were, at least in part, established at this time. There are no grave finds from Skeie, but one of the large grave mounds at Husabø was located on the farm's border with Skeie, and close to the convergence of three historic farm (Skeie, Husabø and Austbø) boundary points (Fig. 7). During the excavation in 2000, the remains of a boat grave dated to the Late Iron Age were uncovered in this mound. There were no older burials, so the mound must have been erected in the LIA. Its construction and location could therefore be associated with the demarcation of the historic farm units, and be seen as an assertion of territorial rights and landownership (Skre 1998: 204-220; Ødegaard 2010).

The reason for such a division could have been hereditary rights (Zachrisson 1994), but the division could also have been the consequence of a reorganization of settlement on Hundvåg, in which the farmland was divided under the auspices of a central landowner. Such a development took place in southeastern Norway during the latter part of the Migration Period and into the first decades of the LIA (Iversen 2013). The lack of house structures from the late Migration Period and onwards at Austbø, and the establishment of a farm at Skeie in the LIA, suggest that some sort of reorganization of the settlement took place on Hundvåg during this time. The name Austbø also points us in the same direction. Austbø is a

divided farm name, meaning 'the eastern part of Bø'. Originally, Austbø must have been part of a farm named Bø, and on Hundvåg this could only be Husabø (Helle 1975: 73). The medieval property structure on Hundvåg also indicates that the farms were part of a large unit in the Viking Age, perhaps an estate. During the Medieval Period, Husabø and Austbø were among the biggest farms in Rogaland, and the Apostle Church in Bergen owned both. The Apostle Church was the most prominent of the royal chapels in Norway, and most likely, it received Husabø and Austbø as a gift from the king (Helle 1975: 59). The king on the other hand probably acquired the farms through confiscations during the unification process at end of the ninth century, or through one of the many conflicts that characterize the political situation in Norway until the first part of the thirteenth century (Helle 1975: 56; Bjørkvik 1995: 73).

During the Medieval Period, many farms in this part of Rogaland were in royal or ecclesiastical possession and this suggests that a series of confiscations took place in the area from the late ninth century onwards (Bjørkvik 1995). Although we have no direct knowledge of the property structure in the Viking Age, prior to the confiscations, it is likely that many of these farms belonged to one or several large estates (Bjørkvik 1995: 74-75). It has been suggested that farms named Husabø/Huseby had a prominent position in such estates (Westerdahl and Stylegard 2004: 125), and there is a general assumption that the Husabø/Huseby farms went on to become royal administrative centres in the late Viking Age and early Medieval Period (e.g. Helle 1975; Westerdahl and Stylegard 2004; Iversen 2011). One important function was probably related to the taxation and storage of goods, and there is a concurrence between the distribution of Huseby farms and the late medieval taxation regions in Norway (Iversen 2011: 239).

We cannot determine with certainty when the historic farms were established on Hundvåg, or when and how the farms became royal and ecclesiastical property. Parts of the archaeological material and several historical sources suggest however, that some of these changes may have taken place during the LIA and VA. The historic sources also suggest that Hundvåg had a significant political and administrative position in the region, especially in the latter part of the period. A stone cross from the late Viking Age at Husabø and a private stone church from the Medieval Period at Austbø (Fig. 6) reinforce this impression; wealthy and important persons probably initiated the erection of both.

CONCLUDING REMARKS

On Hundvåg it has been possible to follow the patterns of agriculturally based settlement from the Late Neolithic to the end of the Viking Age. From around 2000 BC onwards, most of the island seem to have been exploited for agricultural purposes, and both ¹⁴C-datings and the number of house structures suggest that the settlement has been rather stable, at least since the end of the Late Neolithic. Up to the birth of Christ, the landscape on Hundvåg most probably was a mosaic of farms, fields and grazing areas, and the most pronounced change in the organization of the settlement took place in the early Roman Iron Age. At this time, the settlement became concentrated around the height in the central part of the island, and it seems to have been restricted to this area throughout the Late Iron Age and Viking Age.

Changes in the settlement organization over time are readily visible at Hundvåg, and the main reason for this is the extensive archaeological surveying of the area. Because the island presents limited space for settlement and cultivation, it has also made it easier to detect changes in the use of the landscape. From a long-term perspective, however, the settlement

structure on Hundvåg bears many similarities with the general subsistence-settlement along the west coast of Norway. The size of the island has not compromised the general trends according the size of the farms, how the farms have been organized, or how the settlement was situated in the landscape throughout this long time span.

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