# **Norse shielings in Scotland:**

An interdisciplinary study of

*setr*/*sætr* and *ærgi*-names

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## Declaration

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Mark Ryan Foster

# Abstract

This is a study of the Old Norse (hereafter abbreviated to ON) *setr/sætr* and *ærgi* place-names in areas of Scandinavian settlement in Scotland. The elements *setr/sætr* and *ærgi* all have a general meaning of a place for summer grazing in the hills, referred to in Scotland as a shieling. However, the related terms *setr* and *sætr*, are employed as shielings names in Norway and are indistinguishable from each other in Britain. It is only in areas of Scandinavian settlement in Britain and the Faroes that *ærgi* is found to signify a shieling site. The element *ærgi* was adopted as a loanword from either, the Scottish Gaelic *àirigh* or Irish *áirge*, both of which can also have the meaning of a shieling.

What is unusual about this adoption is it is rare for a more prestigious speech community (ON in this instance) to adopt a word from, what is believed to have been, a less prestigious language at the time (Gaelic). Various scholars have looked at this question, but none have adequately explained the reason for the adoption. Much of the previous research has relied on comparisons of local farming systems that were recorded many centuries after the Viking Age. Farming techniques from the fifteenth to twentieth century are unlikely to adequately represent the agricultural situation in the Viking Age due to different social imperatives. The overall question I want to answer in this thesis, is why Scandinavian settlers in Scotland adopted *ærgi*, when they already had corresponding ON terms for a shieling.

The distribution of ON settlement names is one of the main pieces of evidence to prove Scandinavian settlement in Scotland during this period. This is especially true of secondary settlements, such as shielings, which rarely feature in early documentation. The language shift to either Gaelic or Scots-English is likely to have led to the loss of many ON place-names,

but will also have fossilised some names in the landscape. The location of these settlement names can give an understanding of how Scandinavian settlers utilised the landscape and highlight differences in the use of different shieling names.

This thesis is interdisciplinary in nature, but one based on cultural and historical geography. The first element of the study is to understand why shielings developed in Scandinavian society and if there are identifiable environmental factors behind their location. Studies in Norway suggest shielings developed as a response to environmental constraints to agriculture and social pressures to produce a surplus. A locational study of shielings in areas that were the likely origin of Viking settlers in Norway, highlighted seven key locations for shielings. These locational factors were then compared to *setr/sætr*-names in Scotland. The locations were broadly similar to Norwegian shielings, however, Scottish *setr/sætr*-names were more likely to be situated in slightly more fertile locations than Norwegian examples studied.

A comparison of Scottish *setr/sætr*-names with *ærgi*-names also revealed the latter to be more likely found on even richer grazing land. The conclusion being, *setr/sætr* had a more general meaning of a place for summer grazing, whereas, *ærgi* was specifically linked to richer soils and richer grazing land. This link may relate to an intensive dairy economy, something which is known from contemporary documentary sources from the Gaelic world, but has not been proven in pre-Viking Age Norway.

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## ABBREVIATIONS

| | |
|---|---|
| AP | Arboreal Pollen |
| approx. | approximately |
| asl | above sea level (m). It is usual to use OD (ordnance datum) when discussing height above sea level in the British Isles. However, this is not the case in Norway and the Faroe Islands, for consistency I will use asl to describe the height of land above sea level in this thesis. |
| c. | circa, 'around' |
| CV | Cleasby, R. & Vigfusson, G. (1874) *An Icelandic-English Dictionary*. |
| ed./eds. | editor(s) |
| eg. | exempli gratia, 'for example' |
| etc. | etcetera, ·and others' |
| f. | feminine |
| km | kilometre |
| m. | masculine |
| m | metre(s) |
| n. | neuter |
| NG | *Norske Gaardsnavne* (Vols.1-19), Rygh, O. (1897-1936). |
| NSL | *Norsk Stadnamnleksikon*, Sandnes, J. & Stemshaug, O. (eds) (1990). |
| OE | Old English (from the seventh century AD to c.1150) |
| OIr | Old Irish |
| ON | Old Norse, Old Norse can be applied in various ways, West Scandinavian, i.e. Old Norwegian, and East Scandinavian, i.e. Old Danish, but it refers here to West Scandinavian, i.e. Old Norwegian. |
| OS | Ordnance Survey |
| pers.comm | personal communication |
| pl. | Plural |
| ScG | Scottish Gaelic |
| Scots | (Scots English) |
| trans. | translator(s) |
| VA | Viking Age |

# CHAPTER 1. INTRODUCTION

## 1.1 General Introduction

The Viking Age (VA) involved the movement of people from Scandinavia to Britain and Ireland, and then on to Faroes, Iceland, Greenland and North America around the 8th century AD. Archaeological investigations show similarities in size, morphology and the topographical situation of buildings, suggesting a “homogenous common emigrant culture”, though with regional adaptions to resource availability (Larsen and Stummann Hansen 2001, 115-17). It has also been suggested that along with a common building tradition, settlers brought preferences concerning raw materials, articles of daily use (Larsen and Stummann Hansen 2001, 115) and farming systems (Amorosi et al*.,* 1992, 169).

One aspect of the farming economy that has been suggested as being exported with the settlers is the use of shielings. Shielings are summer farms, used to house people and livestock away from the home farm or primary settlement between early summer and autumn. ‘*Shieling’* is a later Scottish term; it is, however, a useful generic term to describe the use of, and practices associated with, summer farms. The seasonal movement of livestock to access fresh grazing at shielings is referred to as ‘transhumance’. Transhumance differs from nomadism in that there is a permanently settled location from where the livestock leave and return (Schuyler 2005, 357-8). Forms of transhumance have been a part of farming in Scandinavia from the Neolithic period onwards.

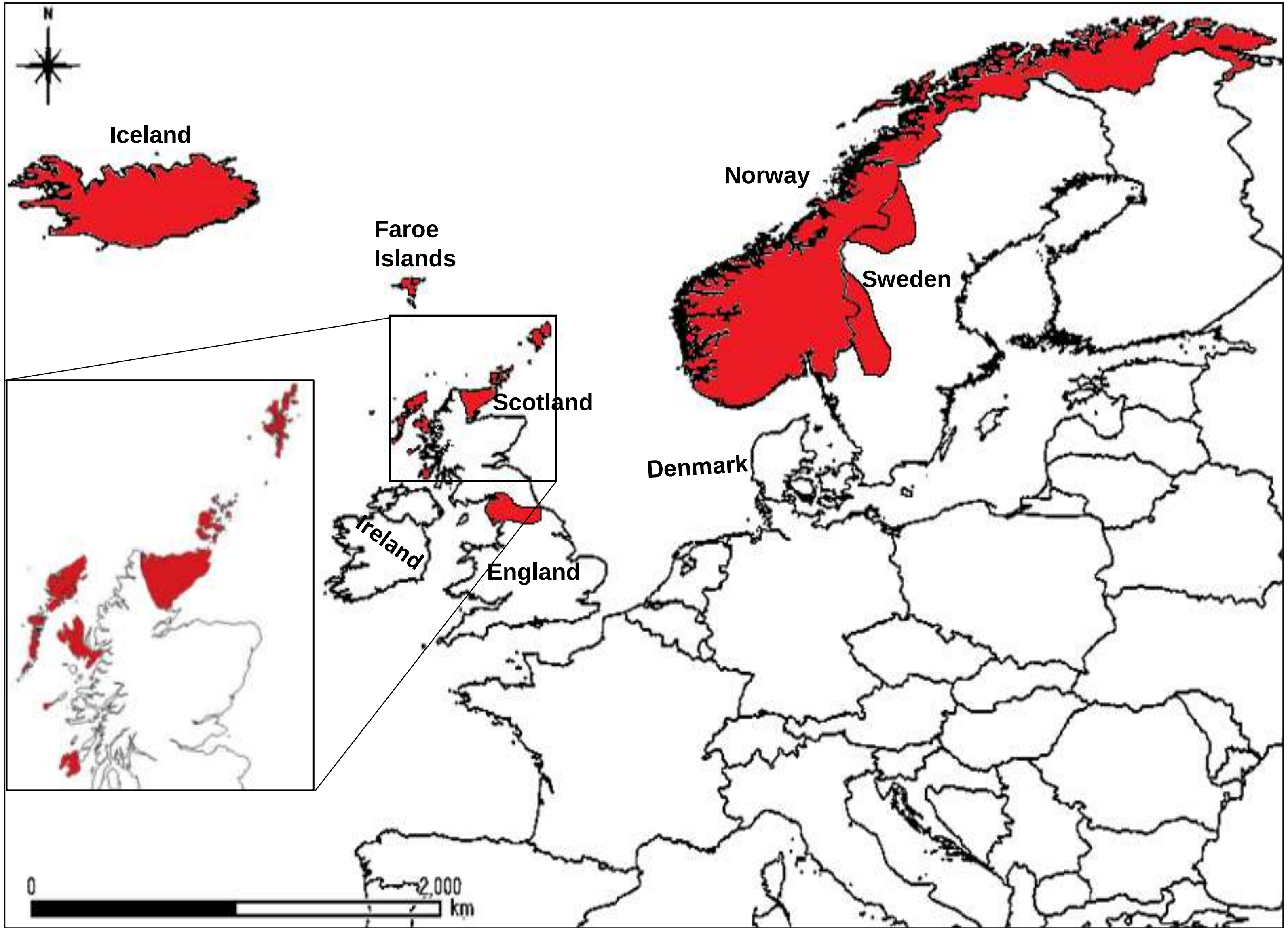


Figure 1.2. Generalised distribution map of the ON element *setr/sætr* within modern country boundaries.

However, the utilisation of sites with buildings that were visited each summer developed during the Iron Age (IA) (see Chapter 3). Viking Age (VA) shieling sites have been suggested as being present in a number of Scandinavian settlement areas abroad, through the study of place-names as in Scotland (Nicolaisen, 1969), archaeological excavations in Iceland (Lucas, 2008; Kupiec, 2016) and building morphology and topography setting in Greenland (Albrethsen and Keller 1986; Albrethsen 1991).

The main aim of this thesis is to try to explain why incoming Scandinavian settlers adopted a Gaelic term for a shieling, *ærgi*, when they had brought with them the related-ON terms *setr/sætr*. This is unusual in a contact linguistic situation for a word from a less prestigious language, as Gaelic is believed to have been in the VA, to be adopted into what was perceived at the time as a more prestigious language (see Chapter 5). Barbara Crawford suggested that within the "organisation of the pastoral economy there is the highly interesting and still not fully understood '*ærgi'* problem" (1985a, 3). Gillian Fellows-Jenson (1985b, 73-4) and Per Sveaas Anderson (1991, 140) both commented on the fact that there must be some difference in the function of each generic, however, that none so far has been found.

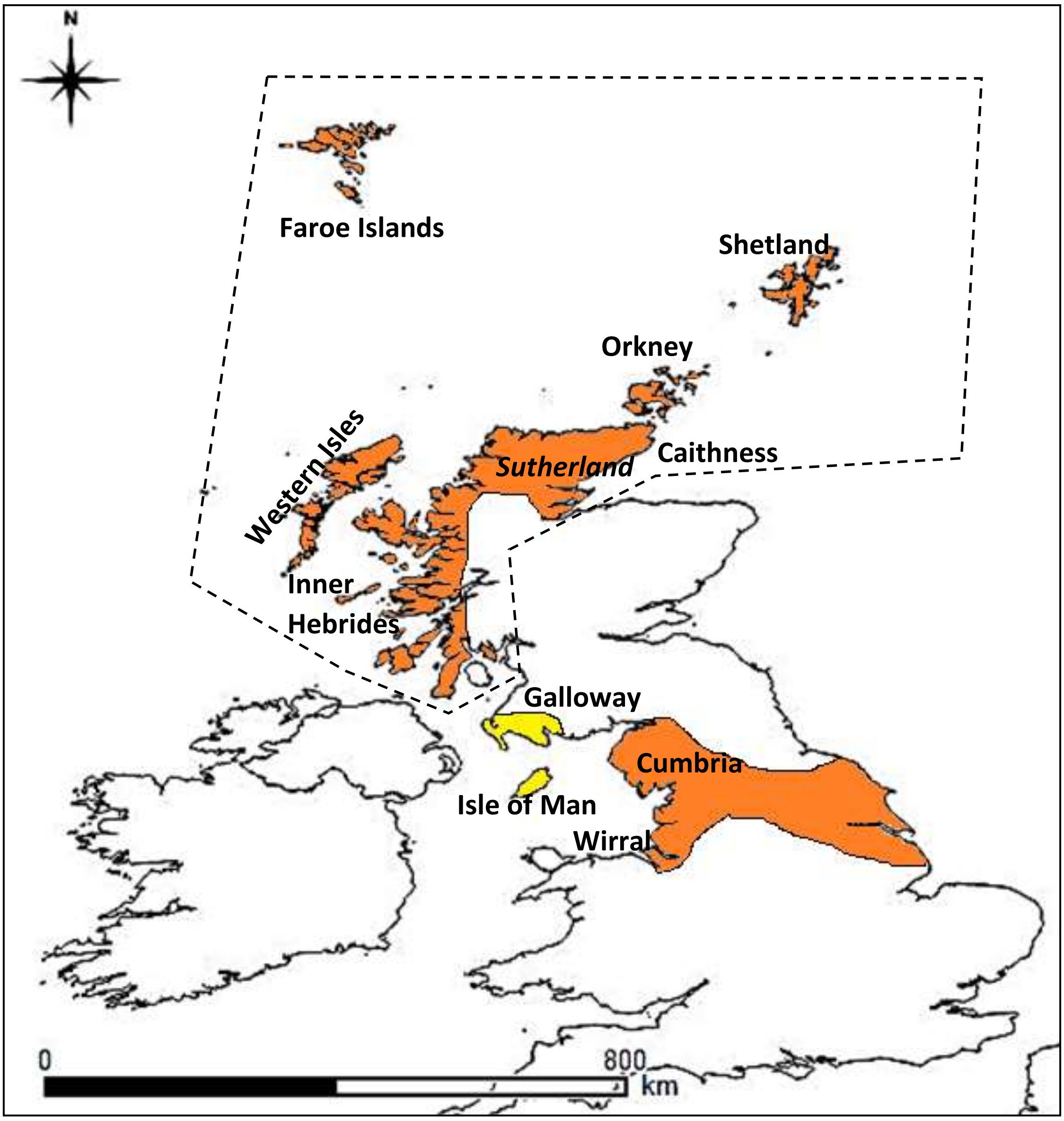


Figure 1.2. The distribution of *ærgi*-names in Britain (*ærgi* in orange, Galloway and the Isle of Man are yellow, as names may represent either *àirigh* or *ærgi*). Area encompassed by the dotted line shows the extent of this study.

## 1.2 Definitions

Jørn Sandnes characterised farms as being habitation with its own name, which housed people and livestock permanently or at least in winter, at the same time utilising land for cultivation (Sandnes, 1979, 166). A shieling, in contrast, is a summer farm, a place to house people and livestock during the spring and summer months away from the home farm (Mahler 1993, 487; Lucas 2008, 85).

The traditional definition for Viking shieling names in Britain, has followed those given in dictionaries of Old Icelandic. Cleasby and Vigfusson (CV from here on) gives the meaning of *setr* n. as: 1. seat, residence, or 2. A mountain pasture or dairy lands; while *sætr* was a specific term for a mountain pasture (Cleasby and Vigfusson (CV from here on) 1874, 525, 619). Heggstad and Torp gave a variety of definitions in Old Norse for *setr* (n.): 1. seat, farm name, residence; 2. shieling '*um soli sól gengr til setrs* ('To go to *setr* in summer'); 3. A Milking place (1909, 370). Heggstad and Torp defines *sætr* as: 1. Shieling; 2. milking place; 3. mountain pasture with a building (1909, 451). CV (1874, 133) and Heggstad and Torp (1909, 546) both give the definition of *ærgi* as being originally Gaelic and having the meaning of *sætr*. Therefore, a *setr* can be a farm, milking place or a shieling, a *sætr* is a shieling or a milking place and a *ærgi* is another name for a *sætr*.

## 1.3 The source language of *ærgi*

In his notes to Hjaltalin and Goudie's 1873 translation of *Orkneyinga Saga,* Joseph Anderson suggested *ærgi* as a Norse corruption of the ScG *àirigh*. Anderson further suggested that this was evidence of a 'blending of folk speech' along a linguistic contact zone in north-east Scotland, with ON spoken to the north-east and ScG to the south-west (Anderson 1873 187). In England the Rev J.C. Atkinson, in *Ancient Whitby and its Abbey,* had postulated that *argh* [*ærgi*] was derived from the ON *hörgr* ('temple') and represented pagan temple sites (1882, 113). This was discounted by Henry Colley March in his study of Lancashire place-names, who, following Anderson, suggested that the generic was derived from the ScG *àirigh* (Colley March 1891, 93; Fellows-Jensen 2002, 91).

Jacob Jacobsen, writing on the place-names of Shetland, identified *aria*/*ergi* place-names as being derived from Celtic *airidh* [*àirigh*] (1936, 179, 181-183). Jacobsen suggested that the use of a Celtic-name for a mountain pasture must be a 'primitive form' and, along with Celtic-names for hills and valleys, are likely adoptions of pre-Norse place-names (Jacobsen 1936, 177; Fellows-Jensen 2002, 90). Gaelic, however, is not believed to have been widely spoken in Shetland before, during, or after the VA (Grant 2003, 4) and are therefore most likely ON *ærgi*. Jacobsen also suggested the farm name Arg in Sandsting, was derived from the Brittonic '*arg*'-enclosure (1936, 208). The link between *arg* and Brittonic was discounted by Gillian Fellows-Jensen, as the word is not recorded before the fourteenth century (Fellows-Jensen 2002, 90). John Stewart identified Arg, Aria, and Benisergj in Shetland as a

Norse adoption of the OIr *áirge* and directly linked their use with that of *Ásgrímsergin* in Caithness (1987, 26).

On Orkney, Hugh Marwick proposed a pre-Norse Gaelic survival for the three simplex Airy names on Sanday, Stronsay and Westray (1952, 6, 23, 38), suggesting that the Airy names probably began as names borrowed from the earlier race for topographical features, which later developed into farms (Marwick 1952, 227, Grant 2003, 169). As in Shetland, Orkney is not believed to have been Gaelic-speaking before or after the VA, which again must point to these Airy names being ON *ærgi*-names (Grant 2003, 4). Marwick also proposes that the farm name 'Arian' in Stromness and the deserted settlement of 'The Styres of Steenie-iron' on Rousay are derived from ON *ærgi.* Marwick making the point that in the use of a definate article –*in* showed the term had been fully adopted as an ON word (1952, 165). Marwick is therefore suggesting that incoming ON-speakers: 1) adopted already occurring *àirigh*-names, as mono-referential names for topographical features; 2) later transferred the topographical name to name new farming settlements; 3) also adopted the term as *ærgi,* which was then used in new name formations. It would seem unlikely that incoming Scandinavian settlers would only adopt *àirigh*-names as relatively minor topographical features and subsidiary farms and almost no major topographical features or settlement names (Smith 2001, 20). It is therefore more probable that the names mentioned on Shetland and Orkney represent ON coinages of *ærgi* after the term was borrowed from Gaelic-speaker's further south.

Mary Higham was unconvinced by a Gaelic origin of *ærgi,* on the basis of a relative absence in the Wirral (1977-78, 350), which is likely to have seen a Scandinavian settlement, possibly due to the Norse expulsion from Dublin in AD 902 (Wainwright 1948, 146). Higham does acknowledge the presence of 'Arrowe', an *ærgi*-name located in the Wirral, suggesting the relative absence of *ærgi* may be due to topography (1977-8, 349); however, Higham countered her own argument when she points out that *ærgi*-names are low-lying in other areas of Scandinavian settlement (1977-8, 349; 1996, 56). Higham suggests a Brittonic origin for *ærgi*-names (Higham, M.C. 1977-8, 347), on the basis of Hugh Marwick's belief of a pre-Norse (and therefore presumed Brittonic) origin of Airy in the parish of Birsey (Marwick 1970, 80). However, Marwick does suggest that the Airy in Birsay was pre-Norse, but that it was Gaelic (Marwick 1970, 80), as he does for all three of the Orkney Airy-names (Marwick 1952, 6, 227).

Jacobsen, despite suggesting a Brittonic origin for Arg in Shetland, suggests that *Arg*-names found in the Faroe Islands (Argisá, Argisbrekka, Argishamar, etc) are a cognate of the Faroese *örga* ('place of gravel and pebbles') (Jakobsen 1936, 208). The linguist Christian Matras later identified the generic as *ærgi* from the OIr *áirge* ('milking place') and suggested that the use of a Gaelic term might indicate a VA date for their coining (1956, 52-53). The Viking Age link was confirmed by Sverri Dahl's excavation at Ergidalur*,* Suðuroy (1970, 362-366) and by Ditlev Mahler's excavation at Argisbrekka on Eysturoy, where 17 out of the 18 houses were dated to between 800-1200 AD (1993, 489). The Faroes may have had some form of a pre-VA settlement (Church et al., 2013, 231), possibly a Gaelic anchorite Christian community (for a discussion see Stummann Hansen 2003, 57-8).

## 1.4 Language borrowing and language contact theories

For a word, such as *ærgi,* to be transferred from one language into another there needs to be language contact. Umberto Ansaldo proposes that when people find themselves as the foreign element in a community, they can (a) impose their own language on the people they come into contact with; (b) 'teach some and learn some language' to allow communication; (c) learn a new language (2009, 82). At least one of the languages will be affected by this contact, either by changing lexically, grammatically or phonetically (Weinreich 1968, 55). These effects can range from the basic borrowing of loanwords, the adoption of grammatical elements, the development of pidgin and creoles, and finally to complete language shift (Thomason 2001, 70, 159-160, Myers-Scotton 2002, 41-48). The result of language contact, or language 'interference' as Uriel Weinreich refers to it, (1968, 1), can help to explain where, when and how a language contact situation occurred (Antilla 1989, 163, Thomason and Kaufman 1991, 63). A comparison of language contact theory to what is known, or suspected, about the contact between Gaelic and ON during the VA, may help to explain how and why the ScG *àirigh* came to be adopted into ON. In  Chapters 4 and 5, I will consider the type of Scandinavian settlement that occurred and in Chapters 6, I will look indepth at the contact linguistic situation.

Michael Samuels proposed two main types of contact: Type A: stable and continuous contact between languages ‘adjacent on either the horizontal (regional) or the vertical (social) axis’; Type B: a ‘sudden contact due to invasion, migration, or other cause of population shift, of systems not normally in contact hitherto’, with bilinguals learning the language of ‘prestige or livelihood’ (1972, 92-93). Carol Myers-Scotton, though agreeing with Samuels’ proposals, prefers to split the contact into three types, differentiating between military invasion and colonisation and other forms of population movement, and retaining contact along a linguistic frontier as the third type of contact (Myers-Scotton 2002, 31-36). Umberto Ansaldo’s study in Asia, of what he calls ‘Contact Language Formation’, suggested three situations where language change may occur: (a) trade between different communities, especially where there is a third space to meet, such as a market or port, (b) interethnic marriage, and (c) migration, either forced or spontaneous (Ansaldo 2009, 8).

Weinreich put forward a scale of borrowing grounded on morphemic classes, which itself was based on a scale of borrowing proposed by Whitney (1881, 19-21), but also taking into account Haugen’s ‘scale of adoptability’ (1950, 214-216). Weinreich proposed an outline of the way one language can affect another, which is dependent on a number of variables such as: the relative proficiency in each language; specialisation in the use of each language by topics and interlocuters; the manner of learning each language; and the attitude or prestige attached to each language (Weinreich 1968, 3). Sarah Thomason makes the point that vocabulary is borrowed before structure, but never the reverse (2001, 69) and she suggests four stages of borrowing, each a result of increasing levels of contact:

- Casual contact leads to only a few people becoming bilingual, but not fluent, and there is only limited borrowing of non-basic vocabulary, mostly nouns.
- A slightly more intense contact leads to some bilingual individuals becoming relatively fluent and this leads to borrowing of function words, some minor structural borrowing and increasing use of rare words.
- Intense contact involves a larger number of bilinguals within a population, leading to basic vocabulary, pronouns, verbs, adjectives, affixes and low numerals being adopted; there is also some structural loss or additional syllable structure, syntax word order and morphology.
- The final stage is the development of extensive bilingualism through very intense contact, until all aspects of a language structure are susceptible to borrowing (Thomason 2001, 69-70).

Werner Winter states that ‘lexical transfer is by far the most common type of linguistic transfer’ (1973, 144). Lexical items are more open to borrowing than phonics or grammar (Weinreich 1968, 35, 47, Vildomec 1963, 102, Antilla 1989, 155, Thomason and Kaufman 1991, Thomason 2001, 69, Stewart 2004, 393) and both simple and compound words can be transferred without the need to understand grammar (Weinreich 1968, 48, Antilla 1989, 156). Following the adoption of a word, monolinguals are just as able to accept a new loanword as a bilingual individual (Weinreich 1968, 56). Loanwords can be borrowed with foreign morphemes intact, or morphemes can be substituted with one from the borrower's language (Antilla 1989, 156). Thomason makes the point that very few bilinguals are needed to introduce a new word, citing the introduction into English of the word '*taboo*' from Tonga by Captain Cook as an example of the transfer of a word with a few bilingual individuals (Thomason 2001, 73). This would seem to give credence to Einer Haugen's suggestion that rather than using the term borrowing when a lexical transfer occurs, adoption may be a more apt term (1950, 211).

Weinreich (1968, 56-58) suggests the motivation for adopting new words can be explained as:

- The need to designate new things, persons, places, or concepts.
- Where there is a 'a variety of geographically localised terms being used to describe an object, concept, etc, these are more likely to be substituted for a single new word that replaces them all.
- Homonymy, similar to the theory of 'low frequency of words', where a word is borrowed to resolve a clash between words.
- The 'tendency of affective words to lose their effective force', creating a need for synonyms. Weinrich referring to the use of borrowed terms from another language in some instances as 'lexical aggrandisement'.

Myers-Scotton divides borrowing into cultural borrowings, which introduce new ideas, concepts or objects, which therefore need a new word, and core borrowings, which are words that have already got a duplicate in the recipient language (Myers-

Scotton 2002, 41). Thomas Stewart suggests there is either a ‘lexical gap’ or a social basis, based on the perceived status of the relevant language as the motivation for borrowing (2004, 393). Weinreich refers to words for newly invented or imported objects as concrete loanwords and argues that they are in fact ‘mere additions to the vocabulary’ (1968, 53). Antilla prefers the term ‘need-filling’ for borrowed words that are used for new nominations (1989, 155). Weinreich suggests that what Myers-Scotton calls ‘core borrowings’ may affect the receiving language in three possible ways: (1) confusion in usage, especially during the early stages of contact, leading to the abandonment of one of the terms; (2) the replacement of the old word with the foreign term; or (3) the specialisation over time of the old and new term (Weinreich 1968, 54-56).

Samuels argues that weak bilingualism (Thomason’s ‘casual contact’) allows only limited transfer of vocabulary and the resulting lack of understanding can lead to the development of a pidgin language (Samuels 1972, 93, Grant 2003, 96). A pidgin language has a small number of shared words, but only limited grammar (Antilla 1989, 173, Thomason 2001, 159). The motivation for the development of a pidgin arises from a ‘need for two speakers of mutually unintelligible languages to find a mode of communication’ (Samuels 1972, 93). When a pidgin becomes the first language of a community, it becomes a creole (Samuals 1972, 93, Antilla 1989, 173, 176); however, a creole not only adopts lexical elements, but grammatical elements may also develop within a ‘cross language compromise’ (Thomason 2001, 159-160). When there are a large number of bilinguals, and bilingualism is generally ‘strong’, it is more likely that language shift will occur (Myers-Scotton 2002, 48; Gigashvili and Gotsiridze 2014, 26). Weinreich termed language shift ‘a change from the habitual use of one language to that of another’ (Weinreich 1968, 68).

A key point to any contact-induced language change is that there needs to be some element of bilingualism within at least one of the language communities involved, to allow for the lexical meaning of words to be explained (Weinreich 1968, 56; Winter 1973, 139; Antilla 1989, 157; Myers-Scotton 2002, 41). Borrowing, however, usually happens one way with members of the less prestigious language borrowing from the more prestigious language (Nicolaisen 1961, 91; Weinreich 1968, 3; Samuels 1971, 94; Odlin 1989, 13, Thomason 2001, 66; Myers-Scotton 2002, 41).

Weinreich was one of the first scholars to consider the effects of socio-political factors in language contact, or ‘interference’ as Weinreich termed it (1968, 1). He further suggested that contact through bilingual groups would have a greater impact, and this in turn would be affected by: the relative size of bilinguals in each speech community; the attitude towards each of the two languages and cultures involved (prestige); the size of the bilingual group in total, and also the size of these groups within each of the two languages involved; and the attitude to bilingualism and the mixing of languages (Weinreich 1968, 3-4). Thomason suggests that the social indicators of contact-induced change are: the intensity of contact (the greater the intensity the greater the social pressure-the more interchange occurs); second, the longer duration of contact the more borrowing will occur, and thirdly, subordinate groups are more likely to become bilingual (Thomason 2001, 66). Terence Odlin noted that 'The group exerting the influence is often, though not always, a speech community with larger numbers, greater prestige, and more political power' (1989, 13). Prestige can be bestowed on a language by being spoken by the ruling class (Antilla 1989, 155) and in Scotland during the VA this would seem to have been ON (see Chapter 6.7).

Language contact can therefore have a variety of outcomes, from complete language shift on one extreme, to the borrowing of lexical items on the other. The scale of 'interference' is affected by the type of contact, its duration and intensity, the size of bilingual communities and the dominance or 'prestige' of the languages involved. Richard Cox in western Lewis found that only 6 Gaelic loanwords were adopted into ON: *àirigh* (shieling), *buaile*-(enclosure), *cro* (fold or pen), *aith* (ford), *creag* (rock), *ail* (rock) (Cox 1991, 486). In comparison, Cox found 90 ON loanwords had been adopted into Gaelic (1991, 486; see Chapter 6.8). The importance of prestige can be seen in Iceland, where, despite 63% of females being of British or Irish decent (Helgason et al., 2001, 733; See Chapter 1.4), very few Gaelic loanwords entered the Icelandic language (Sigurðsson, Gísli 2000, 118). This would suggest that ON was the more prestigious language and that the limited number of Gaelic loanwords in ON would suggest that there must have been a specific reason why *ærgi* was adopted by Scandinavian settlers to the British Isles.

## 1.5 Literature Review

Several authors have come to the conclusion that there must have been a fundamental difference in the use of *setr* and *ærgi* by Scandinavian settlers in the British Isles during the VA (Fellows-Jensen 1985b, 73-4; Anderson 1991, 140; B. Crawford 1985a, 3). There has been no attempt to compile or compare the national distribution of *ærgi*-names from Scotland, and few have tried to explain the reason for their adoption of the generic. It will therefore be necessary to look at the various theories pertaining to the coining of *ærgi*-names emanating from areas outside the study area

Mary Higham, in her paper on '*The -erg* [*-ærgi*] *place-names of Northern England'*, argued that the *ærgi*-names in north-west England represent pre-Viking sites which had practiced a *dær-rath* or *dær-stock* tenancy. For simplicity in this thesis I will simply use the term *dær-stock*. *Dær-stock* tenancy involved the local magnate loaning cattle (mainly draught animals) to a tenant. This was linked by Higham to a similar system found to operate in later medieval vaccaries (latin *vacca* 'cow'). The vaccary keepers paying a rent for the milk, butter and cheese, but the lord retaining ownership of the cattle and any calves (Higham, M.C. 1977-78, 12-13). Mary Higham suggests three possible explanations for the use of *ærgi* by incoming Scandinavian settlers (1977-78, 14):

1. Norse/Irish immigrants renamed existing farms to conform to their farming system.

2. *Æ*rgi-names *r*epresent a pre-Norse relic, possibly dating to the Roman period.
3. Renaming of existing *dær-stock* tenancy with the equivalent Gaelic term.

Higham's view that *dær-stock* was a 'Celtic system of stock-leasing' found in Britain prior to the VA (Higham, M.C. 1977-78, 12) is based on Thomas Peter Ellis's book 'W*elsh Tribal Law and Customs in the Middle Ages*'. However, Ellis, in the chapter quoted by Higham, explicitly states that he is referring to Irish custom and not Welsh (1926, 209-11). Higham describes the *dær-stock* as a 'Celtic system', but Ellis specifically states the *dær-stock* system comes from the Irish law code, the *Senchus Mòr,* and that: 'The Welsh [British] conception of tenure and the position occupied by the tribesmen towards the King or Chief differed materially from the development that occurred under Irish Law' (Ellis 1926, 209). Transhumance is known in Welsh sources; the agricultural economy in Wales in the Middle Ages was similar to the Norse system, consisting of the *hendre* (home farm) and *hafod/hafoty* (shieling). The *hafod* was used in summer for grazing, milking, cheese and butter making, haymaking and general winter fodder collection (Davies 1984, 76). This use of *hafod* would seem to be identical to that of *sætr* in Norway (Reinton 1969) and begs the question of why ON-speakers would replace *hafod* names with *ærgi* and not simply retain *hafod* or replace it with *sætr*.

*Dær-stock* tenancy is Irish in origin. Of the two types of stock lease found in the *Senchus Mór*, the first involved *céile gíallne* ('base client') and *dóerchéile* ('client of submission') who received a fief of livestock or land in return for their payment of a rent (Kelly 1995, 29), while a *sóerchéile* ('free client') received a fief of three cows for a rent of 1 milk cow a year for six years and three cows in the seventh year (Kelly 1995, 32). Higham's theory of a pre-Viking origin of the *dær-stock* system lacks any evidence and *ærgi*-names, being Irish, make it just as likely that they were brought over by Scandinavian settlers as an adoption of an earlier British system that was renamed (Grant 2003, 138).

This also calls into question Higham's second scenario of *ærgi-names* representing a pre-Viking relic:

> 'whether –*erg* [*ærgi*] can be a fossil element indicating pre-Norse and indeed pre-Anglian settlement in an area is a decision for the place-name scholars. It does seem to indicate tenurial obligations which had their roots in the British past… The correlation between Roman forts and roads and the –*erg* [*ærgi*] names is striking, and one could speculate that the tenancies of the sub-Roman period were continuations of cattle-rearing enterprises which had met the Roman need for meat and hides' (Higham, M.C. 1977-78, 14).

Alison Grant makes the point that the distribution pattern of '*erg*' [*ærgi*] names only corresponds to Brittonic-speaking areas that have other Scandinavian place-name evidence and it is absent from other Brittonic-speaking areas that do not have Scandinavian place-names (Grant 2003, 131). The distribution of *ærgi*-names in the Faroes, the Northern and Western Isles that had not been under Roman occupation weakens Higham's argument.

With reference to Higham's third scenario relating to the renaming of cattle-rearing enterprises as *ærgi*-names, there is documentary evidence to show Scandinavian settlers did rename existing settlements. In England, the OE *Norðworðig* was replaced and renamed ON *djúra-by* (modern Derby), and OE *Streoneshalh* ultimately changed to the ON Whitby (Fellows-Jensen 1981, 141). Norse names were also given to existing Iron Age settlements in the Hebrides and Northern Isles, though some seem to have been abandoned before the arrival of the Vikings (Sharples and Smith 2009, 107), while with others it is not known whether Viking settlers, or the raiders who preceded them, bothered to stop and ask the residents their name for a locality or if there were even survivors to tell them.

Circumstantial evidence to support Higham is found in the coastal lowland distribution of *ærgi*-names in Cumbria reported by Pearsall (1961, 84) and Whyte (1985, 105). The lowland location of *ærgi*-names in Lancashire and modern Cumbria are more likely to have been pre-existing settlements, whereas *setr*-names, being found more in the mountainous dome of Cumbria, may represent newly-founded settlements by incoming Norse-speakers, who likely colonised the interior of the Lake District (R. Foster 2012, 85; Figure 1.3). The distribution pattern, however, could just as likely point to environmental factors behind the use of the generics, with *ærgi*-names in the coastal lowlands enjoying a warmer climate, less rain and deeper soils, and *setr*-names found inland being colder, wetter and more infertile. Certainly, the distribution pattern in Cumbria, along the western coast and the more inland distribution along the river valleys of the Kent and Eden would point to the quality of the land as a defining factor (Pearsall 1961, 86; Whyte 1985, 105).

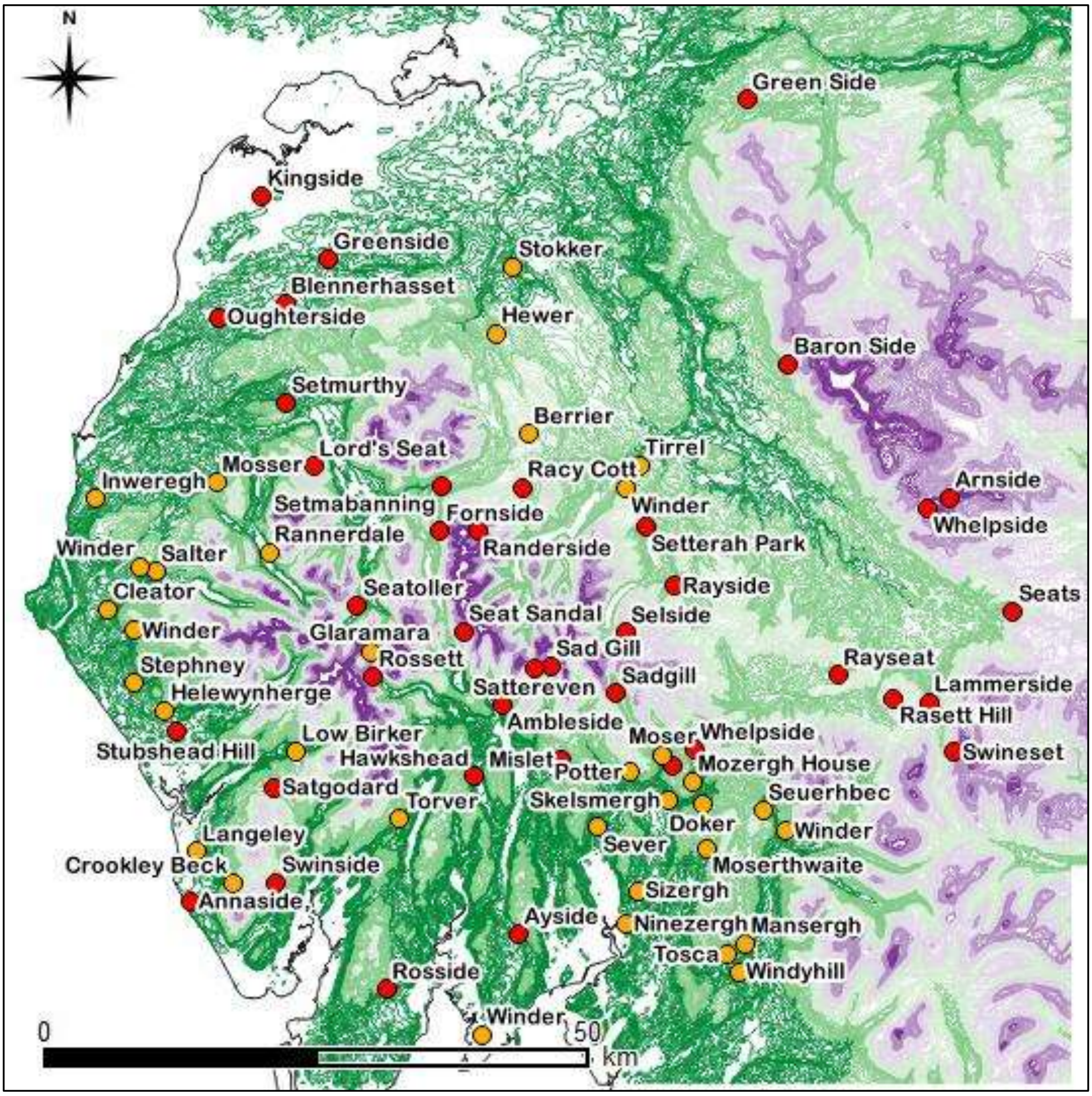



Figure 1.3 Map of *setr*-names (red circles) and *ærgi*-names (orange circles) in Cumbria (after Fellows-Jensen 1985a). Layer colouring: 0-20m white, 20-145m dark green, 145-270m green, 270-400m light green, 400-520m light purple, and 520m+ dark purple).

Mary Higham, noting the low-lying nature of *ærgi*-names and the fact ‘the quality of land was unlike that expected of shielings’, later modified her argument, suggesting a close association between *ærgi* and arable land (1996, 56). Pearsall and Gillian Fellows-Jensen had made a similar link (Pearsall 1961, 84; Fellow-Jensen 1985b, 74), Fellows-Jensen suggesting *ærgi* represented shielings in arable areas. Higham argues that the continuous need for ploughing and draught animals throughout the summer would necessitate the need for some form of grazing land to be held close to the home farm. The theory proposes that *ærgi*-names may represent such grazing land, with oxen being moved in a diurnal cycle from the grazing to the farm and back (Higham, M.C. 1977-88, 16-17).

The importance of traction animals from the Neolithic period as a means of exchange, status and wealth has been argued by Bogucki (1993, 500); even so, the argument that *ærgi*-names represent reserved grazing for traction and draught animals would seem to be wasteful. It was the necessity of providing grazing away from the home farm, in order to grow and safeguard the crops and hay, that initiated the use of shielings (Zimmermann 1999, 315), so it would be strange to retain livestock close to these important fields. The *Gulaþinglova* (‘Gulathing Law’, hereafter Gulathing) (G81) specifically states that cattle should be driven from the home farm pastures to the shieling from June until September and that animals should not return before September (Larson 1935, 94). The law does not state any exceptions for draft animals, Arnkel *Goði* (‘priest’ or ‘chieftain’) in *Eyrbuggja Saga* (Chapter 30, 85) is said to have driven off seven of his father’s oxen from mountain pasture in the autumn. The saga does not say if the oxen had remained at the home farm before being taken to the fell pasture in the autumn, but as this corresponds with G81 of the Gulathing Law, it would suggest that all livestock were taken to mountain pasture during the summer.

The 'semi legendary' Sveinn Ásleifarson is thought to have lived in the early 12th century.  Surviving manuscripts of *Orkneyinga Saga* have been dated to c. AD 1300 (Jesch 2010, 157) and it is a reasonable possibility that this represents a true reflection of farming practice in 12th century Orkney. According to the Saga, Sveinn goes raiding once the arable land is sowed and does not return until harvest (*Orkneyinga Saga*, chapter 105, 215). The implication being that in the 12th century there would be no need to have draught animals kept close to the home farm once the land was sowed and it is likely that it was no more important in the 8-10th century.

The link between *ærgi*-names and draught animals' rests on two assumptions by Higham; the first involves '*ærgi'* having the meaning of 'a herd of cattle' (1978, 12). I would suggest that this is a mistake in the translating of the meaning from the original Old Irish, and rather than 'herd' it specifically meant dairy or milk herd (see Chapter 6.3). The second involves trying to link farming practices of post Norman Conquest England with Viking farming methods. Though Norman lords were descendants of Scandinavians, they had lived in Normandy since the Treaty of Saint-Clair-sur-Epte AD 911 (*Historia Normannorum*).  In that time the Norman aristocracy had been in contact with Frankish society for over 150 years, so this contact would affect the cultural orientation of the Norman lords in matters of land, food, and custom.

An example of differing cultural norms can be seen where Higham quotes an agreement found in a charter between William de Mowbray and Adam de Stavely in 1204 where ‘plough beasts’ must return to the village after grazing the forest for fear the herders may take game or timber (1977-78, 14). This document is the central tenet to Higham’s theory concerning the link between *ærgi* and draught animals; however, Norman attitude to waste (uncultivated land) was one of lordly ‘private forest’ or ‘free chase’ (Winchester 1985, 93), where access to resources was strictly controlled.

This view of private ownership of the land outside the farm boundary was, and is, alien to Scandinavians. The Norwegian Gulathing Law states that all men shall have the use of water and wood in the *almenninger* (common land; land not cultivated, literally ‘all-mens’), and that everything further than a man can throw a *sniðill* (sickle) from his fence, is to be considered *almenninger* (G145, Larsen 1935 124). In the *Frostaþing* Law (hereafter Frostathing), the King may give a lease to farmers to enclose land in the *almenninger,* with a similar proviso that only the land within a knife’s throw of his fence line belonged to him (F7, Larsen 1935, 394-5). Hay meadows in the *almenninger* belong to whoever first puts their scythe to the grass and remains theirs to mow for the following 12 months. Similarly, as much wood could also be cut as could be removed by nightfall and traps could be set for wild animals in the *almenninger*, so long as they were not near another person's trap (F8 and F9 laws in Larsen 1935, 395-6). The only limitation on use of the *almenninger* in the Frostathing Law was that crops sown without the King's permission belonged to the King (F8, Larsen 1935, 395). This highlights the problem of using post ethnological practices as a proxy for those of Norse VA society without being able to identify that practice in VA Scandinavian society.

Eric Cregeen suggests that during the earliest phase of settlement, there would be a relatively large number of Gaelic-speaking women slaves or wives/concubines compared to the number among Scandinavian settlers. These Gaelic-speaking women are likely to have worked in dairy/milking places and they would have referred to it by their own word, *àirigh,* later Manx *eary* (Cregeen, cited in Megaw 1978, 339). Gaelic society, from literary sources, seems to have had gender-specific labour allocation (Kelly 1997, 540-451), though how strongly this was complied with in small farms is uncertain, and the *Cáin Lánamna* law text would suggest a less rigid gender separation of tasks (cited in O'Sullivan and Nicholl 2011**,** 81). Some roles, such as turning a quern for grinding grain, were often the work of slaves of either sex (Kelly 1997, 450). However, certain activities seem to have had a stronger gender bias; professional cattle herding was the preserve of a male *buchaill* ('one who attends cattle'), though both sexes could herd livestock (Kelly 1997, 450) and there was a strong association between females, especially slaves, with milking and dairying (*Bethu Brigte* Chapter 62-64, accessed online

14/5/15 at https://celt.ucc.ie/published/T201002/index.html; Lucas 1989, 42; Kelly 1997, 450-51; O'Sullivan and Nicholl 2011, 81). Cregeen's suggestion would seem a reasonable assumption, in that male Scandinavian settlers are likely to have captured/bought female slaves and set them to work on their own farms; however, Fellows-Jensen has argued that this does not explain why the term was exported with settlers to non-Gaelic-speaking areas (Fellows-Jensen 1983, 44). Arne Kruse has argued that Gaelic slaves would have been transported to new settlements with their masters (Jennings and Kruse 2005, 256; Kruse 2005, 167-8) and Icelandic sagas refer to Irish slaves and free men being settled in Iceland (*Landnámbók* and *Laxdæla Saga* among others). DNA evidence from Iceland and the Faroe Islands would seem to suggest large numbers of British and Irish females were transported to Viking settlements. Genetic studies suggest British or Irish ancestry for about 80-90% of female in the Faroes (Als et al., 2006, 501) and 63% of female in Iceland (Helgason et al., 2001, 733, 735). Presumably the majority came as slaves and concubines. However, the gender imbalance may not accurately represent the demographic situation at the time of settlement, being the result of:

- The preferential survival of offspring of wealthier Scandinavian males.
- The more powerful males (more likely of Scandinavian decent) being able to beget a greater number of children from breeding with a large number of women.*

Gender allocation of work was not confined to Gaelic society, but was widespread in Europe during the Middle Ages (Whittle 2013, 317) and would not be new to Scandinavian settlers (Jochens 1995, 116-18; Myrdal 2008, 64; 2011, 295). Jenny Jochens, in her study of Icelandic sagas, notes that the running of the household and farm were split into different tasks, often gender assigned and referred to under the term *hjón* (Jochens 1995, 116). One of the activities women were also responsible for in the *fyrir útan stokk* was milking cows and sheep at the *sel* (shieling) during the summer months (Jochens 1995, 122; Myrdal 2008, 64; 2011, 296). At the *sel,* women milked the cows in the pastures, while sheep were herded into pens to be milked (Jochens 1995, 122). Some of the milk would be transported back to the main farm (*vetrhús*) to be turned into butter and cheese (Jochen 1995, 123). This making of cheese and butter was considered highly skilled, but strenuous, and was usually completed by female slaves (Myrdal 2008, 68-9; 2011, 298).

Myrdal noted that in the Icelandic sagas, freemen, but never slaves, were mentioned in connection with sowing seed and ploughing (Myrdal 2011, 299), while male slaves were mocked for milking cows (Myrdal 2008, 70). Ármann Jakobsson's study of *Brennu-Njáls Saga* came to the conclusion that in Icelandic society during the time the sagas were written that, ‘the ideals of masculinity may become so exaggerated that it becomes uncompromising and oppressive’ and that in such a society there would be a fear of deviating from preordained roles, for fear of being labelled less than manly (2007, 214). The aversion to milking may be linked to the connotations associated with farm work found in 18th century Britain, where milking was a metaphor for masturbating and ploughing for penetration (Ganev 2007, 41). It is highly likely that milking and dairy work would be carried out by women and the link between female ancestry in the Faroes and Iceland, would suggest that these women were originally indigenous to the British Isles or Ireland. However, the absence of *ærgi* in Iceland and the presence of *ærgi* and *setr* in Cumbria would seem to indicate that it may not just have been a high proportion of Celtic females that determined whether *ærgi* was appropriate to use as a place-name.

Scandinavian settlers would have allocated tasks around a farm, directing who carried out secondary activities and where they occurred, according to their cultural priorities. Eric Cregeen's theory that Gaelic-speaking women being behind the use of a Gaelic term, is unlikely. The language contact situation, with dominant ON-speakers would be unlikely to adopt words from a subordinate language for a shieling (Weinreich 1968, 1). The limited number of Gaelic words adopted by Scandinavian settlers in Scotland would suggest that it was more likely that the concept of *ærgi* was fundamentally different and so that led to its adoption (Anderson 1991, 140; B. Crawford 1985a, 3; Fellows-Jensen 1985b, 73-4). Fellows-Jenson has suggested that it may take research by ethnographers and geographers to understand the reason for the adoption and use of the place-name *ærgi* (1977-8, 25).

Gillian Fellows-Jensen states that *ærgi* was adopted from the Gaelic *àirigh,* arguing that *ærgi* came to represent a Norwegian *heimseter* (Fellows-Jensen 1985b, 74-75). A *heimseter* is a shieling that lies close to the home farm, which can be used for short periods of grazing in spring and autumn, before moving on to more distant shielings. The location of both *heimseter* and *ærgi*-names, low-lying and close to arable land and Fellows-Jensen argues that *ærgi,* represent 'land that was hitherto unoccupied but not necessarily, of course, unexploited' prior to the VA (Fellows-Jensen 1985a, 416). Mary Higham has questioned Fellows-Jensen's assumption, that a West Scandinavian farming system would be appropriate to North-West England, and if it was, why the term *heimseter* was not used (Higham, M.C. 1996, 57). Fellows-Jensen's theory is based in part on Donald MacAulay's study of the place-names of Bernera, where the Gaelic *àirigh* is used for grazing land used in autumn before cattle are returned to the village pasture for winter (MacAulay 1971-72, 313-37; Fellows-Jensen 1977-8, 24-25). There are problems with using shieling practices from Bernera; for one, it is a relatively small island with limited grazing. There is also only one *ærgi*-name surviving as a topographical name on Lewis and this raises the question why, considering the overwhelming ON nomenclature, is *ærgi* largely absent, *ærgi* may not have been an appropriate term for a settlement on Lewis.

On Hirta, St Kilda, there was a tradition of summer grazing in small valley called Gleann Mor, across a ridge line from the main village (K. MacAulay 1764, 29-30; 123-6, cited in Harman 1993, 245). There is no record of people staying at Gleann

Mor overnight, though Harman suggests the tradition may have fell out of use after a small pox outbreak (1993, 187). Women would travel from the village each day to Gleann Mor at around 6am and 5pm to milk the cattle (Ross 1890, 35, 79 cited in Harman 1993, 249). This is similar to ethnographic accounts concerning heimseters in Norway (Fellows-Jensen 1985b), as was the practice of overwintering the cattle in byres and more often houses and using the manured floor of the byre was used as fertiliser for the arable fields in spring (Harman 1993, 176, 245; Chapter 3.10.5). Small huts called cleiteans of varying in size, shape, location, and age are scattered around the islands of St Kilda. They had various purposes ranging from shielings to stores for fuel, food, and fodder (Geddes and Watterson 2013, 108). Cleiteans are so distinctive to St Kilda and the evidence suggests that they are indigenous development and not of Norse origin (Geddes and Watterson 2013, 108). The farming system led to contamination of the arable soil by the manuring strategy, which was suggested my Meharg et al., “that the nature and intensity of agricultural activity was distinctive” to Hirta [St Kilda] (2006, 1826). This suggests that the transhumance strategy that had developed by historical times may be unique to the island and would not be applicable to other areas of Scandinavian settlement.

## 1.6 Geographical extent of the study

In this study, I will use modern names for countries such as Norway, Scotland, Ireland, and England, even though they did not come into being until after the period I am studying (Macniven 2006, 22). During the VA, all these countries were made up of small, often rival, petty kingdoms, whose borders are likely to fluctuate, with some appearing and disappearing over time. Likewise, regional terms, such as Scandinavia, Western Isles, Northern Isles, as well as Norwegian municipalities such as Nesset or Ullensvang, for example, may only have developed after the period being studied, or may not have encompassed the same geographical area as today. The reason for using these names, as Alan Macniven put it, is to use them as a “convenient geographical short-hand” (2006, 22).

Within Scandinavia, the ON shieling names *setr/sætr* have a predominantly Norwegian distribution, with a more limited distribution in Sweden and being absent from Denmark. As I am interested in Scandinavian settlement in Scotland, I will focus on Norway as the most likely source for settlers to Scotland.

I have excluded Iceland from my study as *setr/sætr* is extremely uncommon, only found as a topographical name (Svarar Sigmundsson 1996, 332) and *ærgi* is completely unknown as a place-name element. Secondly, in Iceland ON *sel* n. is the most common element for a shieling. The use of *sel* as a term for a shieling in Iceland is unusual, not only in a Norwegian context (Beito 1949, 120), but also in Scandinavian settlement areas in Scotland and north-western England. It may suggest a unique environmental situation that made certain generic elements unsuitable, as suggested by Macgregor for *setr* in the Faroe Islands (1986, 99). Other ON terms were adapted to fit a new environmental context in Iceland, for example ON *hraun* n. (‘rough place, a wilderness’) in Iceland to name the new phenomenon of a lava field (CV 1874, 187, 282) and *hver* (‘pot’) is used for hot springs (Svarar Sigmundsson 2005, 230-1).

Guðrún Sveinbjarnardóttir has suggested upland sites were founded much later than lowland farms with the generic *sel* and may have been early shielings that were converted to permanent farms (1991, 92). These later upland shielings may represent a change in the farming economy characterised to a greater reliance on sheep in Iceland (Sveinbjarnardóttir 1992, 9). The use of the term *sel* may be connected to the decreasing number of cattle kept in proportion to sheep that has been suggested as due to climatic deterioration around AD 1200 (Lamb 1965, 16-17; Ogilvie et al., 2000, 38), or to the effects of a lower population after the *Plágan mikla* (‘big plague’) of AD 1402-03 (Lárusson 1960, 53-4, cited in Guðrun Sveinbjarnardóttir 1992, 9).

The Faroe Islands seem to have undergone a similar change to Iceland by the time the Seyðabrævið (the Sheep Letter) was issued in AD 1298 (Arge 2005, 32; 2006, 75; Mahler 2007, 475). However, the Faroes not only contain identifiable *ærgi*-names, but it is the only location to have extensively excavated an *ærgi* site and is therefore important in understanding the locational factors behind the coining of this place-name. I will discuss the Faroes at further length in Chapter 6.

The Isle of Man and Galloway contain several *eary*-names which may have been derived from *ærgi*, but a later Gaelic overlay has obscured their derivation and the names could just as likely be Scottish Gaelic (ScG) *àirigh*-names. It has been suggested that the *eary*-names on Man (Megaw 1978, 335) and *àirigh*-names in Galloway (Oram 1995, 133, 135) may represent pre-Viking names based on the assumption of Gaelic being the dominant language preceding the VA (Nicolaisen 1965; Megaw 1978).

Eleanor Megaw proposed that ScG *àirigh* are found in Galloway, which was based on Nicolaisen suggestion that the distribution of *sliabh* (‘hill’ or ‘hill slope’) in Galloway points to the area being Gaelic-speaking in the pre-Norse period (Nicolaisen 1965). This theory concerning *sliabh*-names has been refuted by Simon Taylor, who argues that they are more probably Post-Norse (2007). Richard Oram has shown that there is a correlation between Scandinavian settlement and *àirigh*-names in the Machar and Stewartry districts, though the *àirigh*-names are linguistically ScG (1995, 135; 2000, 250). Oram initially came to the conclusion that the *àirigh*-names in Galloway were pre-VA Gaelic names (1995, 135), but later concludes that they are not conclusively pre-Norse, but likely to reflect a time when ScG was gaining dominance over ON (2000, 250).

On the Isle of Man there is similar confusion, with Peter Gelling arguing that transhumance on Man was introduced by Scandinavian settlers (1962-3), whereas Megaw argues that *eary*-names may pre-date any Scandinavian settlement (1978, 335). Fellow-Jensen came to the conclusion that there are no definite pointers to Norse origin in Manx *eary*-names and they may be ‘post–Norse formations’ (1983, 45). Gillian Quine systematically reviewed Peter Gelling's research on transhumance on the Isle of Man and though, Quine thought that there were likely to be VA shielings in operation on Man, she was not able to date any sites (1990, 318-323). The *eary*-names on Man may therefore represent pre-VA Gaelic *àirigh/áirge,* ON *ærgi*, or post-VA Gaelic *àirigh*-names. The confusion over the derivation of *àirigh*/*ærgi*-names on the Isle of Man and in Galloway, combined with an already extensive study area, means that I will exclude these areas and focus my study where there is greater linguistic certainty.

## 1.7 Linguistic designation

The language spoken by the people(s) that came from Scandinavia in the VA is often referred to as Old Norse (ON), though ON can refer to West Scandinavian (Old Norwegian) or East Scandinavian (Old Danish) (Barnes 1999, 1-2). Einar Haugen suggested they had developed out of what he referred to as "Common Scandinavian" (1976, 150). Haugen emphasised that 'common' does not refer to a single Scandinavian language, but to similarities in all Scandinavian languages and that there "were no doubt both geographically and historically diverging dialects" (1976, 150). Michael Barnes also makes the point that the forms of Scandinavian that emerge in the VA may only be those that were most dominant and that there may have been other forms (1997, 39). As Scandinavian settlers to Scotland, Faroes and Iceland are believed to have come from Western Norway and that they spoke an Old Western Norwegian dialect, ON here will refer to West Scandinavian (following Gammeltoft 2001, 22).

Similarly, Gaelic may refer to Old Irish (OIr), Middle Irish (MIr), Scottish Gaelic (ScG) or Manx Gaelic. Kenneth Jackson has argued that the Gaelic spoken in Ireland and Scotland was substantially the same up until the thirteenth century (1951, 89). As most written forms of ScG words occur after this date I will refer to Gaelic in a generic sense and OIr or ScG when referring to specific terms associated with each geographical area.

## 1.8 Ethnic designations

There is a bewildering range of terms to describe 'Vikings' in insular chronicles. In Latin chronicles they can be called *Nordmanni*, *Nortmanni* and later *Normanni*, *piratae*, *wicing* and *Dani* (Downham 2009, 141). David Dumville has suggested that the belief that *Nordmanni* referred to Norwegian Vikings and *Dani* to Danish Vikings no longer holds, as both terms were used in "free variation" in Old English (Dumville 2008, 354; Downham 2009, 143). It is not until 1005 that Denmark first appears in text and *Norwege* (Norway) first appears in the ASC in 1028. Ben Raffield's discussion of the composition of the '*micel here*' in England came to the conclusion that it was composed of multiple *lið,* or military brotherhoods, sworn to individual leaders that coalesced and disbanded as conditions dictated (2016, 311). However, it is likely at the start of the VA, that a *lið* was composed of more localised grouping based around chieftains, as they would be the only people able to mount an expedition (Samson 1991b, 126; see Chapter 3).

Gaelic chronicles referred to Vikings as *gennti*, pagans or heathen, *gaill* (foreigner), and *gaill* could be split between *Finngaill* and *Dubgaill*. The Fragmentary Annals (FA) were the earliest source for the view that *Finngaill* referred to Norwegian and *Dubgaill* to Danish Vikings (Downham 2004, 30; 2009, 155). The FA only survives in a 17th century copy and it incorporates legendary and saga information, and, as such, must be taken with some scepticism. It has been suggested that *Finngaill* and *Dubgaill* actually differentiates between old and new *gaill* (foreigners) (Downham, 2004, 30; 2009, 156). Therefore, the use of terminology in chronicles to differentiate ethnic or national background is too unreliable to use (Dumville 2008, 354; Downham 2009, 169).

The term ‘Scandinavian’ can have the meaning of someone, or thing, that came from Scandinavia. Is the term apt for a first or second-generation immigrant to Scotland or Ireland? The VA lasted for 300-350 years; the children and grandchildren of settlers in Scotland and the Faroes continued to be linguistically and culturally Scandinavian and their settlements shared similarities with their ancestral homeland. It is likely, over time, indigenous populations would also come to see themselves as the same as the peoples who had settled, for argument’s sake, as Scandinavian. Ethnic identity in prehistory is increasingly seen as malleable and not as closely related to biological ancestry as once thought. Simon Trafford suggests we can “no longer accept ethnicity as an objective biological fact; but as a subjective and flexible construct, a belief in the unity of a group of individuals based on perceived common characteristics, whether real or imagined”

(2000, 19). James Barrett has put forward the view that “there are no simple correlations between ethnicity, material culture and speech communities since all are deliberately manipulated by individuals and groups according to current need” (2007, 209). The discovery of a female grave from Cnip, Lewis, showed a woman with diagnostically Scandinavian artefacts, such as: an antler comb, twin oval brooches, and a ringed pin of 10th to early 11th century date (Welander et al*.,* 1987; Dunwell et al., 1995). Isotope analysis of teeth point to the female having been raised locally: was she a first-generation offspring of a Scandinavian parent(s); was she originally a member of the pre-VA population who assimilated into prevailing Scandinavian culture, either by marriage, fosterage or just cultural change?

The term ‘Viking Age’ is used for the period under study and ‘Viking’ is common parlance for a Scandinavian during this period. However, ‘Viking’ has no ethnic connotation and its meaning in ON is difficult to pinpoint. In ON, there are two related words: *víking* (f), which refers to an activity (possibly raiding or trading, for example) and *víkingr* (m), a person who may have been engaged in the former activity (Jesch, 2015, 5). Both terms were in use by Scandinavians in the VA and I will defer to Jesch, who defines ‘Viking’ as a word to “characterise peoples of Scandinavian origin who were active in trading and settlement as well as piracy and raiding, both within and outwith Scandinavia…… within the broad range of [AD] 750-1100” (2015, 7). Likewise, Norse can have a meaning of coming from Norway, or as a speaker of ON; either of these meanings would make ‘Norse’ a relevant term to use in this thesis. In this thesis, Viking, Scandinavian and Norse all share the same meaning as pertaining to people who spoke ON and were culturally Scandinavian, whatever their biological heritage.

## 1.9 Temporal considerations

The start of the Viking Age has traditionally been dated to the raid on the priory of Lindisfarne in AD 793 (ASC). Judith Jesch (2015, 8-10) makes the point that raids are likely to have been carried out by people who had been familiar with areas raided and to account for a period of trade, “reconnaissance and preparation”, Jesch suggests a provisional start to the VA of c.AD 750. The timing for the start of any settlement stage cannot be identified with any certainty. There are no sources that allude to settlement and, archaeologically, we are reliant on very few sites with a patchy distribution, whose data is of variable quantity and quality, though the number of sites is growing (Graham-Campbell and Batey 1998, 48).

The end of the VA is more difficult to pinpoint (Jesch 2015, 8); the wide geographical range of Viking settlements and the varied political and cultural situation each was found in means that the VA may have had a staggered ending. The relevance of the end of the VA to this study is only when *setr* and *ærgi* ceased to be active place-naming elements. The use of *setr* in the Hebrides, would suggest that it was active from sometime after AD 800 to at least the early part of the 10$^{th}$ century and the Scandinavian encroachment into Cumbria (Oram 2000, 3). *Ærgi* is likely to have been adopted after contact with Gaelic-speaking people sometime after AD 800 and fossilisation of *ærgi* as topographical names in the Faroe Islands points to it falling out of fashion, possibly by the 11th century (see Chapter 6.2). However, the Gaelicisation of the Hebrides in the 12th century (Clancy 2008, 46) could theoretically have lengthened the time it was active in this location, being a cognate with the ScG *àirigh*. In the Western Isles, *setr* is likely to have stopped being an active place-name element once ScG took over (see Chapter 4), but *setr* was still in use as a dialect word in Shetland in the 19th century and could have been coined at any time during which Norn language was spoken (Waugh 2013, 11). Due to the complexity of identifying likely VA shielings, I will cover the methodology for identifying each element in the relevant chapter: *setr* in Chapter 4 and *ærgi* in Chapter 5.

## 1.10 Place-name chronology

Olaf Rygh in *Norske Gaardnavne* (NG hereafter) and Magnus Olsen (1928) first suggested a hierarchy and chronology of farm names in Norway, which was associated with the settlement expansion from the Late Bronze Age to the Christian Middle Ages. The basic premise rests on three elements: first, that the earliest farms in a district would be located on the best agricultural land and would therefore either pay higher tax, become the name of the district, or have a church (or any combination of all three); the absence of ON place-name elements in Scandinavian settlements abroad gives a terminus for some elements; thirdly, the presence of 'heathen' or Christian specifics in compound names give a terminus or start date for a place-name of around AD 1000. The habitational generics *vin* (natural meadow) and *heimr,* are pre-Christian in date, as they are never compounded with Christian names (Olsen 1928, 72; Kruse 2007, 10). Both *vin* and *heimr* are also absent or uncommon in Viking settlement in the British Isles (B. Sandnes 2006, 231; Brink 2008b, 58) and the suggestion is they must therefore have fallen out of fashion and ceased to be active as a place-name element before or at the start of the Viking Diaspora (Kruse 2007, 7). Though scholars are increasingly tentative in proscribing watertight time frames for the coining of individual place-name elements, the basic premise would still hold. The hierarchy and chronology of Scandinavian place-names has been the basis for much of the research on Scandinavian place-names in the British Isles.

## 1.11 Aims of the thesis and thesis structure

The settlement of ON speaking people in Scotland has been controversial on a number of issues, from the date the Viking Age started (VA); the start of settlement; the number of settlers; the type of settlement that occurred; and the type of relationship forged with the people whom they encountered. My study touches upon several issues: what was the type of settlement that occurred during the Viking Age, what was the type of cultural contact between incoming ON-speakers and people they encountered? I am going to use an interdisciplinary method, based on a study of place-names from a historical and cultural geographical perspective and incorporating archaeological and environmental information where available (see Chapter 2).

The use of quantitative data analysis of shielings has been attempted in the Hebrides (Olson 1983, 214-221) and in Shetland (Macgregor 1987, 486-93;

Gammeltoft 1995, 75-78). These regional studies run the risk of emphasising local environmental conditions and missing either general locational factors or over emphasising local one. Studies of place-names, unsurprisingly, have tended to concentrate on the linguistic situation and do not sufficiently take into account the likely cultural situation behind the naming. This study will be the first to cover the whole of Scotland to look for key factors in the location of both generic elements, while also attempting to place the naming of settlements into the likely cultural and linguistic situation at the time.

The thesis is structured into seven chapters, with this chapter acting as a short general introduction to the topic. The second chapter includes the methodological considerations and primary data collection methods. This is followed by three self-contained chapters, each with its own introduction and conclusion; the geographical extent of the study requires each to have its own literature review to be able to adequately cover each section. Chapter 3 is a study of shielings in Norway: this is to understand the reasons why shieling use developed and also the type of locations that were used as shieling sites in the Scandinavian homeland. This information can then be compared to sites used in Scotland and this will allow a comparison of shieling names in both locations to identify similarities or differences in settlement location. The fourth chapter includes two in-depth case studies: the first covering the Western Isles and Skye, and the second a comparison of Shetland and the Faroe Islands. The rationale behind the choice of these locations was that I found a complementary distribution of *sætr* and *ærgi* names in each and the latitude and climate were similar, to allow comparison. Ideally, I would have liked to have included case studies from Orkney and Caithness and a further one of Cumbria, but it was not possible without losing the depth of study. Chapter 4 concentrates on the use of *setr* in Viking settlement in Scotland and the Faroe Islands. I will look for similarities and differences in *setr*-names in Norway. Chapter 6 is a study of the location of *ærgi*-names and a discussion of the likely reasons for adoption of the term and its use in Scotland and the Faroes. The last chapter is a short conclusion, where I will try to answer the key question as to why Scandinavian settlers adopted the Gaelic term *ærgi*.

# Chapter 2 Theoretical and Methodological Considerations

This study is interdisciplinary in nature, there are therefore various types of evidence I needed to evaluate as various potential sources (Chapters 2.1-2.5). However, this study is based around the concept of a cultural landscape, and my consideration for this are explained in Chapter 2.6.

## 2.1 Sources

### 2.1.1 Contemporary British and Irish chronicles and annals

The principle surviving chronicles and annals contemporary with the VA are mainly Irish, namely the Annals of Tigernach (AT), Chronicum Scottorum (CS), Annals of Clonmacnoise (AC), Annals of Ulster (AU), Annals of Inisfallen (AI), and the Annals of the Four Masters (AFM) (McCarthy 2001, 324). AFM only survives in a copy of AD 1636. There are also various versions of the Anglo-Saxon Chronicle (ASC), however this contains only limited information on northern or western Scottish affairs. The Isle of Man developed into a Norse Kingdom during the VA, but its first chronicle does not begin until the 13$^{th}$ century (Grabowski and Dumville 1984, 216; Dumville 2008, 351).

The region that is believed to have seen the densest Scandinavian settlement, North-east Scotland and the Northern and Western Isles, have no surviving records for the entire Viking period (Dumville 2008, 351). The region of Argyll is also absent from the documentary record between AD 800 and AD 1100 (Dumville 2008, 351), this location and period would be of prime importance for the studying interaction between Gaelic and ON-speakers. We are left with a very few references pertaining to the study area:

- AU (794.7) *Uastatio omnium insolarum Britannie. a gentilibus.*
  'Devastation of all the British islands by the heathens.'

- AU (798.2) *Combustio Inse Patraicc o genntibh,* and *borime na crich do breith* and *scrin Do Chonna do briseadh doaibh* and *innreda mara doaib cene eiter Erinn* and *Albain.*
  'Patrick's Island was burned by the gentiles, and they took away tribute from the provinces, and Dochonna's shrine was broken by them, and other great incursions by them, both in Ireland and in Scotland.'

- Annals of St Bertin (AD 847) *Scotti a Nordmannis per annos plurimos impetiti, tributarii efficiuntur, insulis circumquaque positis nullo resistente potiti immorantes.*
  'The Irish, who had been attacked by the Northmen for a number of years, were made into regular tribute-payers. The Northmen also got control of the islands all around Ireland, and stayed there without encountering any resistance from anyone.' (trans. Nelson)

- AFM (851.16) *Gofraidh, mac Feargusa, toisech Innsi Gall, d'écc*
  'Gofraidh, son of Fearghus, chief of the Innsi Gall, died.'

- AU (870.6) *Obsesio Ailech Cluathe a Norddmannis,.i. Amlaiph and Imhar, duo reges Norddmannorum obsederunt arcem illum and distruxerunt in fine. iiii. mensium arcem and predauerunt*.
  'The siege of Ail Cluaithe by the Norsemen: Amlaíb and Ímar, two kings of the Norsemen, laid siege to the fortress and at the end of four months they destroyed and plundered it.'

- AU (989.4) *Gofraidh m. Arailt, ri Innsi Gall, do marbad i n-Dal Riatai*.
  'Gothfrith son of Aralt, king of Inse Gall, was killed in Dál Riata.'

The reliability of contemporary chronicles and annals as sources for the study of Scandinavian settlement is problematic. Chronicles are unreliable through bias, omission (Dumville 2008, 362-3; Downham 2000, 192-3; Neville 2002, 189; Broun 2004, 142), later interpolation (Page 1986, 12; Radner 1999, 322-3; Downham 2004, 27), parochialism (Dumville 2008, 350; Evans 2010, 20), or ignorance (Dumville 2008, 354; Downham 2009, 143). The establishment of rural settlements is completely absent from the documentary record and they are of very little value for studying farming systems.

## 2.1.2 Scandinavian and Old Norse sources

The Vikings were not a literate people at the start of the VA (Haugen 1976, 137), so contemporary sources were written by their enemies. It was not until 200-300 years after the start of the VA that sources are found to survive from Scandinavian sources.

### Historical works

In Iceland, Ari (‘*inn fróði*’) Þorgilsson wrote two historical works that relied heavily on oral sources, only one of which has survived, *Íslendingabók* (The Book of Icelanders), written between 1122 and 1133. This work was subsequently used as an authority by later saga writers (Cormack 2007, 204); however, a bias towards the *Haukdælir* family, Ari’s patrons, has been suggested by Friðriksson and Vésteinsson (2003, 142), which may affect the accuracy.

*Landnámabók* (The Book of Settlements) survives in two complete versions (*Sturlubok* and *Hauksbok*). *Landnámabók* purportedly gives the names of around 400 people who made up the primary settlers in Iceland. Though, Friðriksson and Vésteinsson have argued that the purpose of *Landnámabók* was to provide Iceland with a history, but one which may have been affected by a 13th century political situation. This 'history' may have included matching settlers with farms of the same name or inventing a settler to help explain a farm name (Friðriksson and Vésteinsson 2003, 149-50). This would suggest that the information contained within *Landnámabók* cannot be taken as a wholly truthful account of a VA settlement.

In Norway, two Latin histories were written in the 12th century. A monk, Theodoricus, wrote the *Antiquitate Regum Norwagiensium* and an anonymous author *Historia Norwegiae.* Theodoricus explicitly cites the poems from Icelandic sagas as historical sources, which calls into question the veracity (Cormack 2007, 203).

**Laws**

There are two complete Norwegian law codes that date to the 12th and 13th centuries, which is outside of the VA, though they may contain an older stratum of laws (Tamm 2001, 9; Brink 2008a, 27-28). The Gulathing Law (G) covered parts of the modern *fylkes* of Hordaland and Sogn og Fjordane (see Figure 2.1 and 3.3) and is believed to be the older of the two surviving complete codes having been first redacted during St Olaf's rule (AD 1015-1028). The Frostathing Law (F), covering Møre og Romsdal and Sør- and Nord-Trøndelag, is probably as old, in parts, as the Gulathing Law, the church laws of Archbishop Øystein Erlandsson date part of the code to around AD 1170.


Figure 2.1 The law provinces of Norway c.AD 1160 (after Ødegaard 2013).

These two law codes are not only the oldest complete codes, but also cover the area I will study in Western and Central Norway (Chapter 3). In total there are six laws found in the codes that relate directly to shielings, the Gulathing Law contains four laws:

- G81 states that farmers who share the same farm need to drive their cattle out of the farm pasture [to the shieling] at the same time, when two months of the summer are spent.
- G84 specifies that boundary markers on shieling pastures shall be where they were of old and restricts the return of cattle to the home farm.
- G86, refers to how disputes should be settled concerning shieling pastures.
- G131 states that the token to summon people to a thing, that it should only be sent to the winter dwelling and not to the shieling.

There are two articles in the Frostathing Law there related to shielings: The Law of Tenancy F13 states, ‘if a man sets fire to another man’s … to the mountain pasture that has been fenced off and does not belong to the common, let him make good the damage’ (Larson 1935, 383). F8 of The Law of Tenancy and Theft, states that, ‘whoever desires to do so may set up a shieling in the *almenningr* (‘common’) and may remain there through the summer if he chooses’ (Larson 1935, 396).

Iceland is the only area of VA settlement where a medieval law code is known to have been in existence. According to Ari Thorgilsson *inn fróði* (the Learned) in *Íslandabók*, a man named Ulfljótr was sent to Norway to adapt the Gulathing Law around 920-930 AD, creating what became known as the Grágás (Grey Goose Laws) (Byock 2001, 93). The story of Ulfljótr has been questioned by Sigurður Líndal (1969, cited in Byock 2001, 93) and Jesse Byock has suggested that there are very few similarities between the Icelandic laws, the *Grágás*, and the Gulathing Law (2001, 94).

**Icelandic sagas**

Icelandic sagas can be categorised into a number of sub-genres (Clunies Ross 2002, 445): *konungasögur* ('king's saga') also included the Earls of Orkney in *Orkneyinga Saga*; the *Íslendingasögur* ('Sagas of Icelanders') involves settlement, feuds and relationships in Iceland from the settlement (AD 870) until the 11$^{th}$ century; and the *samtíðarsögur* ('contemporary sagas') which took place roughly around the 'Age of the Sturlungs' in the 13$^{th}$ century.

The historical accuracy of 8$^{th}$-10$^{th}$ century events written down during the 12$^{th}$ to 14$^{th}$ centuries has been questioned (Book Prose Theory) (Lönnroth 1991, 4). There is a risk that the information contained within sagas may be a product of the society at the time of writing and specifically, the 12$^{th}$ century elite attempting to justify land claims or legitimacy (Durrenberger 1991, 14). Even the geography of sagas, such as *Hrafnkels saga Freygoði* (Nordal 1940) and *Gísla saga Súrssonar* (Wyatt, 2004, 276-7) has been shown to be inaccurate. Ian Wyatt came to the conclusion that landscape features in sagas were often employed as a literary device to direct the narrative (2004, 276). The Icelandic sagas are a problematic source for studying the VA, having been written at least two or three centuries later and may only represent the situation at that time in Iceland. However, information from sagas will be included if they corroborate other forms of evidence, but will be used with scepticism in this thesis, due to the risk of inaccuracy and bias.

## 2.2 Archaeology

Archaeology is one discipline which could shed light on the different activities which were performed at settlement sites. Compared to the place-name evidence there are only a relatively small number of sites excavated in the study area, often concentrated in specific areas, which include among others:

- Orkney: Birsay (Curle 1982; Morris 1996), Tuquoy (Owen 1993), Quoygrew (Barrett 2005), Pool (Hunter et al., 1986; 1993; 2007).
- Caithness: Freswick (Curle 1939; Batey 1987; Morris et al., 1995).
- Shetland: Jarlshof (Hamilton 1956), The Biggins (B. Crawford 1985b), Sandwick (Bigelow 1985), Old Scatness (Turner et al., 2005; 2010; Dockrill et al., 2009), Norwick (Ballin Smith 2007), and various Norse settlement sites on Unst (Turner et al., 2013).
- Western Isles: Barvas, Lewis (Armit 1996), Bornish, South Uist (Sharples and Parker Pearson 1999, Sharples et al., 2005), Bostadh, Lewis (Neighbour

and Burgess 1997), Drimore, South Uist (Maclaren 1974), Cille Pheader, South Uist (Parker Pearson et al., 2004) and Udal, North Uist (I. Crawford and Switsur 1977).

- Faroe Islands: Ergidalur (Dahl 1970a), Toftanes (Stummann Hansen 1991), úti á Bø (Arge and Hartmann, 1992), Kirkjugarð (Arge and Hartmann 1992), á Sondum (Jensen 1995), I Uppistovubeitinum (Arge 1997b), Argisbrekka (Mahler 2007).

The above list in not an exhaustive one, but highlights the regional concentration of archaeological excavations. There has been no archaeological investigation of a Norse VA settlement in the Inner Hebrides or the western littoral of mainland Scotland, despite place-name evidence pointing to Scandinavian setlement. Outside of my study area, in Iceland and Greenland, VA farms have been excavated, but there is a lack of place-name evidence to identifying *sætr* or *ærgi*. This means that direct comparisons are difficult to make, though conclusions concerning the general farming system may be made.

The majority of excavated settlements within the study area are believed to have been farms. Very few shieling sites have been excavated even in Norway (Chapter 3). The seasonal nature of shieling occupation, limits the build-up of identifiable archaeological remains, may make them difficult to find and may also mean that those that are excavated have little diagnostic evidence (Mahler 2007, 449, Lucas 2008, 90). Shielings are also more likely to be abandoned and forgotten (Magnus

1986, 49) and the less sturdy nature of the buildings are more likely to disappear into the landscape (Mahler 1993, 492). Furthermore, as shieling sites are by their very nature situated on grazing land they are also less likely to be discovered through later land use, such as ploughing bringing artefacts to the surface.

Shielings have been excavated in Norway, often as part of rescue excavations before development of an area, which I will talk about in Chapter 3. There have also been excavations of proposed Viking shieling sites in England: Gauber High Pasture, Lancashire (King 1978), Simy Folds, County Durham (Coggins 2004), Bryants Gill, Cumbria (Dickinson 1985), and in Greenland (Albrethsen and Keller 1986), as well as Pálstóftir, Iceland (Lucas 2008), and various other sites in Iceland (Guðrun Sveinbjarnardóttir 1992). Many sites have been identified as possible shielings due to the perceived marginality of location, however, without place-name evidence it is impossible to identify them as *setr/sætr* or *ærgi*-names.

Only three possible *ærgi* sites have been excavated and only one of these is in Britain (Table 2.1). A small-scale excavation of a site west of Earsary (itself an *ærgi*-name) on Barra (NF697007). This site was tentatively assigned to the late Norse period on the basis of a single steatite spindle whorl. Other than the spindle whorl, there was a small artefact assemblage, which limit any conclusions concerning the dating or function of the settlement (Branigan 2004, 46). The site is on the southern slopes of Beinn Ghunnaraigh and Branigan suggests on the basis of this that it may be Gunnary (ON personal name *Gunnarrs* and *-ærgi*), after which the mountain was named (2012, 64-5). There are problems in identifying this site as an *ærgi*-name and more specifically as '*Gunnarsærgi'*. The building morphology does not fit with the rectangular VA Norse building styles used at shieling sites in Norway (Chapter 3.7.2), Iceland (Lucas 2008), and the Faroes (Dahl 1970a, 1970b; Mahler 2007). A single spindle whorl and a possible fragment of grass marked pottery are also not conclusive evidence for VA occupation, though there may be a Scandinavian settlement close by. The identification of the site as *Gunnarsærgi* is also problematic. The site is 1km north-west of the village of Earsary (itself an *ærgi*-name), but 2.8km west of the site is Alt Gunnairigh (NF669011), a stream that runs down the western slopes of Beinn Ghunnaraigh. It would seem to be more logical for Gunnar's-*ærgi* to be located closer to this stream and the excavated site to be associated in some way with Earsary.

The two other *ærgi* sites to have been excavated were both found in the Faroe Islands: Ergidalur (Dahl 1970a; 1970b), and Argisbrekka (Mahler 1993; 2007) (discussed in Chapter 4). Ditlev Mahler reported a typival range of artefacts from Argisbrekka, however, Mahler pointed out that the finds were limited compared to a primary settlement site, such as Toftanes (2007, 449). Mahler concluded this disparity was due to a different pattern of behaviour than that found at coastal settlements such as Toftanes and suggestive of an alternative function for *ærgi* sites (Mahler 2007, 449).

The excavations of Argisbrekka in the Faroes and of Páltóftir in Iceland produced bone assemblages. Around 79% of bones at Argisbrekka could not be accurately identified (53.9% mammalian), 12.8% bird, 2.8% fish bones, and 9.6% were unable to even be assigned to a class. Over 95% of bones were burnt and found within or near to hearths (2007, 296). Young sheep dominated the mammalian assemblage, with only a single pig molar and six cattle bones (Mahler 2007, 296). Around 96% identifiable bird bones come from Alcids (*Fratercula artica*, *Alca torda, Uria* spp.) a large number of Alcid bones came from the meat rich pectoral region (2007, 296). This would suggest that seasonal food resources were being exploited for food while at the shieling.

Despite the risk of differential survival rate of bones, including the lack of the larger and more durable cattle bones, the assemblage would seem logical for a shieling site. If the function of a shieling was to provide grazing land for fattening or to preserve the home meadows, it would be unusual to slaughter the same animals and more likely occupants fed on seasonal available summer foods, such as nesting birds. This would save any livestock selected for slaughter for the autumn when they were in prime condition and grazing starts to become scarce and fodder needs to be stretched out throughout the winter. It would be easy to drive the animals to where they were to be eaten than kill them at the shieling and transport the meat.

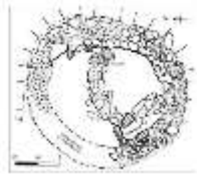
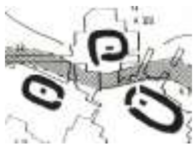
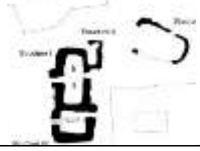
| | Earsary, Barra (Branigan 2012) | Ergidalur, Suðuroy, Faroes (Dahl 1970a; 1970b) | Argisbrekka, Eysturoy, Faroes (Mahler 1993; 2007) | Pálstóftir, Iceland (Lucas 2008) |
|---|---|---|---|---|
| **Height (m asl)** | c. 65m | 180m | 130m | c.580m |
| **Location** | Small valley | Lake shore in a cirque | Lake shore | Gently sloping (north-west) |
| **Buildings** | Oval stone walled hut facing downhill, stone faced/turf filled upslope. Interior measured 5 x 4m, divided into two areas with a cist like structure in the west side.  | Rectangular stone walled building 5.5 x 3.5m inside. A second building was identified later, with possibility of a third (Mahler 2007, 446), possible cattle enclosure (unexcavated)  (Arge 1991) | Rectangular turf walled buildings, consisting of a dwelling (7-8 x 3.5m), work house (3-5 x 3.5m) and store (3 x 2.5m).  | Rectangular buildings: Structure I: internal space of c.15m². Structure II: rectangular 3m². Structure III: less substantial walls, no postholes-possibly unroofed or open enclosure, c. 9 m². Structure IV: later addition to Structure I, 9 m².  |
| **Artefactual remains** | 34 pottery shards (one grass marked), 35 flint flakes, single steatite spindle whorl | Large pottery bowl shaped shards | Knives, shears, locks, iron slag, steatite, round bottomed clay vessels, silver and gold rings, bronze ring pin, circular brooch, glass beads. | 2 Copper alloy coins (Harald Hardråde 1047–1066), copper alloy fitting, copper alloy spillage, copper alloy stud, crucible (3 joining pieces), 2 iron nails, iron punch (3 joining pieces), glass bead, 6 quartz pebbles (manuport), stone flakes (8 jasper; 9 quartz). |
| **Animal bones** | N/A | N/A | 95% bone fragments were burnt (21% identifiable):<br>-367 bird fragments (50.4% identifiable: 96% Alcids (auk family, 4% *Anser* spp (goose), *Somateria* spp. (Eider) or *Anas* spp.(duck)<br>-71 bones *Ovis aries*/*Capra aegagrus* (sheep/goat), primarily young animals,<br>-1 pig molar (1½-2-year-old),<br>-6 adult cattle bone fragments (head, ribs, front legs and a horn sheet).<br>-fish 41 (2 identified as *Gadids*). | Limited faunal assemblage (wild fowl c.75% of NISP):<br>-2 *Cygnus Cygnus* (Whooper Swan), 1 *Cygnus* spp., 8 *Anser anser* (Greylag Goose), 57 *Anser* spp., 26 other bird.<br>-11 *Ovis aries* (9 astragli) and 14 either *Ovis or Capra hircus* (Sheep/goat).<br>-11 unidentified. |

Table 2.1 Excavated shieling sites mentioned in the text.

A similar reliance on seasonal wild food was reported from the presumed shieling of Páltóftir in Iceland. The bone assemblage showed a heavy dependence on wild fowl (75% Number of Individual Specimens), with geese being the main species (Lucas 2008, 92). The changes to the composition of grassland at shieling sites as a result of grazing (Kristiansen et al., 1998, 482), may have acted as a magnet to migrating geese in Iceland, by encouraging their preferred grass species. Páltóftir may have been chosen to exploit this resource, or access to migrating geese species (Fox et al., 1987, 295) may have been a beneficial by-product of grazing. The presence of sheep bones on site may represent the disposal of deadstock or that some livestock were deliberately killed and eaten. Alternatively, these bones may represent the remains of sheep butchered and transported back to the home farm. The fact that 9/11 bones were ankle bones shares similarities with modern practices of transporting carcasses of reindeer during hunting expeditions in Hardangervidda. Hunters leave the parts with limited amounts of meat, such as: the skull and mandible, hyoid, syrinx, heel-bone, astragalus, tarsal- and carpal bones, the metapodials and the phalanges at sites where transport is difficult (Hufthammer et al., 2011, 59). However, the small number of bones at Argisbrekka would suggest either the transport of meat or consumption on site was unusual.

Patrycja Kupiec's recent PhD thesis used a new approach to identify seasonal use through micromorphological analysis of floor layers. This approach looks for occupation surfaces alternating with clean windblown deposits to identify seasonal use (2016, 113). The study involved a trial investigation on Lewis and an interdisciplinary study of four shielings in Iceland and two in Scotland. The trial investigation of a historical shieling, Bhiliscleiter on Lewis, followed by two archaeological investigations at Morsgail, Lewis and Kildonan School Shieling, South Uist. The excavations found limited evidence of activity and only a single fragment of grass-marked pottery at each site (2016, 239, 277), but, as Kupiec suggests, this may be due to the limited extent of the test pits (2016, 327).

A problem in Kupiec's methodology concerning VA shielings is the conflation of ScG *àirigh* with the ON adoption *ærgi* (2016, 11, 13). Kupiec does not adequately differentiate between the two generic elements, but seems to suggest that the two terms are the same. *Ærgi*, once adopted, became a ON word and was coined according to rules in ON (Gammeltoft 2007, 481, see Chapter 5). There is no evidence for *àirigh*-names in the Western Isles being pre-Norse (Chapter 6.1) and, though some may have become confused with VA *ærgi*-names, many are likely to have been coined after Gaelic gained dominance after the 12th century (R. Foster 2017 116). Many *àirigh*-names, in places like Lewis, are likely to have been coined during the expansion of the black cattle trade, culminating in large-scale droving of the 18th century (Whyte and Whyte 1991, 157; Devine 2006, 101) and, as such, the ethnographic approach may well represent traditions from a farming economy based on exportation of beef cattle, rather than VA subsistence practices.

Kupriec's study also highlighted a similar problem with Icelandic sites, the two *sel*-names in the study both began shieling activity much later than the *landnám* period:

Þorvaldsstaðasel c. AD 1477 (2016, 183) and Reykholtssel between AD 1300-1440 (2016, 185). A similar late date for Icelandic shielings in the Eyjafjallasveit and Berufjörður districts were suggested by Guðrún Sveinbjarnardóttir (1991, 91). Guðrun Sveinbjarnardóttir did propose that some lowland *sel* farms may have been early shielings that were converted to permanent farms, while these upland *sel*-names were founded much later (1991, 92). However, Orri Vésteinsson has found evidence that some *sel*-names were in use just above the *landnám* tephra layer (pers. comm), which may point to a far more complicated picture.

Beito stresses the limited distribution of *sel* in Norway, with only 90 shielings in all of Norway (1949, 120). The use of *sel* as a term for a shieling in Iceland is therefore unusual in a Norwegian and Scandinavian settlement outside of Iceland. It may suggest a unique environmental situation that made ON generic elements unsuitable, as suggested by Macgregor for the Faroe Islands. Adaptations to the appellative meaning of ON words to fit a new environmental context in Iceland are known (Svarar Sigmundsson 2005, 230-1; see Chapter 1.5). A change to a farming economy with a greater reliance on sheep in Iceland led to the need to create a new nomination for a shieling being adopted (Guðrun Sveinbjarnardóttir 1992, 9)

The usefulness of archaeological remains, though important in the few examples of shielings that have been excavated, is restricted by the seasonal nature of occupation which limits cultural deposits from which conclusions can be drawn. The function of a *sætr* and *ærgi* as summer grazing, also limit the usefulness of any bone assemblages at these sites, as animals are unlikely to have been slaughtered for food at the shieling. Rather it is more likely that animals would be moved back to the home farm to be slaughtered, eaten or preserved. Kupiec's methods, however, will certainly be helpful in identifying seasonal occupation in future.

## 2.3 Place-names

One of the few sources left to study Scandinavian settlement are place-names (B. Crawford 1987, 92; Barrow 1998, 68; Abrams and Parsons 2007, 381). Place-names (toponyms), like all names, are nouns and can be classified as proper nouns (proprium), or common nouns (appellatives) (Macniven 2006, 87; Kruse 2007, 4-5; see Table 2.2).

Scandinavian place-names have recognizable characteristics compared to the place-names from other language groups found in Britain and Ireland (B. Crawford 1987, 92; Townend 2000, 95). Per Sveaas Anderson stated that 'the old place-names of the Hebrides landscape are undoubtedly the only substantial source material available for the study of early settlement and its development in a locality or district' (1991, 134-5).

| | Meaning | Example |
|---|---|---|
| **Toponym** | A place-name | Hill, Cnoc |
| **Proprium (proper noun)** | Refer to a unique entity or specific place | London |
| **Appellative (common nouns)** | Appellatives have a characterising function, as such are referred to as generic elements. Applelatives can be further characterised as being topographical or habitative names. | *-vík* ('wide bay')<br>*-holmr* ('island' or 'dry ground in marshland')<br>*-býr* ('farm') |
| **Topographical name** | A place-name that refers to a landscape feature, which can also be used as a settlement name (Schmidt 2006, 313; B. Sandnes 2010, 7). | *-dalr* ('dale' or 'valley')<br>*-vík* ('wide bay') |
| **Habitative name** | A place-name associated with human habitation or exploitation (B. Sandnes 2006, 232). | *-heimr* (Olsen 1928, 72)<br>*-akr* ('place for growing cereal crops')<br>*-staðir* ('Place') (B. Sandnes 2006, 241) |
| **Simplex names** | Simplex names are formed from a single generic element. | -Wick (ND358510) (ON *vík* 'wide bay')<br>-Twatt (HY269238) (ON *þveit* 'clearing') |
| **Compound names** | Compound place-names are most often formed from a generic (appellative) element and a qualifying (specific) element that further distinguishes that particular place-name. Specific elements can relate to topographical features, fauna or flora, personal names, or the relationship of one location to another. | -Linisiadar (NB209320) (ON *Lin-sætr* 'flax-shieling') (Oftedal 1954, 383).<br>-Ersary (NL704996) (ON *Eirik's-ærgi* 'Eirik-shielings'). |

Table 2.2 Place-name elements.

Matthew Townend states that place-name elements show a geographical inertia that allows them to be mapped and to correlate dialect usage with settlement pattern (Townend 2000, 98). The 'geographical inertia' is due to the fact that once established, place-names can become mono-referential, or as Peder Gammeltoft puts it, ‘the linguistic entity stops connoting and starts denoting’ (2007, 481). As such, place-names can still function as a name for that location even when their lexical meaning has been lost (Nicolaisen 1976a, 15, Nicolaisen 1977, 147). This makes it easy for place-names to transfer from one language and to another and to survive, despite the language it was coined in being replaced, by becoming mono-referential (Nicolaisen 1979-80, 106; Ó Maolalaigh 1998, 15; Gammeltoft 2007, 481; Macniven 2006, 87).

The fact that place-names can become ‘anchored’ to the ground is highly important in areas like the Hebrides, which saw a language shift from ON to Gaelic (Nicolaisen 1976a, 15; Gammeltoft 2006, 53; Caldwell 2008, 29). These areas saw ON names pass through Gaelic and English before being written (I.A. Fraser 1994, 71). The change from one language to another would probably involve the loss of names for many such locations and replacement by one formed from the new language, ON names may have been replaced by Gaelic ones before being documented (Johnston 1991, 266; Gammeltoft 2006, 53; Caldwell 2008, 29). Ian Fraser has also highlighted the risk of later English speakers favouring the more similar ON names than Gaelic when encountering a location that had an ON and Gaelic (1974, 19).

The purpose of any place-name is to single out one locality from others within a general area (Stewart 1975, 86, Gammeltoft 2006, 55). Place-names therefore, at the time they are coined, have lexical meaning to the person bestowing the name (Nicolaisen 1979-80, 106, Kruse 2007, 5). Margaret Gelling suggests that place-names were rarely randomly assigned (1984, 6), and she has shown that Anglo-Saxon settlers in England used a highly specialised lexicon for naming topographical and landscape features, such as different types of hill, meadow, or pasture (Gelling 1998, 97, Gelling and Cole 2000, XV). Scandinavian settlers in the British Isles would also seem to have had specific terms for at least some topographical features such as *vik* (bay), *vágr* (narrow bay), *berg* (vertical rock), *klettr* (isolated rock or hill) (B. Sandnes 2010, 6), and adopted terms into their lexicon that described new concepts, as has been suggested for the term Gaelic *Di- muin* (*di* 'two' and *muin* 'top') as *dímon/dímun* ('hill with two summits') (Jakobsen 1902 quoted in Gammeltoft 2004b, Brink 1996, 68, Gammeltoft 2004a, 72, Svavar Sigmundsson 2005, 231). The term was adopted by Scandinavian settlers for a characteristic landscape feature and may have then been used to name similar features in Iceland, Faroes, Norway, Orkney and Shetland (Gammeltoft 2004b, 33, Svavar Sigmundsson 2005, 231).

The use of specialist terms for habitative names in Scandinavia has been suggested by various scholars (Skre 1999, 419; Brink 1999, 433; 2008, 62; F. Iversen 2005, 140). Scandinavian settlers not only brought with them a 'lexicon of appellatives' to name or re-name their new land, but also a set of rules on how to coin from their homeland. Arne Kruse suggests that, although the distribution patterns of ON place-name elements may vary, 'rarely are the name elements themselves and the naming practices fundamentally different in the colonies' than in Norway (2007, 10). It has been suggested that simplex topographical elements such as *nes* and *dalr* are often given to the primary settlement in Norway (Olsen 1928, 61, Fellows-Jensen 2000, 169, B. Sandnes 2006, 241, Schmidt 2006, 313). In Orkney, Berit Sandnes found that just over half of the large farms had topographical names (Sandnes 2010, 7) and topographical names were favoured as place-names in Iceland (Svarar Sigmundsson 1996, 330). In two contrasting areas, one inhabited and one uninhabited, Scandinavian settlers followed the practice of their homeland of giving the primary farm, probably the earliest farm on the best land, a topographical name. It would seem logical that subsidiary farming units to the primary farm would also be named following traditions brought from Scandinavia.

For my study, a key element is the use of habitative generic elements, including several terms that denote a farm. The fact that incoming Scandinavian settlers had the need for various names to denote a farm begs the question, why not use a single element for 'farm'. This does not make sense, unless each term represented a specific type of farm or a different type of farmland (B. Crawford 1995, 8; Øye 2005, 361; 2009a, 102), Alternatively, settlers may have come from regions that used different elements to refer to a farm (Haugen 1976, 150; Reinton 1969, 24). The distribution pattern of habitative names may depend on the dialect spoken by the settlers in Scotland (Olson 1983, 48-9) and Iceland (Svarar Sigmundsson 1996, 330, 332).

The habitative generic elements such as *bær/býr* (farm), *staðir* (place/farm), *bólstaðr* (farm), and *setr/sætr* (farm/shieling) are found in Scandinavia and various areas of Scandinavian settlement near the Atlantic (B. Sandnes 2006, 241, Kruse 2007, 10). Although there are some distributional differences between the habitative elements, such as *staðir*, *bólstaðr* and *setr/sætr* (Nicolaisen 1976b, 84–120), all three elements survive together in the Northern Isles, Skye and Lewis. The fact that three or four different generic elements for a farm are found within a particular area may suggest that there was a specific meaning behind the use of each place-name. Peder Gammeltoft came to the conclusion that the element *bólstaðr* was used to name farms when a large settlement unit was split up into smaller ones, but it was never used with the general meaning of farm (2001, 271). Gammeltoft also found that *bólstaðr* retained the same meaning in the Viking colonies as it had in Norway and this would seem to strengthen Kruse's argument for continuity in naming practices between Norway and the Atlantic colonies (2007, 10). Place-names at the time they were coined had 'meaning' and this allows a view of how people saw the landscape through the use of specific terminology. The use of the terms *setr/sætr* are likely to have the function similar to that used in Scandinavia during the initial colonisation.

## 2.4 Migration

The use of place-names to map and understand Scandinavian settlement has been the centre of a long running debate. Sir Frank Stenton (1971, 514, 519) and F.T. Wainwright (1962, 85) made the connection between the density of Scandinavian place-names and the density of settlement in England, suggesting that the abundance of Scandinavian place-name recorded a large-scale migration that changed not only the political landscape, but also the society and economy. This view was challenged, most notably by Peter Sawyer, who dismissed the connection between density of place-names and the density of settlement, arguing Viking armies were relatively small and their prestige was responsible for the place-name evidence (Sawyer 1958; Hadley 2006, 2-6).

Lesley Abrams (2012, 19-20) and Judith Jesch (2015, 69-81) have introduced the the theory of diaspora to the VA. Diaspora, from the Ancient Greek *speiro* ('to sow/scatter seeds'), was originally envisaged as resulting from forced migration (see Safran 2005). Robin Cohen introduced a voluntary element to diasporas, suggesting 5 types: victim, imperial, trade, labour, and cultural diasporas (Cohen 1997, 178), with only the former occurring as a result of purely forced migration. The relevance of Cohen's proposed common features of diaspora to the study of the VA has been discussed in detail by Judith Jesch (2015, 68-81), the key concepts being (Cohen 1997, 26):

1. dispersal from an original homeland, often traumatically;

2. alternatively or additionally, the expansion from a homeland in search of work, in pursuit of trade or to further colonial ambitions;

3. a collective memory and myth about the homeland;

4. an idealization of the real or imagined ancestral home;

5. the frequent development of a return movement to the homeland that gains collective approbation even if many in the group are satisfied with only a vicarious relationship or intermittent visits to the homeland;

6. a strong ethnic group consciousness sustained over a long time and based on a sense of distinctiveness, a common history, the transmission of a common cultural;

7. a troubled relationship with host societies;

8. a sense of empathy/co-responsibility with co-ethnic members in other countries;

9. the possibility of a distinctive creative, enriching life in host countries.

Roger Brubaker worried that diaspora as a term was becoming too all encompassing, proposing just three key features of diasporas: 1) dispersion from a homeland; 2) homeland orientation in relation to value(s), identity and loyalty; and 3) boundary maintenance, the preservation of a distinctive identity over an extended time in contrast to a host society (or societies) (2005, 5-7). All three of these criteria (as Jesch has shown with Cohen's) would fit the Scandinavian settlement of Scotland.

Alan Macniven has proposed the concept of “predatory migration”, as developed by Heather (2009) and Halsall (2007), to explain the VA place-name evidence in the Islay (Macniven 2013, 3; 2015 111-2). This involved the large-scale movement of people(s) in order to aggressively acquire wealth. Heather argues the cost of transport would limit the number of dependents (females) on any long-distance migrations (2009, 32) and this would most likely lead to an elite transfer, where cultural change would be due to the prestige of the migrants (2009, 23). Macniven suggests that it would be logical for these migrants to marry into local elites (2015, 112; see Atkinson 1989, 23-4, for a similar process). However, Anthony makes the point that information will filter back to the homeland and this will lead to a chain migration where later migrants are channelled by access to this information into locations which had experienced previous settlement leading to distinct migrant flows to existing Scandinavian settlements (1997, 23-5).

Scandinavian settlement and the cultural and linguistic change could therefore be the result of, or a combination of: 1) the replacement of a large part of the population; 2) the replacement of the elite leading to cultural and linguistic change, or 3) after an initial limited migration, a continual chain migration, reinforcing the Scandinavian element in settlements (see Chapter 4.2.6).

## 2.5 Statistical method

One method that has been used to study VA settlement is the statistical method, which uses early fiscal records to create a settlement hierarchy. The basic theory is, the higher the average payment of rent or tax for a place-name, the higher the status of a generic, the more likely it is that the settlement will be earlier. This rests on the logical idea that the first land to be taken by incoming settlers would be the 'best' quality, normally land with the greater potential for arable farming, and this would later command a higher rental (Marwick 1952, 233; MacGregor 1987, 21-5, Macniven 2006, 97-8). Shielings are secondary farming units, based around pastoral farming, and as such, are likely to paying little or no tax and are often included under their primary farm for taxation purposes anyway (Olson 1983, 35).

David Olson found the survival of early fiscal documents in Scotland was at best patchy (Olson 1983, 16-17). The distribution of fiscal records shows concentrations of pennylands in the Northern Isles, Caithness, the western seaboard and south-west Scotland; ouncelands in the Northern Isles, Caithness, the Isle of Man, parts of the Inner Hebrides and Western Isles, and localised concentrations between Kintyre and Assynt (Easson 1987, 1; Oram 1987, 46). However, the value of individual skatlands, pennylands and ouncelands varies from region to region, making comparison difficult other than within a limited area (Thomson 1987, 24-25; Oram 1987, 46; Gammeltoft, 2001, 272).

There is a basic methodological problem in using the statistical method to study shielings, is by definition they are secondary settlements and at their founding would be low status. However, a generic with a low status name does not necessarily stay low status (Thomson 1987, 47-48; 1993, 60), the utilisation of land for pasture, modifies that area through direct manuring (Hessle et al., 2014, 341). As niche construction theory suggests, the environment will be altered (Eriksson 2014, 1; Odling-Smee, 2003, 419; Laland et al., 2014, 2415) and this may allow other ways iof utilising the land in the future.

Barbara Crawford has pointed out that Houseby on Birsay should be the primary settlement, containing a higher status *bu*/*by* generic. The tunship name though is Beaquoy, and Huseby is not even included in later rentals. Beauquoy contain a low status *kví* (enclosure) name (Marwick's 1952; see Chapter 5.2), but the specific element suggests that it is the enclosure of a *bær*/*bý*, and Crawford suggests 'there can be little doubt that Houseby (*húsa-bær*) had been that central farm' (B. Crawford 2006, 29). Similarly, Helgi Þorláksson noted that Breiðabólstaðr in Borgarfjörður Iceland, was the first settlement in the area, though it was the nearby Reykholt that became the seat of the *goðar* (Þorláksson 2011, 210; Guðrun Sveinbjarnardóttir et al., 2011, 163). This would suggest that the key locational factors in the siting of a settlement, may, in some cases, not remain as important over time. Functional or socio-economic changes can lead to a settlement rising or falling in importance, similarly, environmental change as the result of settlement may affect the fertility and lead to sites becoming less marginal (Hessle et al., 2014, 341).

Land use may also have changed from the time of the founding of the settlement (Sauer 1941, 21); for instance, documentation appearing from 500 to 700 years later for Orkney rentals (Marwick 1952, 191), and up to 900 years later for Skye (Olson 1983, 16-17) are unlikely to retain much information on the initial settlement. Carl Sauer makes the observation that the ‘environmental advantage or disadvantage should then always be relative to the moment or stage of the particular culture, and land use an accommodation of the wants and energies of a community, which changes as these change’ (1941 [1969], 375). As the location of a settlement ‘records the particular preferences as to habitat that concerned the founders… subsequent culture changes alter the site value’ (Sauer 1941, 20).

The time between the coining of a name and its appearance in documentation leaves scope for changing practices, taxation and the hierarchy of settlement. The patchy early records of taxation and rentals over the study area, combined with the varied regional valuations of those that do survive, means that I have rejected using the statistical method in my study.

## 2.6 Settlement location: theoretical considerations underpinning this thesis

Due to the non-existent or patchy nature of documentation related to secondary settlements, I will rely on the pattern of settlement names as one of the key remaining pieces of evidence for the study of the shieling economy. This study will be based on Carl Sauer’s theory of a cultural landscape (1941). Sauer wrote, ‘The spacing of phenomena over the earth expresses the general geographical problem of distribution, which leads us to ask about the meaning of presence or absence, massing or thinning of anything or group of things' (Sauer 1941, 6).

The study of place-names allows distribution patterns to be drawn but the information about their basic function is reliant on the interpretation of the meaning of generic elements (Lundmark 1984, 44). This on its own does not allow for the general characteristics to be identified, nor for regional differences in the location, and can lead to misleading generalisations. The siting of a settlement is the result of the locational choices made by people (Wood 1978, 259) and by looking at the situation of a settlement (or generic element), a reconstruction of how resources were viewed within a society or culture can be made. (Wood 1978, 269).

The choice of location for a settlement is the result of various human choices (Windelhed 1984, 85). The term 'site' in this context equates to a qualitative expression of the physical area (Sauer 1925 [1969], 326, Stjernquist 1984, 29). The location of a settlement may fulfil basic needs, Patrick Nunn suggests in his study of the initial colonisation of Fiji, where that settlement location was largely based on the potential access to food resources (2009, 316). Certainly, in pre-industrial society, access to food, water and shelter have been termed 'survival needs', as a lack of each will cause hardship and/or death (Gold 1980, 21).  The necessity of being close to these 'survival needs' may be true when colonists first encounter an uninhabited pristine environment, or when hunter gatherers move to a new location. However, although food supply is, as has been noted, a key determinant of settlement location, this over-simplistic view has been questioned, and Brian Roberts suggests that although nourishment, shelter and clothes are important, they are only ‘one key control factor affecting settlement’ (Roberts 1982, 23).

There are a multitude of possible location factors behind the location of a settlement (Sauer 1941, 20). The primacy of the physical landscape on human activity, culture, society and even national characteristics was emphasised by Freiderich Ratzel (1882, 1891). Roy Rappaport suggests that culture evolves to allow a population to maintain themselves in a changing environment (1971, 249). Ratsel’s view of ‘environmental causation’ was espoused by the environmentalism/physical determinism schools of human geography, who considered the physical environment the main factor in the creation of culture and society (1882, 1891, summarised in Gold, 1980, 27). This view was taken one step further by the physical determinism of the psychologist Rudolf Moos (1976), and the geographers Ellen Churchill Semple (1911) and Ellsworth Huntington (1924), who advocated that the physical environment is the cause of nearly all human behaviour including settlement. Semple and Huntington, espousing the colonial attitude of the day, suggested that climate affected morals of not only indigenous people but also of those who were recent immigrants (Semple 1911 626-7, Huntington 1924, 70).

Environmentalism and physical determinism saw humans as being submissive to the environment, this approach was criticised by the French school of possibilism exemplified by Vidal de la Blache (1926), Brunhes (1920), and Febvre (1925).

Robin Butlin suggests a human was an ‘active actor and contributor to change’ rather than a rural dweller being a ‘passive respondent to cyclical swings and fluctuations in weather’ (Butlin 1982, 12). Possibilism saw the environment as being a passive canvas for human activity, and humans could choose how to exploit it, dependent only upon their adaptability and the amount of energy they were willing to expend. Lucien Febvre wrote:

> Man is a geographical agent, and not the least. He everywhere contributes his share towards investing the physiognomy of the earth with these “changing expressions” of geography to study. Through centuries and centuries, by his accumulated labour and the boldness and decision of his undertakings, he appears to us as one of the most powerful agents in the modification of terrestrial surfaces (Febvre 1925, 63).

Another counterbalance to the doctrine of environmentalism was the introduction of spatial scientific approach to settlement studies, exemplified mainly by Walter Christaller’s Central Place Theory (1933), but also by other authors, notably Lösch (1954). The Central Place Theory was based on microeconomics and held the premise that in a homogenous landscape where the transport network was evenly distributed, goods and services (and therefore settlement) would develop along regular patterns. Central places with higher order functions would be evenly distributed, surrounded by a hierarchy of dependent settlements, each with fewer and lower order functions and services and a lower population, until distance decay allowed the development of another central place. Similarly, Von Thünan (1826) and later Walter Isard's theory of agricultural location (Isard 1956, 188-99) were concerned with the effect of distance from market on land use. Von Thünan did introduce the idea of central and peripheral areas to agricultural settlement, but like Christaller, his theory also did not take into account variations in soil and topography.

Spatial scientific theories, though useful in explaining settlement patterns in countries with a developed infrastructure and a monetary economic system (Sauer 1941, 8-9), are less suitable for explaining the pattern found in an agricultural system that was primarily a tributary society at the start of the VA (Wickham 2005, 321-3, 694-6). Carol Crumley rightly points out that in the real world, 'pastoral and agropastoral states, although socially hierarchical, display a landscape "footprint" that corresponds to the heterarchical distribution of natural resources - what ecologists term patchiness' (1994b, 183). Real world situations are reliant on the availability of a resource(s) of whatever form, which are rarely, if ever, even in distribution and this in itself will create an uneven distribution of settlement.

The theories associated with the spatial scientific approach also rely on the concept of humans as rational decision makers. The term rational is often associated with Adam Smith's 'economic [hu]man' (Grampp, 1948, 317); this theory rests on the central idea that humans would change their behaviour to find the optimum solution (Guelke 1982b, 38; Gold 1980, 30-31). Frank Knight has pointed out that even the idea of economic rationality informing decision-making is problematic (1963, 127), while Herbert Alexander Simon asserts that human behaviour being generally rational is a misconception in itself (1976, 61). Simon further proposes that the idea of rationality is based on having a choice of alternative decisions that will lead to a desired end, but these ends in themselves can be merely a means to achieve a more final objective (1976, 62). The choice of where to build a settlement is therefore one such choice, and as such, it can provide evidence of a desired end through location factors, but in itself does not explain the ultimate objective, which can only be ascertained by an understanding of the culture of those founding the settlement (Wood 1978, 258; Guelke 1982a, 195; 1982b, 29).

Newell and Simon propose the view that anything is rational so long as it produces the required outcome (1972, 835), so what is rational and what is irrational depends on the context (Sauer 1941, 8-9; Wood 1978, 258; Guelke 1982b, 39). Guelke suggests that the perceived irrationality of medieval people is a result of them not conforming to our modern concepts of economic rationality. To fully understand their thought processes and therefore rational character, other cultures and ages must be assessed in terms of their beliefs and objectives (Guelke 1982b, 38).

People can behave rationally, but not always optimally in a modern sense (Simon 1976, 198-9; Wood 1978, 259). Rappaport suggests that people utilise both an operational model and cognized model informing decision-making: the ‘operational model’ describes the environment in accordance with a scientific understanding, whereas the ‘cognized model’ takes into account the knowledge and beliefs of the individual/culture concerning the environment (1971, 247). People make decisions using both their operational and cognized models, which may not share all the same characteristics, and this leads to decisions which may not seem optimal from a modern viewpoint. To understand the rationale a person used to make a decision in pre-history, you need to understand the society from which it came. Marshall Sahlins wrote (1987, 145):

> The problem comes down to the relation of symbolic reference: of how cultural concepts are actively used to engage the world…… Human social experience is the appropriation of specific percepts by general concepts: an ordering of men and the objects of their existence according to a scheme of cultural categories which is never the only one possible, but in that sense arbitrary and historical.

The school of possibilism has itself come in for criticism for not taking into account the effect of environmental constraints on societies (Ballinger 2008, 6), and how these constraints, or lack of them, affect how cultures develop. Rappaport makes the point that although a culture can be imposed on an ecological system, there are limits to what the environment can tolerate (1971, 249). 'Culture' itself is subject to, and the result of, a selection process, by various factors including environmental constraints, meaning that although ideology can inform behaviour (Rappaport 1971, 249), behaviour is controlled by the environment and the technological ability to exploit it (Rappaport 1971, 249; Solberg 1984, 155). William Kirk brought Gestalt theory from psychology into geography, stating:

> At one level physical man is in direct contact with the Phenomenal Environment, and physical action will lead to changes on both sides of the relationship. At a second, equally important level however, the facts of the Phenomenal Environment will enter the Behavioural Environment (B.E.) of man, but only in so far as they are perceived by human beings with motives, preferences, modes of thinking, and traditions drawn from their social, cultural context (Kirk (1947) 1963, 366).

To Carl Sauer, an environmental response is the behaviour of a given group to an environment, but such a response is not just a reaction to a physical stimulus or necessity, but a result of the cultural orientation of the group (Sauer 1941, 7). Sauer suggests groups have various options on how to proceed, which are informed by the technological ability, skills (Roberts 1982, 24) and cultural wants and therefore the environmental response to a landscape is a ‘specific cultural option with regard to the habitat at a particular time’ (Sauer 1941, 7). For instance, the topography of Norway, with its limited arable potential and scattered grazing, may also have helped to develop an extensive decentralised farming economy (Prescott 1999, 213; Zimmerman 1999, 315; Mahler 1993, 488). The choice of cattle as prestige livestock created problems; with cold snowy winters and short growing seasons this necessitated winter stalling and the need for fodder collection. The high prestige of cattle and the climate may have been a major reason for the development of longhouses with internal byers to protect the cattle from raiders and to make sure they survived the winter (Fokkens 1999, 36; Pedersen, E.A. 1999, 50; Zimmerman

1999, 303). This created the need for a decentralised farming system, with shielings created in suitable places for grazing and fosser collection.

The creation of shielings by clearing areas of wood, scrub and the pasturing of livestock and the resulting direct manuring, led to environment change in these locations (Hessle et al., 2014, 341). In this way, humans are involved in niche construction (Eriksson 2014, 1), "through their metabolism, their activities, and their choices, [they] modify their own and … other's [organisms] niches" (Odling-Smee, 2003, 419). Niche construction theory works in a variety of ways (Laland et al., 2014, 2415):

> "(i) organisms modify environmental states in non-random ways, thereby imposing a systematic bias on the selection pressures they generate, (ii) since organisms modify the environments of their descendants, niche construction generates an additional form of inheritance ('ecological inheritance'), which has been shown to strongly affect evolutionary dynamics, (iii) acquired characters become evolutionarily significant by modifying selective environments, and (iv) the complementarity of organisms and their environments (traditionally described as 'adaptation') can be enhanced through niche construction (modifying environments to suit organisms), not just natural selection."

The niche is then passed on to descendants as a 'ecological inheritance' (Odling-Smee et al., 2013, 8) and the utilisation of such areas leads to the development of a 'cultural niche', where later "individuals will have no idea why certain elements are included in a design, nor any notion of whether alternative designs would be better"

(Boyd et al., 2011, 10923). Scandinavian culture in the VA can be considered as a combination of physical stimuli and cultural orientation, and when Scandinavians settled abroad their cultural preferences are likely to have been brought with them, leaving an imprint on the landscape.

Similarly, in Ireland, the mild winters and rainfall throughout the year allowed almost continuous grass growth, which in turn allowed cattle to graze all year and negated the need for haymaking (Bede, 46; Lucas 1989, 33-4; Kelly 1997, 47, McCormick 2014, 121). These conditions were ideal for the dairy economy, which formed the basis of Irish society in the pre-VA, according to Irish law codes (Kelly 1997, 65, 323-30; McCormick 2014, 124). A later increase in arable farming in Ireland has been linked to climatic downturn, possibly due to increased mortality of livestock in winter, forcing society to change by adopting different systems to ensure food supply (Kerr et al., 2009, 2872). The presence of corn-drying kilns would suggest that the climate had not drastically improved to allow more cereal growing, but suggests a society changing in response to climatic change (Kerr et al., 2009, 2872). The environment therefore creates limits as to what can be achieved, but it creates choices, and dependent on what a particular society prioritises, this forms the basis of the different cultures encountered (Rappaport 1971, 249; Guelke 1982b, 34; Cosgrove 1982, 221; Crumley 1994a 7; 1994b, 186).

The choice of where to site a farm or settlement is a conscious decision in the same way the type of farming practised is a choice. An optimum site for a settlement is more likely to be based on a set of criteria; the criteria used would be influenced by the needs of an individual, which can be split into those things needed for survival, such as water, food and shelter (Nunn 2009, 316), as well as the cultural, social and personal influence on choice. Therefore, the siting of a settlement is the result of the locational choices made by people (Wood 1978, 259) and by looking at the situation of a settlement (or generic element), a reconstruction of how resources were viewed within a society or culture can be gleaned (Wood 1978, 269). This method of research has long been advocated by archaeologists in Scandinavia:

> If one chooses to investigate a prehistoric society as a social system; that is, chooses a problem-orientation about conditions of life and man's way of living and forming his existence in society, an interdisciplinary method of analysis becomes necessary to investigate the ecological connections around and in the settlement. The natural surroundings and their resources are preconditions for the activities which affect subsistence. The interdisciplinary analyses play a central part even in the discussion of the area outside the settlement which could have contributed to the subsistence activities, site territory. Important factors creating resources are climate, hydrological conditions, soils, flora, fauna, technology, communication, and organisation. As noted, the categories of the model include all the productive, social, ecological and communicative connections (Stjernquist 1984, 36).

If we therefore say that the social and personal needs, such as prestige, honour or acceptance, are born of the society or culture a person belongs to (Gold 1980, 21), then the criteria used to decide where to site a settlement will be different depending on the particular characteristics of the culture (e.g. food preferences) of those founding a settlement. This means that a site may be optimal in one society's or culture's view, but not another, depending on the criteria used, and priority given to individual criteria. The basic premise of my study of settlement location is that human decision-making behind the siting of a settlement will be rational at the time the settlement was founded. A site chosen will be the optimum site within that locality for a type of settlement according to a set of criteria informed by cultural norms (Wood 1978, 258; Roberts 1982, 3).

The site, therefore, will have clues to the criteria used in coming to a decision of where to build a settlement in that the choice of one site over another should highlight favourable locational factors for that particular settlement (Amedeo and Golledge 1975, 291). To conduct a study of locational factors, the motivation and needs of those who initially founded a settlement, needs to be identified. Cosgrove argues all human landscapes are symbolic, as they represent a 'geographical expression of a mode of life… [that] comprises the reciprocal unity of nature and culture at specific locations' (1982, 221). John Wright referred to the combination of physical geography and cultural traits as '*geosophy*':

> [N]ot only link ecology, soil science, agricultural and industrial economics, and cultural anthropology, ……. [but to re-establish links] with geology and the various branches of geophysics…… [and] to the desirability of establishing and re-establishing such contacts, I would add, as no less desirable, the re-establishment

> of closer connections with history and the humanities (1947 [1966], 86-7).

Cosgrove has argued for the development of a theory of collective behaviour or culture, to help understand past landscapes and their spatial structure (1982, 220). To study VA settlement and landscape, Carl Sauer has come closest in my opinion, stressing the need to see landscape through the eyes of the founding settlers, as part of a cultural group encompassing their 'needs and capacities' at the time the settlement was founded.

> Every human landscape, every habitation, at any moment is an accumulation of practical experience… The geographer cannot study houses and towns, fields and factories, as to their where and why without asking himself about their origins. He cannot treat the localization of activities without knowing the functioning of the culture, the process of living together of the group, and he cannot do this except by historical reconstruction. If the object is to define and understand human associations as areal growths, we must find out how they and their distributions (settlements) and their activities (land use) came to be what they are. Modes of living and winning a livelihood from their land involves knowing both the ways (culture traits) they discovered for themselves, and those they acquired from other groups. Such study of culture areas is historical geography. The quality of understanding sought is that of analysis of origins and processes. The all-inclusive objective is spatial differentiation of culture (Sauer 1941, 8-9).

Carl Sauer makes the point: ‘At the time a settlement is made, it may generally be regarded as combining in its site the best means of satisfying the wants of the founding group. It is necessary, therefore, to regard the site in terms of the original wants’ (Sauer 1941, 20). As mentioned in the review of statistical records, the environmental advantage of a site is specific to a culture, or particular land use, at the time a settlement was founded, and this is liable to change as the culture or land use changes (Sauer 1941, 21). This makes relying on records hundreds of years later unreliable, as they cannot be proved to represent the situation at the time the settlement was founded.

## 2.7 Vegetation selection by livestock

In a pastoral society, one of Sauer’s ‘original wants’ would be the provision of grazing for livestock; this has rarely been taken into account in studies of settlement despite being of prime importance to farmers. It is highly likely pastoralists in an infield/outfield system would have limited control over where animals grazed in the outfield, but feeding behaviour could be observed and used to inform the location of grazing stations.

Different types of livestock not only have different feeding strategies, but a feeding strategy can change seasonally and as a result of an individual animal’s physiological condition. Nagy and Grabherr suggest: ‘[plant] communities with their overall structure, species composition, and realised biomes can be taken as a net outcome of all biotic interactions and abiotic constraints in a given location at a given time, with a given background of history (species pool)' (2009, 250). Shieling sites are sometimes referred to as 'marginal' in that their location may be at the edge of the range/tolerance of particular species (Mayr 1982) or plant community, or that local conditions have created a particular niche environment allowing a specific plant community to flourish (Körner 1999, 6*,* Nagy and Grabherr 2009, 41*)*. The pastoral function of shielings may have seen them located in locations to exploit a particular grazing resource, or better grazing locally.

Ian Armit has argued that labelling of an environment as 'marginal', "runs the risk of projecting modern political and cultural relationships onto past societies" (1998, 31). Edwards and Whittington make the point that marginality may be physical, cultural or just related to how people perceive an environment (1998, 61-62). Marginality, as a term, is therefore subjective – an environment may be marginal only when it is exploited in a specific way and this can be linked to the socio-economic situation as well as the physical environment (Brown et al*.,* 1998, 147; Coles and Mills 1998, viii-xii). However, concerning farming in the North Atlantic region, shielings can be considered marginal if you follow Irmelin Martens definition:

> [utilising] areas with a low primary production per unit of land and where only a restricted number of cultivated plants can ripen, depending on climatic as well as soil conditions. Marginal farming utilises areas of which only a small part is arable and practises an extensive method of agriculture, thus depending on a large subsistence area per production unit (1998, 31).

Grazing behaviour and diet selection of wild ungulates may be affected by body size, digestive system, mouth size and mobility (Jarman 1974; Hanley and Hanley 1982). Physiological differences are therefore also likely to affect the feeding strategy and diet selection of domestic species (Grant et al., 1985, Gordon 1989a, Menard et al., 2002, Critchely et al., 2008, M.D. Fraser et al., 2009a). Cattle (*Bos Taurus L.)* have large bodies and large and a long ruminoreticulum with slow digestion, and to meet their metabolic requirements they need large quantities of food (Udén and Van Soest 1982, 271; Gordon 1989c, 73). Cattle also have large mouths and relatively immobile lips, feeding by using a protractile tongue to grasp clumps of vegetation, which makes them unselective feeders. Sheep (*Ovis aries*) with thin mobile lips are believed to be better able to manipulate herbage before biting and so increase the ability to select vegetation by browsing (Grant et al., 1985, 1000; M.A. Fraser et al., 2009b, 190). Cattle, being less able to select vegetation prior to eating, are therefore more likely to select vegetation communities which contain higher ratios of preferred plant material (Gordon 1989c, 73). Cattle for example are known to avoid, where possible, heather (*Calluna vulgaris*), possibly due to the high lignin content that affects digestion (Gordon 1989c, 73), and in upland heath and mire habitats (heather moorland) cattle prefer to graze selective swards between *Calluna* plants rather than *Calluna* itself (M.A. Fraser et al., 2009b, 190).

Selective feeding strategy by cattle has been shown; when given free choice of grass or clover (*Trifolium repens*) monocultures, cattle will select a diet of around

70% clover (Rutter et al., 2004a, 31), and even when clover accounts for only 25% of available food, it still formed 62.5% of the diet of dairy cows, though cattle did not select an intake of 100% clover even when available, preferring on average 74% clover to 26% grass (Rutter et al., 2004b, 1321). Rutter concluded that dairy cows actively selected clover and therefore grazing was not random (Rutter et al., 2004b, 1321). Rutter *et al.* conducted their study on modern breeds of dairy cattle and it should be noted that Bele et al., found some difference in diet selection between older (Sided Trønder and Nordland) and newer (Norwegian Red) dairy breeds of cattle in Norway (2015, 6). Though both preferred to feed on grasses and forbs, older breeds were found to be less selective than the modern breed (Bele et al., 2015, 7), but overall, selectivity depended on vegetation composition (Bele et al., 2015, 7). Hessle et al., found a slight difference in the selection of grass-dominated pasture over bilberry forest vegetation by modern Holstein cows, compared to older Swedish Mountain cattle, with the newer breed being slightly less selective than the older breed (2014, 339). Grass made up 84.5% of Holstein and 76.8% of Swedish mountain cows diet, with sedge and rushes making up 17% of ingested vegetation of a Swedish Mountain cow compared to only 9% of a Holstein cow's diet (Hessle et al., 2014, 339). Sæther *et al*. found the difference in diet selection between traditional and newer breeds relatively marginal when comparing breed types (2006, 383), though all the breeds are relatively modern compared to the VA and there is no evidence that diet selection was the same for breeds in the 9$^{th}$ and 10$^{th}$ century; the relatively small difference of diet selection between breeds may suggest that modern studies are still applicable to studying cattle in the VA.

One area where there may be greater difference in diet selection is between dairy and dry cattle and beef animals. Dairy cows have been shown to select a diet with a higher protein content to produce milk (Tolkemp et al., 1998, 2669) and high-yield dairy cows selected more nutrient-rich species compared to lower-yielding dairy cattle (Sæther et al., 2006, 385). Berry *et a*l. found intake of vegetation (both organic and dry) was significantly higher in Brown Swiss dairy cows compared to Highland suckler beef cattle (2002, 446) and energy intake seemed to be of less importance than selection for nitrogen in beef cows (Berry et al., 2002, 450). This would suggest that the location of shielings would differ if they were primarily for dairying or beef production.

Another aspect to consider in highly seasonal environments, such as the North Atlantic islands, is that seasonal change would affect plant growth, abundance of vegetation, relative diversity of flora, and the ratio of live to dead matter in vegetation (Gordon 1989a, 38; 1989c, 55-60; 1989c, 73; Menard et al., 2002, 125). Seasonal changes to vegetation are likely to force cattle to adapt their feeding strategy through the year to exploit the changing abundance of preferential species (M.A. Fraser et al., 2009b, 190). On the Scottish Island of Rhum, Gordon found cattle chose to feed on communities with the highest ratio of live to dead material and only diversified to less digestible communities in autumn when the live biomass decreased (1989c, 73-4). Cattle specifically chose to feed on mesotrophic communities such as herb-rich heath, marsh, and *Agrostis-Festuca* grassland communities in spring, and in summer, mainly *Agrostis-Festuca* communities were preferred. In autumn, cattle widened their diet selection to include oligotrophic grassland communities such as *Molinia* fen, *Schoenus* fen and also marsh, while in winter *Molinia* and *Schoenu*s fen were chosen (Gordon 1989b, 55-60). In extensive grazing found in the *utan garð*, cattle would be able to select vegetation communities to feed upon and it is likely this knowledge gained through observation would encourage the founding of shielings in certain locations.

Cattle would therefore exhibit specific grazing preferences and in a pastoral culture that highly valued cattle, as both Gaelic (Lucas 1989; Kelly 1997) and Norse did (Barker 1999; Zimmerman 1999), these preferences are likely to have been known and understood as the most efficient way to maximise production of either meat or secondary products. It is unlikely that shielings were randomly located; although the prerequisite was access to grazing land, it is more likely that sites were chosen for a variety of factors which might include accessibility, safety of livestock, access to other resources such as iron, wood or fodder collection and also summer grazing potential (Stjernquist 1984, 29, 36). Sites should therefore exhibit some shared characteristics; however, each site would not be found in a carbon copy situation, but depending on the local area/conditions they are likely to share some characteristics which made them attractive as a shieling site.

The location of a settlement is a combination of environmental and cultural factors; the choice of location for a settlement is a result of the ability and needs of a culture to exploit a resource for a given end(s). It is likely that the physical location holds information as to the potential needs of a given society or culture. The name given to a locality will also be governed by the culture it is named in and will have had some lexical meaning at the time it was coined. This initial meaning of a place-name and its related function may only be relevant at the time of the settlement, as the needs of a society change over time and later use or settlement hierarchy may not be representative of the situation during the initial founding. Place-names, however, are a good source of evidence to past landscapes as they are able to be passed from one language to another as they become mono-referential and even when the original lexical meaning of a name is lost.

## 2.8 Problems of macro and micro-scale studies

Gillian Fellows-Jensen posed the question that the 'extent and nature of *ærgi* as a place-name cannot be deduced solely by the linguistic evidence and it may have in fact differed from colony to colony' (Fellows-Jensen 1980, 71). This brings into focus a problem in studying terrestrial phenomena (Egerbladh 1982, 164; Roberts 1982, 4); is it better to study at a macro or micro scale? Large-scale studies are useful at showing distribution patterns, such as *setr/sætr* and *ærgi*-names, but are distribution patterns the result of spatial coincidence, or is there causal relationship between different patterns (Kirk 1947 [1963], 362)? Environmental conditions (climate, geology, vegetation, etc) will vary hugely between more northern settlements in the Shetland and Faroe Islands compared to the Hebrides. William Norton makes the point that 'causal process is liable to consist of a mix of local and regional influences. In this respect there is not one clearly defined and unchanging set of variables which may be interpreted as the basis for spatial form evolution' (1982, 252).

Regional studies run the risk of seeing the study area as a homogenous area, when detailed, small-scale regional studies can lead to unique characteristics of sites coming to the fore (Kirk 1947 [1963], 361, Guelke 1982a, 194). Small-scale studies, such as micro-histories, conversely run the risk of emphasising specific local conditions which may not be representative of the whole area of settlement or specific type of settlement. I intend to address these issues by attempting to conduct a macro and micro study of generic elements, first through a distribution and site and situation study of the whole study area and then at a more local level using zones (Egerbladh 1982, 164). These more regional studies will see how well the generic locational factors correspond to varied local conditions and this may help explain regional variation in location in response to local conditions (Norton 1982, 253).

## 2.9 Settlement zones used in this study

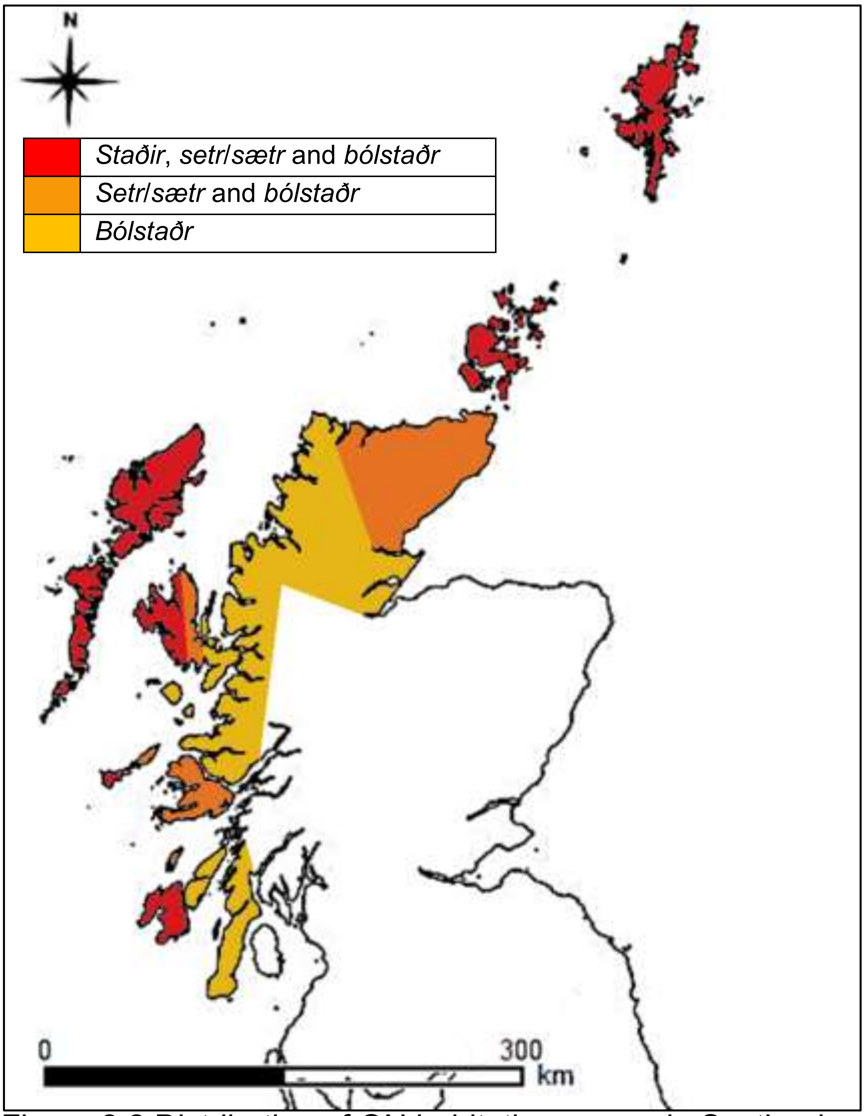



Figure 2.2 Distribution of ON habitative names in Scotland (after Nicolaisen 1976).

Gilliam Fellows-Jensen has questioned whether the use of *ærgi* was consistent across the whole area of Scandinavian settlement, or whether its situation was specific to the prevailing conditions (Fellows-Jensen 1980, 71). Bill Nicolaisen's (1976) study of ON habitative elements did varying density of ON habitational names (Figure 2.2) and Barbara Crawford initially divided Scandinavian Scotland into four zones based on the distribution and intensity of Scandinavian place-name elements (1987, 92–115). Gillian Fellows-Jensen (2000) largely followed Crawford, using the distribution pattern of ON habitative generics, but also included an evaluation of the likely linguistic situation at the time the names were coined (Figure 2.3).

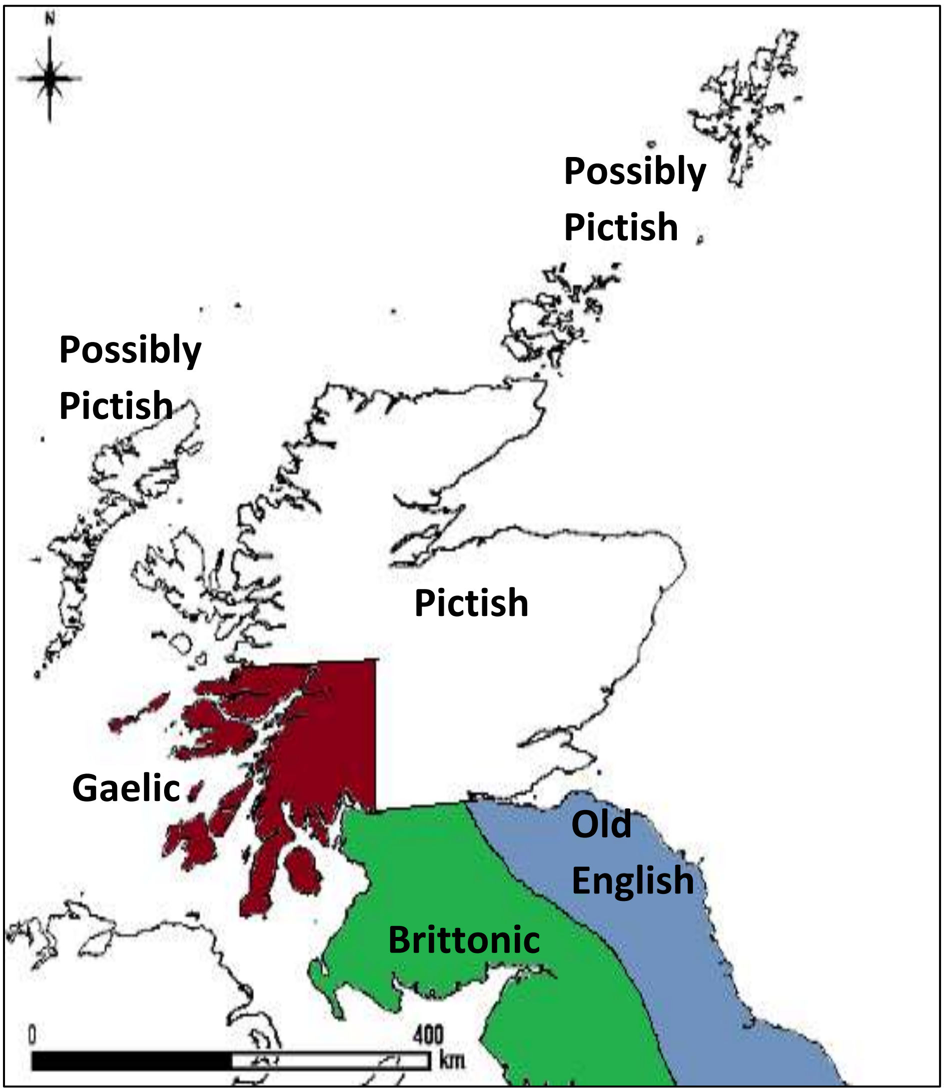



Figure 2.3 The linguistic situation of Scotland in the 7th century (Bannerman 1974; Taylor 2014).

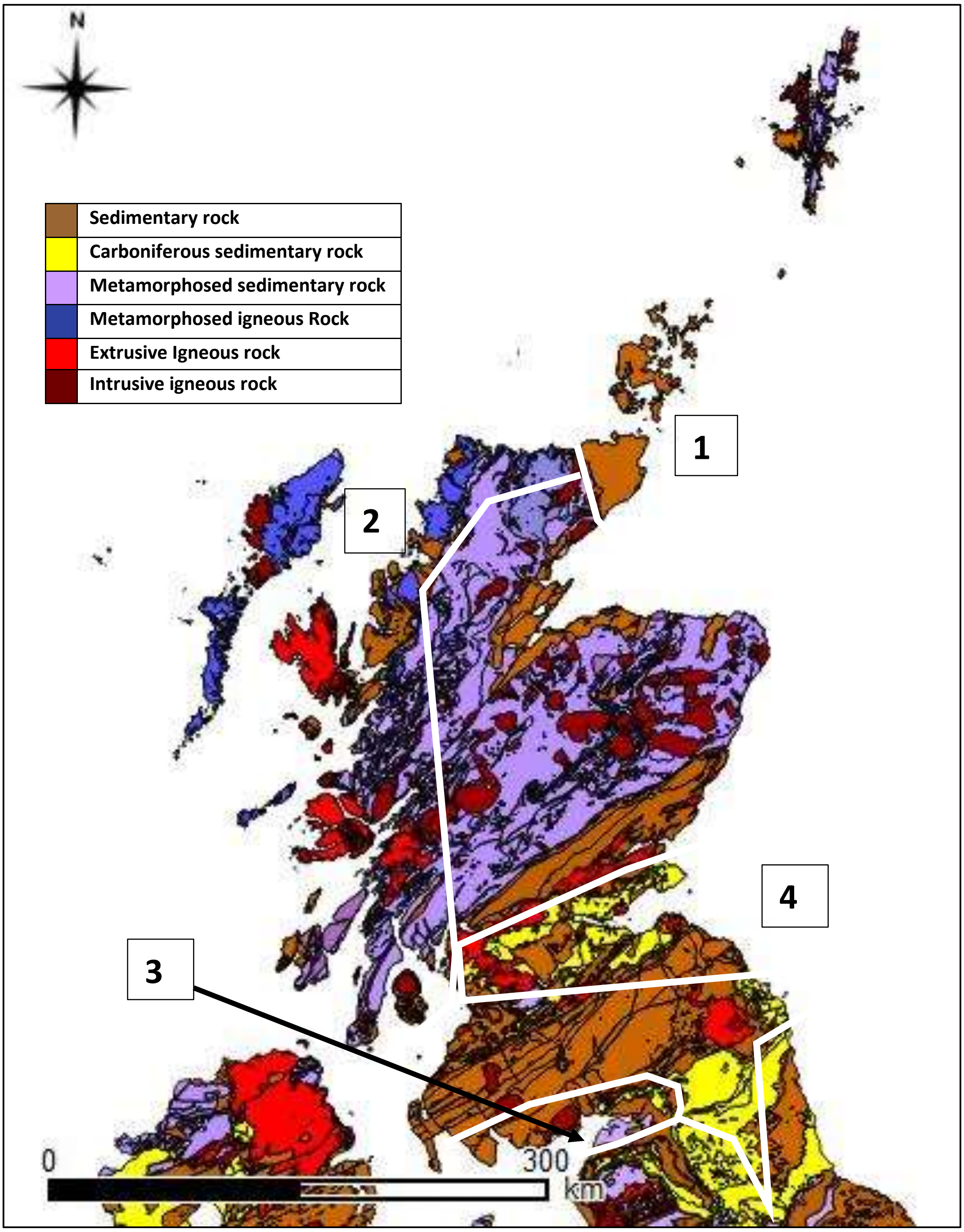



Figure 2.4 Simplified Geological map of Scotland (GIS data from the Ordnance Survey Digimap http://digimap.edina.ac.uk/ accessed 15/5/18). Gillian Fellows-Jensen's four zones of Scandinavian influence white lines (Fellow-Jensen 2000, 135-39).

Fellows-Jensen divided Scotland into four zones, Zone 1 (Northern Isles and Caithness) and Zone 2 (the Inner Hebrides, Western Isles, and the western littoral of mainland Scotland) both contain the Norwegian habitative element *bólstaðr*. However, Zone 2, unlike Zone 1, was subsequently heavily influenced by Gaelic. Fellows-Jensen suggests that Zone 3 and 4 contain the Danish and East Norwegian *bý,* possibly from secondary migration from the Danelaw from what is now Northern England (2000, 141). However, the theory behind the place-name distribution patterns has since come in for some criticism (Kruse 2004 105; B. Sandnes 2006, 248; Taylor 2007, 103; see also Chapter 5.2).

In this study, I divided Scotland into four zones, taking into account the geology, linguistic situation and the distribution of ON habitative generics (Figure 2.5). To this I have added the Faroes as a comparison due to it being an area of Scandinavian settlement where an *ærgi*-name has been fully investigated. The four zones have some similarities, but differences in pre-VA, post-VA language shift and settlement chronology, place-name generics and geology allow locational factors to be compared (Table 2,3). This will allow a more comprehensive assessment of the function of *setr*/*sætr* and *ærgi*-names.

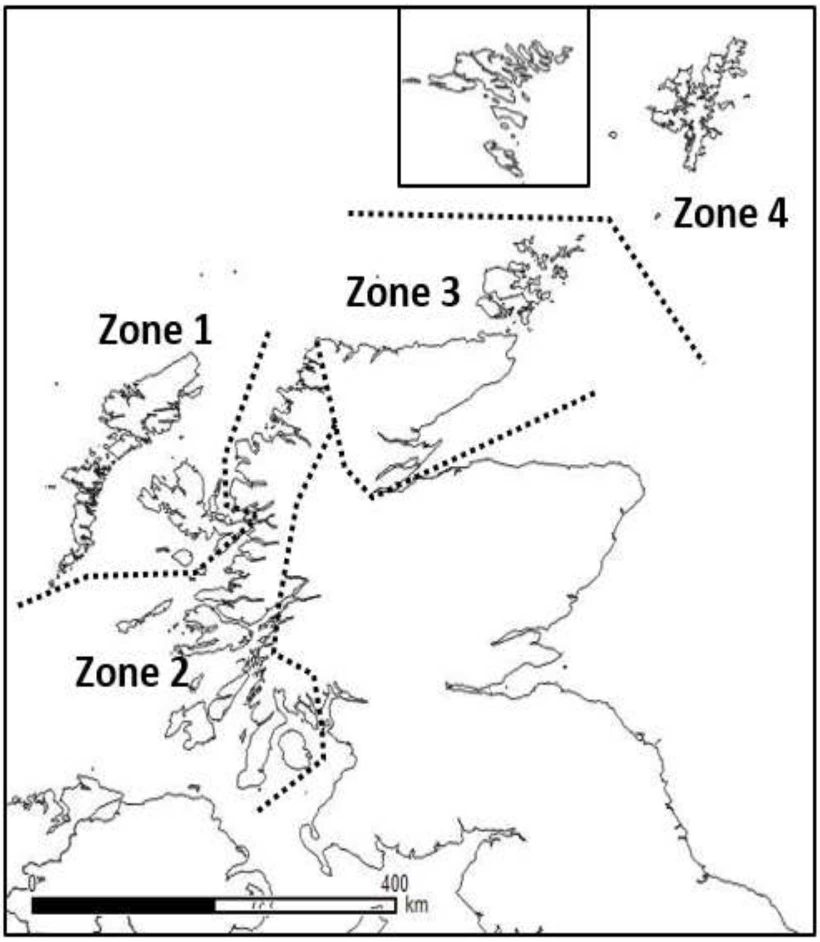



Figure 2.5 Zonal map of Scandinavian settlement used in this study (Insert map Faroe Islands).

Zone 1 and 2 are similar geologically, consisting mainly of metamorphasised rock with scattered areas of igneous rock, and both zones were Gaelic speaking in the post-VA. However, Zone 2 is likely to have seen a language shift to Gaelic during the later VA (Jennings and Kruse 2009b, 143-4), Gaelic may only have gained ascendancy in the Western Isles by the 12th century (Clancy 2008, 46). There is therefore a difference between Zone 1 and 2 in the time that ON names had to be cemented into the onomastic landscape. Zone 1 contains many examples of the

ON place-name elements *staðir*, *bólstaðr*, *setr/sætr* and *ærgi*-names, whereas, only *bólstaðr* and *ærgi*-names have a wide distribution in Zone 2.

| **Zone** | | **Geology** | **ON habitative generics** | **Linguistic situation** |
|---|---|---|---|---|
| **Zone 1** | Western Isles | Gneiss<br>Some intrusive igneous rock in Harris | *Staðir*, *bólstaðr, ærgi,* and *setr/sætr.* | Pre-VA: Pictish (Bannerman 1974; see Chapter 4a).<br><br>Post-VA: ON then Gaelic $12^{th}$C (Clancy 2008, 46). |
| | Skye | Extrusive igneous rocks, some areas of intrusive igneous rock and sandstone | | |
| **Zone 2** | The Inner Hebrides and western littoral of mainland of Scotland | South of the zone: Metamorphosed sedimentary rock<br><br>North of the zone: metamorphosed igneous rock. | *Bólstaðr* and *ærgi* | Pre-VA: in the $7^{th}$ century, Gaelic south of Ardnamurchan and and Pictish to the north (Bannerman 1974; Taylor 2014).<br><br>Post VA: Gaelic |
| **Zone 3** | Orkney | Devonian sandstone | *Staðir*, *bólstaðr,* and *setr/sætr*. | Pre-VA*:* Pictish<br><br>Post VA: ON and then Scots English, some Gaelic in the south and west (Waugh 1993) |
| | Caithness | Devonian sandstone | *Staðir*, *bólstaðr, setr/sætr,* and *ærgi.* | |
| | Sutherland | Metamorphosed sedimentary rock | *Bólstaðr, setr/sætr and ærgi.* | |
| | Easter Ross | Devonian sandstone | *Bólstaðr and setr/sætr.* | |
| **Zone 4** | Shetland | Metamorphosed sedimentary rock, sedimenatary rock and intrusive igneous outcrops. | *Staðir*, *bólstaðr,* and *setr/sætr*. | Pre-VA: Pictish.<br><br>Post-VA: ON, later language shift to Scots. |
| | Faroes | Basalt | *Ærgi* | Pre-VA: possible some Gaelic speakers.<br>Post-VA: ON |

Table 2.3 Rational for zones used in this study (soils are too varied to be categorised here, but will be covered in the relevant chapters).

Zone 3 shares similarities with Zone 1, in that it is believed to have been Pictish speaking in the pre-VA (Waugh 1993, 121) and contains *staðir*, *setr/sætr* and *bólstaðr*. Unlike Zone 1 and 2, ON was replaced by Scots (Nicolaisen 1982, 77), though some Gaelic-speakers are believed to have entered western Caithness (Waugh 1993, 121) and southern Sutherland (Bangor-Jones 1995, 82-3). Devonian Sandstone predominates in Caithness and Orkney creating a relatively gently sloping landscape over much of the zone, the permeable nature of the sandstone bedrock will affect hydrology, soil formation and fertility in contrast to Western Scotland. This provides a contrast with Zone 1 and 2 geologically and linguistically in the post-VA. This allows a direct comparison of the characteristics of shieling sites to see whether they are shared in each region, or whether different controlling factors affect site selection.

Climatically, Shetland and the Faroe Islands in Zone 4 are very similar, with a strongly oceanic climate and relatively similar latitude. Geologically the two archipelagos are different, the Faroes being formed almost exclusively from basalt, while Shetland is more varied. The Faroes are far more mountainous than Shetland and were less heavily exploited prior to the VA (Church et al., 2013; see Chapter 4b). There is a complimentary distribution of shieling names with large numbers of *setr*/*sætr*-names on Shetland and the Faroes where *ærgi*-names predominant. This allows a direct comparison between the two archipelagos and with the other zones.

## 2.10 Data collection method

### 2.10.1 Map survey

There are a number of early maps that can be accessed online at the National Library Scotland that cover the study. Early cartographers such as Timothy Pont (1583-96), Johannes ('Joan') Blaeu (1654), and Herman Moll (1745) have produced maps, but they vary in scale and coverage of Scotland. These maps may be of use in the identification of abandoned and lost settlements, though, were not constructed from trigonometrical surveys and as such, distance and direction are inaccurate, limiting their use to giving a rough assessment of location (Lynam 1950, 13, Bagley 1971, 177).

Shurrery in Caithness (ND042581), on the first edition six-inch to one-mile Ordnance Survey (OS) maps (Caithness, Sheet XVI 1877) covers a large area and several farms to the north of Loch Shurrery; likewise, '*Shurery*' is located to the north of the Loch on John Thomson's Atlas of Scotland 1832, but the name is associated with a single farm in the same area. Blaeu (1654) locates '*Shureri*' west of the Loch, as does Robert Gordon (1642), both based on Timothy Pont's work. William Roy's Military Survey of Scotland names a settlement to the south-east of the loch as '*Sourary*', though there are unnamed settlements shown to the north of the loch (1747-55).


Figure 2.6 Map Shurrery, Caithness on Blaeu's Atlas of Scotland (1654) (accessed on 20/6/14 at maps.nls.uk/view/00000473).

Figure 2.7 Shurrery, Caithness on Robert Gordon's map (1642) (accessed on 20/6/14 at maps.nls.uk/view/00000277).


Figure 2.8 Map of Shurrery, Caithness on William Roy's Military Survey of Scotland, (1747-1755) (accessed on 20/6/14 at maps.nls.uk/roy/index.html).


Figure 2.9 Map of Shurrery, Caithness on John Thomson's Atlas of Scotland (1832) (accessed on 20/6/14 at maps.nls.uk/view/74400135).

Figure 2.10 Map of Shurrery, Caithness on the first edition six-inch to one-mile Ordnance Survey (OS) maps (Caithness, Sheet XVI 1877) (accessed on 20/6/14 at maps.nls.uk/view/74426573)

Even when the location of a settlement seems to match on early maps, this is not an indication of accuracy. Mapmakers often based their map on those that preceded it, and an error in one can be replicated in subsequent maps. Joan Blaeu's maps of Scotland were based on the earlier work of Timothy Pont and others, though he did take advice and information from John Scot of Scotstarvit, Robert and James Gordon, and an unnamed Orcadian. His reliance on John Speed's work in England is evidence that Blaeu could base his work on surveys that were sometimes 70 years out of date and whose survey methods are not always known (Hindle 1998, 11-12). Using these maps for general location is fraught with difficulties, as can be seen in Table 2.4. The direction from Lieurary (a possible *ærgi* name) to the three settlements was similar, but the distances between the given locations mean that the directions are completely inaccurate.

| | Lythmore | Forss | Assary |
|---|---|---|---|
| Robert Gordon (1642), Lurerie | c.500m NNW | c.1200m NNW | c.2800m S |
| Joan Blaeu (1654), Lurerie | c.1000m NW | c.1800m NNW | 2800m SSE |
| 1:25 000 OS Map (2014), Lieurary | 3150m NNW | 6190m NNW | 1080m SSW |

Table 2.4 Location of Lieurary, Caithness (ND065634) in relation to selected settlements on Gordon (1642), Blaeu (1654) and modern OS (2014) maps (distances are estimates for the Gordan and Blaeu and rounded up on the OS map).

The reliance of early mapmakers on subscriptions to pay for the maps led to the overemphasis of some locations over others, and the inclusion or omission of settlements on the basis of financial assistance (Hindle 2001, 140). The inaccuracy of early maps is not confined to distance and direction; the far more accurate Roy Military Survey of Scotland (1747-55) depicts Loch Calder (ND072604), named as Loch Cadell, as being far smaller than it is in reality and Loch Olginey (ND088573) is completely omitted. This puts into question the use of such maps for anything other than possible early spellings and very general location, and where possible I will defer to the location found on the first edition six-inch to one-mile OS maps.

I therefore chose to use the OS six-inch to a mile-maps, first edition (1843-1882). The choice of this particular series was based on a number of factors; firstly, there is an increased chance of place-names being spelt phonetically rather than following a standardised spelling. This was especially important for the ON *ærgi* element which can easily become confused with the Gaelic *àirigh* (I.A. Fraser 1995b, 235; Olson 1983, 210). The OS Name Books that accompanies the series allows for the search of alternative spelling, which can be important for either the inclusion or exclusion of a location. The name givers were identifiable local people who are likely to give the local pronunciation. Cartographically they were accurately measured and produced using a standard method, at a very detailed scale that included many more place-names than later OS maps. The maps are also digitally accessible on the Map Images section of the website of the National Library of Scotland.

Figure 2.11 The location of Braighunisary (Islay) on the first edition six inch to one-mile OS map (Argyllshire, Sheet CCXXXII Survey date: 1878, Publication date: 1882, at http://maps.nls.uk/index.html).

Farms can periodically move location; the farm of Braighunisary on Islay is located at NR376464 on modern OS maps and on the 1899 second addition six-inch to one-mile map (Argyll and Bute Sheet CCXXXII, 1897). However, on the original 1878 six-inch map (Argyllshire, Sheet CCXXXII, 1882) it is located at NR374471. This represents a drop-in altitude of 30m and a move of 641m south of the original site and without the earlier map the locational data of the settlement would have been incorrect. The site is now located in the middle of improved pasture, rather than on the edge of it, where it turns to rough moorland grazing (Figure 2.11 and 2.12), there is no record of any building on CANMORE (https://canmore.org.uk, accessed 15/5/18). This may be a rare case, but it could alter any results in a small data set, so I will therefore defer to the location found on the first edition six-inch to one-mile OS, as this is the more likely settlement location before agricultural improvements and possible settlement migration.

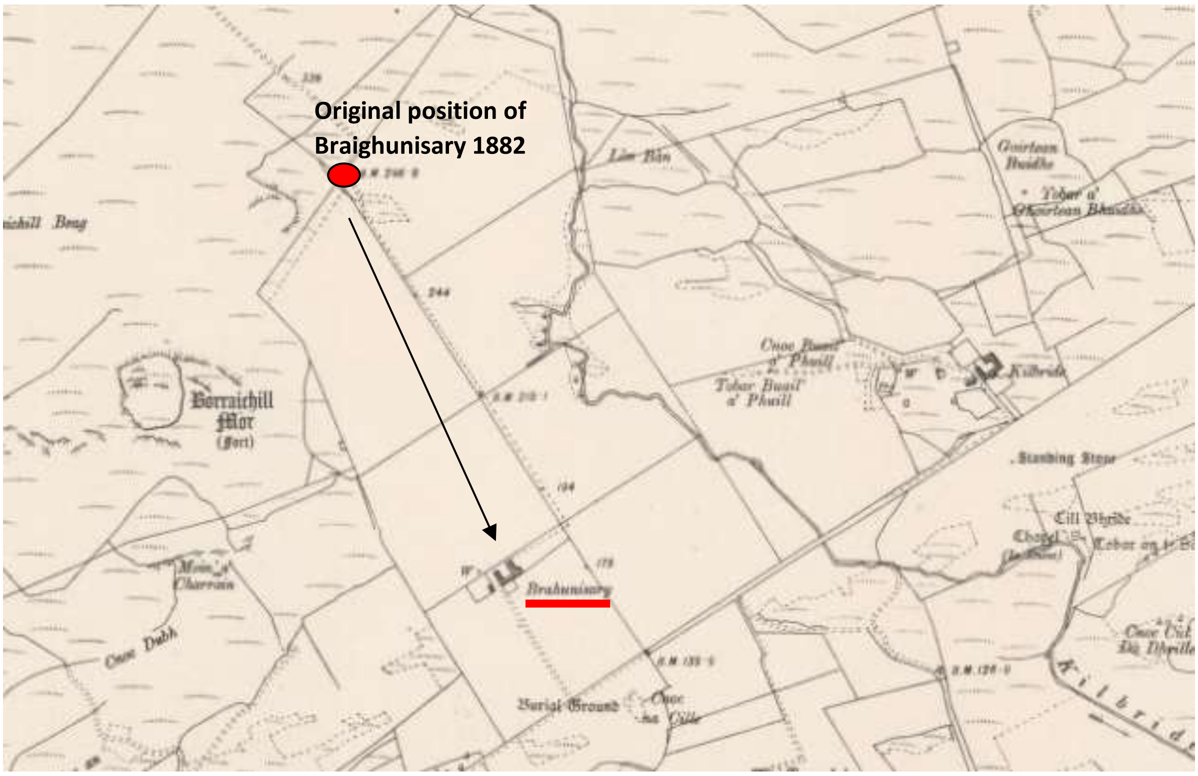


Figure 2.12 The location of Braighunisary (Islay) on the second edition six inch to one-mile OS map (Argyll and Bute Sheet CCXXXII, Publication date: 1900, Date revised: 1897, at http://maps.nls.uk/index.html).

However, I have consulted pre-OS maps where there is confusion over the location of a settlement, such as a topographical name without an inhabited site, or where a place-name is not associated with several possible sites. The use of pre-OS maps was undertaken with caution and on a site by site basis. Thorairaidh in Sutherland (ND041185) is now topographical name, Creag Thorairaidh, with no associated habitation. However, a farm named as ‘Torori’ is named on Kirk’s map of Navidale, East Helmsdale of 1772 (Figure 2.13). This was attached to the base of the hill that is now called Creag Thorairaidh and it thereforewas reasonable to assume that this was the *ærgi*-site.


Figure 2.13 The location of Torori on Kirks map of Navidale, East Helmsdale of 1772 (accessed on 20/5/15 at maps.nls.uk/estates/golspie-loth/plan.cfm?id=2455).

Where I have been unable to locate a settlement associated with what is a topographical name today, I omitted the site from a detailed topographical survey; however, their location has been noted in order to show the distribution pattern of each place-name generic. My reasoning behind this decision is based on two factors; first, the location is too general for any meaningful information about the site to be gathered and, second, topographical names can be some distance from the associated habitation through the process of transference. Transference is where the name of a place is ‘transferred’ to a nearby feature, such as a hill, and if the original settlement is lost then the name can continue to be used but for a different site and situation (Cox 2002, 45). Chonasairidh (Conas-àirigh) is a small upland settlement on Islay (NR36502 49782), 1.21km to the east is the hill, Carn Chonas-àirigh (NR 37731 49715). If the settlement had been lost, then the locational factor of Carn Chonas-àirigh would not be adequate to describe the site and situation of the settlement which is over a kilometre distant.

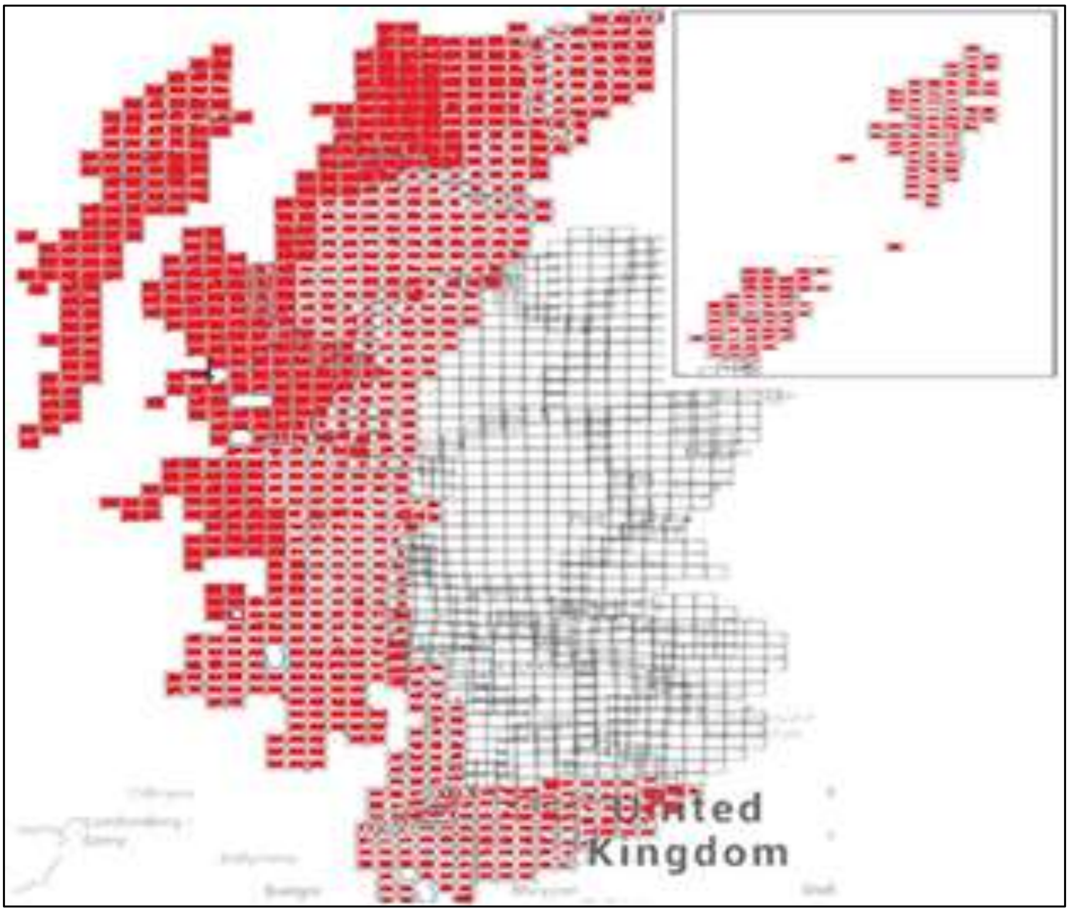



Figure 2.14 Map of the surveyed area from my study (red), OS six-inch to a mile-maps (1843-1882) (accessed at maps.nls.uk/os/6inch/index.html).

The sheer scale prohibited me from surveying the whole of Scotland, and so I followed existing research of known or what is believed to have been Scandinavian settlement in Scotland (Figure 2.14) (B. Crawford 1987; Fellows-Jensen 2000). When a place-name was found containing one of the shieling elements I would also survey maps that were contiguous with that map, whether or not they were in the known or believed area of Scandinavian settlement. This was to ensure that any possible areas of Scandinavian settlement were covered.

### 2.10.2 The topographical survey

Once a site was located, information was collected on the altitude, aspect, and specific locational features, as well as general geographical features of the surrounding area (site and situation), and distance from the sea. This information was collected using modern OS map (2014) for accuracy, but the specific location of each site was based, wherever possible, on the original OS six-inch to one-mile map. I collected information on the solid geology, superficial geology and present vegetation from the British Geological survey and the Macaulay Institute for Soil Research (now part of the James Hutton Institute). Where possible, I virtually visited each site on the 'Street View' facility of Google Maps, to better understand how the settlement fits into the landscape. This will also be used to select sites for site visits, once the correlations of settlement locations have been analysed. Information collected included the following:

- **Altitude**

  The height above sea level (OD) is given for each site to the nearest 10m, or where this was not possible, for the general location. Though in itself not important, it has an effect on temperature and the growing season and vegetation, which restricts its use in time and in farming methods employed. The use of shieling by their nature is connected to temperature and this is connected to altitude.

- **Aspect**

The aspect of a site was given based on the general direction of contours; where the site was in an open flat location no aspect was given. It is logical for settlements in the northern hemisphere to have a southern aspect; however, if one type of place-name exhibits a close correlation with a certain aspect, compared to a different place-name type then this might be indicative of different practices. Collection of aspect is therefore important when considering if the elements of one place-name had an arable function connected to it or just a general pastoral one. Aspect may well be related to altitude, with sites at a higher altitude increasingly favouring a more preferential aspect. This is may be more important for pastoral farming as this will affect the timing of the growing season.

- **Distance from sea**

The distance to the sea was measured to the nearest 100m, using the measurement tool on *Digimap* (http://digimap.edina.ac.uk/roam, accessed online 5/11/14). I chose to find the shortest distance to the sea as a way to remove personal bias from my results. I may consider one harbour or potential access point to the sea as superior to another, and this might bare no relation to the choice of a settlement founder. Access to the sea may or may not have been an important factor in the location of *setr/sætr* and *ærgi* sites, but without knowing the original settlement or landholding pattern at the time, the likely '*best*' route is purely conjecture and may not correspond to any route taken. The sea, however, does have an ameliorating effect on climate (Cherrie et al., 2015, 81) and this can be an important factor in settlement location, as it may allow livestock to be kept outdoors all year round, or crops to be grown at high latitudes.

- **Geology**

  Gillian Fellows-Jensen has suggested that geology, especially superficial deposits, may be important factor in the location of settlements (1978, 94). I visited the British Geological Survey (BGS) website and selected Onshore GeoIndex. I entered the grid reference for each site into the 'Search" option and selected 'Bedrock Geology' and 'Superficial deposits' in the map layer drop down box for 1:50,000. The map scale could then be controlled using the zoom and information was collected, allowing a me to get an overview as well as more detailed data. A problem encountered was that information on superficial deposits in the Western Isles of Scotland was at best patchy and at worst non-existent, especially for the Isle of Lewis and Harris. To complete my survey, I accessed scanned images of the Soil Survey of Scotland maps (1:250 000, sheets 1-7), found at Scottish Soils (http://www.soils-Scotland.gov.uk/data). This gave me a national coverage at the same scale and allowed me not only to fill in the blanks left in the Western Isles, but also add additional information for all sites. I collected information covering Geology and superficial deposits:

1. **Bedrock geology**

   Geology is important as it can affect the soil type and nutrient content of soils derived from it and also its drainage properties (Gammeltoft 2001, 189). This is more important in mountainous areas where the soil is thinner and not buried by deep drift deposits. Where you find several rock types, this can create a mosaic of vegetation due to the effect on differing angles of slope, soil chemistry and drainage, which in turn allows seasonal grazing by livestock (Grant et al., 1996, 1057; Gordon and Illius 1989, 46; Pollock et al., 2007, 127). Roberts has pointed out the limitation of geological maps, in that they ‘conceal a host of lithological variation which affect sub soil qualities’ (1978, 35), but as both *setr*/*sætr* and *ærgi* are believed to relate to pastoral farming, it is the general situation around a location that is important for grazing rather than the conditions of the specific location. The use of zones to compare locations between zones and of the generics within zones will also improve the accuracy of the results by reducing the risks of the varied geological over the study area. This is especially important in parts of Scotland with complex geology (Figure 2.4).

2. **Superficial geology**

The soil can be derived from the parent rock, however, the effects of glacial erosion, transport and deposition, along with fluvial and geomorphological processes combine to make locally varied soils. This is especially true in valley locations where deeper soils can result from deeper drift deposits and the effects of soil catena. Locally fertile soils can be found (Woolacott 1907, 58) and where these soils have particular place-name elements, this can point to specific farming use. As with bedrock geology, areas where several soil types are found can allow a variety of uses. Although farming methods in the 20th century and Early Modern Period have improved soils, this may highlight areas of relative fertility compared to other areas.

- **Present day Vegetation**

The Soil Survey of Scotland maps also give the present vegetation found in a locality. Just as land capability can be improved and farming practices can change over time, present vegetation cannot be taken as unchanging; however, it does allow a comparison of relative fertility of sites. Present day plant assemblages can also be linked to pollen samples from archaeological sites to show whether there has been a continuation of use or a change in the practices, or highlight where land which was once farmed has fallen out of use.

- **Topographical features**

  The steeper the slope, the greater the increase in the velocity of water running down the slope and the reduction in the friction holding soil together under the pull of gravity leading to the removal of soil downslope. Deposition of eroded soil occurs where there is a change of slope or at the base of slopes leading in the latter to the formation of soil catena (Gorham 1953, 145; Badía et al., 2013, 17) and alluvial fans. This creates deep soils at these locations and also damper conditions due to the decrease in throughflow and overland flow from the change in slope and constant water coming down the slope from the higher land. These soils can be used for grazing with lush grass especially along wet flushes or for arable farming (deeper more fertile soils). Soils on steeper slopes are likely to support extensive grazing, being low in nutrients due to leaching and an inability to retain moisture in the soil (Gorham 1953, 144-5; Coenders-Gerrits et al., 8640, 2012; Badía et al., 2013, 17). The criteria I will use are: steep slope (21m or more rise in altitude over 100m), moderately sloping (11-20m rise in altitude over 100m), and gently sloping (0-10m rise in altitude over 100m).

- **General features**

  Various general location factors will be noted down such as access to flood plain, marsh land, bays with access to the sea, archaeological sites, etc.

The collection of this data should allow the site and location factor for each generic to be identified and these then can be compared between each zone to allow regional differences to become apparent. This information can then be compared to the other generic characteristics to help explain the reason why *ærgi* was adopted by ON-speakers. I have not included distance from a water source, as this is a prerequisite for settlement in most parts of the world, and because of changes to water cources in the modern era through drainage and realignment makes the reliability of any data to the VA.

# Chapter 3. The Development of Shielings in Norway

## 3.1 Introduction

The development of shielings or summer farms in Scandinavia, called *sætr* in Norway and *säter* or *fäboder* in Sweden, has been dated from anywhere between the Neolithic (Reinton 1961, 66) to the Medieval Period (J. Sandnes 1991, 219-20). Not only has the date for their introduction been disputed, but there has been a range of theories as to why they were established. Theories have ranged from a response to grazing pressure (J. Sandnes 1991, 219-20), changing climatic conditions that necessitated stallfeeding of cattle and resulting need for fodder collection (Behre 1998, 94) to the use of shielings as territorial estate markers (Lucas 2008, 98; Karlsson et al., 2010, 115).

Since Norway became independent from Denmark in 1814, farming and farmers have held a special place in Norwegian self-consciousness as custodians of Norwegian culture from the "golden age of the saga kings" (Holm 2002, 67). Romantic nationalists idealised the independent farmer as heirs to their Viking forebears, artists painted idealised scenes of farming and shieling use, such as Adolph Tidemand's "*Sæterreisen*" (1864) and Knud Bergslien "*En Aften ved Sæteren*" (1858). The view that this 19th century form of farming had been passed down unbroken and unchanged from the Viking Age (VA) has been followed by various scholars. Lars Reinton's work in Norway on shielings, for instance, has been used extensively when discussing Viking Age farming practices in Norway and abroad. The relevance of farming practices from early modern history to conditions 800 years earlier has increasingly been questioned by scholars (Holm 2002, 74; Bjørgo 2005, 225).

There are several generic elements used to describe a shieling in Norway, including *setr, sætr, støl, sel*, among many others, some of which can have alternative meanings (see Chapter Section 3.3). To reduce the risk of confusion, I will use the Scottish term '*shieling*' when referring generically to summer farms and the ON generic elements when discussing particular elements or examples.

## 3.2 Aims of this Chapter

To understand the use of Scandinavian shielings in VA Scotland I need to look at shieling use in VA Norway. Carole Crumley stated that it was "simply not possible to focus on changes in settlement and land use…without knowledge of elements that characterized earlier*…*landscapes" (1995, 2). I will therefore need to see how and why shieling use developed within the Norwegian farming system, as part of the process of niche construction (Odling-Smee et al., 2013, 8; Boyd et al., 2011, 10923). Understanding how niche construction processes worked in Scandinavian culture will inform me of the decision-making process behind the founding of shielings in Scandinavian settlements abroad, particularly in Scotland (Laland and Brown 2006, 96; Laland and O'Brian 2010, 307). This is because settlers are likely to have utilised their "adaptive packages" developed through their cultural evolution of Scandinavian society to new environments, at least initially (Boyd et al., 2011, 10923). In this chapter I intend to follow Ingvild Øye, who stated (2011, 497): “A methodological starting point has been that agrarian settlements and land use should be seen as an integral entity and as social constructions, not only influenced by topography but also formed by varying socio-economic conditions and shifting farming methods.” The chapter will give me a typology of shieling locations in Norway, which can then be compared to shielings in Scotland. From this I will be able to explain if settlement location followed a specific pattern or whether a different system was adopted in Scandinavian settlements in Scotland. Boyd et al., suggest that the *cultural niche hypothesis* led to the development of adaptive packages (2011, 10923) and this may have been *landnám* (2011, 10923). There has never been a survey that covers more than one specific area that looks at locational factors for shielings in Norway. As the farming system used by Scandinavian settlers during the VA seems to have been uniform, this information could help explain the settlement structure. Shielings, as stated in the introduction and methodology, are relatively underrepresented in studies of the VA, though this is being addressed.

The use of shielings in Norway would be the result of distinct choices made by people. Key questions that need to be answered in the development of this farming system need to be:

1. When did the use of shielings develop in Norway and what did it develop from?
2. What were the drivers that led to the development of the use of shielings?

a. How did the physical landscape influence the farming system adopted (physical drivers)?
b. How did society in Norway influence the farming system (cultural drivers)?

3. What are the physical characteristics of shielings in Norway? Can different types of shielings be identified, were different locations for shielings exploited or were any differences due to different types of landscape?

### 3.3.1 Geography

Norway covers the western part of the Scandinavian Peninsula (Figure 3.1), between 57.98°N to 71.18°N in the north, and 4.59°E in the west and 30.93°E at its easternmost tip. As the crow flies north to south, Norway stretches for 1800km, but when the heavily indented coastline is taken into account, this rises to around 25,148km and to 83,281km when the many islands are included (Statistics Norway, 2013, https://www.ssb.no, accessed 10/1/17). The country is 421km at its widest, and around 30km at its narrowest, bordering Finland and Russia to the north and Sweden to the east.

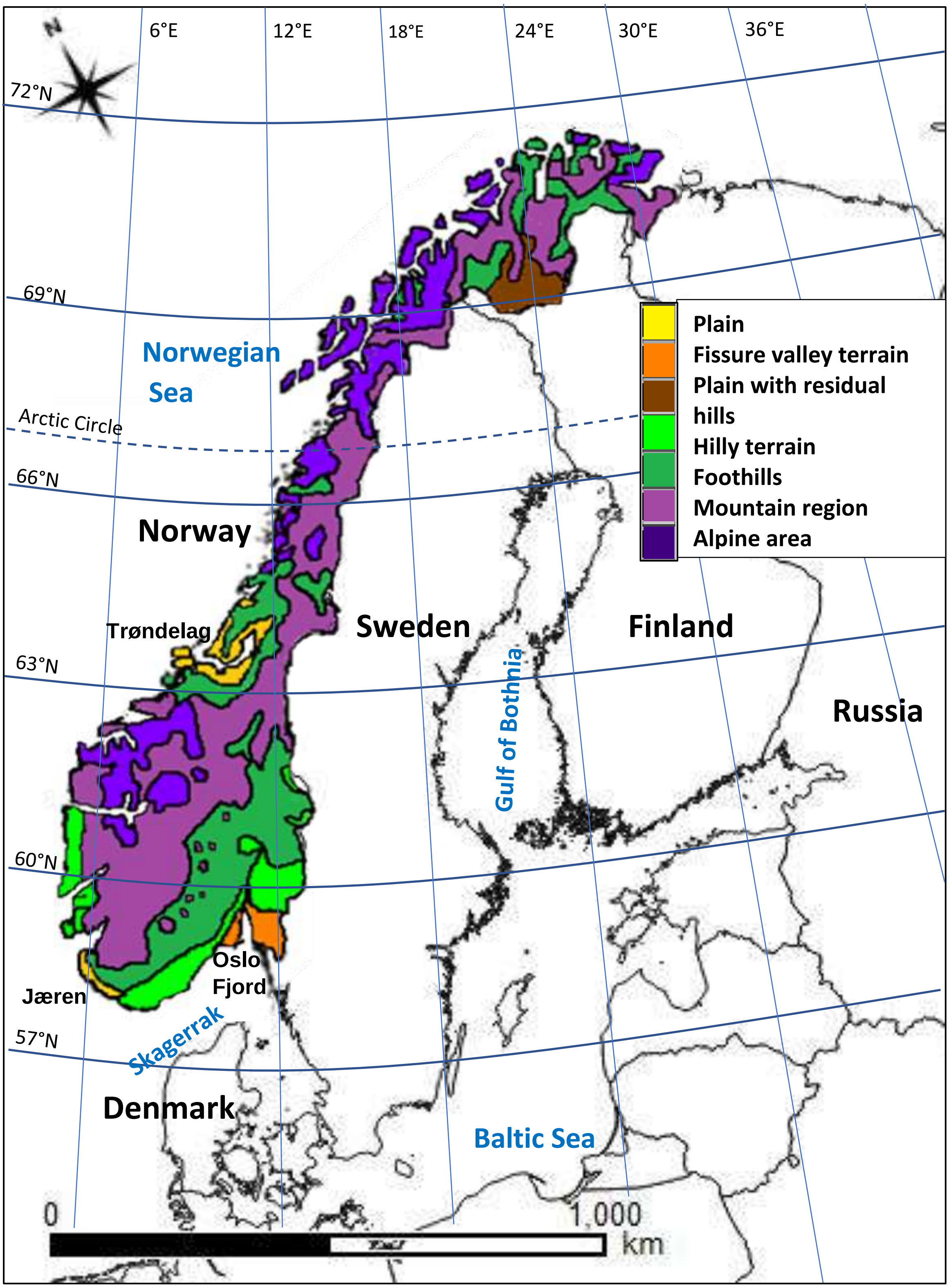



Figure 3.1 Map of Scandinavia with a simplified landscape map of Norway (after Sporrong 2003).

### 3.3.2 Landscape

Norway's overall area is around 323,781km², with bodies of fresh water accounting for 19,633km² of the total (Statistics Norway, https://www.ssb.no, accessed 10/1/17). The country is mountainous, and ranges from high alpine regions in the west and north-west, to hilly terrain in the south-east. The exceptions to this are plains located at Jæren in the far south-west and in the north around Trøndelag. In the south-east, around Oslo Fjord, clay deposits have been heavily eroded to form a fissure valley terrain (Figure 3.1).

The key landscape feature of Norway is the mountain chain which runs from the south, close to the coast, northwards, before swinging eastwards to the border with Sweden and then north again (Figure 3.1). The mountain range then straddles much of the border with Sweden from 62°N and continues in a north-easterly direction, but from north-western Finnmark the mountain chain gets progressively lower in altitude until reaching the Bering Sea. Most of the highest peaks are found in Western Norway, with 250-300 peaks over 2000m, including the highest peak, Galdhøpiggen, at 2469m above sea level (asl).

### 3.3.3 Climate

There is a huge latitudinal range between southern and northern Norway (13 degrees); when looking at modern climate data the climate of Norway varies greatly (Statistics Norway, 2015, accessed on 10/1/17). The climate varied over time, with a climatic optimum between AD 950-1200, which was followed by cooler and wetter conditions from the later thirteenth century (century (Lamb 1965, 16-17; Ogilvie et al., 2000, 38). Although a direct comparison with IA and VA climates cannot be made, variations in climate due to latitude and altitude would have still occurred.

Figure 3.2 shows that winter temperature data has both a north-south and east-west gradient, with winter temperatures warmer in the south and west and decreasing to the north and east. The average temperature at Sola in the extreme south-west is 4.9°C warmer in January and 5°C in July than at Vardø in the extreme far north. There is also an east-west gradient with temperatures at Sola being 1.1°C warmer than Torungen fyr to the east, while in summer this is reversed with Sola being 1.3°C cooler. Eight of the nine sites are less than 15m asl and on average, the growing season of around 6 months. The exceptions are Bergen in the south-west does where it rises to around 7 months, and Tromsø and Vardø in the north while where it drops to four months. Røros is the only one of the nine selected sites not close to sea level (646m asl) and here the growing season is around 5 months.

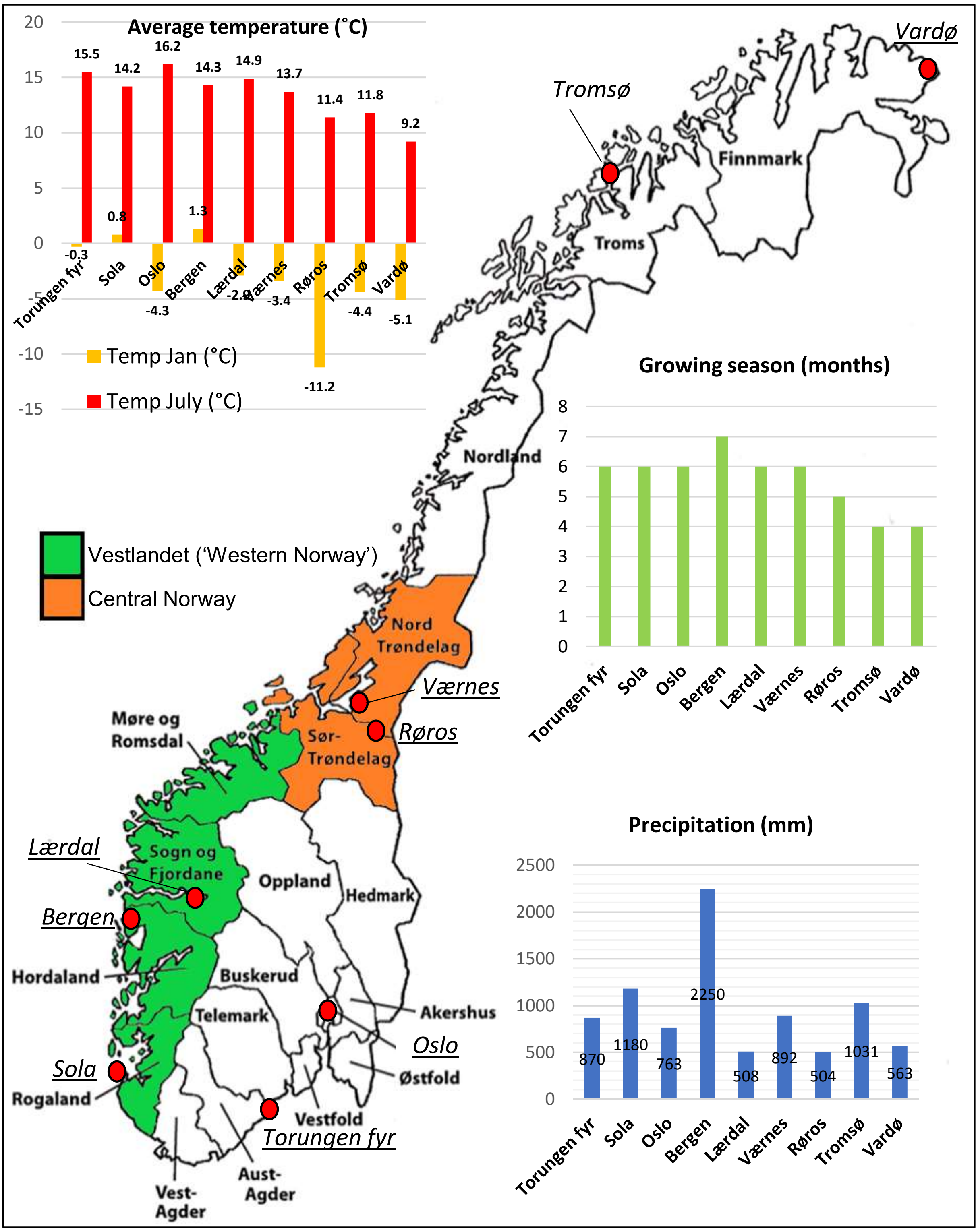



Figure 3.2 Map of Norwegian fylke with sites of selected climate readings (italics and underlined) of selected climate readings (Statistics Norway [www.ssb.no,](http://www.ssb.no) accessed 10/1/17, map after s3.amazonaws.com).

Temperature also varies between coastal regions and inland areas, with coastal areas both warmer in winter and cooler in summer than inland regions of the same latitude and altitude. Solberg found that the coastal areas of Southern Sunnmøre were 2.3°C warmer than inland districts in winter, but 1.7°C cooler in summer (1984, 14). The temperature gradient along the fjords affects the growing season, which in Inner Sogn is 50 days shorter than more coastal districts (Austad and Hauge 2008, 374). This not only reduces the growing season, but it also increases the length of time livestock need to be stall-fed and the corresponding quantity of fodder that needs to be collected (Solberg 1984, 166). In Sunnmøre, Møre og Romsdal, Hans Ströms found that the longer period of stall feeding inland meant that the same amount of fodder would only feed six cows compared to ten cows in more coastal districts (Ströms 1762, cited in Solberg 1984, 166). This would seem to suggest that inland districts would need to put a greater emphasis on fodder collection during the summer than coastal ones and therefore have a greater need for shielings.

What also needs to be taken into account is the affect that altitude has on climate. Nagy and Grabherr state that “mountains, emerging from their surrounding lowlands, transpose the latitude climate zones vertically and thereby make the Earth’s surface a three-dimensional mosaic of climates and life zones, and corresponding vegetation” (2009, 6). During the summer, the lowlands of Inner Sogn can be 6°C warmer than the tree limit; in January it can be between 3°C to 6.5°C warmer. The high steep valley sides of many fjords in spring and summer limit exposure time to direct sunlight in many places, affecting the temperature (Austad and Hauge 2008, 375).

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Rainfall is highest in the west; unsurprising, considering a prevailing south-westerly wind and the mountainous zone, which provides frontal and relief (orographic) precipitation. Precipitation occurs mostly in autumn and winter, as with temperature in winter, rainfall decreases the further north and east you travel. Precipitation occurs mostly in autumn and winter, though it is highly variable and influenced by topography, temperature and distance from sea. Typically, rainfall is greater in the south and west and lower in the east and north. Bergen, which is surrounded by mountains on the west coast, has on average annual rainfall of 3102 mm. Oslo, in eastern Norway, is in a rain shadow created by the mountains to the west, has 911 mm and the northern coastal location of Vardø means it only receives 519 mm annually. Even within Sognefjord, rainfall can vary from that of a strong oceanic climate with 2000-3000 mm a year in the west, to a continental one in the east; with Sogndal receiving 800mm a year while Lærdal received only half of this as a result of differences in local topography (Utaaker 1980).

## 3.4 Historical Background

As this chapter is specifically looking at developments in Norway I will use the Norwegian dating system, as this is most relevant to my study. Norway as a country did not exist at the start of the Viking Age; the area that later constituted Norway was made up of several rival petty kingdoms (Myhre 2000, 43-4). The consolidation of power by Harald *Harfagra* ('Fairhair') during the 870s culminated with the battle of *Hafrsfǫrðr*, and created a centralised power, at least in Western Norway (Roesdahl 1998, 74; Sigurðsson 2011, 71, Downham 2012, 3). However, outside this area and also within it, the country was still made up of competing local magnates, who retained distinct regional powerbases (Hermanson 2011, 65-7; Poulsen and Sindbæk 2011, 27). By the time of Harald *Harfagra's* victory at *Hafrsfǫrðr* Vikings had been active in raiding the British Isles for around 80 years and settlements may have already occurred in the Northern Isles, Hebrides and Ireland, although it was just beginning in England (ASC AD 876). It is therefore important to remember that settlement may have initially been piecemeal in nature, possibly with a distinct regional flavour and been born out of a society which reflected the cultural situation before unification began.

| Main Periods | Secondary Periods | Dates |
|---|---|---|
| Mesolithic (Old Stone Age) | Early Mesolithic | 9000-8000 BC |
| | Middle Mesolithic | 8000-7000 BC |
| | Late Mesolithic | 7000-4000 BC |
| Neolithic (New Stone Age) | Early Neolithic (EN) | 4000-3300 BC |
| | Middle Neolithic (MN) | 3300-2400 BC |
| | Late Neolithic (LN) | 2400-1800 BC |
| Bronze Age (BA) | Early Bronze Age (EBA) | 1800-1500 BC |
| | Late Bronze Age (LBA) | 1500-500 BC |
| Iron Age (IA) | Early Iron Age (EIA) | 500-0 BC |
| | Roman Iron Age (RIA) | AD 0-400 |
| | Migration Period | AD 400-550 |
| | Merovingian Period | AD 550-750 |
| | Viking Age (VA) | AD 750-1030 |
| Middle Ages | Early Medieval Period (EMP) | AD 1030-1150 |
| | High Medieval Period (HMP) | AD 1150-1350 |
| | Late Medieval Period (LMP) | AD 1350-1537 |

Table 3.1. Approximate timeframe for human settlement in Norway (after Myhre 2004 and Hope 2015).

## 3.5 Shielings in Norway

Olav Beito's study of shielings in Norway found around 49,000 names in Norway from the LMP to 1949 (1949, 4). Beito divides these names into generic elements that specifically designate a shieling (*sæter*, *setr*, *støl,* and *sel*), additional names related to habitation, either farm names or buildings (19), cultural names (41) and nature names (106).

Eight names, to a greater or lesser degree, have the meaning of farm: ON *bustad* (m.), ON *býr* (m.), ON *bœli* (n.) can also have the meaning of a place for animals (NG), ON *heimr* (m.), ON *staðr* (m.), ON *garðr* (m.), ON *land* (n.) can also just mean a piece of land, and ON *þorp* (n.) though this usually had the meaning of a secondary farm. It is possible that these names are regional names for shielings, or that they represent permanent farms that were settled during favourable times, but due to their more marginal situation were later converted to shielings as a result of climate deterioration, overgrazing, or population decline (J. Sandnes 1981, 91).

There are also several shieling names that have a meaning of a building, though most of the terms have a temporary or less prestigious connotation than a farm (Table 3.2). Magnus Olsen, in his discussion concerning *setr*-names, gives the example of the Icelandic *búðseta* ('sitting in a booth or shed') in the context of staying somewhere without milk animals and therefore referring to a less advantageous situation (1928, 162). Rather than being specific terms for a shieling, the reference to huts may point to the place people stayed at the shieling becoming synonymous with going to the shieling and through time came to take on the meaning of a shieling themselves (Olsen 1928, 163).

The ON term *sel* (n.) has the meaning of the 'hut on the *sætr*' in Norway (VG, 1874, 521; Heggstad and Torp, 1909, 367); it also has the same meaning as a shieling in some parts of Norway and Iceland. In Norway, there are only 30 farm names and 90 shieling names with *sel* as the generic element – these are scattered between Sogn og Fjordane (43) and Møre og Romsdal (15), Valdes in Oppland (14), Telemark (11), Hordaland (7) (Beito, 1949, 120). In Scandinavian settlements abroad, it is only in Iceland that *sel* was productive as a shieling name (Beito, 1949; Hitzler, 1979; Guðrun Sveinbjarnardóttir, 1992).

| | Shieling terms from Beito |
|---|---|
| **Shieling names associated with buildings** | • ON *búð* (f.) a booth, a temporary or seasonal shelter (Cleasby Vigfuson (CV))<br>• ON *hus* (n.) house (CV, NG, NSL)<br>• German *hytte* (f.) small house, cabin, shelter (NSL)<br>• ON *kot* (n.) cottage, hut, shed (Haugen, 1974)<br>• ON *legr* (n.) drovers' camp (NSL), shelter, sleeping place (Haugen, 1974); lega (f.) somewhere to lie (CV, NSL)<br>• ON *sel* (n.) the house on the sætr (NG)<br>• ON *skjul* (n.) cover shelter, shed (Haugen, 1974)<br>• ON *stofa* (m.) living place (NSL), hut (Haugen, 1974), the oldest sense a bathing-room with a 'stove' (CV) |
| **Shieling names associated with farm out-buildings** | • ON *bås(s)* (m.) cubicle, cattle stall (CV, Haugen, 1974)<br>• ON *bœli* (n.) a farm name, but can also be a place for animals (NG)<br>• ON *fjós* (n.) fé-hús = 'cow-house, byre, or stall (CV), barn (NSL)<br>• ON *flórr* (m.) in Icel. floor of a cow-stall, in Norway a cow-stall (CV)<br>• ON *hlaða* (f.) a store-house, barn, barn or to load, build up, stack (CV), hay barn (Haugen, 1974)<br>• ON *kví* (f.) cattle (CV) |
| **Shieling names associated with fields, grazing or fodder** | • ON *beiti* (n.), pasturage, gerðis-beiti, the 'bite' or pasture in a garth (CV)<br>• ON *eng* (f.) or *engi* (n.) a meadow, meadow-land (CV, NSL*)*<br>• ON *garðr* (m.) original meaning of fence, then land plot, but came to mean farm (NG, NSL)<br>• *Gjerde* either ON *gard* (m.) or ON *gerði* (n.), a place girded round, hedged or fenced field (CV), fenced plot (NG, NSL)<br>• ON *hegne/hegna to hedge, fence (CV, Haugen, 1974)*<br>• ON *kǫs* (f.) heap or pile (CV, NSL), fertilising a field of cleared land, possibly with ash (NG) could be in woods and in conjunction with cultivation, also could relate to a grassy area in between bogs (NSL)<br>• ON *lykkje* (f.) lock, coil, loop, can mean a closed field (CV) *good fortune (Haugen, 1974)*<br>• ON *slått* (m.) or *slåtta* (f.) hayfield haying (Haugen, 1974)<br>• ON *teigr* (m.) a strip of field or meadow-land, a paddock (CV)<br>• ON *tuft/toft/tupt/topt (f.)/tomt(e)/tømt* (n.) a green tuft or knoll, green, grassy place (CV)<br>• ON *vangr* (m.) grazing land (NG), enclosed field or home-field (CV), field similar to *vollr,* possibly milking place outside, but close to the farm, a fenced summer farm (NSL)<br>• ON *vǫllr (m.)* a field (CV, NSL), an area around a sætr (NG) |

Table 3.2. Selected shieling names from Beito (1949).

The cultural names include five terms used when taking land into cultivation, either by burning or among woodland, which may suggest some form of slash and burn (ON *brenna* (f.); ON *rjóðr* (n.); ON *ruð* (n.); ON *ruðningr* (m.); ON *svið* (n.)). There are also three cultural names connected to arable farming (ON *akr* (m.); ON *ekra* (f.); and possibly ON *ból* (n.)). However, the fact they are rarely used suggests that they are atypical and may relate to the occasional use of such sites for cereal cultivation and may be related to slash and burn agriculture.

The majority of cultural names, however, relate to pastoral farming, such as names related to fields, grazing, fodder, cows, byres or barns (Figure 3.6). It is a possibility that these names came to designate an outlying field, which developed over time into a shieling, but retained its original name. Olsen gives the example of *Lǫðusetr* (‘grazing land with a barn’) as an outlying location with a barn that developed into a shieling site (1928, 163). In a similar way, shieling names containing ON *vǫllr* (m.) and ON *vangr* (m.), which both had an original meaning of field or meadow, are likely to have evolved from outlying fields into shielings. Stefan Brink has suggested that this process was behind the development of Swedish *säter* and some Norwegian *setr*-names (1987, 82-3).

Karlsson et al., in their study of northern Värmland and western Hälsingland in Sweden, found that permanent farms and shielings were often established simultaneously during the RIA to Merovingian Period (2010, 103, 114). This would suggest that shielings were an integrated part of the agricultural economy at this time. However, some shielings are also likely to have been established at a later date, as with the shieling Gammelvallen on Frostjärnsberget, which was only developed some years after its attached settlement (Karlsson et al., 2010, 114). Gammelvallen has a meaning of 'the old field', which would fit with the early statement that some fields (*vǫllr*) may have been turned into shielings after being initially used for grazing or fodder production.

Many of the nature names, such as, *haugr* (m.) ('hill/mound'), *kollr* (m.) ('rounded hill/peak') are compounded with generic elements *setr*, *sætr*, *or Stǫðull (støl)*, where they are used as identifying elements. It is also likely that many of the nature names began as names for topographical features that were later developed into shielings or the name was transferred to nominate a shieling, rather than being a specific term for a shieling (B. Sandnes 2006, 233).

Many of the terms used for a shieling in Norway given by Beito may well have been later coinages and this would explain their absence from Scandinavian settlements abroad. Tore Iversen has suggested that farms with the terms *brenna, gerði, hagi, holt, hus, svid* and *kot* were newly cleared farms during the EMA-LMA, possibly as a deliberate policy by landowners to use thralls to clear new land during manumission (2011, 270-1). The marginality of these sites made them more likely to be deserted (T. Iversen 2011, 271) or they could be turned into shielings, as happened in Iceland (Guðrun Sveinbjarnardóttir 1991, 92). The limited number of sites containing these elements used as shielings would also suggest that they were not initially terms used to designate a shieling (*brenna* 39, *gerði* 33, *hagi* 70, *holt* 150, *hus* 104, *svid* 22, and *kot* 4 (Beito 1949).


Figure 3.3 Distribution map of commonly used shieling generic elements in Norway (Reinton 1969, 24),

The generic elements that Beito gives as specifically relating to a shieling are *sætr*, *setr*, *støl,* and *sel,* which make up 41% of the total number of shieling names. Lars Reinton suggests there were seven regional terms used for shielings (1969, 24; Figure 3.3), but in Western Norway it is only *setr*/*sætr* and *støl* that are found, in Central Norway *setr*/*sætr, and bustad* and *vollr* (Figure 3.3). The complementary distribution of *setr*/*sætr* and *støl* is not clear cut; although I could not find any *støl* names in Levanger, Nord-Trøndelag, there was a 4:1 ratio of *setr*/*sætr* to *støl* in Snillfjord (Sør-Trøndelag); 5:1 in Fræna and 6:1 Nesset (Møre og Romsdal); 1:2 Sogndal and 2.5:1 Bremanger (Sogn og Fjordane); 1:1.6 Ullensvang and 1.5:1 Lindås (Hordaland). Only in Sogndal and Ullensvang were there more *støl sites than setr*/*sætr* – both these municipalities are inland.

The generic element *støl* (*stǫðull* (m.)), from the Proto-Germanic *staðulaz*, has the same root as the verb *standa* ('to stand'); *støl*, is also given as *staul, støyl, stail, stol, studul, stul, styl, stil*, and *stel* (*Norsk Stadnamnleksikon* (NSL). In Norway, *støl* has the meaning of 'a milking-place for cows' (CV, NG, NSL), but the connection with 'to stand' means they may have initially represented a location in the outfields where cattle stood to be milked (Helleland 1989, 71-2). Eva Svensson suggests *støl* represent a more 'sporadic' form of outfield grazing than *säter* in Sweden (Svensson forecoming).

Figure 3.4 Reppastølen, Sogndal, 558m asl (Nils Olsson Reppen, c.1900, https://mashable.com/2016/12/10/people-of-sogndal, accessed 20/1/17).

The definition of *støl* as a milking place and the connection of shielings with dairying by Reinton would suggest that these sites should have been important in the VA agricultural system and as such just as likely to have been exported as *sætr*. However, *støl* is not common in Scandinavian settlements in Britain (Stewart 1987, 262), though it is present in Iceland (http://ornefnasja.lmi.is/ accessed 20/1/17). There are other generic elements, such as *heimr* and *vin*, which are common in Norway, but rare in Scandinavian settlements abroad: *heimr* and *vin* (Olsen 1928, 178-9, 192-4; B. Sandnes 2006, 23; Kruse 2007, 9; Chapter 1.8 above).

It is, therefore, only *setr* and/or *sætr*-names which were commonly used as the place-name element for a shieling by Scandinavian settlers to Scotland, and it is therefore these shieling generics I propose to study in Norway as well as Scotland. The reasons for this are, firstly, as has already been stated, they are the known shieling generics commonly used by settlers in Scotland and there is therefore a large enough sample to be able to analyse. Secondly, as the aim of this thesis is to understand why Scandinavian settlers to Scotland also adopted a Gaelic term for a shieling, *ærgi*, the site and situation can be directly compared to highlight locational differences. There are possible pitfalls to this approach: *ærgi* may have replaced one of the other generic elements in Scandinavian settlements in Scotland and this would explain absence in these settlements. Language contact theories concerning dominance of ON would seem to discount this possibility (see Chapter 5), especially as most of the generic elements given by Beito were not specific terms for shielings. It is only *sel* and *støl* in Iceland that can be shown to have been used by settlers from Norway in the VA; as *ærgi* is absent from Iceland any comparison would be meaningless, considering the differing climatic and geographical conditions (MacGregor 1987).

## 3.6 Definitions

The NSL, following Beito, gave *setr* as the generic in around 900 farm names and 1700 shieling names, and *sætr* as the generic for 850 farm names and in 14000 shieling names (1990, 274-5). Beito gives the etymology of *setr* as being derived from the Proto-Scandinavian ∗*setiR,* through the ON verb *setja* (‘to place/set’).

While *sætr* is derived from the Proto-Scandinavian ∗*sátiR*, from the ON verb *sitja* ('to sit'). Both deriving from the Proto-Germanic ∗s*etjan* and ultimately from the Indo-European ∗*sēd* (Beito 1949; 11, Cox 1990, 96).

Olaf Rygh defines *sætr* (n.) as: 1. mountain pasture, 2. place in outlying fields or in the mountains, where one keeps the cattle in the summer (NG Introduction 1898, 74). Heggstad and Torp give the meaning as: 1. residence; 2. mountain pasture with house in summer; 3. farm name (1909, 684).

Rygh gives the definition of *setr* (n.) as being a farm name, or residence ('place where you sit') (NG Introduction 1898, 74). Heggstad and Torp define the term as: 1. to sit down; a residence; 2. shieling; summer milking place; 3. farm name (1909, 572), which is similar to the Old Icelandic definition given in CV as**:** 1. seat, or a residence; 2. a mountain pasture or dairy lands (1874, 525). Rygh (1898, 74) and Beito (1949, 47) noted that *setr* can be given as -*set*.

Whereas *sætr* has been suggested as having a specific meaning of mountain pasture, *setr* can be either a farm or a shieling. Beito suggests that some *setr*-names may have originally began as shielings (1949, 83). Sandnes and Stemshaug went further suggesting that *setr* was initially used to denote a shieling during an early initial expansion of farming (NSL 272-4; Fellows Jensen 1984, 161). The theory suggests that these sites are likely to have been low-lying on relatively good quality land and more likely to then develop into permanent farms and this would then create the impetus to coin a new name, *sætr,* to distinguish new shielings (B. Crawford, 1987, 108; Nicolaisen 1976b, 118).

Magnus Olsen thought that there is no way of ascertaining an original meaning for *setr* and did not follow Rygh's view of *setr* being a farm name (1928, 161-2), suggesting a close connection with the verb *sitja*, to stay somewhere temporary (1928, 177). Olsen, using evidence of the specific element in compound *setr*-names, points to the secondary nature, for instance, Hovset to Hovdan in Hevne, and Henset to Hennen in Valsøyfjord, making that point that few are situated on cornfields, which he suggests as a prerequisite in Norway for a 'real farm' (1928, 161).

The 'marginal' nature of some *setr*-names is evident at Svolset in Leikanger, where shieling activity began between AD 130-550 (Magnus 1986, 48; Skrede 2005, 35). The site lies around 800m, which is above the treeline and it never developed into a farm. Hoset in Stjørdalen, Nord Trøndelag, by comparison stands at 319m in a large area of cultivated land and has been split into a number of farms (Salvesen et al., 1977, 141). When Salvesen et al., made a comparison of all 15 Hoset farms in Norway, they were found to be at a higher altitude than average for settlements in their local area. Around 85% had been deserted at some time in the LMA and this was suggested as evidence of these farms being highly peripheral (1977, 134). The specific element of Hoset has been suggested as being ON *hár* or *hór* ('high') and this may point to the site being even more peripheral than some *setr*-names within the area. However, Salvesen et al., found that of the 22 *setr*-names in Stjørdalen, Hoset paid the highest tax, which would suggest that if it was peripheral, it was only relative to associated settlements (Salvesen et al., 1977, 137).

Helge Salveson suggests that *setr*-names in some areas that saw colonisations during the VA, such as Østerdalen in Hedmark, occupy central locations and are some of the oldest settlements (1977, 134). The inland areas of Hedmark, Oppland and Buskerud are unlikely to have been significantly involved in settlement in Scotland, but this may point to a new meaning to *setr* during the VA. However, when looking at the various ways to measure hierarchy, *setr*-names do not appear to be primary farms. Only five of the 900 *setr* farm names became the names of parishes (Olsen 1928, 235; Akselberg 2005, 9) and municipalities (NSL), Langset (Akershus), Innset, Tynset, Vallset (Hedmark) and Nesset (Møre og Romsdal) (NSL). This equates to only 0.55% of the farm names (Akselberg 2005, 9) or 0.19% of the total 2600 *setr*-names. Salvesen et al., made a comparison between rents of habitational generics in 1661 for the Stjørdalen area of Nord Trøndelag, and found that the 22 *setr*-names had a lower than the average rent (Salvesen et al., 1977, 137). This would seem to corroborate Olsen's view that *setr* did not initially represent a farm name generic, but having the "stamp of something secondary" (Olsen 1928, 168).

The fact that so few *setr* developed into parishes and municipalities would seem to give some credence to the view that most were originally secondary settlements and possibly shielings. As it is often also difficult to separate each element, I will therefore collect data on recognisable *setr* and *sætr*-names separately and also combine the results. The theory being that this will allow me to study the geographical situation of possible early shieling sites (*setr*) and ones that may have developed later (*sætr*). Scandinavian settlement abroad is likely to have followed a similar chronology, with the setting up of shielings during a conquest phase (Anthony, 1990; Lynnerup, 1998; Ledger et al., 2013), followed by later ones, as the landscape was either fully settled or more intensively exploited.

Beito suggests two main reflexes for *setr,* dative singular *sete,* with dative plural *seto*; and *seter* (modern Norwegian form of *sætr*), giving the definite form *setra. Sætr* is given one reflex *seter* by Beito, also having the definite form *setra* (Beito 1949, 47; NSL, 1997, 274-5). Helleland questions the body of evidence Beito uses to identify *sete* asa dative singular form of *setr*, suggesting it may be a dialectical form of *seter,* with a svarabhakti vowel leading to the loss of the final consonant (1989, 59-61, 66-67).

| **Fylke** | **Municipality** | | ***Set*** | ***Sete*** | ***Seter/sæter* (this study)** | ***Seter/sæter* (*Heradsregisteret*)** |
|---|---|---|---|---|---|---|
| Hordaland | 1 | Lindås | 7 | 0 | 38 (30/8) | 15 (0/15) |
| | 2 | Ullensvang | 2 | 23 | 1 (1/0) | 7 (0/7) |
| Sogn og Fjordane | 3 | Bremanger | 7 | 4 | 45 (10/35) | 9 (0/9) |
| | 4 | Sogndal | 1 | 40 | 1 (1/0) | 14 (13/1) |
| Møre og Romsdal | 5 | Fræna | 23 | 0 | 27 (27/0) | 38 (3/35) |
| | 6 | Nesset | 14 | 0 | 95 (87/8) | 48 (48/0) |
| Trøndelag | 7 | Snillfjord | 2 | 0 | 45 (37/8) | 38 (0/38) |
| | 8 | Levanger | 17 | 3 | 3 (3/0) | 9 (3/6) |
| **Totals** | **Coastal Zone** | | **39** | **4** | **155 (104/51)** | **100 (3/97)** |
| | **Inland Zone** | | **34** | **66** | **100 (92/8)** | **78 (64/14)** |

Table 3.3 Distribution of *set, sete* and *seter* names from my study and *seter* from the Heradsregistret (http://www.dokpro.uio.no/ accessed 15/1/17).

Table 3.3 highlights the regional basis of pronunciation of *sete* and *seter*, a complimentary distribution would seem to confirm Helleland's suggestion that *sete* is a dialect form of *seter*, being found almost exclusively in Ullensvang and Sogndal. Similarly, the pronunciation of *seter* with either a short '*e*' or long '*æ*', would also seem to have a regional distribution pattern. Even in areas which contain both *seter* and *sæter*, as in Horndalen in Nesset, Møre og Romsdal, the site of Rødalsæter (517 m asl) is only 160 m away from Slenesseter (513 m asl), and is virtually identical in aspect, drift geology and position. In the *Heradsregisteret,* municipalities which today contain *seter* or *sete*-names, such as Lindås, Sogndal, and Snillfjord, are given as predominantly *sæter.* This would suggest that there is nothing diagnostic about the spelling of *sete*, *seter* or *sæter* other than it may relate to local pronunciation. From here on in, *sete*, *seter* or *sæter* will be referred to as *sætr*, and only names ending in *set*, will be referred to as *setr*.

## 3.7 Literature Review

Studies of shielings in Norway have been either ethnological (Reinton 1955; 1957; 1961; Borchgrevink 1977), archaeological (Bjørgo 1986; Magnus 1986; Skrede 2005), or Paleoenvironmental Reconstructions (Kvamme 1988; Indrelid 1988; Kvamme et al.,1992; Austad et al., 1991). The initial studies of shielings in Norway were often ethnographic in nature, based on available early documentation, surviving customs, or linguistic analysis of place-names (Beito 1949).

### 3.7.1 Ethnographic studies

The Swedish ethnographer John Frödin (1929), followed by the Norwegian Bjørn Hougan (1947, 26), put forward the theory that *sætr* use represented a half-way house between nomadism and permanent settlement. Lars Reinton linked *sætr* use with the introduction of agriculture by the battle-axe culture during the Neolithic (1961, 14). However, indicators of grazing from pollen diagrams in upland areas only suggest extensive grazing during the Neolithic and it is not until the IA that more intensive grazing with associated buildings, that constitute shieling use, occurs (see Section 3.4.3).

Lars Reinton's work on shielings was based on ethnographic accounts from historical times. Reinton characterised *sætrs* in Norway according to their distance from the main farm and the activities performed. At a *fullsætr,* people stayed during the summer, cows were milked, and the milk was processed on site into dairy products. As these sites might be some distance from the main farm, a *fullsætr* would have required living quarters. At a *mjølkesætr* cows were milked, but the milk was transported to the main farm for conversion to butter or cheese and therefore had to be close to the main farm. *Slättesætr* ('haymaking *sætr*') was the third type of *sætr* and could be any distance from the main farm where environmental conditions were suitable for growing hay (Reinton 1961, 28f).

Anne-Berit Borchgrevink also suggested that there were three types of *sætr,* but based on the distance from the home farm. The *heimsætr* was found between one and twenty kilometres to the main farm and usually at a slightly raised altitude. *Heimsætrs* were used for grazing in the spring on route to and from grazing further in the *Utmark* in the autumn (Borchgrevink 1977, 9-10), though Beito stated that these could sometimes be separate shielings, *haustsætr* and *vårsætr* (1949). A *fjellsætr*, *langsætr* or *sommersætr* was the main *sætr* where animals were pastured during the summer; these were often high mountain pastures and were between 5 and 70 kilometres distant from the main farm (Borchgrevink 1977, 9-10). If the *fjellsætr* was a considerable distance from the main farm and/or at a much higher altitude, a *mellomsætr* allowed grazing to be utilised at different altitudes and served as a stop-off point on route to and from the *fjellsætr* (Borchgrevink 1977, 10).

The farming system proposed by Reinton and Borchgrevink was one based on ethnographic and historical accounts. Knut Odner questioned the approach of using contemporary or recent cultural practices for understanding prehistoric patterns (1972, 627), Guðrún Sveinbjarnardóttir attempted to fit Reinton's classification to Icelandic shielings ('*sel'*), but it was found to be incompatible (Sveinbjarnardóttir 1991, 91). Ditlev Mahler suggests the 'classic Norwegian shielings of the 17th century and onwards, are the result of a special development which does not necessarily have retrospective value for pre-Black Death or older shieling traditions' (Mahler, 1998, 57).  A problem with the use of Reinton's classification is the focus of shielings on the production of dairy products (Sindbæk 2011, 108). Janken Myrdal has argued that the plunge churn was not widely known in Scandinavia before AD 1000, which limited the amount of milk that could be processed at any one time (1988, see chapter 6.8). The use of salt as a preservative was introduced around the same time (Myrdal 2011, 298), which suggests that large amounts of milk could not have been processed into dairy products and even if it could, the limited ability to preserve it would make the process pointless.

*Skyr* ('sour milk') is an Icelandic yoghurt like dairy product made from curdled milk, that has been a staple of Icelandic diet (Byock 2001, 47) and before butter and cheese developed in importance in Norway, *skyr* may have been the main product of milking in the early VA. In Icelandic sagas, references to offering *skyr* as food to visitors can occur in a negative light (*Egils Saga*, Chapter 43, 99; *Grettis Saga*, Chapter 28, at http://sagadb.org, accessed 15/10/18; Rodriguez 2007, 22-25). However, in *Eyrbyggja Saga* there is nothing derogatory about the offer of *skyr* as a food (Chapter 45, 124; Rodriguez 2007, 25) and this may just have been down to the everyday use of dairy products (Rodriguez 2007, 32). Jesús Rodrigues suggests that there may have been a dietary difference between Norway and Iceland by the time that the sagas were written down in the 14$^{th}$ century (Rodriguez 2007, 21). Rodrigues argues that Iceland, unlike Norway which was self-sufficient in grain product, relied on cereal imports and this led to the development of a unique dietary culture based primarily on dairy products (Rodriguez 2007, 18). *Skyr* did not remain a major food resource in other areas of Scandinavian settlement or in Norway, and this may point to the physical environment limiting resources in Iceland being responsible for its importance there.

Botolv Helleland made a study of *sete* names in Ullensvang; in this, he looked at the linguistic background to names and also a brief study of their geographical situation (1989). Helleland makes some important points on the veracity of Rygh's NG (see Section 3.5). The study is a well thought out and in-depth study of shielings from an inland municipality, but may only be applicable to Ullensvang. This is a study I would like to build upon by looking at different geographical factors and by comparing with other inland and coastal municipalities to see how universal Helleland's findings are.

### 3.7.2 Archaeology

The study of shielings archaeologically in Norway really developed with large scale hydroelectric developments in the 1970s and 1980s; even so, the number of VA shieling sites is very small. As my focus is on shielings from the start of the VA to around AD 1050 (see Introduction), and in particular those in Western and Central Norway, I have concentrated my study on literature from within this time frame and location.

A hydroelectric scheme in Friksdal, a side valley of the larger Henjadalen in Leikanger, Sognefjord was undertaken in the 1980s. The valley lies above the treeline, around 800m asl, and leads up to a steep valley wall at the Voggebreen Glacier (Magnus 1986, 44-45). Human activity began at the site in the BA, with drops in AP, grazing indicators species, cup marked stones and cooking pits (Magnus, 1986, 46). Two sites containing house remains were investigated, Heimste Friksdal and Svolset. The former had been in use as a *sætr* as late as the 1950s, C-14 dates obtained from what appeared to be the oldest buildings showed the site had been in use in the 13$^{th}$ century, which was abandoned and then reoccupied in the 17-18$^{th}$ century (Magnus 1986, 56).

The second site, Svolset, had remains of 12 buildings, eight of which consisted of two buildings sharing a long wall between them. The buildings were between 4-9m long and 3-4m wide; two out of the 12 house remains were excavated, one of which completely. The excavated building was set in a narrow ditch with dry stone walls on the outside and an entrance to the south; three or four pairs of posts supported the roof (Magnus 1986, 46). The two buildings each contained a fragment of Migration Period pottery and C-14 dates of AD 550 ± 90 and AD 650 ± 80 were also obtained (1986, 46). Magnus gives a settlement date range between AD 550 ± 90 to AD 870 ± 140, with finds suggesting occupation up to a 11$^{th}$ century date. Pollen analysis and archaeology would seem to suggest the site was abandoned from AD 1310 ± 70, until the 17$^{th}$ century (1986, 48-49).

The cultural layer was only between 10 and 20cm in depth and Magnus found few finds: some spindle whorls, loom weights, glass beads, a couple of knives, an iron celt, whetstones, iron nails and rivets. The presence of spindle whorls and loom weights would point to textile manufacture and, along with beads, to the presence of women at the site (1986, 46). The iron nails and rivets may have been also manufactured on site, though this is not proven, Marit Anita Skrede’s later excavation found iron slag, which may also suggest iron production (Skrede 2005, 38).

Skrede, during her study, found four more buildings, making a total of 16, ten of which had two rooms. Fifteen of the buildings had stone walls, with rooms on average between 20-30m² (Skrede 2005, 33). Nine additional buildings were radiocarbon dated, which gave dates from AD 130-410 to AD 885-1010, which was 300 years older than the date proposed by Magnus (Skrede 2005, 35). Skrede suggests the EIA saw a high level of activity at Svolset, with a change of activity in the late RIA, possibly because of some form of economic change (2005, 39-40). The Nyset-Steggje projects in Årdal, Sognefjord found numerous earlier signs of human activity between 900 and 1300m asl. Fourteen house remains were excavated; walls were found to be stone turf and soil, with the roof supported by pairs of posts. The building covered 30m² with an external footprint of 10 x 6m and an internal one of 8 x 4m (Bjørgo 2005, 213). Finds include slag, knives, arrowheads, amber and glass beads, whetstones, spindle whorls and weaving weights, which Bjørgo interpreted as evidence that the sites were inhabited by both males and females involved in a number of different activities (1990, 125-6).

A wider survey of the region found fragments of bucket shaped pottery from RIA/Migration Period deposits (2005, 214). Of the 33 IA houses found, 24 were excavated, all between 950-1300m asl; the majority are believed to have been shielings, though some may have actually been permanent farms (Bjørgo 2005, 226). The number of artefacts increased from the EIA to LIA, which may suggest more intensive use of the area from AD 300-1000. There were 83 glass beads found in 13 houses, most commonly in VA contexts, 40 spinning whorls from 13 houses and 40 loom weights from six houses, mostly IA (Bjørgo 2005, 218-19). Iron slag and both amber fragments and unworked amber were taken as indications of manufacturing occurring on site (2005, 219).

Only 1% of the 34,000 pieces of charred bone could be identified to species level (Lie 1992, cited in Bjørgo 2005, 219). The bones' assemblages included both wild (bears, reindeer and ptarmigan) and domesticated species (sheep/goat, cattle and pig) as well as fish (cod, herring, coalfish and eel), the latter two showing a connection with the lowlands (Bjørgo 2005, 219). Though hunting was evident from the bones of wild species, projectile points and pit falls, the size of buildings led Bjørgo to conclude that they were too large for just hunting parties. Evidence of textile manufacture also points to female as well as male occupation, and the pollen analysis and the bones of domestic animals also point to exploitation of grazing (2005, 224).

The main conclusion of the wider investigation of Nyset-Stegje and the surrounding valleys was that there was a "systematic utilization of the mountain pastures" by farmers to preserve the small infield and nearby outfield for winter fodder collection (Bjørgo 2005, 223-4). Though stock herding had occurred in the area from at least the BA and possible as far back as the Neolithic (Prescott 1995), shielings first began to be used in the later RIA and this would suggest that they were connected to a change in agriculture, society or both. Bjørgo concluded that shielings in Inner Sogn were probably to protect the homefield, so that winter fodder could be collected, by keeping livestock away from it. The shieling provided summer grazing for the livestock and allowed ancillary activities to be undertaken, such as hunting, fishing, gathering seasonal wild food, such as berries, textile manufacture and iron smelting (Øye 2004, 91; Bjørgo 2005, 219, 225). The presence of bones from wild reindeer and ptarmigan at Nyset (Bjørgo 2005, 219), Alcids at Argisbrekka (Mahler 2007, 296), and wild geese at Páltóftir (Lucas 2008, 92), suggest that season resources were exploited during the stay at the shieling. Bjørgo suggests that dairying may not have been an important part of shieling economy and was more likely to be a later development (2005, 225).

The lack of interdisciplinary studies of low altitude sites in fjord areas had been commented upon by Moe (1996, 123). One of the problems encountered in using archaeological investigations of abandoned sites is that they are, by being abandoned, marginal and, as such, could be atypical of the vast number of other sites that still have occupation (Øye 2011, 496). Ingvild Øye underlined the problem in relying purely on abandoned and often single sites, and associated fossilised field systems for evidence of prehistoric agricultural systems, in that their abandonment highlights their marginality (2011, 496). Their limited operational lifespan may not then be representative of less marginal sites, though Øye came to the conclusion that in Western Norway, as in other parts of Norway, there is strong continuity of settlement. The problem of investigating still inhabited farms, especially in agricultural favourable positions, is that evidence can be destroyed by later human activity, and it has not always been possible to locate the complete farm structures (Myhre 1973, 24).

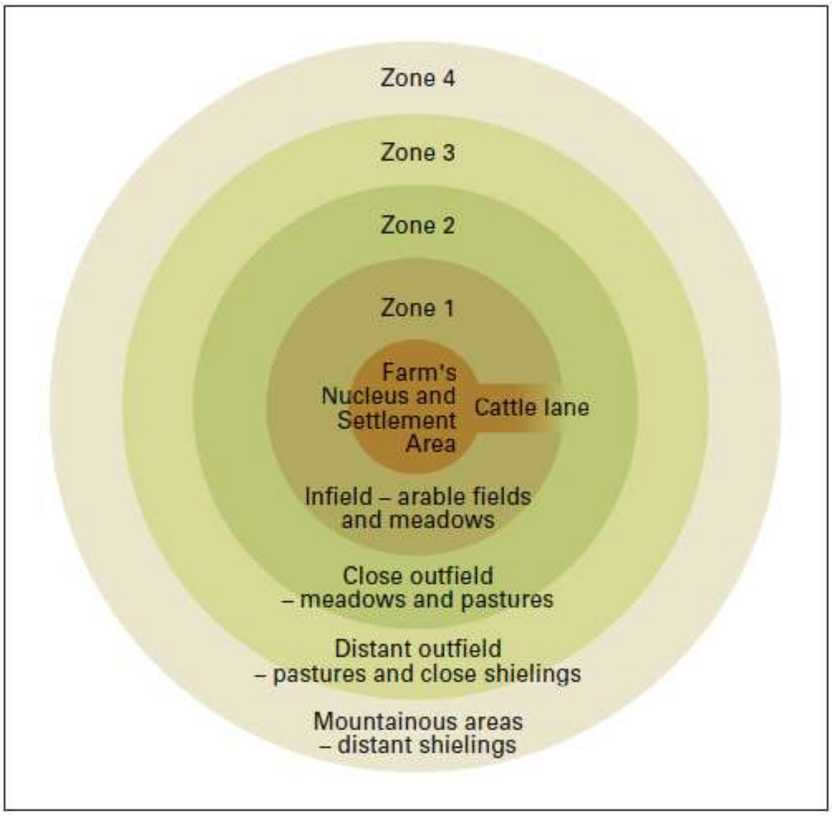



Figure 3.5 Farm zonation in Western Norway (Øye, 2011).

Ingvild Øye, in various papers, ushered in a more interdisciplinary method of studying Norwegian shielings. Øye incorporated the study of farms and shielings into studies of the larger resource area of farms and the overall role of farming within socio-economic and cultural history and wider supply network of produce (Øye, 2002; see Chapter 3.10.8). Øye divides West Norwegian farms into four zones and the farmyard, or *tun*. The initial zone around the farmyard included the infield with its arable and meadow for haymaking; around this was an outfield (*utmark*) of meadow, grassland and woodland, followed by more distant outfields with nearby shielings, *heimsætr* or *heimstøl*; and then even more distant mountain *sætr* or *sommerstøl* (Øye, 2009, 101). Within this system, farms could use multiple *sætrs*, with two or three *sætrs* at different altitude, as described by Borchgrevink (1977). Each farm could be self-sufficient, growing produce and hunting and gathering wild resoucesoperate, but may well have been part of a wider network (see Chapter 3.10.8).

The *Vestlandsgården* Project ('The traditional farm in Western Norway') initially covered archaeological studies of four farms, but subsequently another seven farms were studied as part of MA or PhD projects (Øye 2002). These farms were found at varying altitudes from 40 to 450m asl and coastal as well as inland, overall; dating suggests that farming at these sites was started in the EIA, with an intensification occurring during the LIA and again, after a hiatus, during the VA (Moe 1996, 127; Øye 2011, 502).

Overall, the majority of studies have focused on single sites, and while the *Vestlandsgården* Project looked at 11 locations, only one site had a relevant shieling name for my study, Rønset, Hyllestad (Foyn 2008). Rønset stands at 45m asl and was first utilised for grazing in the EBA, with an intensification of agricultural use observed from c.AD 110-65 (Foyn 2008, 74-77). The RIA saw further intensification of agriculture and the addition of nutrients to permanent fields, which Foyn suggests is the likely date for the founding of the farm (2008, 98). Cereal pollen may also suggest cultivation on site (Hjelle 2008, 114). Rønset has many parallels with Hoset in Stjørdalen, with an initially extensive use for pasture dating from the LN, through to the BA. This was followed by an intensification of grazing activity in the EIA and the arable cultivation at the transition to the LIA. This was when Salvesen et al., suggests Hoset became a permanent farm (1977, 140-42). Rønset would fit the theory of an early site used for seasonal grazing being given a *setr*-name, which subsequently converted to a farm and raises the possibility that the direct manuring by livestock improved the fertility to allow cultivation.

Single site studies, though, run the risk of the location being atypical; two recent studies, however, have studied a number of shieling sites. Kristoffer Dahle's archaeological study of shielings in Romsdal was the first to undertake a comprehensive study of shielings in that area and was able to highlight the long history, starting from their establishment between RIA and the 17th century. Dahle points out that the limited scale of the excavations means that earlier structures could be missed, especially for those dating to the 16-17th century, and an earlier date for these sites cannot be ruled out (Dahle 2007, 347). Pollen analysis of surrounding mires could be of use in establishing if the shielings were established at the same time as those in the RIA. Britta Hope's study of shielings in Sogndal also pinpointed the establishment of shielings from the EIA and through to the 14th century (2015, 105). Both studies are excellent in dating development of shielings at a regional level; the limited nature of excavations means that it would be easy for datable material to be missed, and this may account for the late dating of some sites. Dahle and Hope also focused on sites in upland areas and, as a result, they do not take into account possible early shielings in lowland locations.

### 3.7.3 Paleo-environmental reconstruction

As part of the archaeological investigation prior to hydroelectric power schemes, pollen analysis was also undertaken. Mons Kvamme's study of shielings in sub-alpine and alpine zones divided the cultural landscape of shielings into three elements (1988, 350):

1. A treeless area around the shieling as wood is being used for timber and firewood, and cattle grazing stopping regeneration.

2. A field layer dominated by grasses, sedges and herbs species that are tolerant of grazing. Reduction of tall herbs due to heavy grazing and increase of grazing tolerant species, in particular, *Deschampsia cespitosa*, *Dactylis glomerata*, *Agrostis capillaris*, *Rubiis idaeus*, *Galeopis tetrahit*, *Galium aparine* and the moss *Rhytidiadelphus squarrosus* (Austad et al., 1991, 45). On shielings that are still in use today, the concentration of animals around the shieling has led to the development of grassland with nutrient-rich species (*setervoll*), such as *Agrostis capillaris*, *Avenella flexuosa*, *Deschampsia cespitosa,* and forbs such as *Trifolium repens* (Hessle et al., 2014, 341).

3. There are buildings, some of which may be used to house cattle. Norderhaug suggests the importance of cattle byres or enclosures at shielings in historical times was to protect against attacks by wolves and bears (2008, 408, see also Steyaert et al., 2001, 390;

Sæther et al., 2006b, 370). It is likely that it was just as important to protect livestock from animal attacks in the IA and VA, for example *Grettir's Saga* refers to a bear attacking livestock during Grettir's travels in Norway (Chapter 21, 57).

The difference between extensive use of summer pasture and shielings would therefore be a greater reduction in AP, an increase in a grazing tolerant and light demanding field layer, along with the presence of buildings at shielings. Using the above criteria, extensive exploitation of mountain resources has been dated to c.1155 BC at Seltuftene, Erdalen, Stryn, Sogn og Fjordane, but only in the VA or EMA that house remains are found; extensive grazing c.555 BC at Frettestøl, Etne, Hordaland, with more intensive summer farming dated from c. AD 1065; summer farming from c.AD 525 at Sunndalsætra, Stryn, Sogn og Fjordane; and at Hovden, Vetlefjorden, Sogn og Fjordane from c.AD 890 (Kvamme 1988, 353-365).

Overall, the evidence from archaeology and paleo-environmental reconstruction would suggest the exploitation of grazing initially in coastal areas, and soon after, inland districts during the BA and into the Early IA. Hordaland and Sognefjord, with early extensive exploitation of land that had grazing potential, started from the LN and BA. Some of these sites were later established as shielings during the IA to VA, which saw an intensification of the exploitation of mountain resources (Müller-Willie 1999, 205; Moe 1996. 127; Prescott 1999, 217). Moe suggests intensification of grazing in Norway occurred in two periods, AD 500-600 and AD 900-1200 (1996, 127). These shielings were used to graze animals, probably cattle, and conduct associated ancillary activities, such as textile manufacture and iron production, during the summer months (Sindbæk 2011, 108).

With the exception of Botolv Helleland's study of shielings in Ullensvang (1989), there has not been a study that has analysed the geographical situation of shielings in Norway, especially one that has looked at lowland as well as upland sites, or made a comparison of coastal and inner fjord areas, in the vein of Peder Gammeltoft's study of *bolstaðr* names. This should give a fuller understanding of the resource exploitation of VA farms and allow a more in-depth understanding of Scandinavian settlement in Scotland.

## 3.8 Methodology

Norway, as has been demonstrated, is highly variable in topography, climate, soil and availability of cultivatable land. It would be extremely difficult to come to conclusions concerning the locational factors of *sætr*-names over the whole country; with 48,000 shieling names (Beito 1949) it was also impossible to study each individual site. It was therefore necessary to limit the scope of the investigation by basing it on a representative sample. As I am interested in the use of shielings in the Viking Age settlements in Scotland, it seemed logical to identify areas which are most likely to have been the homeland for these settlers.

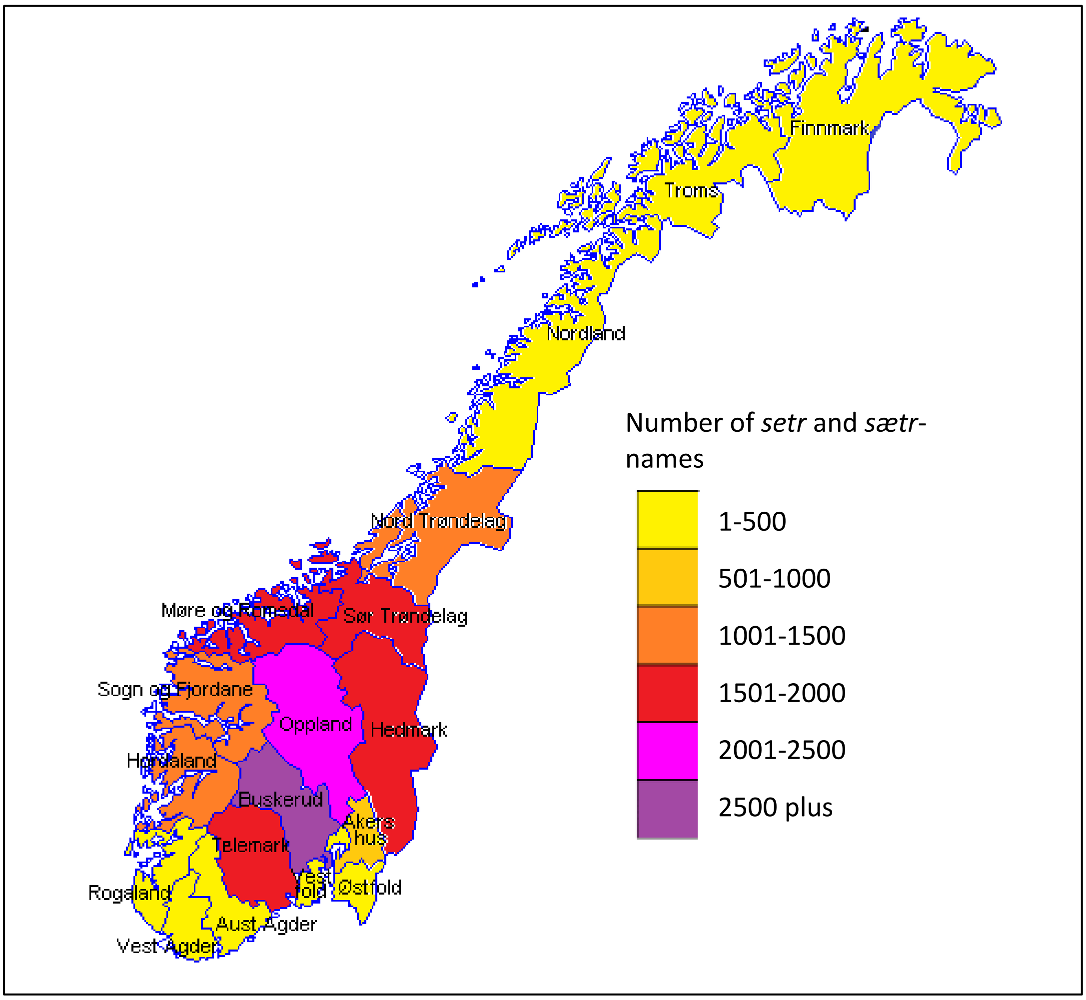


Figure 3.6 Number of *setr* and *sætr*-names in each *Fylke,* from Heradsregisteret (Hordaland data missing from Heradsregisteret and has been taken from the Seternamnarkivet) (http://www.dokpro.uio.no/ accessed 15/1/17).

The Heradsregisteret shows the highest concentration of *setr* and *sætr*-names in Buskerud and Oppland. As these areas, being landlocked, are unlikely to have been the setting-off point for early raids in the VA, I chose to study Western and Central Norway. Egon Warmers' work on ecclesiastical and secular insular metalwork found in VA graves (Figure 3.7) highlight areas of likely early contact and these areas are potentially from where settlers may also have originated (1983). Warmers' study highlights the concentration of metal work from Rogaland in the south-west to Trøndelag in Central Norway. Rogaland, in the far south-west, had only 26 *setr and sætr*-names spread between 18 different municipalities according to the Heradsregisteret. The sample size from any single municipality was too small (maximum four sites from Bjerkreim) to be able to extract enough detail to compare with shielings in Scotland; I therefore excluded Rogaland. This left me with the *fylke* of Hordaland, Sogn og Fjordane, Møre og Romsdal and Trøndelag (including both Sør and Nord).

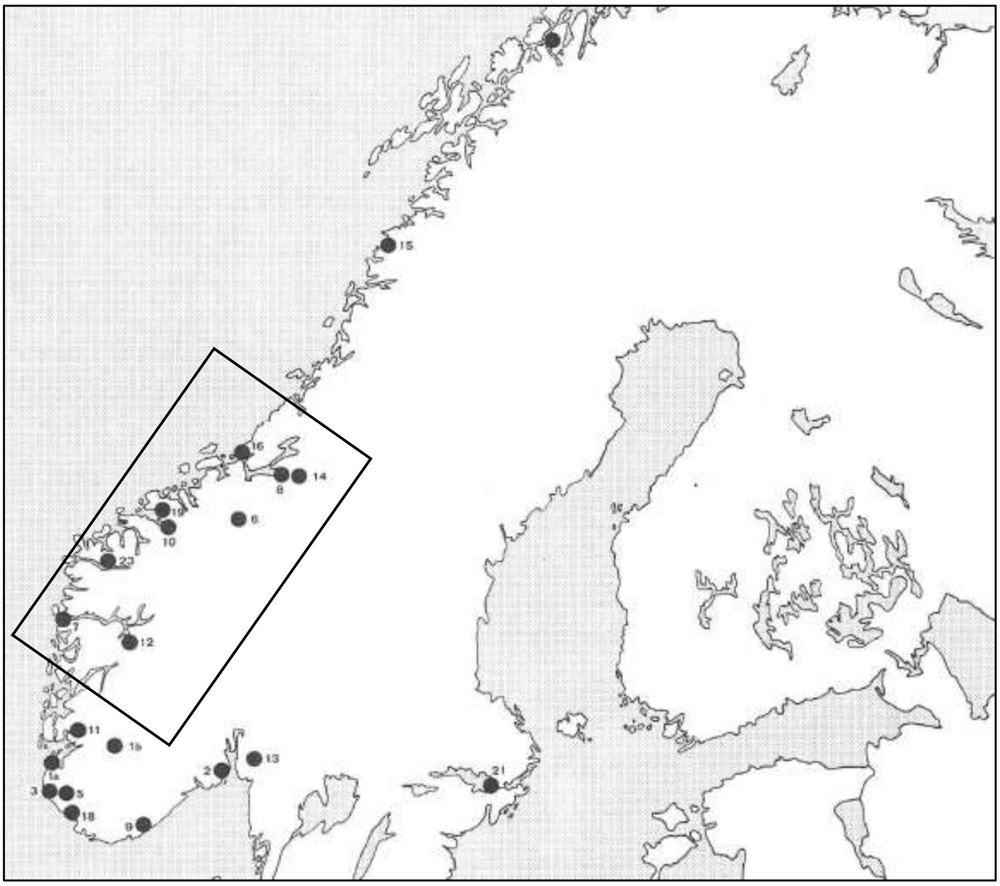


Figure 3.7 Ecclesiastical and secular insular metalwork found in VA graves (Warmer 1983). Boxed area covers the four *fylke* included in my study.

Within these four *fylke*, I followed Berljot Solberg, who split the district of Northern Sunnmøre into two zones: an outer coastal zone that covered coastal islands and peninsulas, and an inner fjord zone (Solberg 1984, 155). Solberg's theory was that during the IA, people settled most densely in the outer coastal zone and it was during the Migration Period and into the Viking Age that people are likely to have increasingly exploited the agricultural potential of the inner fjord zone (1984, 169). Solberg suggested that the number of farms in the outer coastal zone doubled during the Viking Age, while in the inner fjord zone they increased by 7-8 times (Solberg 1984, 173). Although the coastal zone experienced an earlier settlement expansion during the IA, both coastal and inland zones saw settlement growth during the VA. Therefore, the development of Scandinavian settlements in Scotland, during the ninth and tenth century, was concurrent with settlement expansion in Norway. It is logical that the location of shielings would be similar as the farming system should have been similar and any difference in lacational factors can be identified.

To take into account the variation in climate between coastal and inland districts, I split each of the four *fylke* individually, into an outer coastal zone and an inner fjord zone, and gave each municipality a number, which were randomly selected. If a municipality was contiguous with another municipality that had already been selected, another was drawn. This was to give as wide a variety of landscapes as possible and to remove any bias through personal association, preference or previous knowledge. This gave me one coastal and one inner fjord municipality from along the coastline that is likely to have been the starting-off point for early raiding and eventual settlement in what is now Scotland.

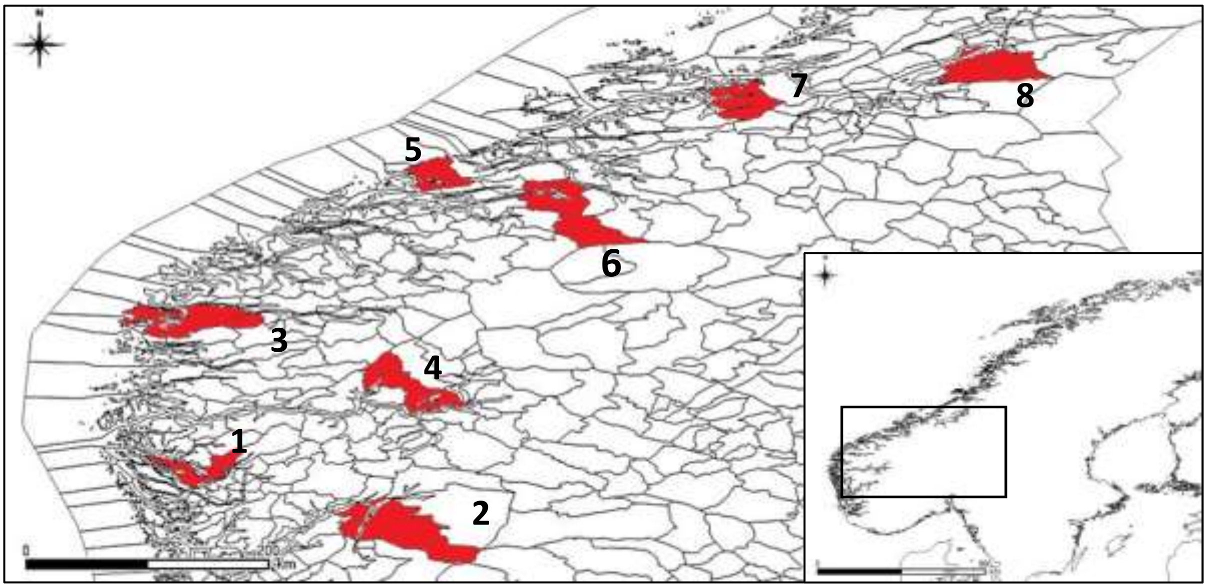



Figure 3.8 Distribution of the eight municipalities used in this study: 1. Lindås, 2. Ullensvang (Hordaland); 3. Bremanger, 4. Sogndal (Sogn og Fjordane); 5. Fræna, 6. Nesset (Møre og Romsdal); 7. Snillfjord, and 8. Levanger (Trøndelag).

My initial intention was to follow Oluf Rygh's NG (1897-1924) in identifying shieling names in Norway. Rygh relied on the earliest records available, especially the public estate valuation register, *Matrikkel*, and the *Diplomatarium Norvegicum* to identify place-names**.** There are, however, various problems with this method: the early records are rarely comprehensive, with areas missing or lost, and it is likely that only the permanent settlements would tend to be recorded and not subsidiary farming units. As the majority of *setr*-names would still fulfil a subsidiary role, they are unlikely to be mentioned. For studying *setr*-names, NG has a number of problems; do the *setr*-names recorded only represent those that were situated in such an advantageous position to allow them to have developed into a tax-paying independent farm? If this is the case, are they representative of *setr*-names generally or do they just give an impression of one spectrum of possible *setr*-names? Botolov Helleland has highlighted this problem in Ullensvang in Hordaland; Rygh names only three *setr*-names in Ullensvang, Reidsete, Reisete and Langasete (Rygh, 1910: 450, 458, 459). Helleland's study of Ullensvang found 55 *setr*-names or 18.33 for everyone named in NG. Helleland's study of Ullensvang included Eidsfjord, which was a separate municipality until 1964 and then again 1977, and Odda, separated from Ullensvang in 1913). I have not included either Eidsfjord and Odda in this study, as I have used modern municipality boundaries for ease.

Due to the limited range of data sets and the risk that even these may be biased in the representation towards more favourable sites, I chose not to rely on NG. I next looked at the seternavnregistret archive online (http://www.dokpro.uio.no/, accessed online 82/3/16) to help identify shielings names in Norway. When I searched the data for Ullensvang in Hordaland, this gave 22 *setr*-names, but when I looked at individual records, five of these place-names were duplicated in the records between two to five times; the actual number of different *sætr*-names was just 12. Similarly, the seternavnregistret for Fræna, in Møre and Romsdal, gives 55 records, but 10 place-names are duplicated 24 times and so the actual number of different place-names recorded was only 31. Considering Helleland found 55 *setr*-names in Hordaland, while NG gave three and the seternavnregistret 12, I decided to base my study on maps. To standardise my data collection, I used the modern municipality boundaries. The reasons for this were twofold: first, it was easier to collect the data, as I did not need to try to pinpoint previous boundaries from maps of unknown accuracy. Secondly, as there is no way of determining the actual area of VA *herad*s, all that mattered was that two easily defined areas in each *fylke* were surveyed.

The risks of this method are that names may represent later coinages and are not therefore representative of Viking Age or earlier site selection criteria, or that topographical names may have been transferred from another on the actual site and the data collected would be false. Shielings are more likely to be abandoned during population decline as the result of epidemics or climate change (Øye 2004, 100-1), when agriculture contracts to the “best areas from an agricultural point of view” (Welinder 1984, 5). Jørn Sandnes’s work during the Farm Desertion Project found that, on average, 56% of farms and 60-62% of holdings had been deserted by 1520, but farm desertion rates were not uniform. Desertion rate ranged from 38% in Åsane to 44.5% in Lindås, which are both along the western coast belt, compared to over 70% of farms in Bjugn-Stjørna in central fjord area in the Trøndelag (1981, 93). In each *fylke*, desertion rates were also uneven, with more peripheral areas suffering greater rates of desertion than core agricultural districts (Særheim 2001, 36). Sandnes concluded that it was younger more marginal settlements which were more likely to be abandoned, while the majority of older farms continued to be inhabited (1981, 95).

There is also the risk of relying on maps for my data set is that many of these abandoned farms were only recolonised much later in the late MA to early modern period, and names may have been bestowed on sites with visible ruins but whose name had been lost. The use of *Øygard,* and possibly *Gamle*-, as a specific element, may suggest recolonisation of sites where a folk memory of habitation remained but whose original name was lost. There is the possibility that the sites on modern maps represent abandoned farms that have been given a shieling name through analogical naming, as has been suggested for some *bister* ('*bolstaðr*') names in Orkney (Smith 2007, 424). However, as suitable sites for settlement in Western Norway, even so-called marginal ones, are in short supply (Øye 2011, 496), it is likely that a folk memory would be strong and make it likely that many names would be retained (Ainiala 1997, 108).

Brita Hope's MA thesis on shieling sites in Sogndal would seem to suggest that even topographical names are quite accurate in locating abandoned archaeological sites (2015, 70). Hope found many of the sites date to the IA and Migration Period and are therefore contemporary with the proposed development of shielings in Norway (2015, 81). Although this does not prove the present name was the original one coined, the use of a specific generic element does suggest that the site was known to have been used in a particular way during its existence. However, I have excluded topographical names where shieling names are used as a specific element, such as *Setehaugane*, or *Seteråsen*, if there is no habitation. On similar sites, where the shieling site is still identifiable, this type of topographical name can be some distance and in a completely different type of location from the actual shieling site (see Chapter 2 above).

## 3.9 Physical Drivers of Transhumance and Shieling Use

### 3.9.1 Glaciation

Glaciation during the Quaternary (2.588 million years ago until the present) has had the largest impact on the topography and soils of Norway. During this period, numerous glacial eposodes occurred (Mangerud 2004, 273; Mangerud et al., 2011, 283), the last Ice Age, known as the Devensian in the UK and Weichselian in Europe, lasted from 120,000 years BP until c. 10,000 years BP (Ehlers 1996, 290).

At the Last Glacial Maximum (LGM), between 26-20,000 BP (Clark et al., 2009), the Fennoscandian ice sheet covered all of Norway and flowed over what is now the Norwegian Sea. Several studies have suggested the surface of the ice being between 2000–3000m asl (Hughes 1981); this would have covered all the land area, with only isolated nunataks above the ice surface (discussed in Mangerud 2004). Consequently, very little pre-Devensian soil would have survived (Olsen 1998, 76; Mangerud 2011, 282) and most soils could only develop once deglaciation had occurred.

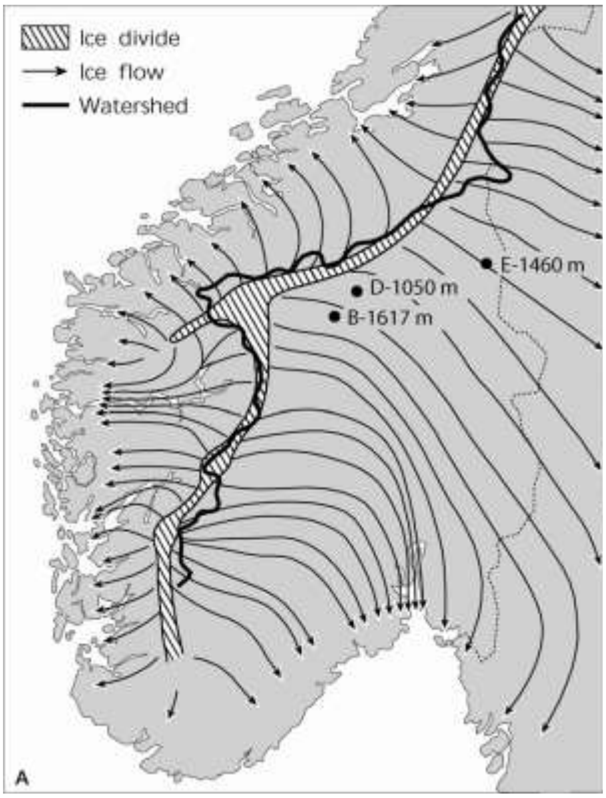



Figure. 3.9 Modified reconstruction of early phase glacial ice flow at the LGM (adapted from Vorren and Mangerud 2008 and Mangerud 2011, 288).

The mountainous spine running down the Scandinavian Peninsula has been suggested as acting like a watershed, with ice flow running laterally away east and west (Figure. 3.9). Erosional processes carved out glacial troughs from pre-existing valleys where the greater thickness of ice allowed differential erosion, with abrasion at its base deepening the valley (Nesje et al., 1992, 518). The thinner ice on the plateau and peaks between the valleys reduced the effects of glacial erosion, but still scoured the land (Mościcki 2006, 161). On the eastern side of the mountain chain, glaciers were frozen to the bedrock (Kleman and Hättestrand 1999); this limited the potential erosion and valleys were only deepening by around 250m, leaving wide and gently sloping valleys. On the western side of the watershed, the presence of meltwater at the base of the glacier, facilitating basal sliding and increasing glacial erosion (MacGregor et al., 2009, 193), eroding some valleys by over 2000m (Vorren and Mangerud 2008, 491). The valleys in Western Norway resemble classic glacial troughs, with over-deepened glacial valleys with steep sides and a parabolic shape (Nesje and Whillans 1994, 42; Vorren and Mangerud 2008, 491).

Deglaciation began around 18,000 years ago (Forsstrøm and Greve 2004, 75; Mangerud et al., 2011, 289), with parts of the coast becoming deglaciated c.16,000 BC (Forsstrøm and Greve 2004, 75; Mangerud et al., 2011, 289) and by c.8500 BC, ice had receded to around the present-day distribution over Norway (Lohne et al., 2012, 87; Mangerud et al., 2011, 289). After the ice had retreated, the valley sides and much of the upland surface had been scoured of sediment leaving only thin deposits of lodgement till or glacial melt-out till (Nesje and Whillans 1994, 42-3). Sections of the lowlands were covered in glacial till and fluvioglacial sediments, made up of sand and gravel. However, in Sognefjord there are only limited amounts of glacial derived sediment found, Nesje and Whillans have suggested that this due to the resistance to weathering of the base rocks (1994, 42-3). Consequently, only small areas along the valley floors had a sufficient depth sediment to allow the development of richer soils. The rest of the landscape was limited to thin deposits of glacial sediment, limiting soil and vegetation development and how the land could later be exploited by incoming people, However, after deglaciation, glacio-eustatic sea level rise occurred, with some parts of Hordaland seeing a rise of 11.1m by 7,100 BP (Kaland 1984, 226). The valley floors of many of the glacial valleys in Western Norway were also inundated by sea water (Kaland 1984, 237). This created the typical fjord landscape we see today, with long fingers of sea extending for up to several hundred miles up these glacial carved valleys, characterised by sheer cliffs plunging into the fjord.

Figure 3.10 Classic glacial trough with steep valley sides and flat valley floor Vistdal, Nesset, Møre og Romsdal (author's photo).

Once the greater mass of ice had been removed from the land surface, the crust, which had been depressed by the weight of ice, rebounded slowly over time (Lowe and Walker 1984, 65). Isostatic uplift led to land rising back out of sea and it continues to this day, where land around the Oslo Fjord and Trondheim has risen by around 36cm in the last century (Dehls et al., 2000, 1459).

Figure 3.11 The settlement of Gauprøra, Nesset, Møre og Romsdal, on a small coastal platform (Author's photograph).

The resulting sections of raised coastal plain (*strandflate*) can stretch for 20-40km in some locations (Aarseth 2008, 490), but it is often much narrower (Klemsdal 1982, 143). These areas of *strandflate* often abut directly to hills, giving both lowland and upland to exploit. Areas along the fjords also rose above the height of the water; the valley of Flåm in Sogn og Fjordane rose around 130m during the Holocene, leaving marine deposits along the valley floor (Indrelid 1988, 49). However, sea level rise, as a result of glacial melt, flooded the over deepened vallays, for example only the upper 40% of the Flåm valley is now above sea level. There are also small platforms along the sides of fjords, such as Gauprøra, Nesset, Møre og Romsdal (Figure 3.11), either raised above sea level by uplift or due to the formation of alluvial fans.

The area of Western Norway is therefore made up of two distinct zones: a coastal zone with varying amounts of *strandflate*, and a mountainous zone with many, though not all, main valleys flooded by sea water. This has created a landscape in the mountainous zone with limited areas of low-lying flat land, often at the valley heads, and small platforms of land either along the fjord shores or on the precipitous valley walls.

### 3.9.2 Soils

Glacial erosion scoured the landscape of sediment, but with the melting of the ice, there was deposition of glacial derived sediments (Figure 3.12). The more gently sloping eastern valleys, were smeared by a deep course till, which could reach high up the valley sides (Garnes 1973, 82). The steeper western valleys and associated mountain plateau were covered by thin deposits of lodgement till, with some glacial melt-out till (Nesje and Whillans 1994, 42-3). The valley floors of many of the western valleys, where you would have expected to find deeper soils, are often covered by sea water, with the majority of flat land found only around the valley heads.

Isostatic uplift raised sea bed deposits *(havavsetning*) and marine beach deposits (*marin strandavsetning*). There are large deposits of marine clays around Trøndelag and Oslo Fjord in south-eastern Norway and together with the till, aeolian and marine deposits around Jæren, Rogaland, that provided workable and most fertile soils in Norway.

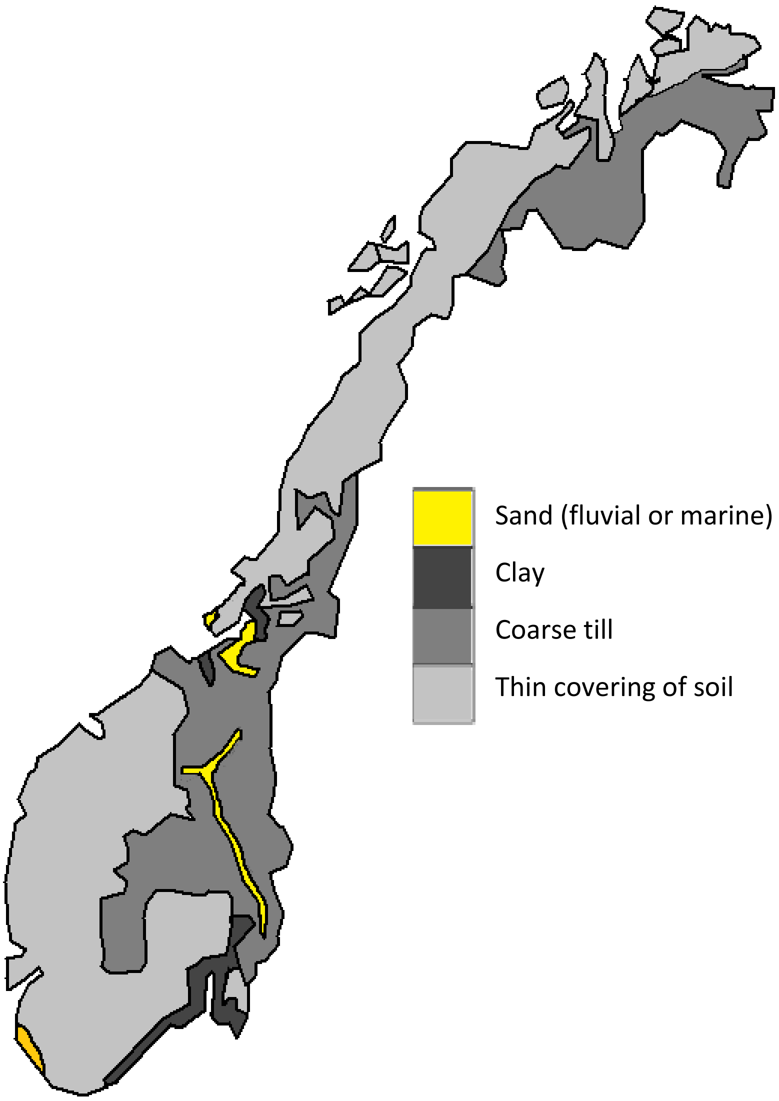



Figure 3.12 Simplified drift geological map of Norway (after Sporrong, 2003).

At a more local level, only relatively small areas of more fertile soil are found throughout Norway. These are scattered between areas of scoured rock, thin till deposits, or areas where poor drainage has initiated peat formation. These ‘fertile’ areas may be the result of variations in local geology, small fluvioglacial deposits, alluvial soils along flood plains and raised marine deposits. It is these areas of localised fertility that would be primary sites for settlement and the limited size and small number of such fertile sites would leave the soil at risk, if intensively used, of becoming exhausted. To ensure the soil did not become exhausted would require periods of fallow or some way to fertilise the soil to allow continuous cropping.

### 3.9.3 Biogeography

The differences in climate, topography and soil make a varied landscape and this will affect the biogeography of Norway. Figure 3.14 gives a generalised view of vegetation zones in Scandinavia. More thermophilous species appear with lower latitude and altitude; deciduous and mixed woodland are found along the southern and south-western coast. With increasing latitude and altitude, this changes to boreal coniferous forest, up to between 900-1200m in Western Norway. The effect of latitude means that the tree line can vary between 1200m in Southern Norway, to almost sea level in the far north. Above the tree line is the alpine zone, which correspondingly decreases with latitude.

Many areas of deciduous and mixed woodland along the coastal districts of Southern and Western Norway were exploited early by settlers during the Neolithic and BA. Deforestation led to the formation of acid heath along areas of the coast zone from around 3700 BC (Kaland 1986; Prøsch-Danielsen and Simonsen 2000; Hjelle *et al.,* 2010; Mehl *et al.,* 2015). This further limited the amount of good quality arable and grazing land available, though the mild winters may have allowed winter grazing to occur at a time when other forms of grazing were sparse (Kaland, 1986).

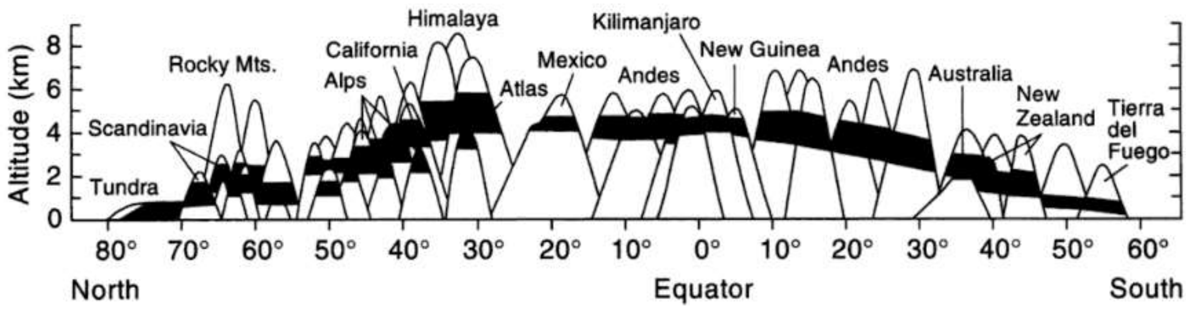
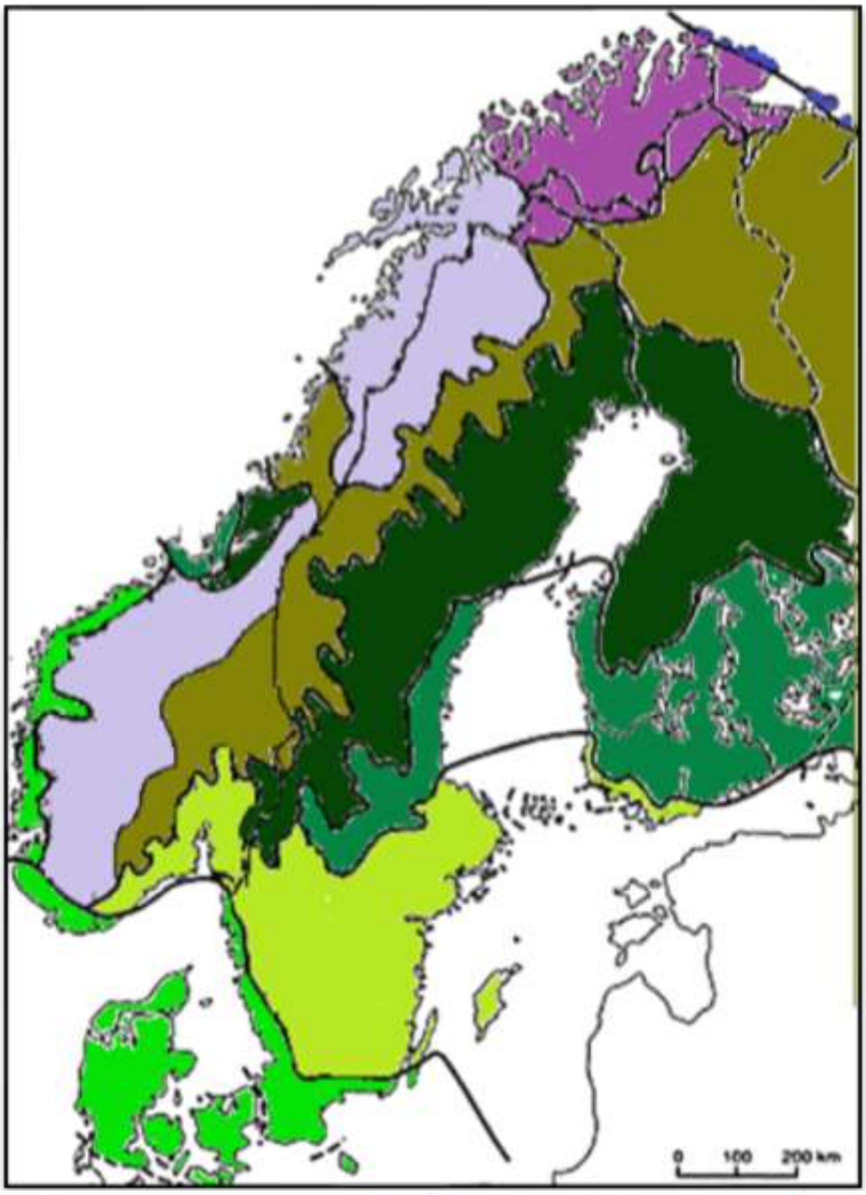



Figure 3.13 Alpine life zone in relation to altitude and latitude (Körner 1999, 10).

In mountainous areas, the landscape, in the form of altitude, aspect and slope, can create rapid changes in vegetation zones. In Sognefjord, mixed birch (*Betula pubescens*) and alder (*Alnus incana*) are found in the valley bottoms; they are succeeded by deciduous forests of elm (*Ulmus glabra*), small leaved lime (*Tilia cordata)* and ash (*Fraxinus excelsior*) along more fertile and drier parts of the valley. This in turn is replaced by birch woodland up to the tree line of around 1200m. Above this tree line there is a mosaic of oligotrophic mire and tundra plant communities, depending on drainage and soil depth (Austad and Hauge 2008, 374-5).




| | | | |
|---|---|---|---|
| Arctic zone | | Central boreal coniferous forest region | |
| Subarctic region | | Southern boreal coniferous forest region | |
| Alpine zone | | Northern European mixed forest region | |
| Northern boreal coniferous forest region | | Northern European deciduous and western mixed forest region | |

Figure 3.14 Map of vegetation zones in Scandinavia (after Sporrong 2003).

From a pastoral point of view, even within the space of a few kilometres, a wide range of vegetation communities can be accessed. The limited area of each community would mean that each could only sustain limited grazing, but the link between temperature and altitude would allow a number of habitats to be utilised at different times as the climate warms. This would encourage the use of multiple shielings at different altitudes, where the topography and vegetation allowed grazing and an area for buildings (Austad et al., 1991, 40; Øye 2009a, 103), with the home farm on the valley floor. The shieling of Liasætra (Figure. 3.15) is situated at the top of a steep climb where the ground levels out at the edge of a wide cirque. The site is level for clearing and building, and the topography also provides a range of habitates for grazing livestock and fodder collection (Sæther et al., 2006, 375-80).

Figure. 3.15 The varied topography of mountain plateaus, Liasætra, above the tree line (mostly *Betula*) and to the right of the photo, Nesset, Møre og Romsdal (author's photograph).

## 3.10 Cultural Drivers of Transhumance and Shieling Use

### 3.10.1 The development of the cultural landscape

Lotte Selsing has proposed an early migration of hunter-gatherers following very quickly after the retreat of the ice (2012, 179-80), though this is rejected by Bjerck (2009, 119). However, evidence for population centres are found from c.5600 BC at coastal locations from Tørkøp, Østfold in the south (Bjerck 2007, 11) and as far north as Bodø in Northern Norway (Moe 2003, 194). The majority of sites remained coastal throughout the Mesolithic, with the population relying on fishing, hunting and gathering (Moe 1996, 126; Bjerck 2007, 11). However, pit falls and drift fencing show that there was exploitation of inland resources for hunting from c.6000 to 5000 BC around Inner Sogn (Ohnstad 1980 cited in Austad et al., 1991, 39) and Hardangervidda (Moe, Indrelid and Fasteland 1988, 443).

At Kotedalen in Hordaland, marine resources such as fish, seal and otter were almost exclusively exploited during the Mesolithic. It was not until the early part of the MN, that an increased in the use of terrestrial animals was also observed, though dependence on marine resources remained high (Hufthammer 1992 cited in Hjelle et al., 2006, 156 and for other locations see Bjerck 2007, 17). The inclusion of less seasonal species has been suggested as a move to a more sedentary lifestyle (Hufthammer 1992; Hjelle 2006, 156), though this interpretation has been disputed (Warren 1994, 224; Bergsvik 2001, 3-4).

### 3.10.2 Introduction of farming

The dating for the introduction of agriculture relies on three pieces of evidence: artefacts from archaeological sites; osteological remains; and palaeobotanical data (Hjelle et al., 2006). Anthropogenic indicators from palaeobotanical studies include:

- Deforestation, shown by a drop in Arboreal Pollen (AP), especially when accompanied by a sustained increase in the values of *Poaceae* (grasses), which could indicate grazing.
- The appearance of species favoured by grazing, such as *Plantago major* (greater plantain), *P. Maritim*a (sea plantain), *Rumex* (sorrel), *Artemisia* (mugwort), and *Chenopdium* (goosefoot) (Kaland 1971, 23-24).
- The appearance of species used to identify cereal cultivation, such as *Cerealia* grains or *Plantago lanceolate* (ribwort), a weed of cereal fields. Though there is evidence for the appearance of *Plantago lanceolate* in Norway prior to introduction of agriculture as an occasional species of littoral meadows (Bakka and Kaland 1970, 24; Hjelle et al., 2006, 151), the later increase in pollen is likely to be the result of anthropogenic factors.

Natural processes can also account for some changes to pollen diagrams: climatic deterioration or amelioration affects the distribution of more thermophilous species; wild grass pollen, such as *Leymus arenarius* (lyme grass) can be mistaken taken for Hordeum type pollen (Hjelle et al., 2006, 152-4). Disturbance by animals can lead to the appearance of ruderal or nitrophilous species, which could be mistaken for anthropogenic indicators, as suggested for the activities of puffins on the Faroe Islands (Buckland et al., 1998, 295). I will follow Hjelle et al., in the use of *farming* and *agriculture* as general descriptors, *cultivation* for a more general term for growing crops, *arable farming* for the growing of cereal, and *pastoral* and *grazing* when referring to domesticated animal husbandry (2006, 150).

The first evidence for the introduction of agriculture in Norway occurs around the fourth millennium BC, with the appearance of pollen from grazing indicator species (Indrelid and Moe 1982, 65; Myhre 2004, 18; Overland and Hjelle 2009, 460). Grazing indicator species appear at coastal sites from around c.3750 BC at Kalandsvatn in Hordaland (Mehl et al., 2015, 14) and c.3650 BC in the far north as Bodø in the Lofoten Islands (Nilssen 1988, 373). Further inland, on the plateau of Hardangervidda, grazing begins around 3250 BC (Indrelid and Moe 1983, 65); this early period of summer grazing may have been associated with shepherds' shelters (*driftlæger*) rather than shieling use (Moe, Indrelid, and Fasteland 1990, 443). This would suggest that the keeping of domestic animals had become an integrated part of the subsistence economy over much of coastal Norway between c.3000 and 2500 BC.

The rock shelter at Skipshelleren, Hordaland, has some of the oldest domestic animal bones in Western Norway, radiocarbon dated to 2900-2200 cal. BC (Olsen, 1976, cited in Hjelle *et al*., 2006, 157). Only 1% of mammal bones recovered from the LNA and EBA levels at Skipshelleren are identifiable; of these, 4% came from domestic species, suggesting that pastoral farming only accounted for a minor part of the diet (Hjelle et al., 2006). However, the percentage of domestic animals found in bone assemblages did rise by the later BA to 18% at Skipshelleren, 14% Ruskeneset (Hordaland) and 8% at Skrivarhelleren (Sogn og Fjordane), with sheep being the dominant domestic animal species at all three sites (*Hjelle et al.,* 2006, 157-8).

### 3.10.3 Cereal cultivation

Over much of Norway, evidence of animal husbandry in pollen diagrams appear several hundred years before that of cereal cultivation (Prøsch-Danielsen 1996, 96; Myhre, 2004, 16; Mehl et al., 2015, 14). The earliest evidence of cereal cultivation in Norway dates from c.3140 BC at Lista in Southern Norway (Prøsch-Danielsen 1996, 95). Cereal cultivation can then be dated in Western Norway from c.1808 BC at Hjelle in Sogn and Fjordane (Soltvedt 2000, 53) and by c.1790 BC at Barstad in Northern Norway (Vorren 1979, 10). Cereal has seen also been identified in pollen diagrams from as far north as Brensholmen in the Malangen area around c.1148 BC (Vorren 2005, 165). Today, the area of Malangen is considered the northern limit of *Hordeum* cultivation, however, Vorren has found evidence of cultivation to the north of Malangen, at Kvaløya, Troms, c.750 AD (2009, 164).

Bakka and Kaland have argued that the introduction of cereal cultivation was responsible for a change in settlement location in Hordaland, during the Middle to LN. Sites changed from coastal fishing and hunting sites to better farming districts in the middle and inner areas of fjords (Kaland 1971, 28; Bakka and Kaland 2010, 31). Today, only 3% of land in Norway is classed as cultivated land; 90% of which is located in Southern Norway – this leaves just 0.3% of cultivatable land spread over the rest of the country (Jones 2008, 283). Arable land is a scarce resource over much of Norway, and the change to cereal growing would lead to constraints on the location of any settlement. The lack of suitable arable land would also have encouraged the change to permanent settlement and the intensive use of whatever cultivated land was available, risking exhausting the soil through monoculture if not left fallow for a period of time.

The preferred cereal during the LN had been *Hordeum vulgare nudum* (naked barley) with some *Triticum* sp. (wheat). Naked barley has the advantage of a relatively high yield, even on less fertile soils (Soltvedt 2000, 58-9; Myhre 2004, 30). *Hordeum vulgare* (hulled barley) became more widespread and abundant during the BA; its dependence on more fertile soils, along with the appearance of nitrophilous weed species, such as *Chenopedium album L*. (fat hen) (Myhre 2004, 30).

### 3.10.4 Development of an infield-outfield system

Some early sites in Southern Norway were found to have large numbers of small fields, often referred to as 'Celtic fields'; some of these fields could, theoretically, have been left fallow to prevent soil exhaustion (E.A. Pedersen 1999, 50-1). Fallow areas could be used for grazing, and the fields could be fertilised by direct manuring

(Barker 1999, 276). This is not, however, an efficient method of growing cereal when dealing with limited areas of arable land, due to the need to leave areas periodically unproductive. However, it makes sense if, as has been suggested by Hjelle *et al.,* (2006, 165), that during the Neolithic it was social prestige and not the need to increase food production that drove the introduction of cereal, possibly to produce beer for feasts (Foote and Wilson 1970, 402; Bjørkan Bukkemoen 2016, 118; Grønnesby 2016, 144). The ‘prestige’ factor needs to be considered when considering agricultural systems and the cultural drivers behind individual choices (see Chapter 3.10.8).

A similar ‘Celtic field’ system has been identified at Vinarve, Gotland, but during the RIA and Migration Period it was overlain by single farms, each with arable and meadowland surrounded by a fence; a cattle lane led from the buildings to the surrounding pasture land (Windelhed 1984, 85). Bjørn Myhre identified similar farm morphology in his study of farms in Jæren, in the 4$^{th}$ to 6$^{th}$ centuries (Myhre 1973, 17; 1974, 40). The farm at Ullandhaug, near Stavanger, had a cattle pen with a cattle lane leading out of the infield; the infield covered between 10-15 acres (1973, 14-15). Similar farm structures to the infield/outfield farming system to south-west Norway have also been found in Western Norway (Øyr, 2011, 406) and in Scandinavian settlements abroad (see Chapter 4).

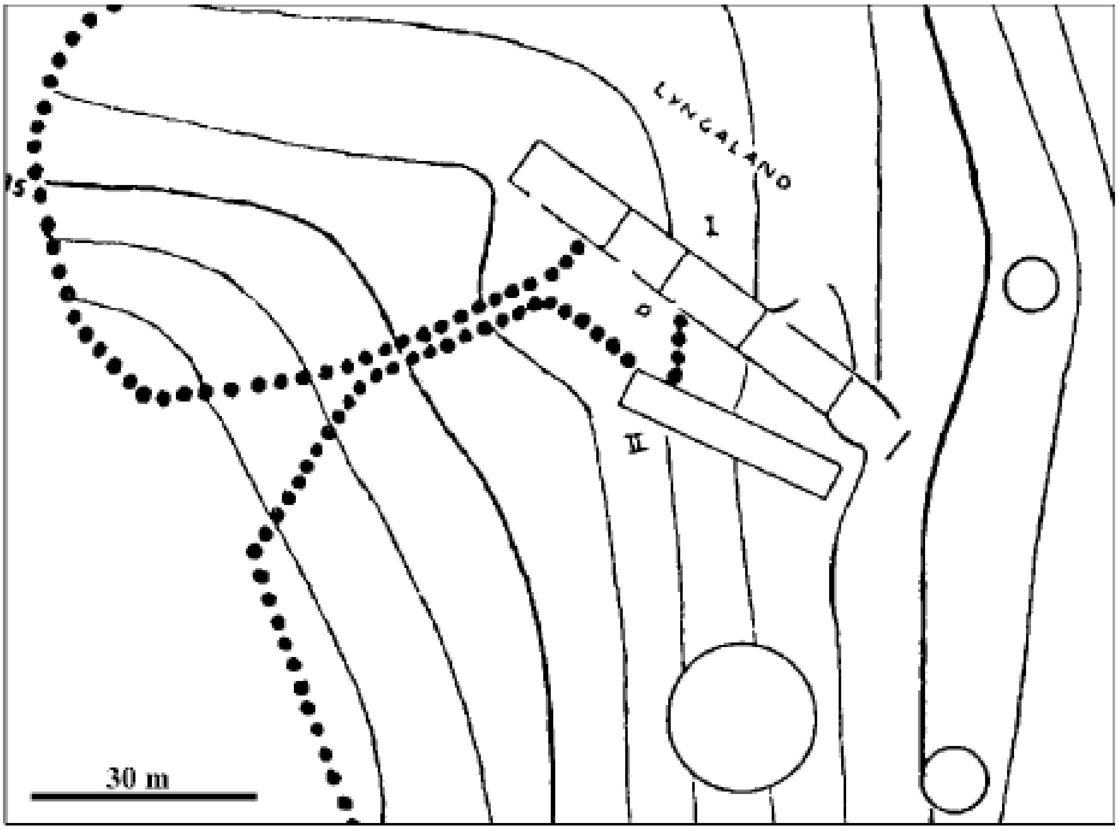



Figure 3.16 Lyngaland, Migration Period farm from Jæren with cattle track and stone fence surrounding the Infield (Petersen, 1936).

The development of an infield-outfield farming has been explained as an intensification of cultivation and has been dated to between the 4th to 6th century AD in south-west Norway (Myhre 1973, 18; 1974, 39). The system involved the infield (*innan garðs*) being physically separated from the outfield (*utan garðs*) by a fence (ON *garðr*). The infield consisted of arable fields and meadows for haymaking; cattle tracks led from the farmyards through the infield to the outfield. Cattle tracks were present on individual farms, and more complex settlements, which consisted of an infield with several farmyards, each with associated cattle tracks (Myhre 1973, 21-22).

The infield and outfield system would seem to have been adopted around the IA onwards; the infield was protected by a fence and allowed the farming of fertile plots for arable and meadows. At the end of the Migration Period, farm desertion is evident in Jæren, with the number of farms in Jæren decreasing. Those farms that did survive the Migration Period saw a decrease in the area of arable land, which would be counterintuitive, as there should have been more land to farm. Myhre suggested that this shows the introduction of a more intense cultivation technique (1973, 25) and intensification of a smaller area could only occur with addition of fertiliser. Animal dung could be used to fertilise the plots, and this would do away with the need for fallow periods and allow the intensive use of the fields through continuous cropping (Barker 1999, 277; F. Iversen 2016, 70). Direct manuring can take place while cattle graze plots; however, this runs the risk of damaging the pasture (Zimmerman 1999, 312).

### 3.10.5 Longhouses and cattle stalling

The introduction of three-aisled longhouses occurred in Norway, as in other parts of Scandinavia, during the BA though with regional variation in the chronology (Armstrong Oma 2016, 12). The basic form of three-aisled longhouses, with variations in size, shape and material stayed the same from the IA to almost the end of the VA (Armstrong Oma 2016, 16, 17; Bjordal 2016, 243). It has been suggested that the introduction of three-aisled longhouses was linked to changes to how animals were kept, with animals kept in byres during the winter (Rasmussen

1999; Zimmerman 1999). In the EBA at Forsandmoen in Rogaland, the settlement consisted of two large longhouses, 18 and 20m long, neither had evidence of internal byres (Løken 1998, 108). The lack of internal byres meant that the longhouses could potentially house 15 to 25 people. However, by the LBA (c 900 BC), settlement reorganisation led to several smaller longhouses (13-15m long) with internal byres, which could house 5-6 people; the byres have been interpreted by Myhre as evidence of individual ownership of livestock (2004, 42, 47, see also Meling 2016, 164). By the VA at Vorbasse in Denmark, one farm had 20 stalls and another 22 stalls (38.1% living, 61.8% storage) and by the 10-11th century, three farm complexes on the site contained 95-100 stalls (14.6% living, 85.3% storage) (Thurston, 2001). The amount of living space more than halved over the 200-year period, suggesting an increased importance on storage. Not all longhouses have evidence of internal stalling, though this is not evidence that they did not exist, or that byres may have been in separate buildings (Barker 1999, 273; Sauvage and Mokkelbost 2016, 289).

The change to internal byres has been linked to the need for manure as fertiliser during the IA (Hedeager 1992, 201). Stalls were found to be three times more effective at collecting dung than cattle pens (Zedler 1741 cited in Zimmerman 1999) and this would seem to suggest that not only was there a change of society from some form of communal social arrangement to one of independent farms (Myhre 2004, 47), but also to the intensification of farming, with small individual infields and associated byres to produce manure.

The stalling of cattle has other functional explanations, such as protection from winter weather (Barker 1999, 276), preserving grazing land during winter (Barker 1999, 276; Zimmerman, 1999, 312), protection against raids (Harsema 1993 cited in Fokkens, 1999, 36), as well as the collection of manure (Fokkens 1998; Karlenby 1994; Barker 1999, 276). Michael Olausson has questioned the view on the "absolute connection between stalling and fertilising" (1999, 320), while Karl-Ernst Behre has suggested that it was the "Fimbul winter" (from the Icelandic *fimbulvetr*, 'great winter') during the BA that was a contributing factor in the introduction of stalling (1998, 94). The introduction of stalls and byres has been shown to predate this deterioration in climate and would suggest that other factors may have contributed to this change. The need to overwinter animals in byres has been questioned by Zimmerman, who reviewed various methods of keeping cattle in very cold climates, and noted that it was only the young who were most at risk of succumbing to cold weather (Zimmerman 1999, 310-311). Though, Zimmerman does point out that in Anglo-Saxon England, with its more temperate climate, there is no evidence for byres, but byres were present in Denmark (1999, 315-6).

Zimmerman (1999, 315-6) suggests that there were several other reasons for the introduction of stalling as well as the need to collect manure, preserve grassland and concerns related to climate. Firstly, byres allowed more animals to be kept, with some inside being stall fed and others kept outside feeding on any remaining vegetation (which could also be supplemented with fodder). Secondly, the amount of fodder needed to feed animals in byres would also be less; the more stable temperature means less energy needs to be burned to keep up internal body temperature. There is a 7.5% increase in fodder consumption for every degree the temperature drops between 10°c and 0°c (Engel 1877, cited in Zimmerman 1999, 312). Thirdly, byres allow easy access to animals for daily needs, such as milking, or to keep draught animals use to work. The need to milk cows in the winter is debateable: Carl Challinor suggests it is possible, under optimum conditions, to milk native breeds in Shetland all year. Though, it is advisable to dry off cattle in winter so as to reduce metabolic stress during fodder shortages (2004, 166, for similar findings for the Faroe Islands, see Baldwin 1983). A fourth reason relates to draught animals being an important aspect of the Neolithic and the need to keep them secure (Rasmussen 1999, 287), Bogucki argues that it is the draught potential of cattle that was important, and this made them valuable (1993, 499-500). This may link to a fifth reason, and this is to do with people's mental attitude to cattle, with humans having a psychological need to be under the same roof (Oluasson 1999, 321; Rasmussen 1999 287; Zimmerman 1999, 316; Armstrong Oma 2016, 20).

### 3.10.6 Winter fodder

Stall feeding necessitated the collection of winter fodder; the number of animals that could be kept was dependent on the amount of fodder that could be collected (Zimmerman 1999, 303). Lotte Hedeager suggests that stalling would not be possible without the introduction of scythes to collect fodder (1992, 207). Janken Myrdal linked the introduction of the scythes to Scandinavia with the spread of byres and the introduction of iron, but points out that the introduction of byres and scythes may have been interdependent (1984, 27). The use of byres would have encouraged the utilisation of a wider area to collect enough winter fodder to survive the winter (Hedeager 1992, 206). The tradition of collecting leaves, twigs and bark from trees in Norway is an example of utilising all available resources for fodder supplies (Austad 1988, 15). In many parts of Norway, due to its topography, collecting enough fodder would have meant utilising outlying areas, many at some distance from the home farm. The distances involved, whether horizontally or vertically, may have been a contributing factor that led to the use of shielings.

As animals also needed access to grazing, this could be combined with fodder collection at shielings. A bonus would be the reduction in energy loss, as animals did not need to be driven long distances each day, allowing animals to reach prime condition and maintain it through the summer. By keeping animals away from the home farm, this also eliminated the risk they could break through the fence and get into the arable and hay meadows during the daily movement back and to grazing in the outfield along the cattle lane. Ingvild Øye found that farming units at high altitude in Western Norway seemed to be as old as farms on those on low-lying arable land (2011, 502). Similarly, in Northern Sweden, pollen diagrams show that permanent farms and shielings were established simultaneously during the RIA and Merovingian Period (Karlsson et al*.,* 2010, 114). This would seem to suggest that shielings were established at the same time as home farms with the infield-outfield system and were an integrated part of the farming system and not a later development. Ingvild Øye came to the conclusion that: "outfields, grazing land and proximity to other valuable resources seem to have played a significant role and may have been of equal importance" to the lowland permanent farms (2011, 502).

### 3.10.7 Livestock selection

The change to some animal husbandry rather than relying on hunting wild animals has been explained by Bogucki as an insurance policy against shortfalls in other resources (1993, 497). The keeping of livestock removes the risk of an unsuccessful hunt, seasonality or overhunting, with the livestock acting as a "walking larder" (Bogucki, 1993, 497). However, the sustainability of this requires a certain number of the animals to be kept alive in order for the herd to remain at replacement level. Animals that breed and mature quickly, such as pigs, or provide secondary products like milk and wool such as sheep, should therefore be a more viable survival strategy (Barker 1999, 278). LN bone assemblages from Norway show a preference for sheep, and it is sheep farming that predominates in the Scandinavian settlements in Iceland and the Faroe Islands since the EMA (see Chapter 4). Increasingly in Norway, however, cattle gained parity with sheep numbers through the BA and IA. Male cattle take between 42-48 months to develop to prime beef animals and are therefore not ideal as walking larders (Bogucki 1993, 497). At Kaupang, the majority of cattle bones came from cattle between 24 and 30 months (Barrett 2004, 87). This would suggest that they were primarily kept for meat, and not old dairy cows, (see Chapter 5) and demand may have been high, as they were slaughtered before they reached prime age for beef animals. Though

Kaupang is unusual in a Norwegian context, being a trading settlement and not a farm, bone assemblages from Scandinavian Dublin appear to be composed of older cows and so probably old dairy cattle, and this would seem to corroborate the belief that farming in Ireland was based on dairying (McCormick 1992, 204).

There should be another factor in the increasing preference for cattle; an association between cattle and wealth has been commentated upon (Barker 1999). In ON the term *fé* can have both the meaning of cattle or money (CV 1874, 148; Roymans 1996; Earle 1997). This association with wealth has been linked to secondary products, milk, hides (Sherratt 1981, 1983) or the luxury element of beef for feasts (Barker 1999, 277; Bjørkan Bukkemoen 2016, 127). Bogucki has argued that the need for traction, linked to the introduction of arable farming, may have led to the creation of elites. The importance of cattle, especially oxen, could lead to them being an important means of gift exchange, to maintain forged alliances (see Section 3.7.8). Cattle were therefore important as a source of meat, secondary products, for prestige, as a sign of wealth, and for use in dowries or to forge alliances (Bogucki 1993, 495).

An interesting connection with the social status of cattle is that the size of cattle withers decreases from the Mesolithic to the IA and cattle remained small through the Medieval Period (Davis 1987, 177). In Western Norway, the *vestlandsk fjordfe* breed traditionally had a weight of 250kg, which is half the weight of a modern dairy cow (Austad and Hauge 2008, 378) and the small size of cattle, even within historical times, can be seen in Figure 3.4. Barker links this, in part, to the use of cattle as a status symbol, with quantity of animals valued over size (Barker 1999, 279). An added benefit of the decrease in size would be a reduction in the amount of fodder each animal required, so making it easier to stall feed larger numbers of cattle.

### 3.10.8 Scandinavian society

The view that Scandinavian society was originally based on free and equal independent peasant farmers held sway in the romantic ideology of Swedish and Norwegian society during the 19th century (Skre 2011, 201). VA burials would seem to suggest that this was the case, with 79% of burials in Western and 86% in Eastern Norway containing weapons; similarly, 71% of burials in Denmark have either equestrian items or weapons deposited in them, though in Sweden the figures are between 3-8% (Jakobsson 1992 cited in A. Pedersen 2011). Owning weapons was a prerequisite of being a free man in the Norwegian Gulathing and Frostahing Law (G.309, F. X3, Larson, 1935) and would suggest that the population was overwhelmingly free. However, Pedersen suggests the figures for Norway are unlikely, stressing that many were cremation burials, which are not dated.

If Norway was a land of free and independent farmers, there was a case for the development of shielings as places to graze animals away from the arable and meadows in the infield. Fodder collection at shielings was an essential addition to that collected from meadows closer to the home farm. During the winter, this vegetation would be turned into manure, and then it could be used as fertiliser for the arable field.

The intensification of farming and establishment of shielings, during the IA to the VA, may point to other drivers as well. Population pressure is a possible cause for settlement growth and the need to intensify food production, often based on Malthusian theory that food production will increase at an arithmetic rate, but population increases at a geometric or exponential rate and will be ‘corrected’ by disease, famine and war (1798). However, the economists Ester Boserup (1965, 1981) and Julian Simon (1990) disagreed, Boserup arguing that increased population would lead to innovation and any addition population rise would also increase the availability of labour to intensify food production. Simon believed reduced availability of a resource(s) would lead to added investment (time or effort) to make up any shortfall or lead to the development of alternatives. Different population theories have been discussed in relation to VA farming in Scandinavia (Emanuelsson 1990, 112; Øye 2013, 300); however, there is a third possibility – social obligations may also have led to the intensification observed.

The belief being these free farmers would give loyalty to a local chieftain or magnate (Poulsen and Sinbæk 2011, 26). Large scale excavations of settlement sites have shown some village-like settlements (Myhre 1999; Lillehammer 1999), containing some buildings larger than others. Plots with buildings, which had been more or less equal in the EBA, begin to show some buildings as being larger than the rest from the pre-RIA through to the Migration Period. This was seen in the large-scale excavations in Norway at Forsandmoen, Rogaland (Løken 2001), Missingen (Bårdseth 2009), throughout Western Norway Diinhoff (2010), and in Denmark at Vorbasse (Hvass 1983). Some of these locations can be described as villages, but large farms have been observed at what appears to have been single farm settlements in other parts of Norway (F. Iversen 2005; Skre 1999; Diinhoff 2010). Søren Diinhoff points out that large farms do not appear in Western Norway until the Later RIA and Migration Period (2010, 211).

Dagfinn Skre used Christaller's 'Central Place Theory' to identify hierarchical landholding structures in Norway, which suggested that individual ownership was not the most common form of landholding, but local leaders, magnates, controlled the land (Skre 2011, 201). The nature of the dependency is unknown, but Skre suggests that it could have varied from serfdom, slavery, to "honourable relations between free men" (2011, 202). Within this hierarchy, each local lord, chieftain, or king would reside in a central place (Thurston 2001, 33; Skre 2011, 203). Skre refers to these central places in estates as magnate farms, so as not to confuse them with later HMA manors (2011, 202). Frode Iversen identified 15 royal manors from literary sources and a further 21 estates belonging to *lendmenn* (royal appointed chieftains) along Western Norway (2005, 134). Iversen estimated that each estate could have around 30-50 dependent farms. Within each estate, place-names connected to particular resources, such as animals or their secondary products, were found. Iversen suggested that this may mean some subsidiary settlements paid tribute from specialisation in production (F. Iversen 2005, 140-1, Øye 2009a, 102). If beef was synonymous with wealth or luxury, there would be added pressure to run cattle, which would necessitate shielings for grazing and fodder collection to provide a surplus (Sinbæk 2011, 103; Skre 2011, 209).

Within a stratified society, farmers would need to provide a surplus to give to their local magnate as 'tribute' or '*veitsle*' (Odner 1972, 642), who in turn had to provide a similar tribute to the local chieftain, and so on, until the king. The need to provide a surplus to fulfil this obligation would have provided a stimulus to intensify agricultural production. Chris Wickham described this type of society as a 'tributary society' (2005), where the local magnate was recognised as a leader, but not as a landlord (Sinbæk 2011 104). Stefan Brink (1999, 424) and Dagfinn Skre (1999, 415) have argued that in VA Scandinavia virtually all members of society were tied to the land. Skre makes the point that at the start of the Viking Age, with limited transport and few markets, each farmer, magnate and chieftain had to produce their own food to feed their own household and provide food rent or *veitsle* for their lord (1999, 415). Brink suggests that it was only the king and his *hirð* ('retinue') that was not tied to the land in this way (1999, 424). However, Frode Iversen's study of royal manors and estates in Western Norway would suggest that the king also needed direct control of some form of food production (2005).

Scandinavian society is not believed to have been based on a monetary system in the pre-VA (Gaimster 1991, 114); the economy has been described as a "prestige goods economy” or “gift exchange” (Samson 1991a, 88-90; Hedeager 1992, 88; Thurston 2001, 49; Sheehan 2013, 811-14). Each chieftain’s power was based on socio-political ties based on gifts to their followers and so access to prestige goods was paramount in retaining or expanding their powerbase (Thurston 2001, 51). Søren Sinbæk using complex network theory to study VA emporia, found there was only a small number of major hubs, though with a greater range of small hubs (2007, 70). There would therefore be limited access to prestige goods and that kings and chieftains controlled access to markers of prestige, which could be distributed to lesser chieftains or magnates. Monopoly of supply created dependency and alliance, while acceptance of prestige goods implied social inferiority and obligation (Thurston 2001, 49). This has been suggested as replacing kinship with a socio-political obligation (Hedeager 1992; Thurston 2001), Frans-Arne Stylegar (2004, 22) described this as:

> “The leading men in this warrior society were lords, no doubt, but they were also gracious givers – of weapon, gold rings, big feasts – and ships (Varenius, 1992). Only by giving, and giving in abundance, could a leading man uphold his status relative to other leading men. But the leading men were also war-lords, for the rich gifts that they were expected to provide.”

Lotte Hedeager (1994, 133) has argued that early Viking raids were a response to limited access to prestige goods. To mount Viking raids to acquire and retain a powerbase, chieftains required followers. The aforementioned Svein Åsleifsson in *Orkneyinga Saga* (Chapter 105, 215) is reported to have entertained 80 men at his own expense during the winter, before raiding during the summer (see Samson 1991b, 126-27). Even as late 12th century, a chieftain needed to not only provide prestige goods to distribute as part of gift exchange, but must also supply food and drink to his warband to keep them (Thurston 2001, 51; Bjørkan Bukkemoen 2016, 123; Grønnesby 2016, 144). Alcoholic beverages have been heavily linked to social life, including the maintenance of allegiances and retention of supporters (Foote and Wilson 1970, 402; Bjørkan Bukkemoen 2016, 118); this would have required grain, which in turn would require manure. The socio-economic foundation of Scandinavian society was therefore based on local production of food to support the farm and its dependents, but also chieftains and their warbands (Odner 1972, 649; Hedeager 1992, 89). This need to produce a surplus could also have been a factor behind the intensification of farming that led to the adoption of infield and outfield farming.

The placing of shielings around the periphery of a farm has been suggested as a way to demonstrate the territorial extent of an estate or farm (Karlsson et al., 2010, 115 in central Sweden, and Lucas 2008, 98 in Iceland). The necessity of signalling ownership of land with a settlement is highlighted in *Hænsa-Þóris saga*, when Herstain Blund Ketilsson asks Tungu-Odd for help after the burning of his father in the farm (Chapter 9, http://sagadb.org/haensna-thoris_saga.on, accessed on 15/4/15):

> *Nú ríðr Oddr at húsi einu, því er eigi var allt brunnit. Hann seilist til birkirafts eins ok kippir burt ór húsinu, ríðr síðan andsælis um húsin með loganda brandinn ok mælti: "Hér nem ek mér land, fyrir því at hér sé ek nú eigi byggðan bólstað. Heyri þat váttar, þeir er hjá váru.*
>
> "Odd rode over to the house that was not yet burned down, reached out and grabbed a birch rafter and tore it from the house. Then he rode around the houses with the burning brand counterclockwise, saying, 'I take here this land into my possession, because I see here no house inhabited. Hear ye all witnesses who are nearby.' Then he spurred his horse and rode away." (trans. Eric V. Youngquist (2002) http://www.sagadb.org, accessed on 15/4/15)

The hierarchy in Scandinavian society may not have been a straightforward pyramid, with the king at the apex and the farmers at the base. Carole Crumley's study of Celtic Iron Age polities suggests varied sources of power and that the relations between these was complex but not necessarily hierarchical (1995, 1, 3). Crumley proposed a term for this type of society, heterarchy, which Crumley defined as "the relation of elements to one another when they are unranked or when they possess the potential for being ranked in a number of different ways. For example, power can be counterpoised rather than ranked" (1995, 3). In a social system within a heterarchy, sources of power linked to values are not constant but can fluctuate (Crumley 2007, 11), creating a situation where magnates at all levels within a society would be in constant competition to retain or extend their power. This would fit with Hedeager's suggestion that a prestige goods economy is dependent on scope for expansion and intensification, leading to colonisation (1992, 89)

# 3.11 Topographical survey results

### 3.11.1 Distance from home farm

A problem of this data is that it can only be based on compound names that relate to a known farm. Simplex names may be historically attached to a farm, but this does not prove the attachment was there in prehistory. In total, I was able to identify 113 shielings to their home farm. The mean distance from the home farm was 1815m, the median distance was 1420m and overall, 80% of sites were 2.5km or less from their home farm. *Setr*-names (nine sites) were, on average, only 655.5m from the home farm, with a median distance of 710m and 89% were less than 896m. *Sætr*-names were, on average, 2126.2m from the home farm, with a median distance of 1830m, 84% were less than 2320m away from the home farm.

**Altitude**

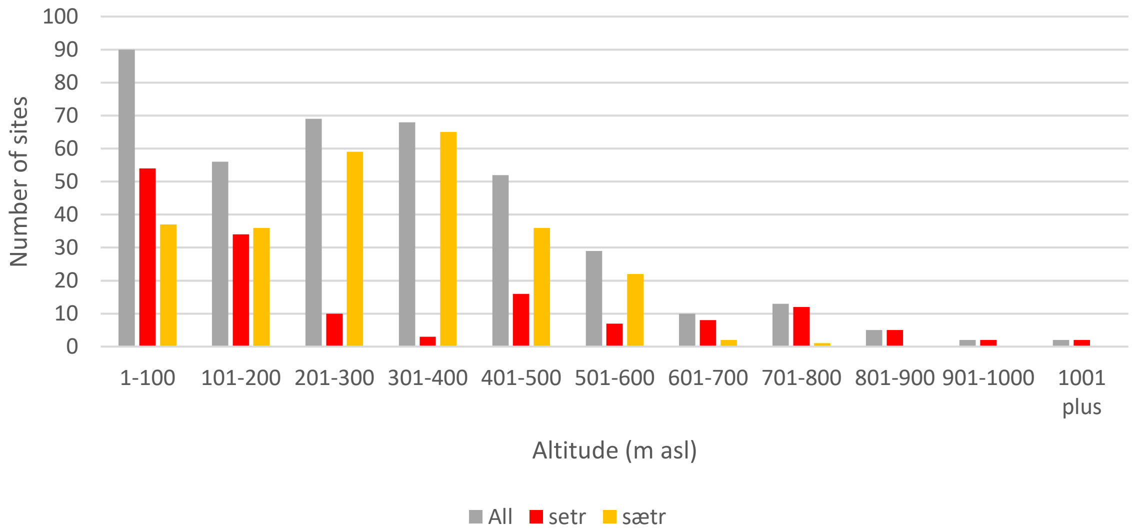



Figure 3.17 Altitude (m asl) of Norwegian shielings from selected municipalities (rounded up to within 100m).

Altitude of shielings was generally below 600m asl; *setr*-names are more likely to be found under 200m asl, while *setr*-names are found between 200 and 400m asl. *Sætr*-names are found at a greater range of altitudes, 80% below 500m asl and only 24% below 200m. Figure 3.20 would seem to suggest that the definition of both *setr* or *sætr* as mountain pasture as misleading and a more general definition of summer grazing is more appropriate. Summer grazing can encompass pasture in the mountains, in valleys, on platforms and plateaus, but also in lowland areas where the conditions favour seasonal grazing, such as on coastal heathland or on a peninsula.

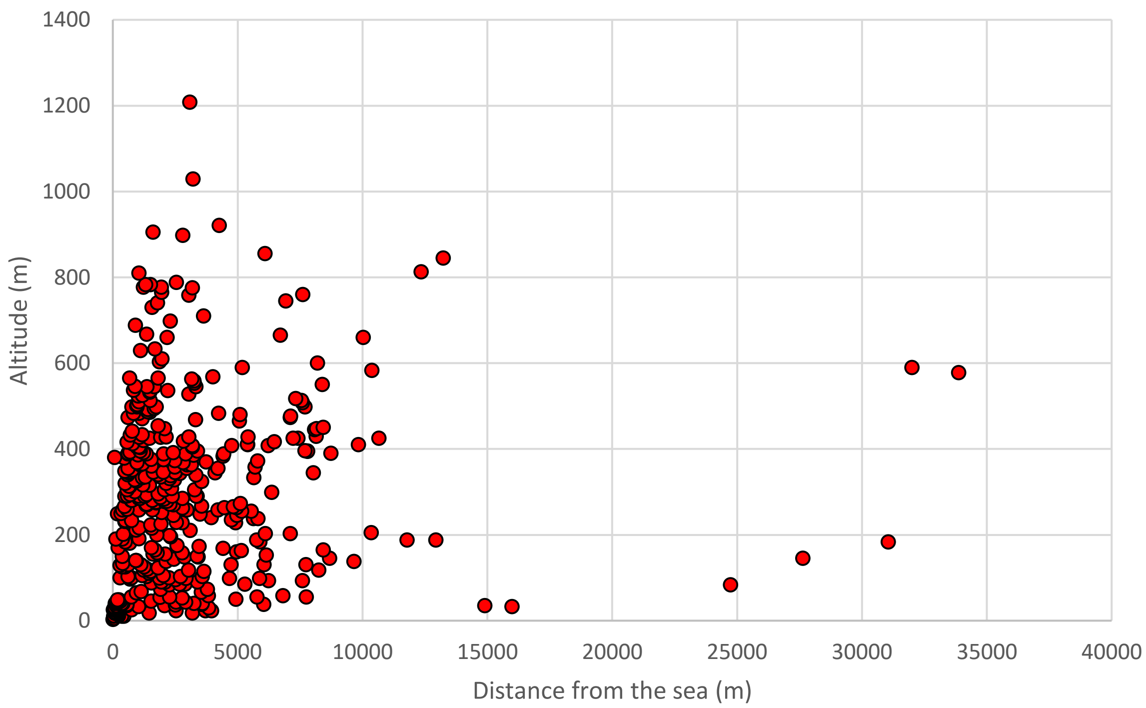



Figure 3.18 The height of *setr* and *sætr*-names compared to distance from the sea.

Comparing the height asl of shielings with the distance from the coast (Figure 3.18), I completed a Pearson Correlation, which gave a result of 0.12963195090830876. This suggests that there is probably no correlation between altitude and the distance from the coast.

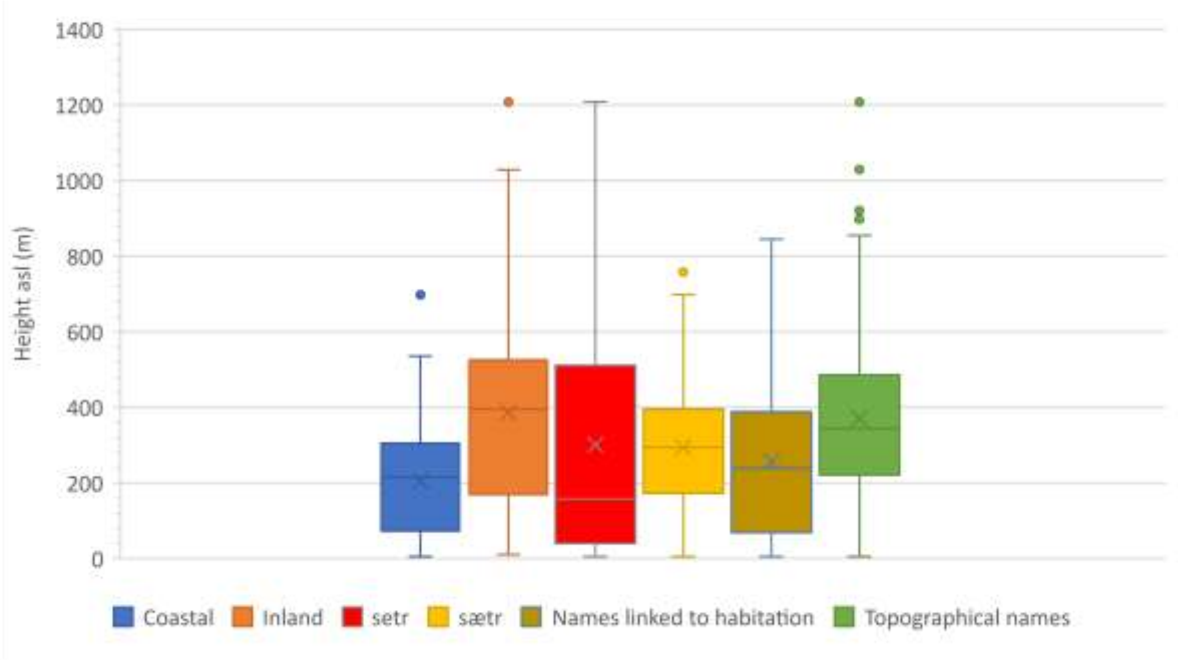



Figure 3.19 Altitude of *setr* and *sætr*-names combined in the four coastal and four inland municipalities, as individual generics, and names attached to habitation and topographical features.

Shieling names in coastal districts (Figure 3.19), unsurprisingly, are low-lying compared to inland districts of Western Norway, with the upper interquartile range being around 250m compared to 465m inland. Inland, shielings are also spread over a wider range of height to those on the coast. The mean altitude of *setr*-names is 205.68m asl and the mean altitude of *sætr*-names in comparison is 389.39m asl. There is therefore a difference of 184m in the mean height above sea level; this is also similar to the difference in the median height of 175 m. However, *setr*-names are spread over a wider altitudinal range then *sætr*-names and the interquartile range is also higher. Names that are still linked to some form of habitation, either permanent or seasonal, have an upper quartile range of 400m, but can be as high as 845m (Grøssete, Sogndal). Many *sete*-names in Sogndal and Ullensvang, such as Grøssete, are more akin to *sætr*-names in other municipalities. The mean altitude of names ending in *set,* once those with *sete* are removed, is 91m asl and the median height is only 55m asl*,* compared to 334m asl for *sætr*-names (Figures 3.21 and 3.22).

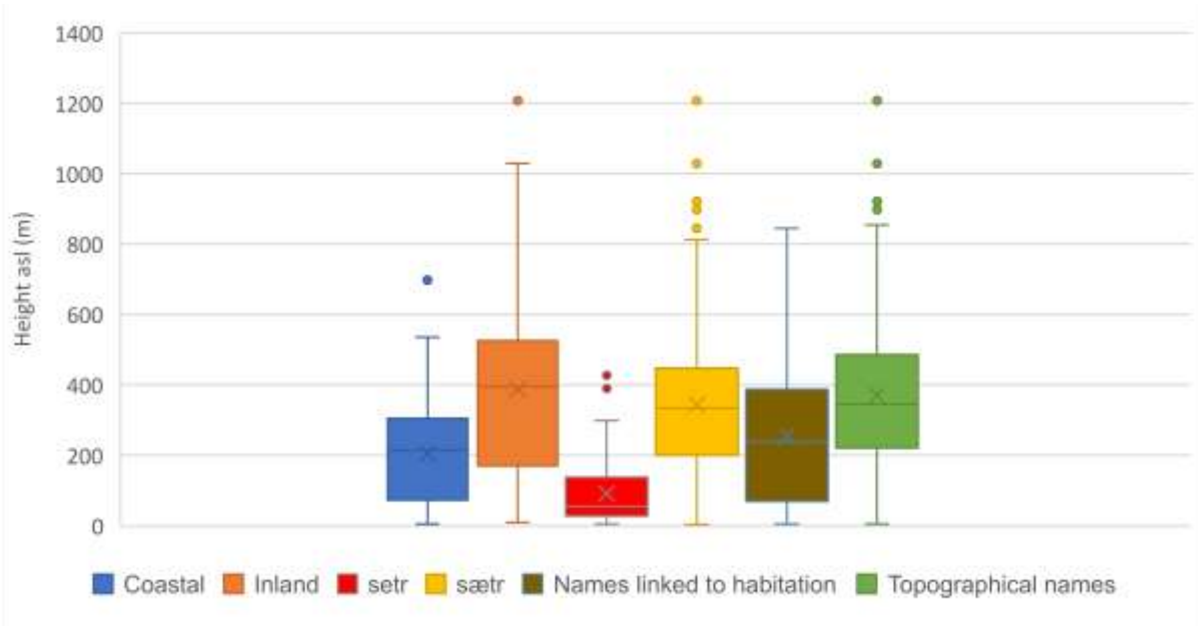



Figure 3.20 Altitude of *set* and *sætr*-names combined in the four coastal and four inland municipalities, as individual generics, and names attached to habitation and topographical features.

Overall, municipalities in the Inland Zone are found at higher altitude than coastal ones, as mentioned earlier. Levanger, in the Inland Zone, is the most northerly municipality; the interquartile range is extremely narrow, suggesting low relief, or specific locational factor behind shielings. Fræna is unusually low; even in the Coastal Zone the interquartile range is under 200m asl.

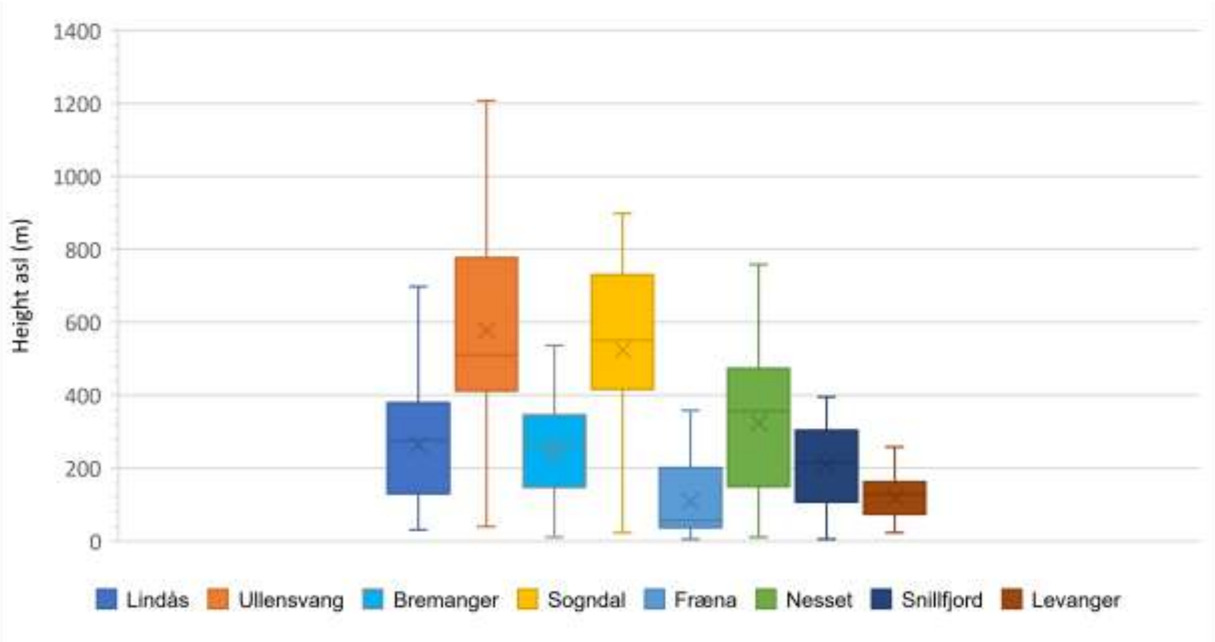



Figure 3.21 Shieling height (m asl) of selected municipalities (coastal municipalities in blue).

On average, *setr*-names are located below 100m in coast locations and 200m inland and *sætr*-names are between 200-300m at the coast and 400-500m inland. On average, shielings are found below 400m asl, the exceptions being Ullensvang and Sogndal. These two municipalities with the highest mean height are also the two found at lower latitudes and the warmer summer climate may account for the higher altitude. However, the topography of Ullensvang especially, with steep slopes and limited low-lying flat land, may have forced utilisation of sites at higher altitude.

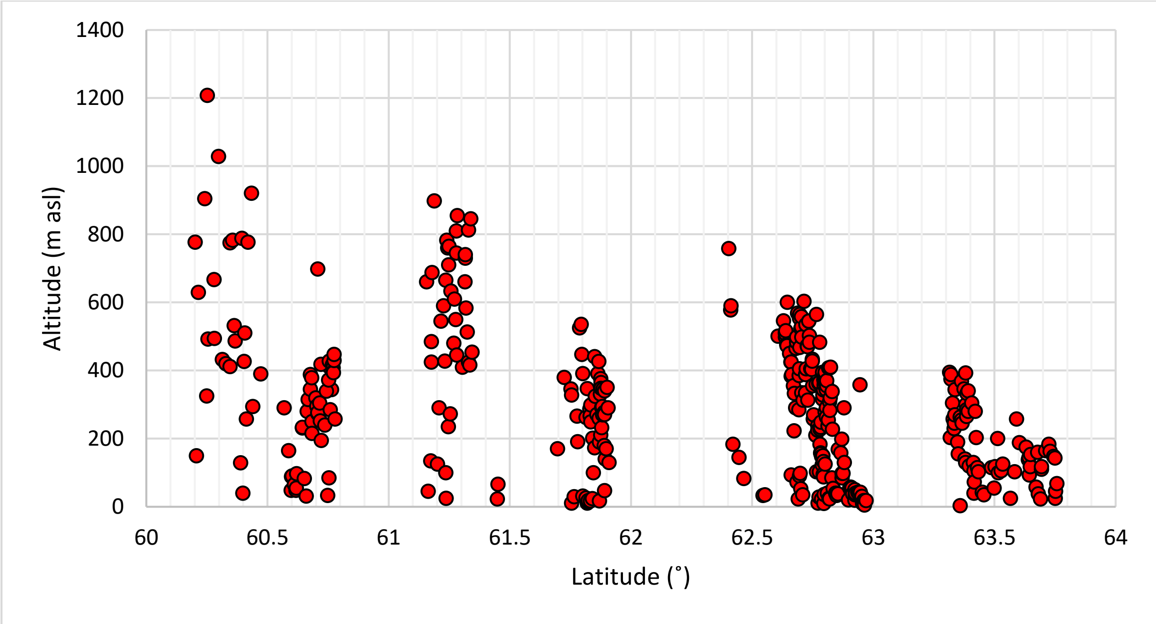



Figure 3.22 Shieling height (m asl) from selected municipalities compared to latitude.

The location of shielings in relation to height (m asl), gets increasingly restricted the at higher latitudes in both coastal and inland municipalities, with the difference between the two narrowing the further at higher latitudes. There is a general decrease in height of mountains towards the north of Norway, but this is also a decrease in solar intensity, air temperature and growing season. I conducted a paired t test, to test the significance and the result from two-tailed P value was less than 0.0001, which by conventional criteria, is considered to be extremely statistically significant. This may suggest that sites were chosen which encompassed a similar climate envelope similar to that stipulated in the Gulathing Law (G81, Larson 1935, 94).

| | Area | Shieling elements | Mean (m) | Median (m) | Mode (m) |
|---|---|---|---|---|---|
| **All** | **Average for the 8 Municipalities** | | 297.43 | 281.5 | 1-100 |
| **Coastal Zone** | **Coastal Zone average** | Overall | 205.68 | 228 | 1-100 |
| | | *Setr* | 169.64 | 89 | 1-100 |
| | | *Sætr* | 230.85 | 248.5 | 201-300 |
| | Lindås | *Setr* | 154.33 | 160 | 1-100 |
| | | *Sætr* | 284.35 | 295 | 301-400 |
| | Bremanger | *Setr* | 53.38 | 18 | 1-100 |
| | | *Sætr* | 289.51 | 287 | 201-300 |
| | Fræna | *Setr* | 37.04 | 33 | 1-100 |
| | | *Sætr* | 169.66 | 168 | 201-300 |
| | Snillfjord | *Setr* (2 sites) | 187.5 | | |
| | | *Sætr* | 208.41 | 216 | 201-300 |
| **Inland Zone** | **Inland Zones average** | Overall | 389.39 | 403 | 401-500 |
| | | *Setr* | 404.68 | 418 | 101-200 |
| | | *Sætr* | 370.77 | 388 | 401-500 |
| | Ullensvang | *Setr* | 577.12 | 510 | 410-500 |
| | | *Sætr* (1 site) | 494 | | |
| | Sogndal | *Setr* | 530.19 | 550 | 401-500 |
| | | *Sætr* (1 site) | 23 | | |
| | Nesset | *Setr* | 101.8 | 90 | 1-100 |
| | | *Sætr* | 387.69 | 395 | 301-400 |
| | Levanger | *Setr* | 118.66 | 138 | 101-200 |
| | | *Sætr* (2 sites) | 163 | | |

Table 3.4 Mean, median and mode for *setr* and *sætr*-names in selected Norwegian municipalities.

### Aspect

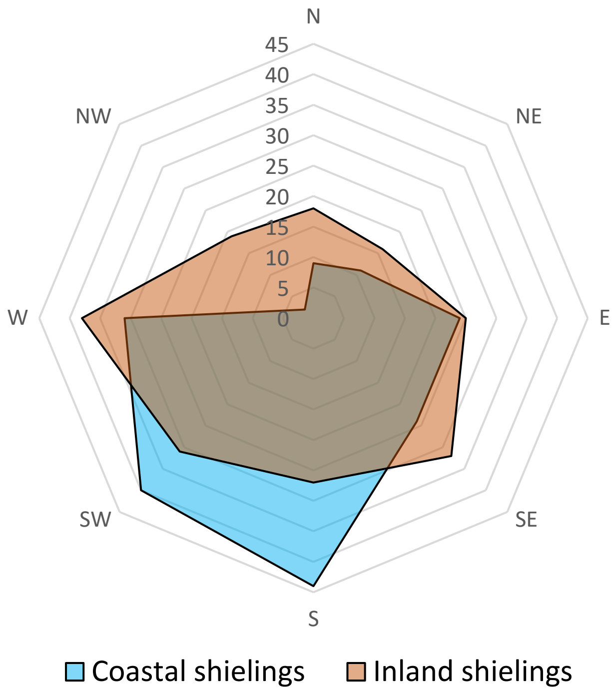



Figure 3.23 Aspect of shieling names in the Coastal Zone.

The aspect of shieling sites in the Coastal Zone is south to south-western, with a secondary preference for an easterly direction and few have a northerly aspect. I completed a Chi square for coastal municipalities, which equalled 68.189 with seven degrees of freedom, the two-tailed P value being less than 0.0001, which suggests that the difference is considered to be extremely statistically significant. Shieling sites in the Inland Zone had a more varied aspect, though predominantly south-easterly through to western. The Chi squared for this area equalled 16.291 with seven degrees of freedom, the two-tailed P value was 0.0226, which was considered to be statistically significant. This would suggest that although the site of shieling names in both zones share a southern to western preference on the whole, the site of shielings in the Coastal Zone was more carefully chosen. There may be various reasons for this, such as the areas were settled earlier, as suggested by Solberg (1984), meaning more favourable spots were chosen for shielings, as lower population meant there was less competition. More probable is that the mountainous zones are far more limited in potential sites and the topography further limits exposure to solar radiation, meaning that more varied sites had to be utilised.

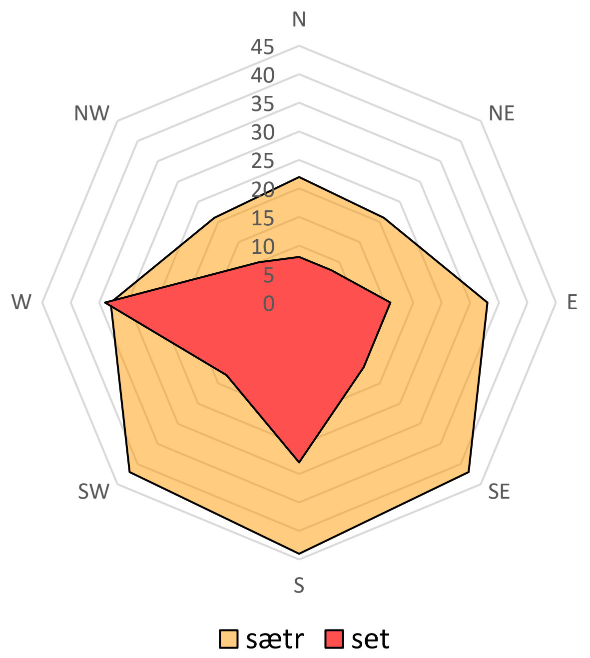



Figure 3.24 Aspect of *set*- and *sætr*-names.

When I looked at the aspect of *setr*-names, they had a preference for either south or west, whereas *sætr*-names are far more varied. Overall, *sætr* sites have a mainly southern aspect, but there were more sites with a northern aspect. Chi squared for *setr*-names equals 36.145 with seven degrees of freedom, a two-tailed P value was less than 0.0001 and the difference is therefore considered to be extremely statistically significant. Chi squared for *sætr*-names equals 21.318 with seven degrees of freedom, with the two-tailed P value equalling 0.0033, giving a difference that is considered to be very statistically significant.

Aspect was therefore a significant consideration in the siting of both *setr* and *sætr*-names and therefore shielings generally, though more so for coastal sites and *setr*-names.

**Geology**

Overall, various metamorphic rocks make up the geology of all shieling sites, especially in coastal districts and *sætr* sites (Figure 3.25). Inland, and in particular, *setr*-names, are more varied in location concerning the bedrock. This is likely to be the result of the many *setr* sites being located in areas such as Levanger, which has an unusually varied geological formation for Norway. Whereas *sætr* are concentrated in Nesset, with a more uniform geology of metamorphic rock. However, in Fræna there is a mix of *setr* and *sætr* (46/54%); both are found exclusively on metamorphic rock (*setr* 87% granite derived gneiss to 13% amphibolite and *sætr* 85% to 15% respectively).

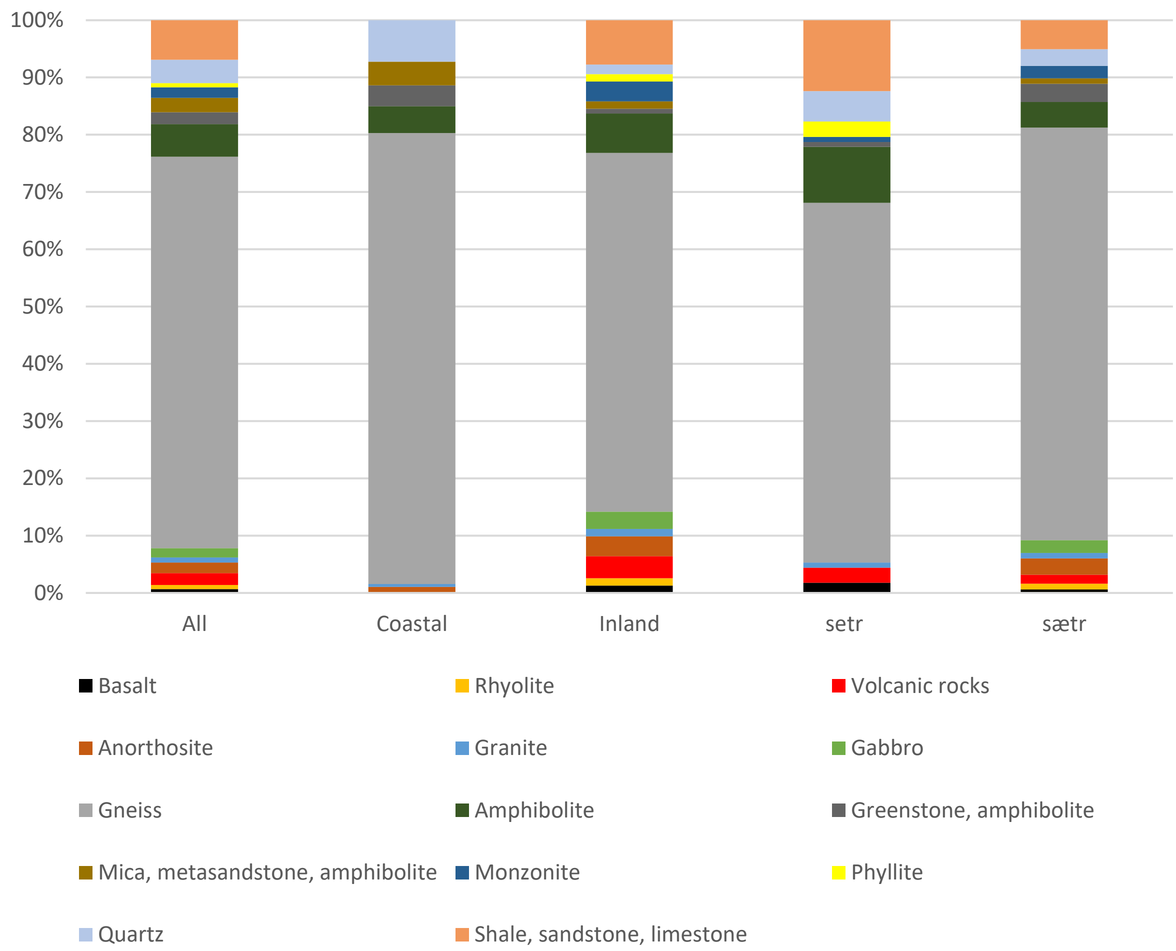



Figure 3.25 Geology of shieling sites for the selected municipalities.

The almost identical geology may point to geology being only a minor factor in location, or the uniformity of the area made this redundant as a factor. In Bremanger, 84% of *setr*-sites were located on metamorphic rock, (quartzite 67%, gneiss 17%), with some on granite (8%) or sandstone (8%), 67% of *sætr* sites were located on metamorphic rock (57% gneiss, 10% various types), 4% on granite, but 29% on sandstone. What cannot be ruled out is that sites exploited very localised outcrops of rock that created locally fertile soils, as found in areas of Inner Sogn (Austad et al*.,* 1991, 37).

**Superficial Deposits**

In the Coastal Zone, shielings are most often located around areas with thick peatdeposits (25% rising to 34% including thinner peat deposits) or bare rock (20%), followed by thin moraine deposits (18%), none of which would be considered good quality land for grazing (Figure 3.26). I have taken good quality soils to be those which could be converted to arable cultivation (alluvium, fluvioglacial, beach and marine deposits); moderate to good soils as relatively deep soils (thick moraine deposits) or soils that are fertile, but thin (less than 0.5m marine deposits); moderate to poor are soils that are thin but have grazing potential (thin moraine deposits); poor as rocky ground or bare rock (bare rock, weathered or landslide material); and finally, peaty soils. Only 8% of sites are found on soils that would be considered good quality (marine deposits, alluvium or fluvioglacial deposits) and 13% of sites were near moderately fertile soils (thick deposits of moraine derived material). Soils around shielings in coastal areas are on average, 25% moderate to good, 18% moderate to poor and 57% poor, of which peaty soils make up 34%.

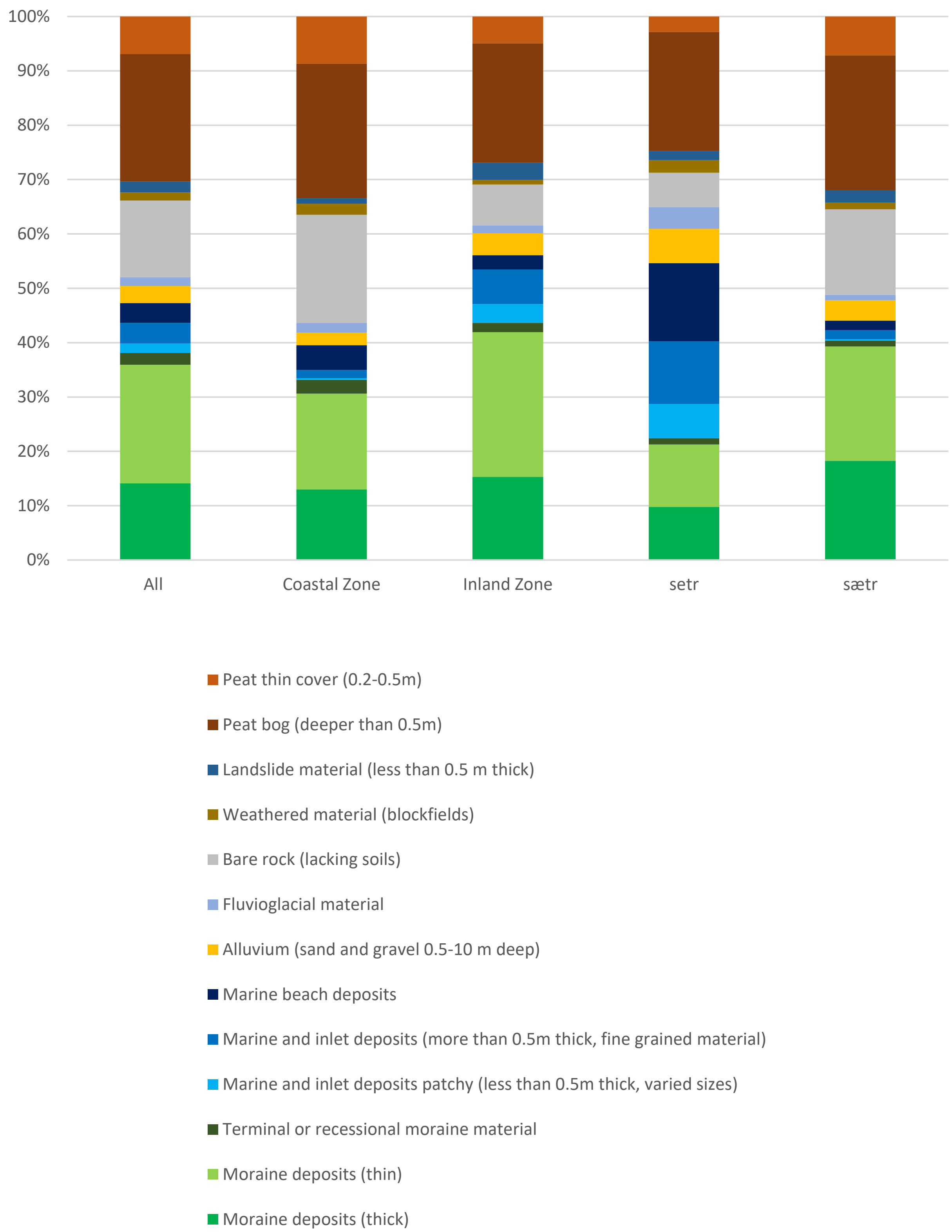



Figure 3.26 superficial deposits around shielings in the selected municipalities.

Shieling sites in the Inland Zone are most commonly found on thin deposits of moraine material (27%) and 22% are near thick peat deposits (rising to 27% when including peat deposits less than 0.5m in depth). Around 14% of sites are on fertile soils, with 20% of sites on moderate to fertile soils (15% thick moraine, 3% thin marine deposits), 27% on moderate soils and 39% are on poor soils, 27% of which are peat deposits. Inland shielings are located on more moderate to good quality soils (61%) than in coastal areas (43%). The choice of location for shielings with larger areas of richer pasture in the mountains may have been a response to the need to counteract the shorter growing season by grazing on rich fodder plants, or replace the energy expended in order to reach these pastures at higher altitude.

*Setr*-names names are over three times more likely to be located on fertile soils (18%) than *sætr*-names (5.5%) and 42% are on soils that can be considered moderate to good, compared to 18.5% of soils at *sætr* sites. *Sætr*-names, in comparison, are 6% more likely to be on poor soils and 14% more likely to be on or near peaty soils.

A typical shieling in the Coastal Zone is found in areas of moraine material among bare rock, but close to thick peat deposits. Inland sites are found on both thick and thin moraine material, often where both are found, and are also close to deep peat deposits. A typical *setr*-name is likely to be on moraine material and marine deposits, with thick peat deposits nearby, and a typical *sætr*-name is more likely to be situated on thin layers of moraine or bare rock, but it is more likely to be close to peat deposits. This gives the impression of *sætr*-names being located on more marginal areas compared to *setr*.

### Distance from sea

At least 65% of all sites are within 3km from the sea and 80% within 6km. In Bremanger, 45% of all shielings are less than 100m from the coast and 100% of *setr*-names are less than 300m from the coast (Figure 3.27). A coastal distribution of *setr*-names is also seen in Fræna, where 55% are within 600m of the coast, there is a gap to a single site at 1450m, then another gap before 30% are between 2500 and 3840m. The two clusters, one close to the shore and a second 2000m plus inland, is not seen in *sætr*-names in Fræna, which are found only after 1500m from the coast.

A coastal distribution is also seen with *sætr*-names in Bremanger: 47% are within 100m of the coast, as are 40% in Snillfjord. Whereas in Lindås, 83% are over 1900m from the coast and, as has already been stated, all sites in Fræna are over 1500m inland. Overall, *setr*-names have a more coastal distribution than *sætr*-names, though there are regional differences, possibly as a result of dialectical differences.

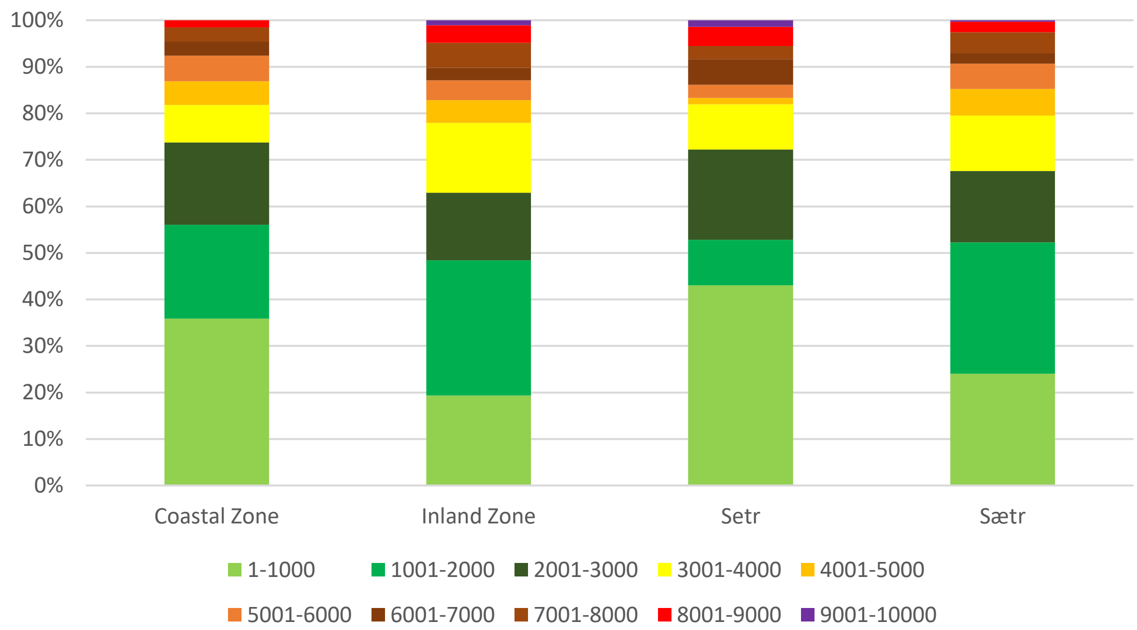



Figure 3.27 Distance from sea of selected Norwegian shielings (rounded up to 100m).

### Site and situation

A key locational factor would seem to be access to marsh or wet habitats (24% coastal and 20% inland) and 3% are found on river meadows (Figure 3.28). Between 7-9% of sites are close to lakes and 10% of sites are in valleys; all these locations would give access to mire, riverine and water edge plant communities. Another key locational factor would seem to be that sites at the base of a slope or where a change of slopes occurs, with 14% and 16% coastal to inland locations, platforms on slopes account for 9% coastal and 15% inland sites (see Helleland 1989, 71). In the Coastal Zone, 6% of sites are located on *strandflate* or peninsulas (*nes*).

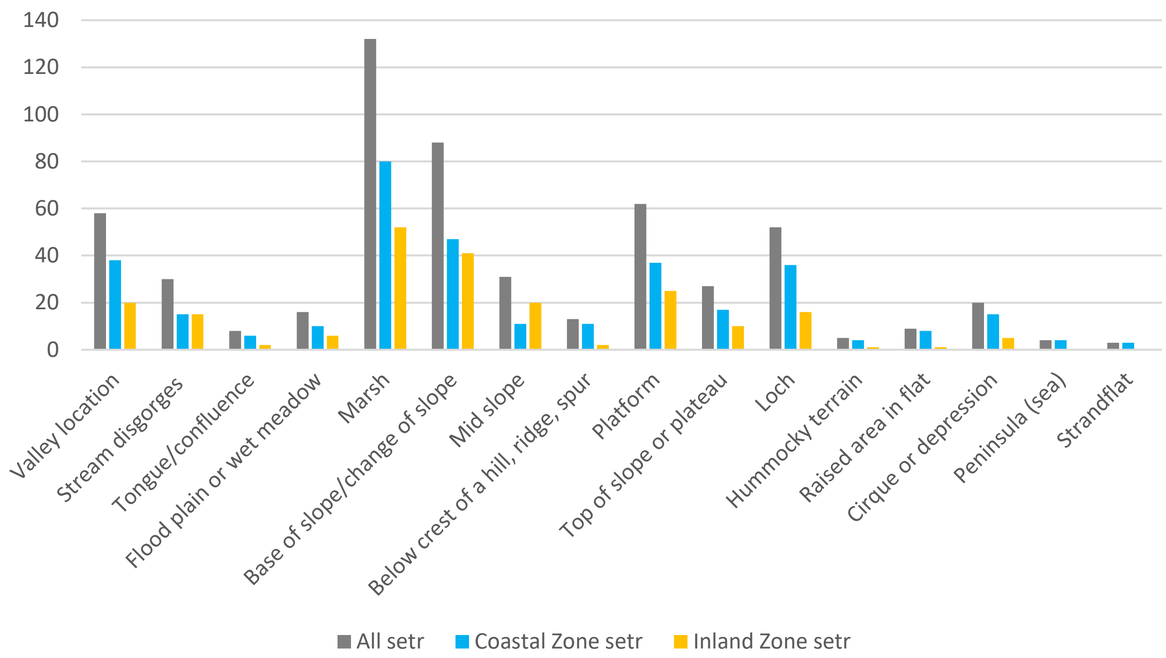



Figure 3.28 Site and situation of shielings, from selected municipalities.

Basic similarities are evident from the site and situation of both *setr* and *sætr* (Figure 3.28), with only 10% of sites in valleys, 30% of *setr* and 25% of *sætr* locations are by meadows, marshy or wet habitats. Though only 3% of *setr* are close to lakes compared to 10% of *sætr*-names. There are some differences between the location of *setr* and *sætr* sites; platform sites are most often *sætr* (16% compared to 4%) and meadow land is most common to have the generic *setr* (8% compared to 2%). *Setr* are also more commonly found on *strandflate* or peninsulas (*setr* 14%, *sætr* 1.5%): in the coastal municipalities of Bremanger and Fræna, 21% of *setr* sites were located on the *strandflat*e.

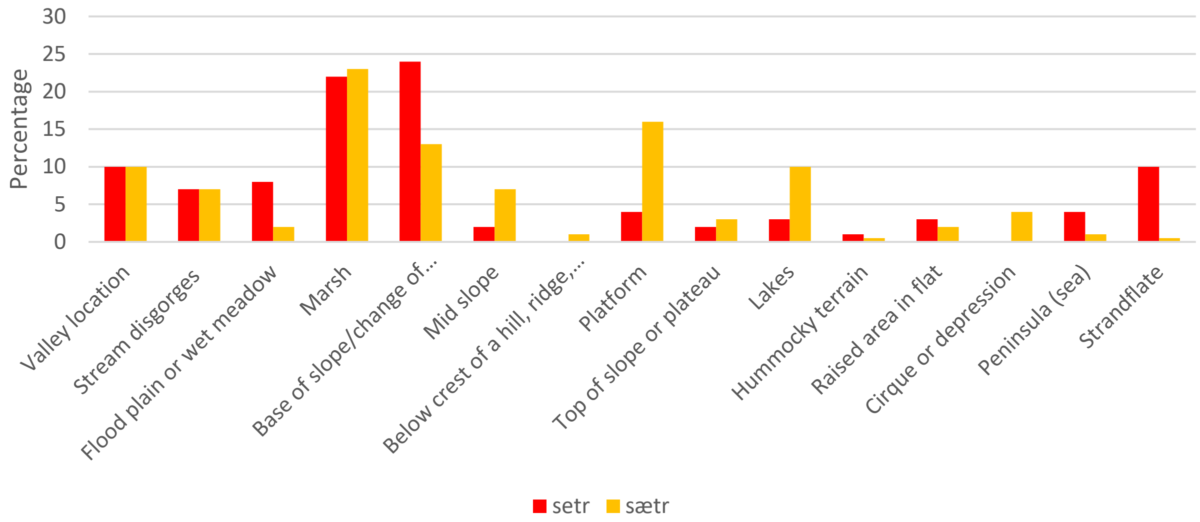



Figure 3.29 Site and situation of *setr* and *sætr* sites in Norway.

## 3.12 Discussion of results

The data for locational factors is affected by the regional variation in use for a *setr*/*sætr*; Ullensvang, Levanger and Sogndal almost exclusively use *setr,* whereas in Snillfjord and Lindås, *sætr* predominates. What can be said is that *setr*-names are, on average, 655.5m from their home farm and are around 205m asl, with an aspect to the south or west. *Sætr*-names are, on average, 2126m from the home farm, at an altitude of around 389m and an aspect ranging from south-east to south-west. Altitude and distance from the home farm would seem to suggest a close connection between the two, and the distances up to 70km given by Borchgrevink (1977) possibly came about after large estates were broken up and later the result of extreme population pressure led to extreme measures to access grazing.

The majority of low-lying land is found in coastal districts, with the most extensive areas of flat and fertile land concentrated around Jæren, Trøndelag and Oslo Fjord. With so much fertile land it would be logical for these areas to have little or no need for shielings. There are, according to the stedsnavn database, 2221 *sætr* in Nord-Trøndelag, 4979 in Sør-Trøndelag, 878 around Oslo Fjord (Oslo 38, Østfold 254, Vestfold 586) and 73 in Rogaland. The exception being parts of Jæren where *sætr*-names are not found; however, an infield/outfield agriculture was practised in the RIA and Migration Periods, as seen by deserted farms, and would suggest that shielings were a part of the farming system. The absence of *sætr* may have been due to shielings being referred to by an alternative designation (Olsen 1928). Though Kristin Armstrong Oma (2016, 13) has argued that the introduction of byres in Rogaland was to "facilitate lambing" and "early socialisation" of sheep, rather than for cattle and as such shielings may not have been necessary. Shielings are also absent in Denmark; Søren Sinbæk has argued that, like in Jæren, they must have been present, but are now lost in post VA agrarian expansion (2011, 106). The most likely term for a shieling in ON was originally *setr*, which, due to later confusion during settlement expansion between old and new shieling, lost its appellative function and was superseded by *sætr* in some regions of Norway.

Overall, sites with *setr* are, on average, lower lying, on more fertile soil and have a more specific aspect when compared to *sætr*-names. This would suggest that they were settled earlier than *sætr* and represent the utilisation of relatively moderately fertile sites close to the home farm. This is not the case in Sogndal and Ullensvang, where *setr* is used almost exclusively and it is therefore impossible to speculate on any chronology of settlement. A logical deduction being that *setr* was used in the initial settlement expansion in the RIA, such as at Svolset, and that *sætr* became active during a later expansion up to the Viking Age.

Geology does not seem to be a major factor in location, though very localised outcrops of rock may be a factor in settlement location. Drift geology is likewise fairly uniform, though *setr* sites are slightly more common on what can be considered as more fertile soils. The marine clays around Levanger did affect these results slightly, but even so, *setr*-names are more likely to be found on moraine deposits over 0.5m deep, while *sætr*-names are more likely to be on moraine deposits less than 0.5m deep or on soils generally that provide poorer quality grazing.

There is a strong correlation with shielings and areas of peat. The proximity may be connected to utilising the peat as a fuel source (Ihse and Skånes 2008, 272; Arge 2005, 24). This is more likely in lowland areas that suffered deforestation in coastal districts (Moe 1996, 126; Lundberg 2008, 357-9); most inland sites are situated below the treeline, giving access to wood. An alternative reason would be the cutting of peat turfs to transport back to the arable land at the home farm; the peat could then be used to create plaggen soils (Moe 1996, 123; Simpson 1993, 1994, 1997; Simpson et al., 1987).

Areas of marsh and bog are also a source of bog iron. Arne Johansen found that iron production (*Jernvinne*) spread along the fjords from the coastal regions during the RIA and Migration Periods, and then further into the mountains during the VA (1973). Arne Johansen and Irmelin Marten found iron extraction was carried out in two key locations, either near the treeline in the subalpine birch forest or at the heads of valleys (Johansen 1973, 100; Martens 1982, 34); both these types of locations are also shieling sites. Various authors have made a clear link between shielings and iron production sites (Hougen 1947; Undås 1959; Martens 1988; Narmo 1996) and the timing for the expansion of iron production sites and shielings are roughly the same. The peat itself could also be useful in the smelting process if wood was in short supply (Mahler and Jouttjärvi 2005, 97), though this may only have been a factor along the coastal strip due to deforestation and heathland formation (Moe 1996; Prøsch-Danielsen and Simonsen 2000).

Being close to peat deposits may just link to particular vegetation communities and their potential for grazing and fodder collection (Øye 2013, 304). In Iceland, Helgi Þorláksson pointed out the importance of wet meadows and lake shores for hay-making and mowing sedge. (2011, 214, see also Welinder 1984, 19; Zutter 1992, 143). Riverbank, lakeside and fen communities are selected for grazing by cattle in

Norway today (Bele et al*.,* 2015, 5; Hessle et al*.,* 2014, 341). Sedge (*Carex* spp.) in addition to grass were found to be a preferred grazing plant for cattle in Norwegian mountains (Sæther et al., 2006b, 375; Hessle et al., 2014, 341) and a field layer of sedge and grazing tolerant species is often a key indicator of shieling activity (Svennsson 1962, 78; Kvamme 1988, 350; Vandvik and Birks 2004, 213). Sedge is also a commonly found plant in communities on peat (Kvamme 1990, 363; Vorren, 2005, 166). Garmo found sedge to be higher in crude protein and less crude fibre than grass species during July and August on mountain grasslands in Norway, which is exactly the same period shielings were in use (1986).

Key locational factors are at the base of a slope or a platform on a slope, especially in more inland locations. These types of sites not only benefit from slope wash bringing soil down form the upper slopes, but they receive more water through runoff and throughflow, even after any rain has stopped. This keeps the soil moist and would encourage plant growth over a longer period.

## 3.13 Shieling locations

From my study, I found a number of key locations where shielings in Norway were situated:

1. Platforms on slopes

Platforms on slopes were a key location for shielings with 29% of sites overall, with 25% of sites in coastal municipalities, and 16% of inland municipalities. Around 35% were very small platforms, often mid-slope on steep valley sides, the other 65% averaged around 37,238m² of relatively flat ground. This accounted for 40% of *sætr* and 20% of *setr*-names.

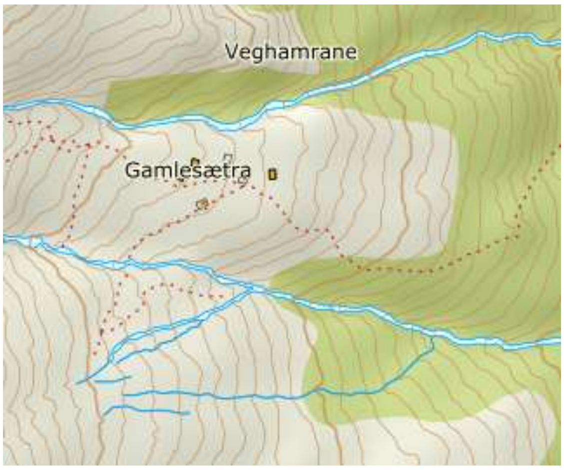



Figure 3.30 Map of the platform site of Gamlesætra, Bremanger (Norgeskart).

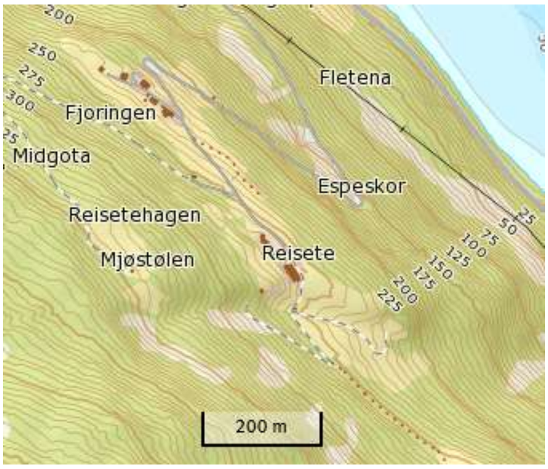



Figure 3.31 Map of the platform site of Reisete, Ullensvang (Norgeskart).

2. Valley location

Locations in valleys accounted for 21% of sites overall; around 15% of these were in major valleys with wide flood plains, 46% in modestly sized valleys with small rivers and some small meadows, and 39% were in small valleys, with small streams and limited (if any) meadow. *Setr*-names made up 86% of these valley sites, though major valley sites accounted for only 10% of *setr*-names, while 47% were in medium valley sites and 43% small valleys. For the eight *sætr*-names, 50% were found in major valleys, 37% medium and 13% in small valleys. The two key locations for shielings were part way along a medium or small river valley, on a small meadow, often with a stream coming down a steep slope. Alternatively, sites at the head of a valley were chosen for shieling sites.

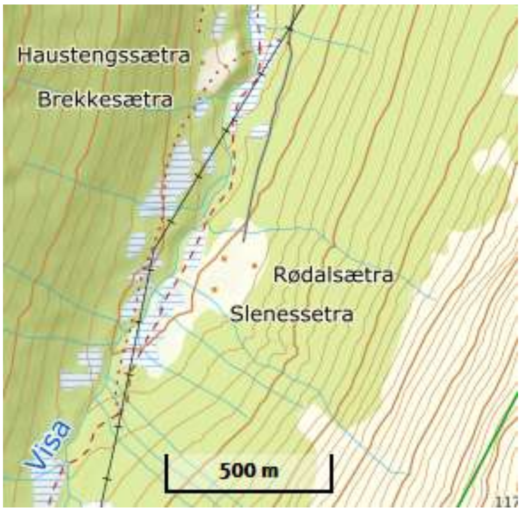


Figure 3.32 Map of setr-names in small side valley sites, Nesset (Norgeskart).

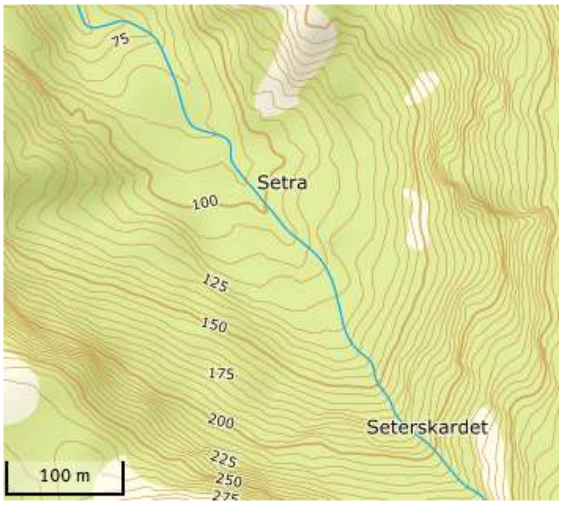


Figure 3.33 Map of a valley head site, Setra, Snillfjord (Norgeskart).

3. Lakesides

Lakeside sites account for 12% of sites (13% *setr* and 11% *sætr*), similarly, cirque and cirque-like depressions in the landscape, such as Liasætra, Nesset (Figure 3.34) account for 7% of sites, and share many of the same attributes, with damp grassland and peat-based marshy vegetation.

Figure 3.34 Map of a lake shore setr sites, Sogndal (Norgeskart).

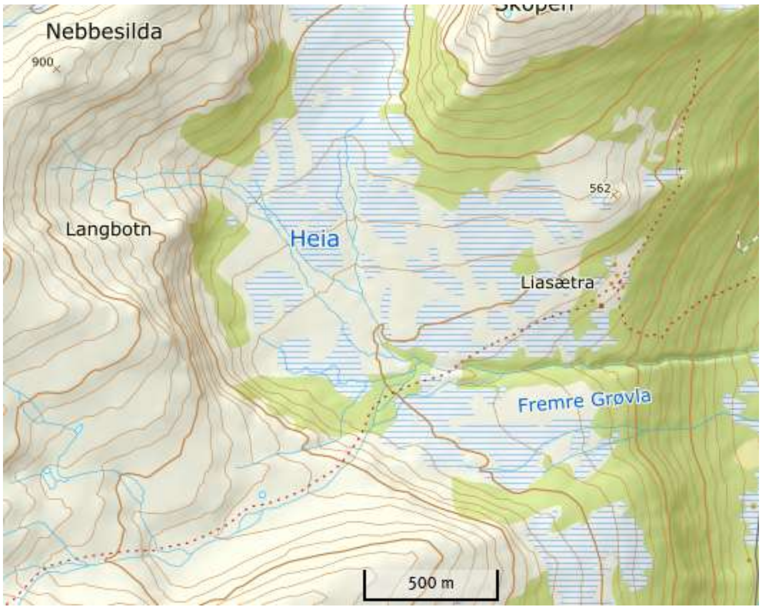


Figure 3.35 Map of a cirque site, Liasætra, Nesset (Norgeskart).

4. Lowland heath and bog

In the Coastal Zone, especially in lowland areas, raised areas in marshy terrain account for 12% of sites, and would seem to represent the exploitation of heathland in summer. These sites in Fræna are found either along the coastal strip, especially in the north of the municipality, which is a little more exposed to the open sea, and inland in wide marshy areas, such as south-east of Farstad.

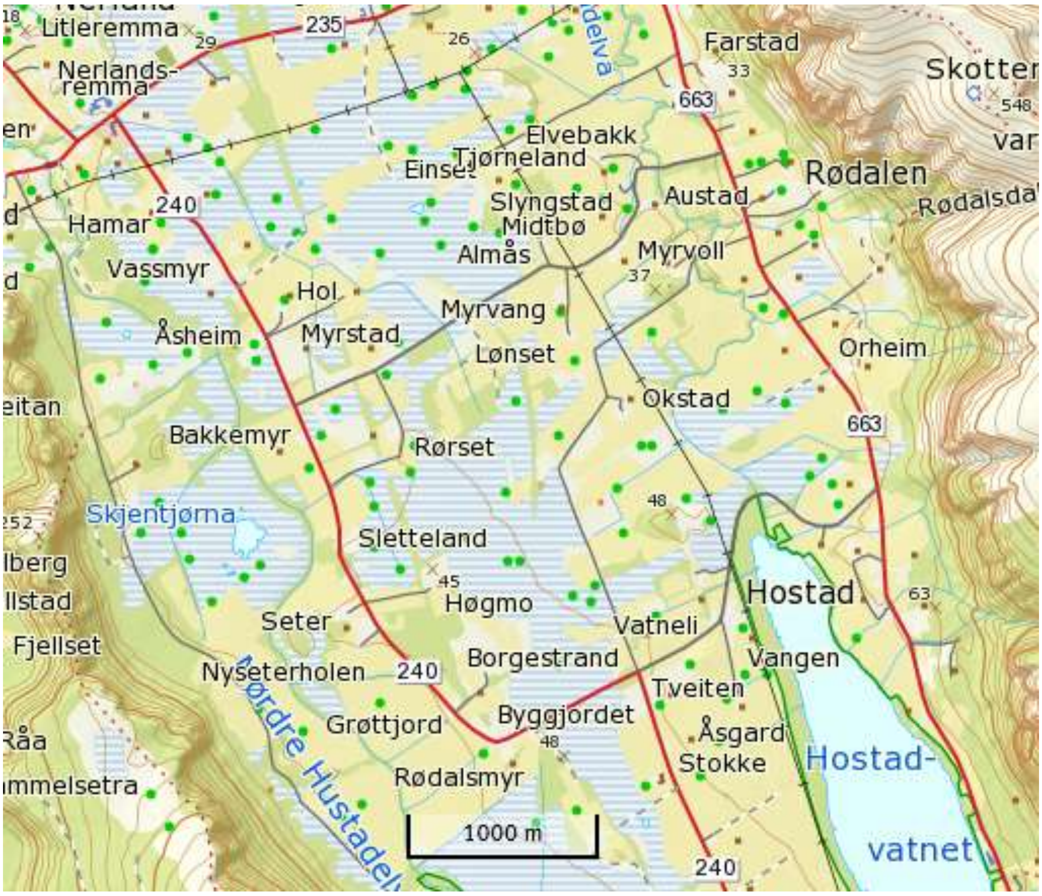


Figure 3.36 Map of lowland heath shielings, Fræna (Norgeskart).

5. Coastal locations

Pockets of grazing along the coastal strip, often a near the base of a slope, some with alluvial fans, were also used for shielings in 9% of the Coastal Zone. These sites were either along the *strandflate* (often of limited extent) or less commonly on a peninsula (‘*nes*’) such as Myrset, Fræna and Seterneset (Fræna and Snillfjord).


Figure 3.37 Map showing a nes used for a shieling location, Snillfjord (Norgeskart).

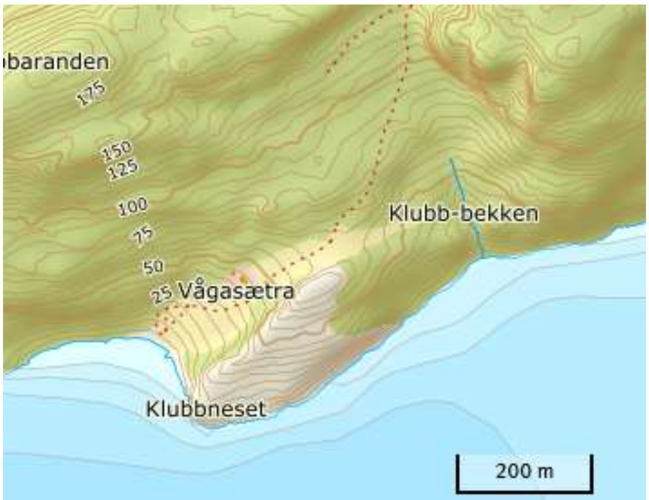



Figure 3.38 Map of a coastal shieling, Vågasæter, Snillfjord (Norgeskart).

## 3.14 Conclusion

Ditlev Mahler referred to the use of shielings as “the spatially restricted but intensive exploitation of a topographically limited resource area in order to maintain and utilize the livestock, and where the winter farm is fixed” (1998, 57). Mahler goes on to equate the presence of shielings as a characterising factor of the Scandinavian VA agrarian economy (1993, 488).

The majority of low-lying land is found in coastal districts, with the most extensive areas of flat and fertile land concentrated around Jæren, Trøndelag and Oslo Fjord. With so much fertile land it would be logical for these areas to have little or no need for shielings. There are, according to the stedsnavn database, 2221 *sætr* in Nord-Trøndelag, 4979 in Sør-Trøndelag, 878 around Oslo Fjord (Oslo 38, Østfold 254, Vestfold 586) and 73 in Rogaland. This would suggest that shielings, as Mahler suggested, were ubiquitous in the farming economy up to the VA. The exception to this blanket cover being parts of Jæren where *sætr*-names are uncommon. However, an infield/outfield agriculture was practised in the RIA and Migration Periods, as seen by deserted farms, and would suggest that shielings were a part of the farming system. The absence of *sætr* may have been due to shielings being referred to by an alternative designation (Olsen 1928). Though Kristin Armstrong Oma (2016, 13) has argued that the introduction of byres in Rogaland was to “facilitate lambing” and “early socialisation” of sheep, rather than for cattle and, as such, shielings may not have been necessary. Shielings are also absent from

Denmark; Søren Sinbæk has argued that shielings, like in Jæren, must have been present, but are now lost in post-VA agrarian expansion (2011, 106).

In the introduction, I wanted to answer three questions:

1. When did the use of shielings develop in Norway and from what did it develop?

   Though exploitation of grazing had occurred since the Neolithic, its extensive nature was not the same as shieling use. The introduction of shielings came about at the same time as the introduction of the infield-outfield farming system and the intensification of arable cultivation, which began in the RIA. The impetus for shielings continued into the VA and there seems to have been two main growth points: AD 200-500 and then AD 700-900.

2. What were the drivers that led to the development of the use of shielings?
   a. How did the physical landscape influence the farming system adopted (physical drivers)?

      The Norwegian landscape was heavily influenced by glaciation and subsequent isostatic uplift, and is characterised by a limited amount of flat and fertile land. The topography therefore necessitates the intensive exploitation of limited fertile soil and the more extensive use of widely distributed areas of moderately fertile or climatically marginal zones. This encouraged the use of seasonally exploited vegetation and use of shielings.

Over much of Norway, farming is generally reliant on small pockets of relatively fertile soil and it is these areas which are most likely to have formed the base for permanent settlement. This is true of the mountainous zone, with its limited areas of flat land, and the coastal zone also had small areas of fertile marine derived soil between ice scoured rocks and acid heath. However, the varied landscape does provide moderately fertile areas, which could also have been exploited in a less permanent, more extensive way. In the steep valley sides of the fjord districts of Western Norway, this may have involved the exploitation of small platforms created by slightly more resistant rock on the valley sides, or above the slope of the valley walls. Often, these platforms would be of limited size, necessitating the use of a number of such sites to provide enough grazing for animals; also, the varying altitude creates a natural timetable for when fresh growth would be available (Austad et al., 1991 40; Øye 2009,103).

b. How did society in Norway influence the farming system (cultural drivers)?

Lotte Hedeager stated that: “The infield system represents the first integration of effective arable and pastoral farming, as the stability of the system was directly dependent upon the relationship between the size of the infield and the number of beasts. The winter fodder which was harvested in the meadow was fodder for the cattle, but recycled through manure it was also an essential nutrient for the constant cultivated soil." (1992, 220-21) Shielings removed cattle from the homefields, protecting the arable and grazing land, but also allowing fodder to be collected. The fodder would feed the cattle through winter while they were stallfed; the resulting manure would be used to fertilise the arable fields. The need for farmers to produce a surplus was increased by a hierarchical society and the need to provide a 'tribute' to the magnate or chieftain. Competition between chieftains as part of the prestige goods economy may have led to increased size of war bands or the need to feast them lavishly and, consequently, led to the need to produce ever more surplus from the same area of land (Sindbæk 2011, 104).

3. What are the physical characteristics of shielings in Norway? Can different types of shielings be identified, were different locations for shielings exploited or were any differences due to different types of landscape?

Shielings are found in a variety of locations but can be broadly characterised, though with the proviso that location is dependent on the relative availability of land that is moderately poor to poor in terms of fertility and the choice of location may be affected by the date it was founded. Early sites are likely to be situated on more favourable locations and later sites on ever more marginal ones. In the inland fjord districts, it is likely that several shielings at different heights were utilised simultaneously from an early period, simply as a response to the extremely limited areas of grazing.

In upland areas, platforms on slopes would allow a building to be built and soil to accumulate, creating relatively richer grazing. Some sites are found on top of the slopes on the high plateau. Cirques are like large platforms on a slope; however, they are natural bowls, collecting rain and storing snow for longer, which is released slowly. This means that vegetation will grow for long through the summer and provide hay mires for fodder collection. Similarly, lakes in lowlands and tarns in mountains would also provide longer grazing along the shore and opportunities for fodder collection.

In lowland areas, small or secondary valleys leading off a major valley providing small meadows for hay-making are key locations for shielings, as are the heads of valleys, which, like cirques, benefit from moisture draining off the surrounding slopes. In coastal districts, headlands provide grazing land in summer that may be too risky in winter, and the salt spray from winter storms would reduce its arable potential. In areas of heath and lowland marsh, small knolls are favoured locations; they are likely to provide a dry site for people and animals during the night.

Shielings fulfilled a range of functions, primarily as a place where cattle could be grazed away from the infield area; sites are likely to initially have been chosen for their grazing potential. There was a need to collect fodder to feed livestock during the winter stalling. Areas of damp grassland, such as lakesides, small river meadows and marshy areas that contained *Carex* spp., were prized, possibly more for hay mires than for initial grazing. Shielings were important in the VA farming system because:

> "Energy came from non-cultivated areas such as meadows, woodland, bogs, mountains and the sea – grazing land, fields for hay-making, gathering of fodder, foliage, bark, moss and seaweed. The infield and outfields were thus complementary, making it possible to maintain animal production, which in turn benefited arable production through the resulting manure" (Øye 2009a, 101).

The sites in Bjørgo's study were all between 950-1300m asl (Bjørgo 2005, 227), Kåri Utaaker's research on growing season in Sognfjord would suggest a frowing season of around 4 months in total (Utaaker 1980, 17-8). This is around 60 days on average less than ones below 100m, though reduction may be smaller in some locations that are sheltered from winds from the sea (Utaaker 1980, 18). However, there are wide variations in climate at sites located at similar altitudes, even over short distances, due to local topography effecting wind, exposure to solar radiation and cold air drainage at night (Utaaker 1980, 18). It is therefore difficult to pinpoint a climate envelope that would cover all these sites, other than at a very generic level. With this in mind, the average growing season below 100m in Inner Sogn, starts between the 24-28th April (Utaaker 1980, 17) and decreases between 12-15 days for every 100m in altitude, the growing season at Bjørgo's sites would therefore begin around early June. This would seem to fit with the Gulathing Law's G81, which gives a date of around the 14th June for setting out for the shielings, with a return of between the 14th August and 14th September (3-4 months) (Larson 1935, 94).

The presence of hunting equipment, iron smelting and textile manufacture would suggest that the grazing regime allowed time to perform ancillary tasks. This would suggest that animals were left to graze extensively during the day, possibly under supervision to protect from animals. The overall impression is not one of an intensive dairy operation, as known from historical times, though some milking and dairying is probable, but involving a limited number of dairy cows (Bjørgo 2005, 225). Many of the sites in this study were only near very small streams, which in summer may well dry, limiting their use in dairy operations.

# 3.15 Distribution maps

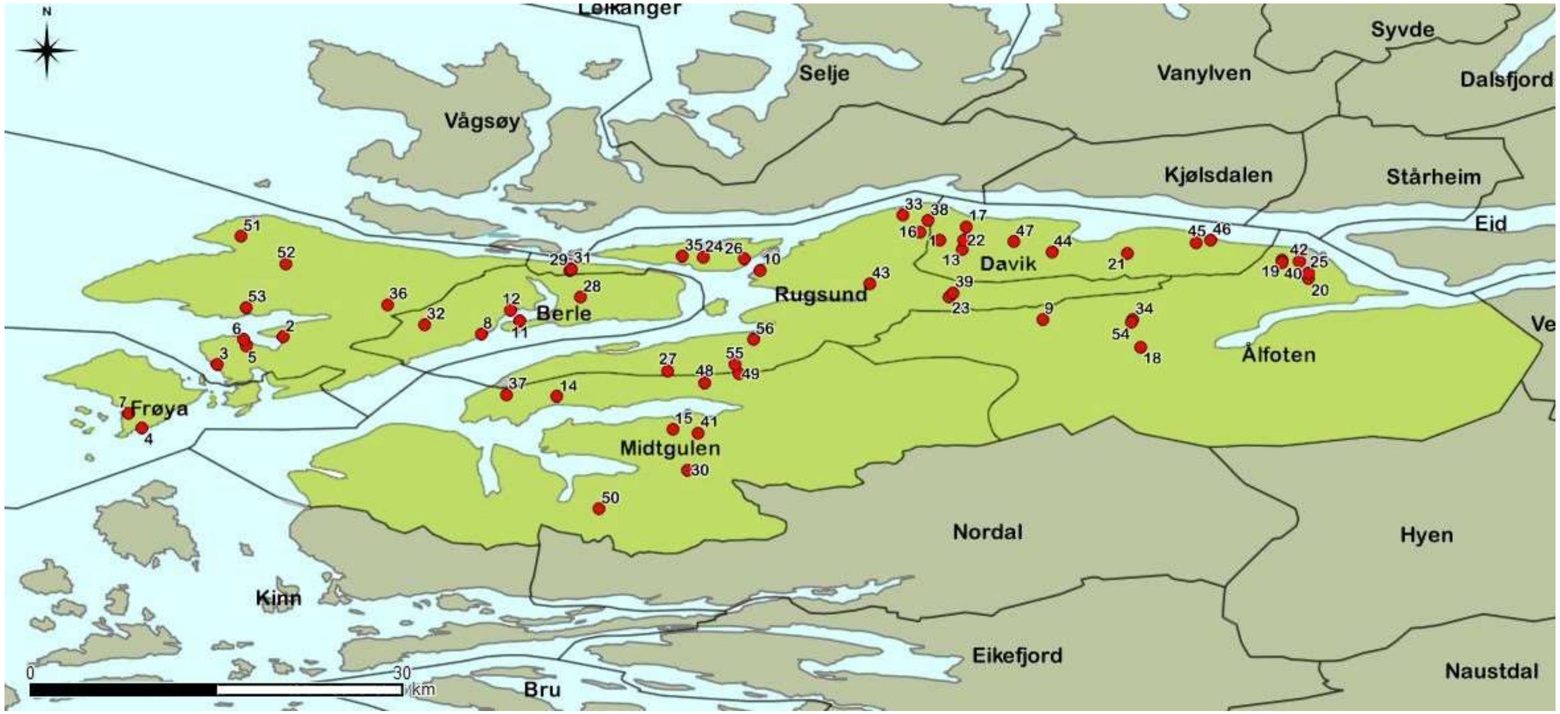



Figure 3.39 Distribution Map of *setr* and *sætr*-names in Bremanger.

1. Dalesætrane
2. Eikeset
3. Kjerpeset
4. Liset
5. Nodset
6. Notset
7. Steinset
8. Steinset
9. Dalsete
10. Kollsete
11. Lisete
12. Lisete
13. Daviknessætra
14. Drystadsætra
15. Eikelandssætra
16. Eldesætra
17. Endalsætrane
18. Fordssætra
19. Forsætra
20. Gamlesætra
21. Gamlesætra
22. Gamlesætra
23. Gamlesetra
24. Glofoyksætra
25. Gunnarssætra
26. Haukedalssætra
27. Hennoysætra
28. Hesteviksætra
29. Hornskorsætra
30. Indrehussetra
31. Klubbesætra
32. Lisbetsetra
33. Litlesetra
34. Myklebustsætra
35. Nygardssætra
36. Nysetra
37. Ospenessætra
38. Otrasætra
39. Ovesetra
40. Persætra
41. Risesætra
42. Sætra
43. Sætra
44. Sætra
45. Sætra
46. Sætra
47. Sætra
48. Sandesætra
49. Sandesætra
50. Setra
51. Setra
52. Setra
53. Setra
54. Vikasætra
55. Vingedalssætra
56. Vingesætra

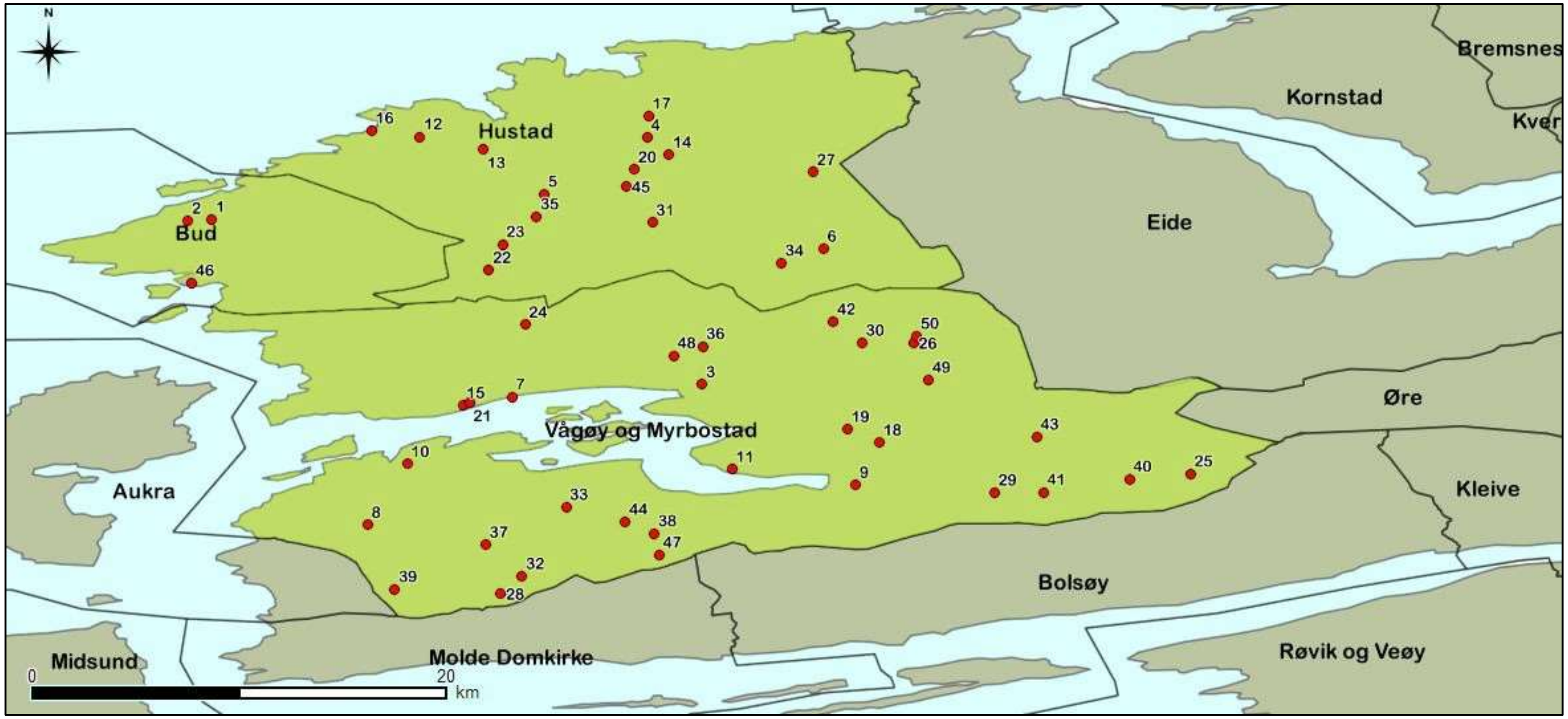



Figure 3.40 Distribution map of *setr* and *sætr*-names in Fræna.

| | | | | |
|---|---|---|---|---|
| 1. Myrset | 11. Lindset | 21. Rorset | 31. Nerlandsseter | 41. Melseter |
| 2. Bergset | 12. Lindset | 22. Skardset | 32. Åndalsseter | 42. Myrbostadseter |
| 3. Dalset | 13. Lokset | 23. Skarset | 33. Bøyseter | 43. Rødalsseter |
| 4. Einset | 14. Lonset | 24. Asseter | 34. Farstadseter | 44. Sandseter |
| 5. Fjellset | 15. Loset | 25. Gunnhildseter | 35. Gammelseter | 45. Seter |
| 6. Gronset | 16. Myrset | 26. Holaseter | 36. Haukåsseter | 46. Seterneset |
| 7. Haset | 17. Myrset | 27. Hostadseter | 37. Hestadseter | 47. Storseter |
| 8. Helset | 18. Rodset | 28. Maliseter | 38. Holsseter | 48. Storseter |
| 9. Julset | 19. Rodset | 29. Malmedalsseter | 39. Liseter | 49. Sylteseter |
| 10. Lindset | 20. Rorset | 30. Myrbostadseter | 40. Malmeseter | 50. Troaseter |

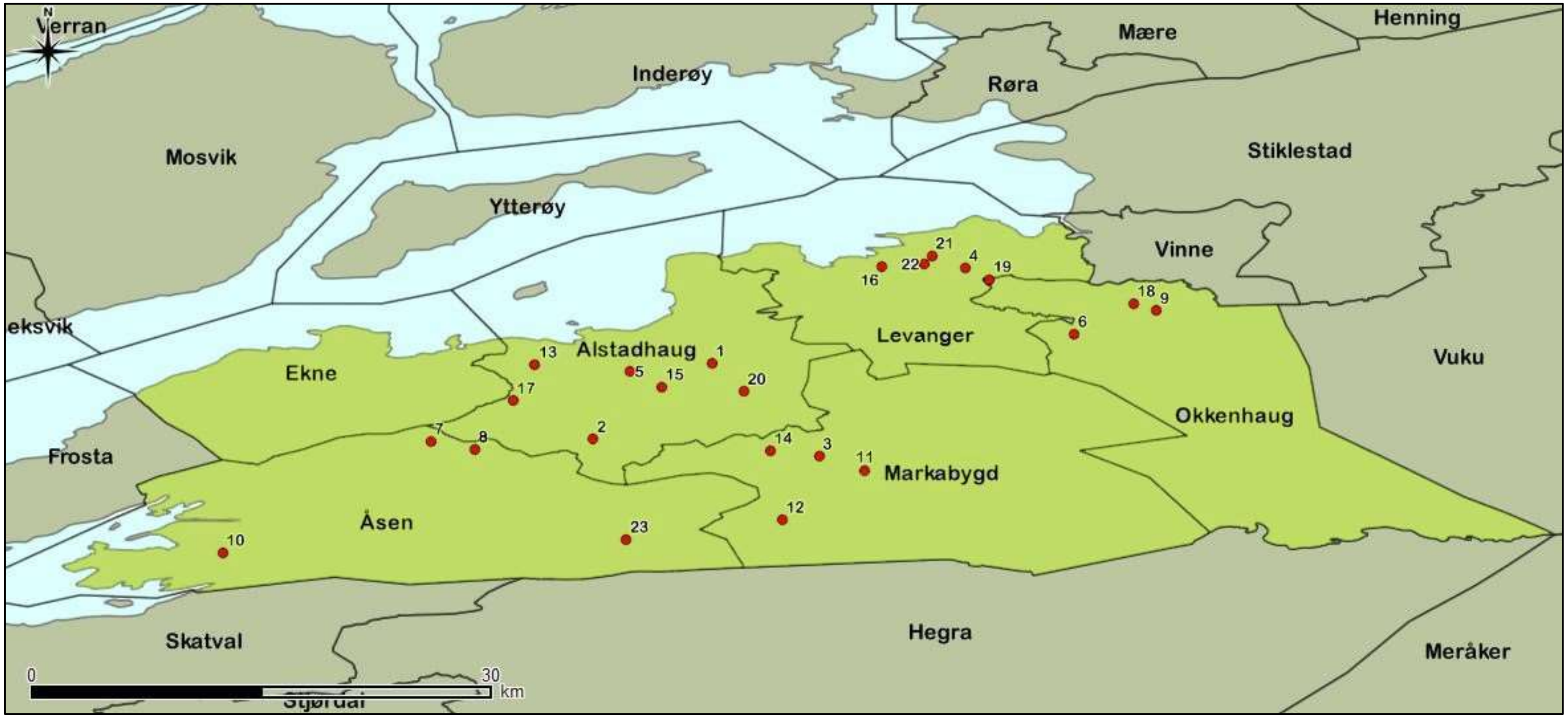



Figure 3.41 Distribution map of *setr* and *sætr*-names in Levanger.

| | | |
|---|---|---|
| 1. Blomset | 9. Skogset | 16. Røset |
| 2. Elgset | 10. Spillset | 17. Tuvset |
| 3. Hallset | 11. Troset | 18. Duvsete |
| 4. Haugset | 12. Tunnset | 19. Geitsete |
| 5. Hofset | 13. Veiset | 20. Julsete |
| 6. Kolset | 14. Venset | 21. Seter |
| 7. Nordset | 15. Vollset | 22. Setran |
| 8. Ringset | 16. Røset | 23. Skjelstadseter |

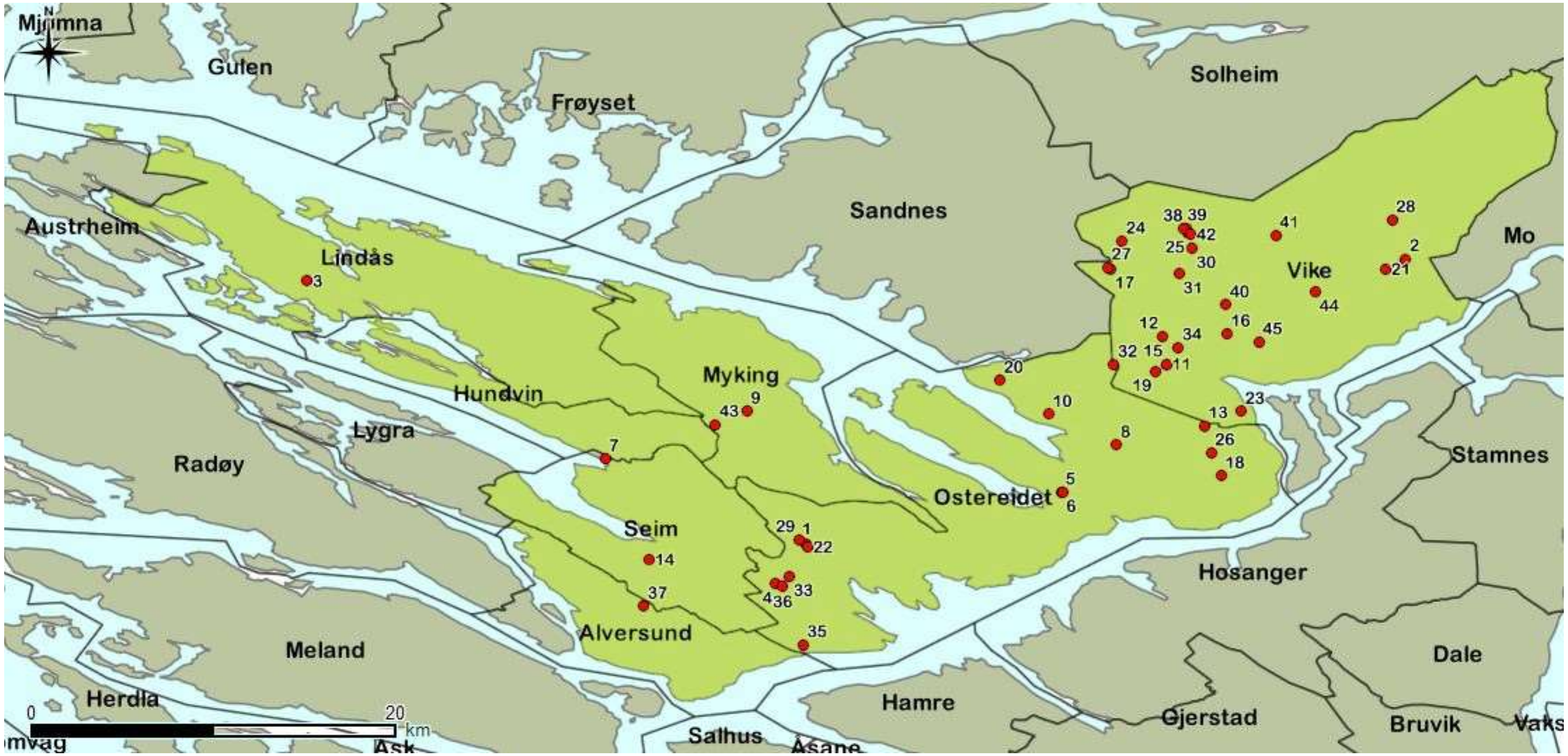



Figure 3.42. Distribution Map of *setr* and *sætr*-names in Lindås.

1. Hakset
2. Høset
3. Sirset
4. Sjauset
5. Storset
6. Storset
7. Seter
8. Andåsseter
9. Austseter
10. Dyrdalsseter
11. Eikefetsæter
12. Eikemosæter
13. Eiknessæter
14. Fiskeset
15. Fitjaseter
16. Gamleseter
17. Gamleseter
18. Gamleseter
19. Gamleseter
20. Gamleseter
21. Gamleseter
22. Hageseter
23. Haukøyseter
24. Kalvedalsseter
25. Liaseter
26. Molviksæter
27. Norddalsseter
28. Nyseter
29. Øvre Hageseter
30. Paddøyseter
31. Rauneholseter
32. Rødlandsseter
33. Sæter
34. Sæter
35. Seter
36. Sjurseter
37. Skarpeseter
38. Steinsetdalssæter
39. Steinsetdalsseter
40. Store Urdalsseter
41. Stussdalsseter
42. Torsheimseter
43. Tveitaseter
44. Vetle Aurdalssæter
45. Vikeseter

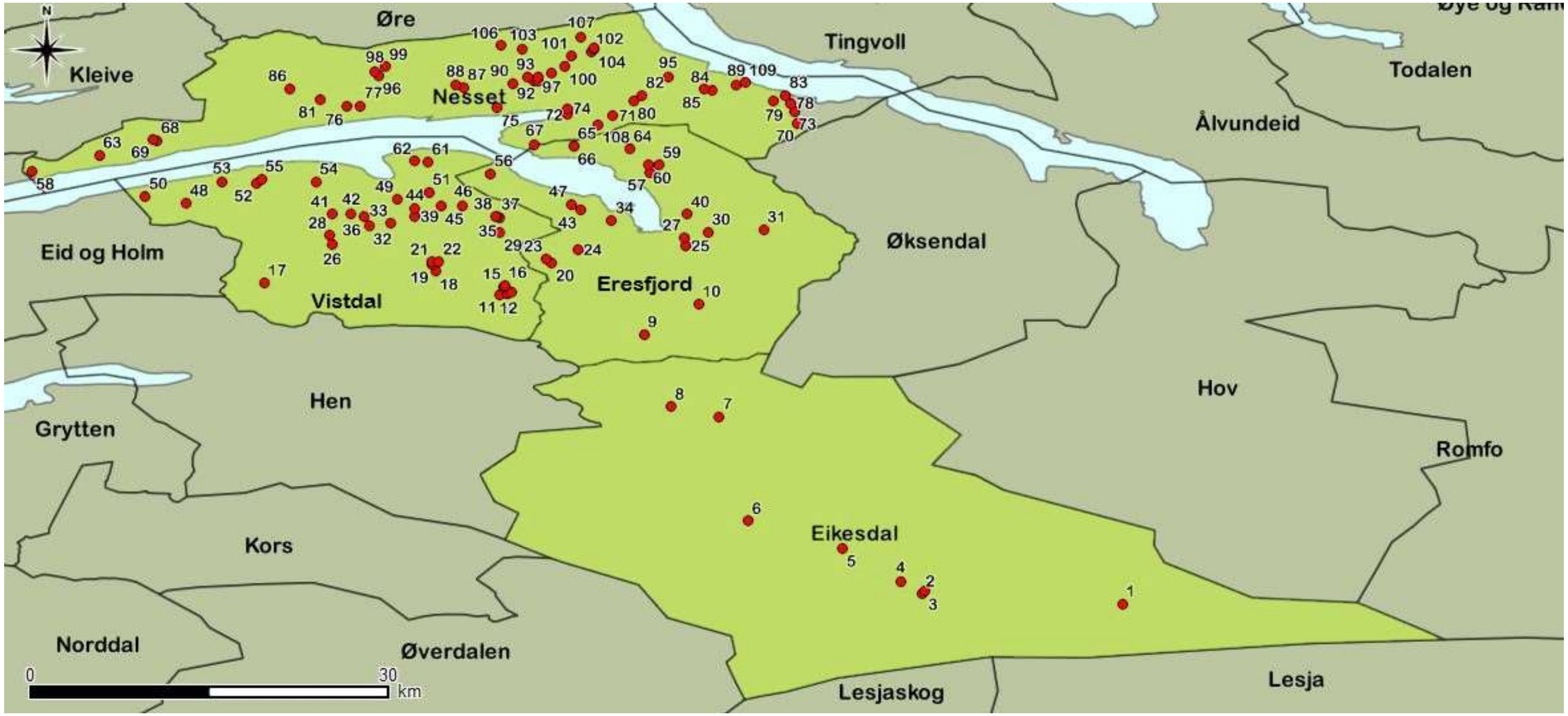



Figure 3.43 Distribution map of *setr* and *sætr*-names in Nesset.

1. Stordalsåseter
2. Botnaseter
3. Finsetseter
4. Finnset
5. Seter
6. Skogset
7. Vikeseter
8. Hoemseter
9. Meringdalseter
10. Ljøsåbotn sæter
11. Gammelstølseter
12. Slenesseter
13. Horneseter
14. Rødalsæter
15. Brekkesæter
16. Haustengseter
17. Sauseter
18. Lensmannssæter
19. Oppdalsseter
20. Solhjellseter
21. Storåkerseter
22. Bergsetseter
23. Turhusseter
24. Husbyseter
25. Litlseter
26. Hansetsæter
27. Grandseter
28. Langeseter
29. Gammelseter
30. Dokkseter
31. Kanndalsseter
32. Helleseter
33. Selseter
34. Naustesæter
35. Reitaseter
36. Stuseter
37. Herutseter
38. Aslakseter
39. Bergset
40. Drivsæter
41. Liaseter
42. Haugseter
43. Vasseter
44. Bergset
6. Øygardseter
47. Sølåttseter
48. Skorgeseter
49. Hanset
50. Strandseter
51. Nedregardseter
52. Nyseter
53. Trollhaugseter
54. Sandnesseter
55. Gammelseter
56. Ernesseter
57. Breivikseter
58. Buvikseter
59. Gammelseter
60. Hagbøseter
61. Gauprørseter
62. Øvregardseter
63. Hestadsæter
64. Innergardsseter
65. Ut-Boggeseter
66. Boggeseter
67. Buktaseter
68. Ranvikseter
69. Åramseter
70. Fjellseter
71. Stubøseter
72. Langset
73. Fredsvikseter
74. Nesset
75. Klokkset
76. Gammelseter
77. Trollmyrseter
78. Liaseter
79. Kvennsetseter
80. Teigset
81. Gammelseter
82. Myrset
83. Kvennset
84. Rønningseter,
85. Eidseter
86. Skjørseter
87. Høvikseter
88. Reitaseter
89. Finnset
90. Lensmannsseter
91. Myraseter
92. Hansgardseter
93. Steinteigseter
94. Kvamseter
95. Talset
96. Haugseter
97. Hagaseter
98. Rødseterin
99. Dalaseter
100. Storliseter
101. Nistuseter
102. Bersåsseter
103. Holseter
104. Neverliseter
105. Nyseter
106. Øyaseter
107. Raudsandseter
108. Langsetseter
109. Kallset

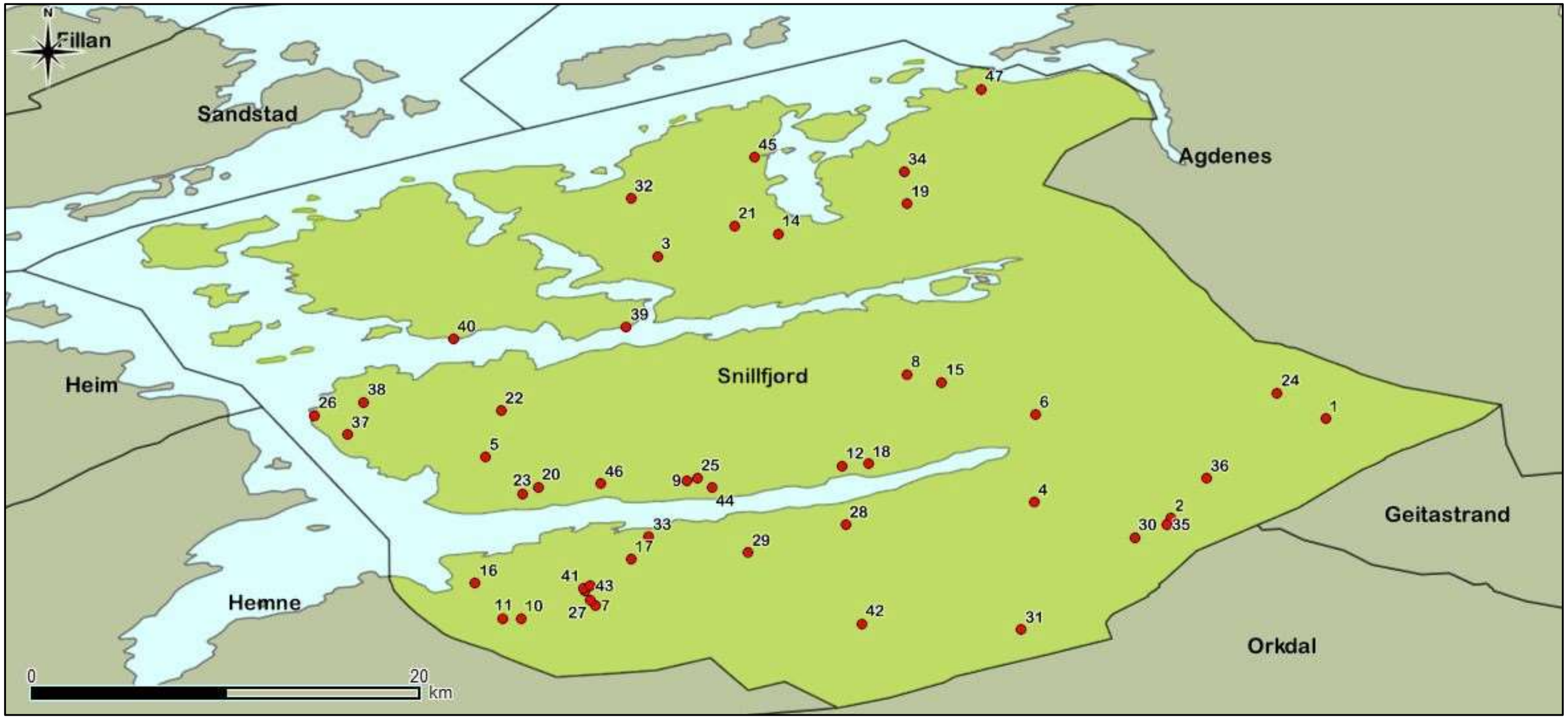



Figure 3.44 Distribution map of *setr* and *sætr*-names in Snillfjord.

1. Hakset
2. Høset
3. Sirset
4. Sjauset
5. Storset
6. Storset
7. Seter
8. Andåsseter
9. Austseter
10. Inner Berdalsseter
11. Ytter Berdalsseter
12. Breivikseter
13. Einansæter
14. Elvaseter
15. Fagerdalsseter
16. Forraseter
17. Gammelseter
18. Gammelseter
19. Gammelseter
20. Hafsmosæter
21. Halsaseter
22. Heggstadseter
23. Heggviksæter
24. Kleivseter
25. Klungerviksetra
26. Moldviksetra
27. Myseter
28. Sandvikseter
29. Seterbustolen
30. Setergarden
31. Setterseter
32. Seter
33. Seter
34. Seter
35. Seter
36. Snilldalssæter
37. Stokkaseter
38. Stokkaunseter
39. Stolpnesseter
40. Vagesæter
41. Vennasæter
42. Vuttudalsseter
43. Vollsaeter
44. Vilvangseter
45. Gammelseter
46. Klungervikseter
47. Seterneset

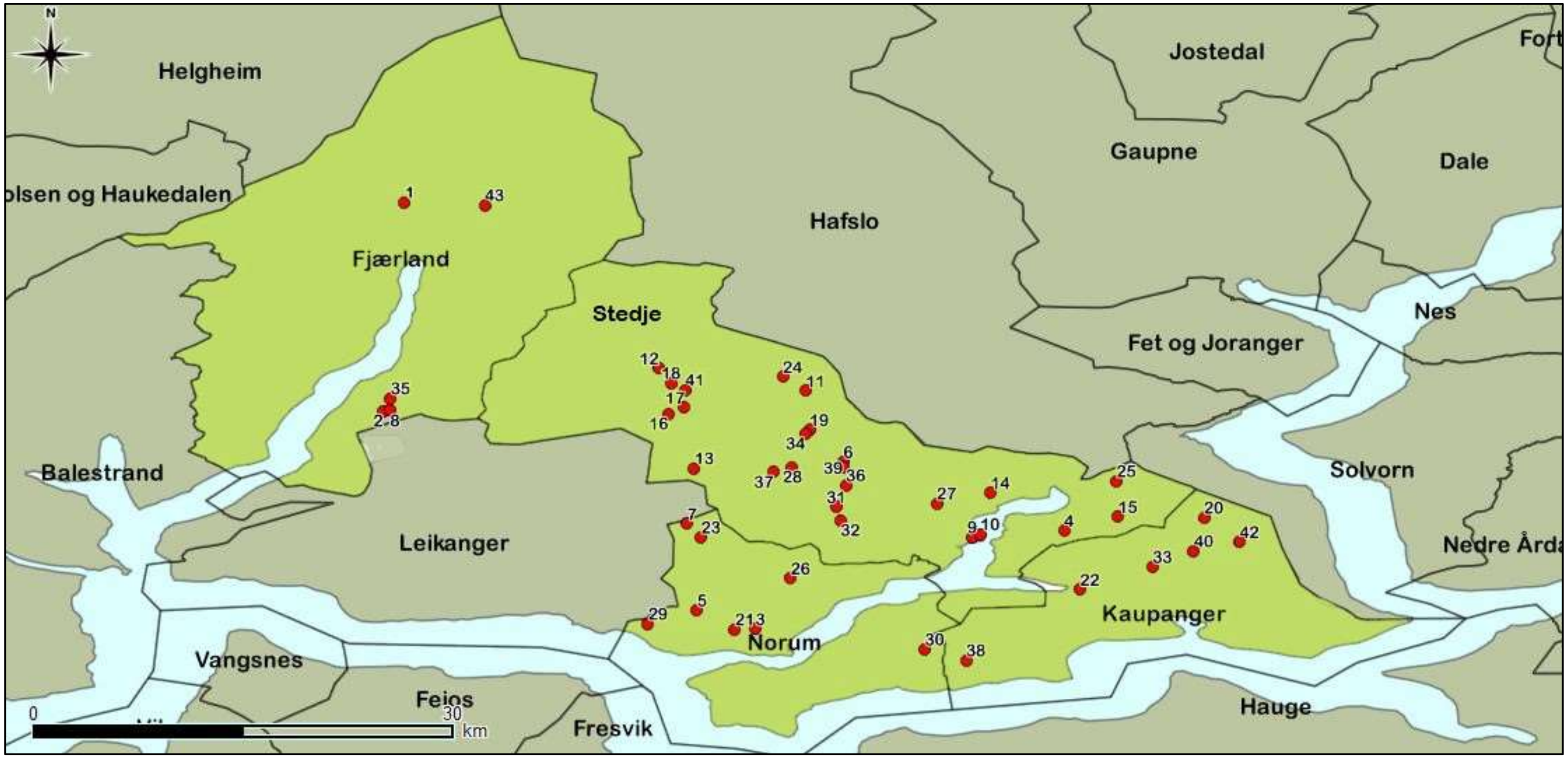



Figure 3.45 Distribution map of *setr* and *sætr*-names in Sogndal.

1. Bykset
2. Breisete
3. Frulauposete
4. Habbasete
5. Honnsete
6. Kraksete
7. Myrbeinsete
8. Myrsete
9. Navarsete
10. Navasete
11. Navarsete
12. Nysete
13. Rysete
14. Skogasetboen
15. Soleisete
16. Solasete
17. Stomnasete
18. Binesete
19. Breidesete
20. Breidesete
21. Engjasete
22. Furesete
23. Grossete
24. Helgasete
25. Hjelmasete
26. Holsete
27. Kollsete
28. Krakesete
29. Lingesete
30. Notsete
31. Ospesete
32. Ospesete
33. Purlesete
34. Roysete
35. Ruggesete
36. Skirsete
37. Skogasete
38. Stokksete
39. Syresete
40. Vatnasete
41. Vatnasete
42. Oygarden Rodseter

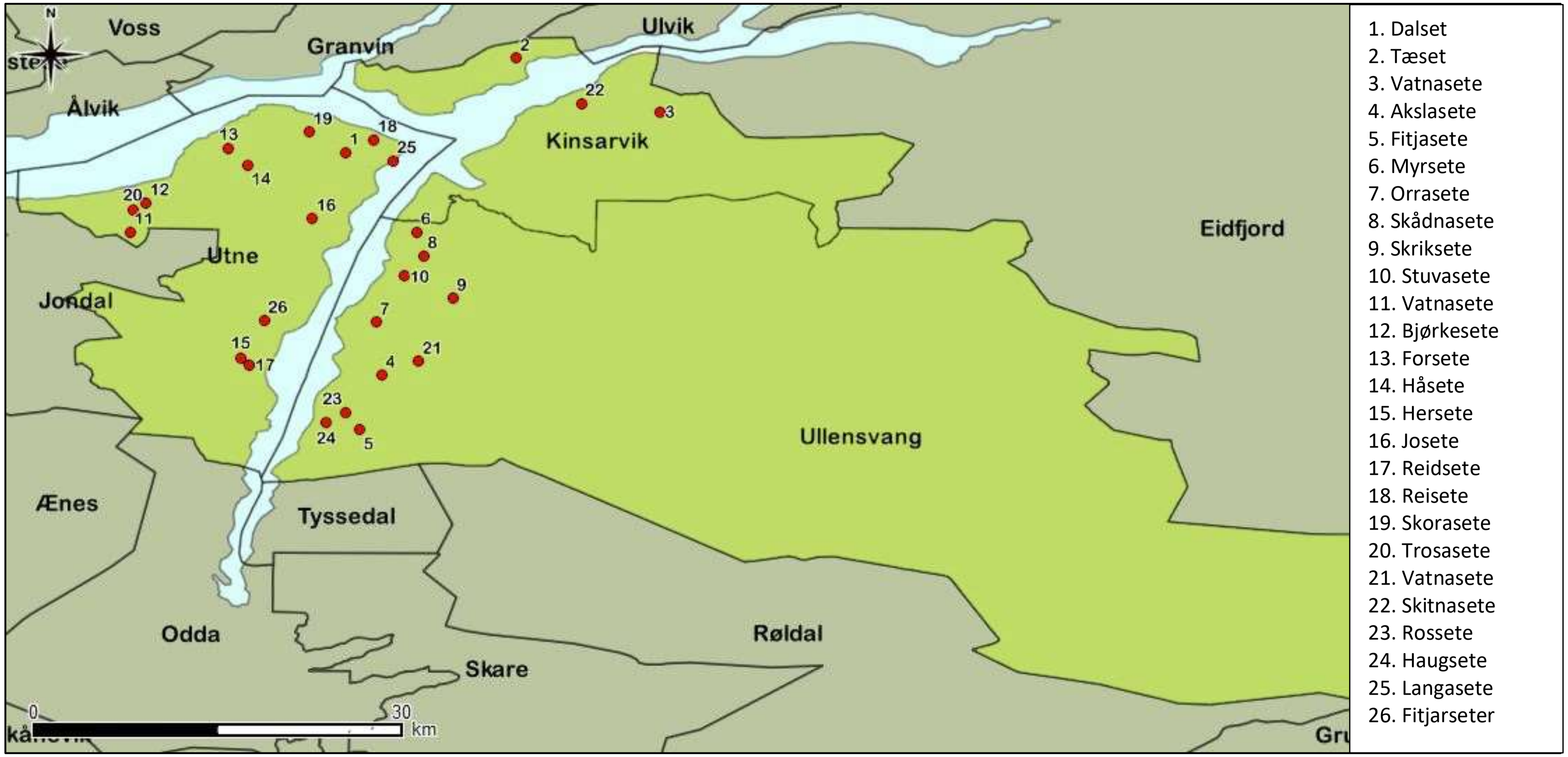



Figure 3.46 Distribution map of *setr* and *sætr*-names in Ullensvang (Helleland found 55 sites (1989); however, his study of Ullensvang included Eidfjord and Odda within (with an additional 21 sites). When comparing the same area, Helleland had 32 sites to my 26 sites. Six sites are no longer found on maps and have been omitted on the basis of consistency with other municipalities. The site of Skinasete is now missing from Norgekart, but the place-name Skinastølane may point to the generic being changed from *sete* to *støl*).

# Chapter 4: Scandinavian settlement zone case studies: Environmental and Chronological Considerations

In this chapter I will look in more detail at two zones within my study. The rational behind this is to test whether environmental factors were responsible for the use of each generic and/or (Zone 1), was a difference in the chronology a factor (Zone 4). The two chosen case study areas have a complimentary distribution of shieling names: Zone 1. *setr*-names predominate on Skye and Lewis, while *ærgi*-names are dominant in the Uists; Zone 4. *setr*-names predominate on Shetland and *ærgi*-names in the Faroes. Zone 1 has clear environmental differences between the *setr* used in harsher environment of Lewis and *ærgi* in the more favourable Uists (see Chapter 4.1.2-4.1.4). Zone 4 also has varied environmental chatracteristics, but *ærgi* used in the harsher environment of the Faroes and setr in the relatively favourable conditonns of Shetland. Zone 4 also has a difference in settlement history pre-VA, the traditional view has been that Shetland was settled earlier and far more extensively than the Faroes in the VA. Zone 4 allows me to test whether the distribution pattern can be explained by differences in the type of settlement wor whether this is related to chronological differences.

# 4.1 Case Study 1: The Western Isles and Skye (Zone 1)

## 4.1.1 Location

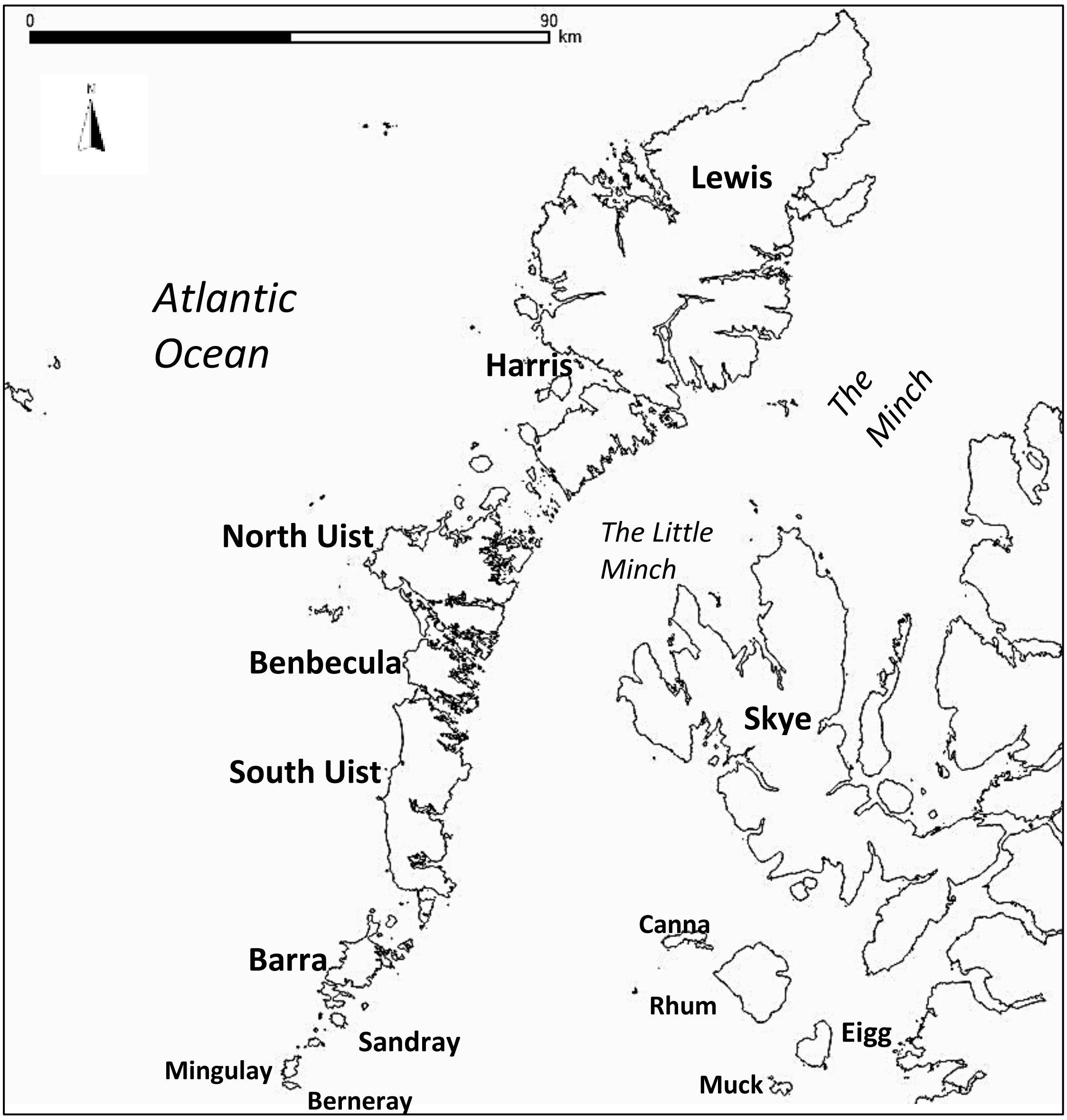



Figure 4.1.1 Map of the Western Isles, Skye and the Small Isles.

Case study 1 area is comprised of the Western Isles, Skye and the Small Isles. The Western Isles, also known as the Outer Hebrides, Innse Gall or the Long Island, consist of a 210km long Island archipelago stretching from Lewis in the north to

Mingulay and Berneray in the south. The Minch separates the Western Isles from the mainland and is at the shortest distance 38km of the coast of north-west Scotland. The narrower Little Minch divides the islands of the Western Isles from Skye and to the south of Skye are the Small Isles of Canna, Eigg, Muck and Rhum.

## 4.1.2 Geology and topography

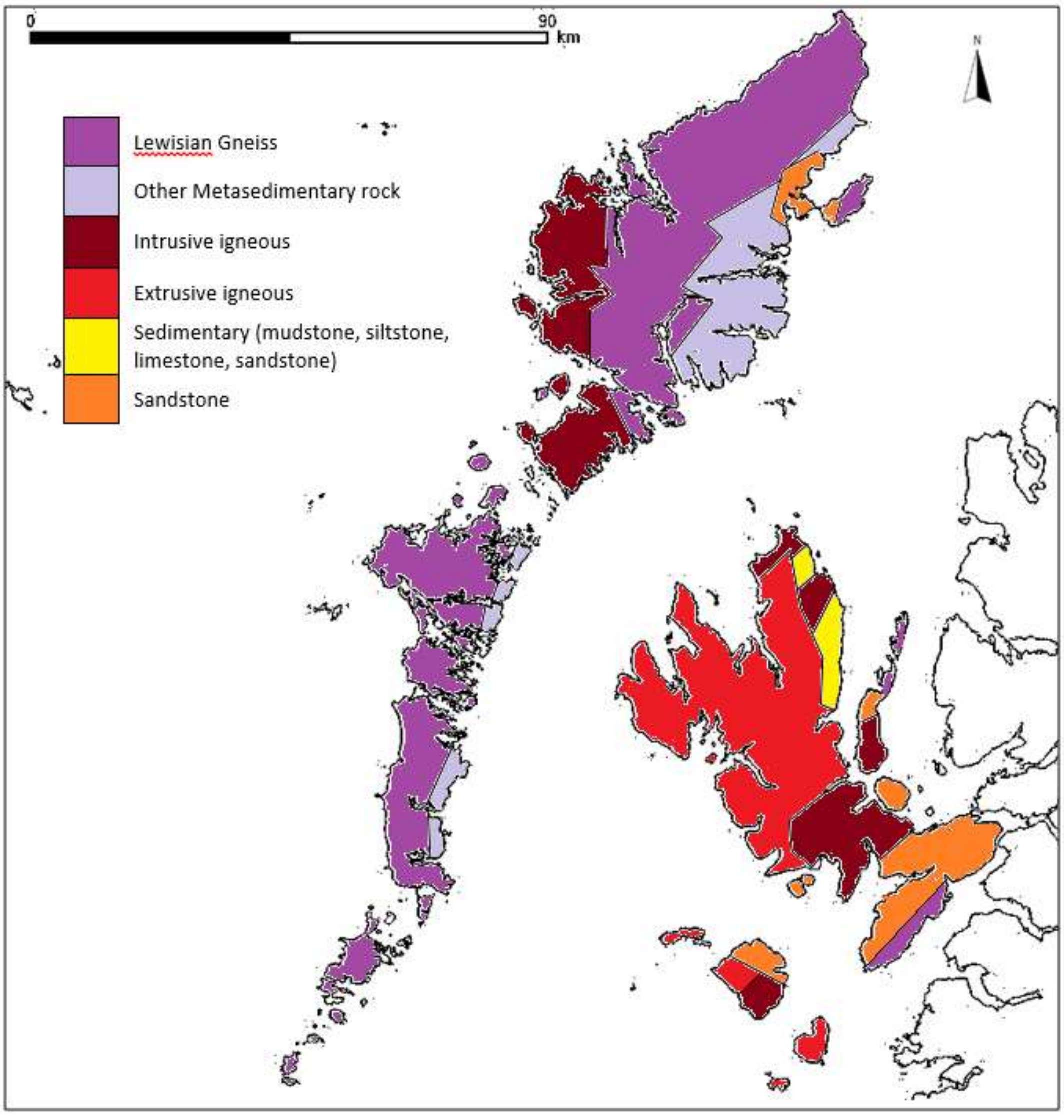



Figure 4.1.2 Simplified geological map of the Western Isles and Skye (after the British Geological Survey).

The Little Minch not only physically separates Skye and Western Isles; it also separates two distinct geological areas. The Western Isles are formed from metasediments (metamorphosed sedimentary rocks), mainly Precambrian Lewisian gneiss with outcrops of Torridon sandstone around Stornoway and intrusive felsic igneous rock, mainly granites, forming Harris and the southern portion of Lewis.

The geology of Skye and the Small Isles is different to the Western Isles, being formed from extrusive mafic lavas and tuffs, the majority of the islands are formed from basalt, with some gabbro, hawaiite and mugearite. Central and north-eastern Skye and parts of western Rhum are composed of granite, interspersed along the eastern coast of the Trotternish Peninsula with bands of mesozoic sedimentary rock (mainly mudstones and sandstones, but with some limestone). There is also a band of sandstone between Kyleakin and Sleat in the south of Skye.

Glacial erosion of gneiss in Northern Lewis formed an erosion platform (Hall 1995, 5), which, on deglaciation, was covered by up to 6m of hummocky moraine (Boyd and Boyd 1990, 67). The gentle slopes and deep till restricted drainage and promoted peat growth (Hudson et al., 1982, 19; Boyd and Boyd 1990, 67). Glaciation of the granites of south-western Lewis and Harris has created a knock and lochan landscape (Peacock 1984; Gordon 1993). Subsequent weathering and erosion of the rocks formed a shallow acidic colluvium over much of the landscape (Boyd and Boyd 1990, 70; Peacock 1984; Gordon 1993). Areas with poor drainage led to peat formation, where drainage was better, brown forest soils and humus-iron podsols developed. The cool climate leads to the formation of oligotrophic rather than eutrophic brown soils; these are moderately acid with medium to low base cation saturation and are considered moderately fertile (Fitzpatrick 1964, 48; Brayshay 1992, 102-103).

The Uists are composed of Precambrian Lewisian gneiss, low-lying, mainly below 100m asl, with Eabhal (347m) in south-eastern North Uist and a ridge of Lewisian complex mafic gneiss down the east coast of South Uist, rising to 620m at Beinn Mhor, providing higher relief. The Uists and Barra have a tripartite division in drift geology (Brayshay 1992, 99-103): an eastern mountainous coast covered mainly by peat; a band of calcareous sand running down the west coast called the machair; and an intermediate zone between the two, where peat has become mixed with windblown calcareous sand from the machair and is known as the 'blacklands' (Owen et al., 1996, 128).

The term machair, after the Gaelic for 'fertile plain', is local term for calcareous soil now predominantly used as dune pasture, but formerly used for arable cultivation (Gilbertson et al., 1996, 72, 119). The machair being relatively productive (Owen et al., 1996, 128), was the core area for Neolithic settlement (Armit 1996, 164; Parker Pearson 2012, 12). The machair can be split between stabilised dunes found inland, referred to as the 'high machair', and the 'low machair', made up of a coastal plain that is prone to seasonal flooding (Gilbertson et al., 1996, 91-98).

The dune machair soils range from calcareous regosols close to the beach, to brown calcareous regosols or peaty calcareous gleys inland, depending on drainage and the water table (Glentworth 1979). Soluble lime content of the machair decreases from 40% near the coast to 20% inland (Hudson 1994, 22-23) The sandy machair soils are free draining, making the soils susceptible to drought in summer and leaching in winter. This can lead to deficiencies in nitrogen, potassium, copper, cobalt and magnesium (Dry and Robertson 1982; Owen et al., 1996, 128). Similar problems of leaching and cobalt deficiency in the sandy soils of West Jutland have been linked to Vosk Disease in cattle and sheep (Jubb and Kennedy 1963, 271).

Skye and the Small Isles were formed around 60 million years ago by volcanic activity. The igneous rock rises to 992m asl at Sgurr Alasdair, in the Cuillin Hills of south-west Skye. The Trotternish Peninsula, of north-eastern Skye, is characterised by a basaltic plateau rising to around 600m asl. Quarternary glaciation led to the formation of glacial troughs, soils are relatively infertile, more fertile soils being derived from thicker glacial deposits or fluviolglacial gravels in valleys and bays (Armit 1996, 24).

### 4.1.3 Climate

Today, the warmest average temperature of 12.9°C occurs in July and August, the coldest average temperature in January and February is 4.1°C (Angus, 1991, 30). Though there is only a 0.7°C difference in the average annual maximum temperature between Stornoway in the north and Barra in the south, though Barra on average 1.6°C warmer in winter. Overall, the temperature range is one of the lowest in Britain at 8.8°C (Angus 1991, 30). The accumulated temperature (days above the threshold of 5.6°C) allows grass to start to grow from April through to November on Barra, and May to October in Lewis and Skye.

The prevailing wind is south-westerly; as a result, westerly locations are subject to stronger winds than eastern ones. Western South Uist has a monthly mean wind speed of 15.2 knots, Stornoway on the east coast 11.5 knots, and south-eastern Skye, 8.2 knots (www.metoffice.gov.uk). Wind is one of the defining characteristics of the climate, being among the highest in the world (Gloyne 1968; Hudson et al*.,* 1982).

Annual rainfall varies in the Western Isles from around 1000mm in parts of Lewis, to 2400mm on the high ground of Harris. Rainfall is much higher on Skye, with Prabost receiving 1806.2mm and the mountains in Skye can receive over 3000mm of rain a year.

### 4.1.4 Vegetation

The characteristic vegetation of the Uists is the machair; as you move inland from the fore dunes, dune building species such as *Elymus fartus* (sand couch-grass), *Leymus arenarius* (sea lyme-grass) and *Ammophila arenaria* (marram grass) help to reduce wind speed and allow increased accretion (Owen et al., 1996, 126). The machair grassland has far less *Ammophila arenaria* than other dune and calcareous grasslands. This leads to the more level nature of the machair, reducing *Ammophila arenaria's* ability to compete against other forbs (Owen et al*.,* 1996, 126).

Away from the machair, vegetation succession during the Holocene initially followed sites of a similar latitudes and geology on the mainland as the Western Isles and Skye (Birks and Madsen 1979, 839; Hirons and Edwards 1990, 188; Fossitt 1996, 188). Woodland cover was never continuous and allowed an under story of grasses and ferns to grow (Fossitt 1996, 187).

After 7000BP, there is a decrease in AP and pollen of species associated with mires and bogs, such as *Narthecium ossifragum* (bog asphodel)*, Cyperaceae sp*. (cottongrass) and especially *Calluna vulgaris* (ling heather) increase. Bohncke has suggested Mesolithic people were responsible for initiating this decline (Bohncke 1988, 455, 460); Fossitt suggests that an increase in the number and intensity of storm events may have tipped the balance of tree survival in marginal areas. However, Fossitt agrees that anthropogenic factors were partly responsible for the continued fall in AP (1996, 194).

Once tree cover was removed, transpiration rates would decrease and soil moisture content increase, which favoured peat formation (Fossitt 1996, 191). At Loch Buailaval Beag (Isle of Lewis) the change from an open woodland habitat to blanket peat occurred within 100 years (Fossitt 1996, 187), Bohncke reported similar findings at Callanish on Lewis (Bohncke 1988, 458). Blanket peat formation started c. 5200 BP, blanket peat dominated Lewis by 2500 BP and has essentially covered large parts of northern Lewis since (Fossitt 1996, 194).

Vegetation on the Uists and Barra followed the drift geology, with dune machair plants along the west, mesotrophic *Agrostis*-*Festuca* grassland down the Blacklands, and *Calluna*-*Molinia* moorland on the peats of the east coast (Pankhurst 1991; Kent et al., 1996; Weaver et al., 1996; Angus 1997). There is, therefore, a very distinct vegetational divide between Lewis, dominated by blanket peat, and the Uists, with three distinct vegetational zones.

## 4.1.5 Linguistic situation

Documentary sources on the pre-VA situation in the Hebrides are non-existent. Bannerman suggested that northern limit of Gaelic Dalriada was at Coll and Tiree, and Ardnamurchan on the mainland in the sixth century AD (Bannerman 1974, 28). The inferences being, the people north of this line were likely to be Pictish and therefore possibly speakers of P Celtic or a Brittonic dialect compared to the Q Celtic speakers of Dalriada (S. Foster 1996, 19; Kruse 2005, 149, see Chapter 2.9).

## 4.1.6 Place-names

Place-names are of little help in deciphering the linguistic situation in the Western Isles, having been completely obliterated by first incoming Norse-speakers and then later by a Gaelic overlay. The only name that is documented as being pre-Norse is Skye, recorded by Ptolemy in the 2nd century AD as *Sketis nesos* (cited in Kruse 2005, 141)*,* and *Scia* in Andomnàn's *Life of St Columba,* c. 7th century AD (book 1, chapter 33, 136). Skye has the same semantic meaning of 'split' in Old Irish and ON and this has led Kruse to suggest a shared Indo-European origin for the word, and, as a result, makes it more difficult to assign a source language for Skye.

The two further island names that have been suggested as being transformed from pre-Norse names are Lewis (ON *Ljóðhús)* and Uist (ON *Ívist*) (Kruse 2005, 157; Gammeltoft 2007, 487). Arne Kruse points out that both names are unusual in that they do not contain the usual *–ey* (ON 'island') suffix or mundane prefix (Kruse 2005, 157). Arne Kruse (2005, 157) and Peder Gammeltoft (2007, 488) have suggested that these two island names have undergone phonological adaption and a substitution of lexemes to make them easier to pronounce and understand (and remember) (Kruse, 2005, 157). Gammeltoft tentatively suggests that *Ljóðhús* (Lewis) and *Ívist* (Uist) may be Pictish (2007, 487). The fact these names, along with Skye, survive in Norse adaptions show some contact, however brief, between native and incoming Scandinavians to allow the transmission of the names of major landscape features (Kruse 2005, 157).

Other than the three island names mentioned, there are no identifiable pre-Norse names (Henderson 1910, 185; MacBain 1922, 70; Watson 1926, 38-9; Small 1968, 5; I.A. Fraser 1974, 19; Stahl 1999, 365; Kruse 2004, 104; 2005, 158; Jennings and

Kruse 2005, 251). The one dissenting voice to this ON onomastic whitewash is Richard Cox, who has argued that Gaelic was spoken in Lewis prior to the coming of Scandinavian settlers and that many place-names are pre-Norse (Cox 1991). Cox further suggested that Gaelic continued to be spoken throughout the Norse period, possibly in linguistically demarcated communities (Cox 1991 488). Cox later qualified this, without rejecting it, by stating that although there are no Gaelic place-names that are identifiable as pre-Norse, 'some, such a *Bothan Ciaran*, possibly are, and many others may be' (Cox 2002, 118). This argument is rejected by Kruse, who points out that there is a lack of Gaelic terms incorporated into ON ex-nomine units (see Kruse 2004, 160-162 and Jennings and Kruse 2005, 30).

The impression that is left is one of a blank canvas concerning pre-Scandinavian place-names or, as Nicolaisen suggested, the Western Isles were a 'nameless landscape' in the eyes of the incoming Scandinavian settlers (1979-80, 110).

> 'we find when Norse settlement is of a systematic nature. These names imply involvement in the landscape to a major extent – the planting of seed, the building of boats – and indeed, the final act of settlement, culminating in the complete physical takeover of the islands' (I.A. Fraser 1978, 19)

Magne Oftedal found that 99 out of 126 village names on Lewis were of Norse origin and a further nine had Norse elements, but in a Gaelic structure (2009). Ian Fraser's study of place-names on Lewis found that in Europie township only 26 out of 101 place-names recorded were of a purely Norse formation, while another 40 had Norse elements, with 30 containing no Norse element (1974, 15). In the townships of Knockaird and Five Penny Ness, 46 out of 80 names contained Norse elements, the rest being Gaelic, Norse names in both townships were found to be more coastal, while Gaelic names had a more inland distribution (I.A. Fraser 1974, 15). Fraser concluded that Gaelic names on Lewis are, on the whole, post-Norse and relatively late (1978, 19).

In comparison to the earlier language shift to ON, the later Gaelicisation of Northern Skye and the Western Isles after the VA allowed the transfer of ON names into Gaelic (Gammeltoft 2006, 65) and the formation of 'ex nomine onamastic units' such as Loch Lacsabhat (ScG *loch* m. 'lake', ON *lax* m. 'salmon', ON *vatn* n. 'lake') (Cox 1988-89, 3; Kruse 2005, 161). Which would seem to suggest the shift to Gaelic may have been slower, allowing the transfer of terms from one language to another, or that ON was not, initially at least, seen as less prestigious than Gaelic. Fraser expressed surprise at the number of purely ON place-names that survived, considering population and agricultural change over the proceeding (post-Norse) centuries (1978, 18).

## 4.1.7 Archaeology

Ian Armit has highlighted, with possible Iron Age affiliations between the Hebrides, Northern Isles and the mainland of northern Scotland (1996, 164), such as the distinctive wheelhouse (Parker Pearson and Sharples 1999, 3). However, other than six Pictish symbol-stones from Zone 1 (Jennings and Kruse 2009, 77), an ogham-inscribed knife handle from Bac Mhic Connain roundhouse (Beveridge 1931) and a possible painted stone from Garry Iochdrach, both from North Uist, there are few diagnostically Pictish artefacts to categorically say the area was Pictish (Armit 1996, 164). Armit argues that the 'geographical marginality' of the area in relation to the centre of Pictish power may have led to an 'ill-developed' level of Pictishness, and raised the possibility of a possible Gaelic influence in the Western Isles, on the basis of its remoteness from the Pictish power base in eastern Scotland and its relative closeness to Dalriada (1996, 164).

**Settlement location**

Ian Armit points out that even with the high density of Norse place-names in places like Lewis, archaeological sites of this period are elusive, which he puts down to sites being still inhabited, hiding their remains below present buildings, or their similarity to later medieval and later buildings obscuring the distribution pattern (1996, 189).

The location of many Scandinavian sites on South Uist are close to, or built directly on, 'Pictish' machair sites (Sharples and Parker Pearson 1999, 50; Parker Pearson 2012, 417), such as at Udal (I. Crawford and Switsur 1977). No pre-Viking building has been found at Cille Pheadair; however, a pre-Viking grave was found nearby

(Parker Pearson et al*.,* 2004, 241) and two settlements have been reported, one 50m north and the other 200m south of Cille Pheadair, leading Sharples and Pearson to suggest that, along with Bornais, the settlement pattern is very similar to the Late Iron Age pattern (Sharples and Parker Pearson 1999, 50; Parker Pearson 2012, 38).

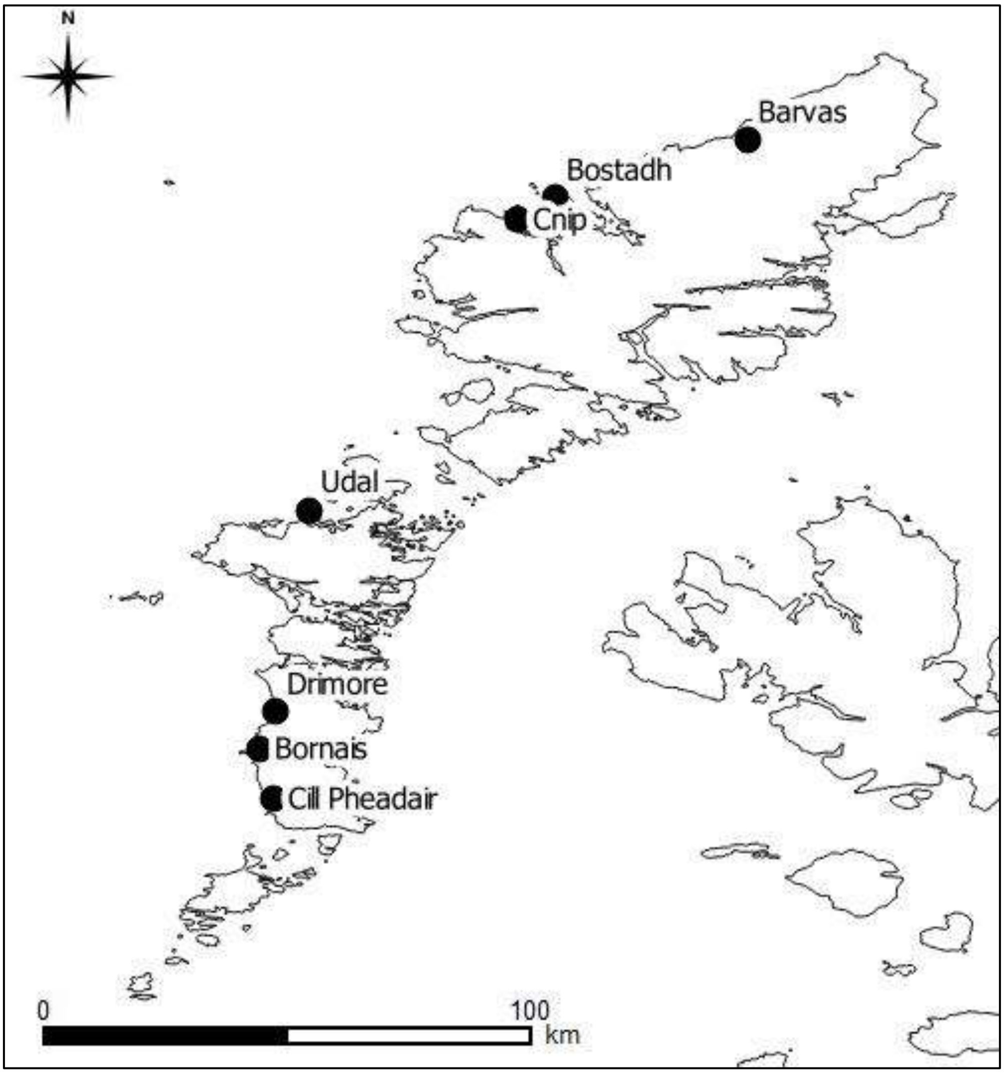


Figure 4.1.3 Excavated Scandinavian settlements named in the text.

## Pottery

A distinctive Udal plain style pottery has been identified by Lane in the Western Isles from c. AD 350 to 850, the pottery followed the earlier tradition of being locally handmade and fired without a kiln (Lane 1983, 286-88; 1990, 117). The style of undecorated flat-based buckets and shouldered jar forms with flared rims ceramics were produced using a tongue and groove construction technique (Lane 1983, 247-8). This style of ceramic is absent from the Inner Hebrides and Scottish mainland; there are, in fact, no large assemblages of handmade ceramics found throughout Dalriada (Lane 1983, 283; Jennings and Kruse 2009, 76).

It is only in the Hebrides, Orkney and the Faroes that pottery is found in a Scandinavian context in the VA (Lane 1983, 348). Udal plain style pottery underwent a significant change in style during the VA, with the production of flat-based open bowls and cups with sagging bottoms and circular platters (Lane 1983, 170-87). This ‘Viking-period style’ has been identified from 29 sites, compared to 15 sites with Udal plain style pottery, between Lewis and Coll and Tiree (Lane 1990, 125, 128). There is still an absence of pottery from the Inner Hebrides and Argyll compared to the Western Isles, which may point to the varying density and nature of Scandinavian settlement (Lane 2005, 205).

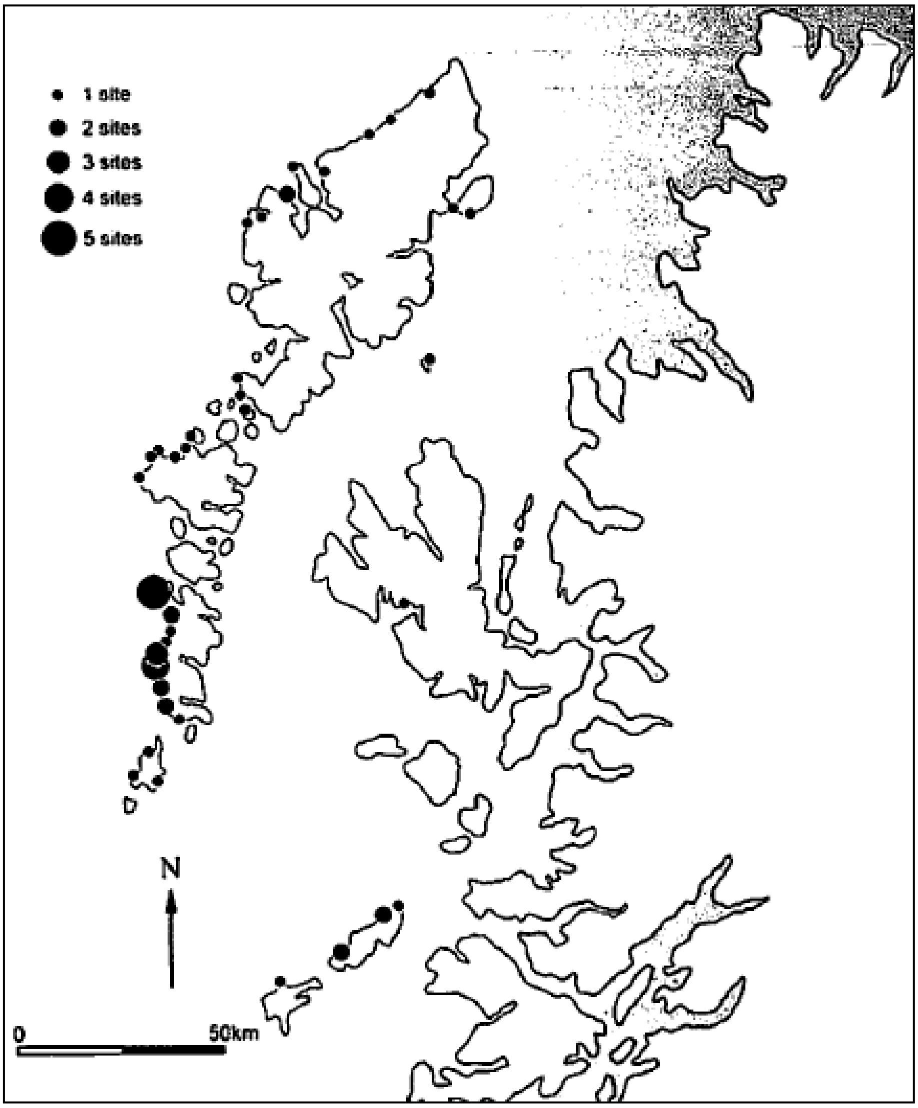


Figure 4.1.4 Distribution map of VA and Norse pottery (Lane 2005, 213).

The change of style and construction technique has been suggested as having parallels with northern Irish Souterrain ware from Co. Antrim (Lane 1983, 350). Jennings and Kruse have suggested that either the new style of pottery may have been brought from Ireland by Viking colonists, or that they brought Irish slaves who made the pottery (2005, 256). The possible use of imported slaves to produce pottery has also been suggested for the Faroes (Jennings and Kruse 2005, 256), which is not only one of the few other areas of Scandinavian settlement to use pottery, but sagging based bowls at Sørvágur and Sandavágur show close parallels with Hebridean examples (Lane 1983, 348). Lane concedes that there may have been some influence between pottery styles in the Hebrides and Souterrain Ware during the Viking period, but argues for a ‘stratum of local continuity’ as the most likely explanation for the continued use of pottery (Lane 2005, 215).

This does leave questions about why surviving locals would adapt their tried and tested techniques to produce the new design unless the new style was unsuited to the tongue and groove technique. It would be interesting to test the original construction technique on producing the flat-based open bowls and cups with sagging bottoms and circular platters, in order to see if the design causes added stress to the pottery.

## Buildings

A long-standing cultural divide between those people inhabiting the areas north and south of Ardnamurchan has also been linked to the building of brochs or complex Atlantic roundhouses (Armit 1991, 182), with a similar distribution to Pictish stones (Jennings and Kruse 2009, 76). Although some rectangular buildings are known from pre-Viking sites, curvilinear buildings were usual for households in the Western Isles (Armit 1996). The introduction of rectangular house structures or buildings has been associated with incoming Scandinavian settlers at Barvas, Lewis (Armit, 1996), Bornish, South Uist (Sharples and Parker Pearson 1999), Bostadh, Lewis (Neighbour and Burgess 1997), Drimore, South Uist (Maclaren 1974), Cille Pheader, South Uist (Parker Pearson et al*.,* 2004) and Udal, South Uist (I. Crawford and Switsur 1977).

The dating of these buildings is spread from the mid-ninth century at Udal (I. Crawford and Switsur, 1977, 131-135), ninth to tenth century at Drimore (Maclaren 1972, 15), tenth to eleventh century at Barvas (Armit 1996, 192), and eleventh to thirteenth century at Cille Pheadair and Bornais (Sharples and Parker Pearson 1999, 51-55; see also Barrett 2003, 87-88). The excavated VA buildings are not contemporary with each other; though there is no conclusive evidence for a specific date for this change over the Western Isles, this does show a cultural trait that lasted four centuries and possibly longer with the use of blackhouses.

The use of internal byres within longhouses has a long history in Norse culture (Fokkens 1999, 36; Zimmerman 1999, 301), Maclaren has suggested that Drimore may have been partitioned with a byre at one end (1974, 13), while Bornais may have had an ancillary building used as a byre (Sharples 2005). If byres were used during the VA, then fodder procurement would be a necessity to feed the livestock over the winter (Zimmerman 1999, 312-313) and this would have required expansion into the blacklands and/or heaths and bogs of central Lewis and eastern parts of the Uists.

## Animal husbandry

By comparing pre-VA animal husbandry practices to those of the VA, differences in the systems employed can be highlighted. This information will may show whether the existing farming enterprises were just taken over by Scandinavian settlers, with a continuation of practices, or whether a new farming system was imposed. This data may explain the type of farming system practised and whether it was more similar to the Scandinavian or Gaelic model.

Most Iron Age (IA) sites show a preference for sheep over cattle: in total, sheep accounted for 48% of bone assemblages compare to 38% for cattle (Table 4.1.1). At Sligeanach, Cill Donnain on South Uist, sheep bones outnumbered cattle bones, by a ratio of 1.17:1 in the Early Bronze Age (EBA), which rose to 3.61:1 in the Early Iron Age (EIA) and 2:1 in the Middle Iron age (MIA) (Mulville and Madgwick 2012, 238-240).

A higher proportion of sheep were kept into older age than cattle. Sheep showed a greater slaughter rate in their second year according to dental wear and bone fusion at Bornais, which may indicate breeding for meat, but allowing at least one wool shear (Mulville 1999, 253). A similar pattern of age/death, with the majority of sheep killed between 18 and 30 months old, was observed at Cill Donnain, but with a regular slaughter each year, up to four years of age, and has been interpreted as geared towards producing meat and wool economy (Vickers et al., 2014, 172). Comparable results for a meat and wool economic model of sheep farming was observed at Bornais and meat production at Cnip (McCormick 2006), Sollas (Finlay 1991), Hornish Point and Baleshare (Barbour 2003). Pigs were slaughtered while immature, which, it has been suggested, shows pigs were reared for meat and fat (Mulville 1999, 248).

| **Barra/Uist Iron Age (IA)** | **sheep** | **cattle** | **pig** | **deer** | |
|---|---|---|---|---|---|
| Udal (phase XI-XIII) | 58 | 38 | 2 | 0 | Serjeanson (2013) |
| Balshare | 59 | 34 | 6 | 1 | Barbour (2003) |
| Sollas site a | 67 | 28 | 4 | 1 | Finlay (1984) |
| Sollas site b | 38 | 54 | 5 | 2 | Finlay (1984) |
| Hornish Point | 59 | 28 | 12 | 1 | Barbour (2003) |
| A ‘Cheardach Mhor | 59 | 36 | 3 | 2 | Finlay (1984) |
| A ’Cheardach Bheag | 43 | 41 | 3 | 13 | Finlay (1984) |
| Cill Donnain | 42 | 46 | 10 | 2 | Vickers et al., (2014) |
| Dun Vulan Midden | 48 | 28 | 22 | 3 | Mulville (1999) |
| Dun Vulan platform | 39 | 47 | 14 | 1 | Mulville (1999) |
| Bornais M1 LIA | 46 | 34 | 6 | 14 | Sharples (2012) |
| Bornais LIA | 53.8 | 32.6 | 6 | 7.5 | Sharples and Smith (2009) |
| Pabbay | 83 | 15 | 1 | 0 | Mulville in Branigan and Foster (2002) |
| Mingulay | 39 | 60 | 0 | 0 | Mulville in Branigan and Foster (2002) |
| Sandray | 60 | 37 | 3 | 0 | Mulville in Branigan and Foster (2002) |
| Total for assemblages from Uist and Barra | 53 | 37 | 7 | 4 | |
| **Lewis/Harris IA** | | | | | |
| Berigh LIA | 17 | 48 | 2 | 32 | Thoms (2003) |
| Cnip | 30 | 40 | 5 | 25 | McCormick (2006) |
| Bostadh 1 LIA | 46 | 40 | 0 | 11 | Thoms (2003) |
| Total for Lewis assemblages | 32 | 43 | 2 | 23 | |
| **Overall Total (%)** | **49** | **38** | **6** | **7** | |

Table 4.1.1 Bone assemblages of selected domestic mammal species and wild Deer from Iron Age sites in the Hebrides (after Sharples and Smith 2009).

Only 5/19 bone assemblages how a preference for cattle over sheep (Table 4,1.1), two of which, Sollas and Dun Vulan, have assemblages from different areas of the sites that have differing ratios of sheep to cattle. The three assemblages with a preference for cattle, one comes from Mingulay and the other two are found were excavated on Lewis. Sites away from the machair may have acidic conditions, meaning smaller sheep bones are less likely to survive in the ground than the larger cattle bones, and this may account for the differences, especially on Lewis (Thoms 2003, 124).

The age slaughter pattern of cattle at Dun Vulan suggest many died very early in their first year; Mulville suggests that only 30% of bones show late fusing, which was interpreted as a small breeding population. When looking at ageable mandibles (14 cattle mandibles), just under 50% were less than a month old and another 11% were between one and eight months old and less than 10% died in each of the later age groups (1999, 246-247).

The high infant mortality rate of cattle has been seen as evidence of a dairy economy (Legge 1981, 86-89). Legge sees the concentration on milk production as a response to a lack of ‘good pasture’, as dairying is more productive per head/per unit of land than beef production (1981, 89). However, dairy cattle preferentially feed on the pasture that supplies the nutrients and energy to produce milk (Berry et al., 2002, 448, 451; M.A. Fraser 2009a, 368), whereas calves and beef cattle can feed on poor moorland grazing (Berry et al., 2002, 448) so rather than dairying being a strategy for poor grazing, it is one more suited to moderate to good pastureland.

McCormick suggests that a high infant mortality between the ages of six to nine months could be a result of feeding restrictions, especially in winter, which may be partly caused by a lack of fodder collection (McCormick 1992). Serjeantson and Bond disagree with McCormick by pointing to the long growing season in the Hebrides decreasing the need for fodder (2007, 206) and Thoms has questioned the relevance of the ethnographic accounts McCormick used from the eighteenth and nineteenth centuries for studying the IA (Thoms 2003, 199). However, references in the Irish annals specifically link cattle deaths to bad winters (AU 748.3, AU 799.4, AU 900.3, and AU 917.1).

Milk residue, in the form of lipids, has been identified on pottery from 23 shards at Cladh Hallan and three from Dun Vulan (Craig et al., 2005, 100; Mulville 2005, 172). Craig et al., on the evidence of the faunal remains and milk residue from pots, suggest that dairying was an important aspect of the Western Isles prior to the coming of Scandinavian settlers and have further made the link between areas with bog butter finds and early calf mortality (2005, 100). However, Dr Walker in the 18th century reports that on Coll unfinished pots were filled with milk before firing (1980, 171) and if this was a traditional practice in the Hebrides it may account for the milk residue.

There is a greater emphasis on deer as a food resource on Lewis; this may be a consequence of the poorer agricultural conditions, forcing the inhabitants to rely on wild resources. The difference in utilisation of deer as a food source may have been caused by the localised extinction of red deer on South Uist (Parker Pearson 2014, 211), Mulville found evidence of the hunting of immature deer at Bornais in the LIA, which would suggest that South Uist may still had a viable population of red deer (Mulville 2012, 341-2; Parker Pearson 2014, 211).

The blanket bogs found on Lewis are ideal winter grazing for red deer, which have been observed grazing on *Calluna-Trichophorum* communities between 36-48% of the time (Clarke et al., 1995, 174), and this figure can be higher for stags (Osborne 1984, 504). Deer are selective grazers, and on Rhum were observed in summer to overgraze favoured *Agrostis-Festuca* grassland, when no cattle were present (Gordon 1988, 7). This can have a detrimental effect on a deer population, as overgrazed patches can lead to *Molinia caerulea* dominated swarths (Gordon 1988, 7).

When cattle are present, red deer were found to preferentially graze areas that had been grazed by cattle the year before (Gordon 1988, 4; Clarke et al., 1995, 175), and there is also found a higher ratio of calves per hind (Gordon 1988, 4). The feeding style of cattle with a wide mouth and relatively immobile lips means that they are not able to be overly selective in feeding when compared to sheep and deer (Chambers et al., 1981, 103). This removes unpalatable dead matter, increasing the availability of new shoots in spring for deer (Gordon 1988, 8). Cattle grazing on Lewis may therefore have allowed a greater harvest of adult deer, as it promoted, as a result of the less selective feeding of cattle, open grazing for the more selective deer (Grant et al., 1985, 1002).

During the VA there is a 9% increase in the proportion of cattle found in the selected bone assemblages from the Western Isles overall (Table 4.1.2); while sheep dropped by 8%, pigs and deer remained fairly consistent. However, the results are not uniform: sites such as Udal saw an increase in cattle bones of 43% and a decrease in sheep bones by 31%, Mound 1 at Bornais, on the other hand, saw a modest increase in cattle bones from the Late Iron Age of around 8%, but accompanied with a drop-in deer bones by 6%, with the percentage of sheep bones remaining constant.

| **Uists** | **Sheep (%)** | **Cattle (%)** | **Pig (%)** | **Deer (%)** | |
|---|---|---|---|---|---|
| Udal IXc-X | 27 | 70 | 3 | 0 | Serjeantson (2013) |
| Bornais M1 | 46 | 41 | 6 | 8 | Cartledge et al., (2012) |
| Bornais M3 | 55 | 35 | 7 | 3 | Mulville in Sharples (2005) |
| Cille Pheadair | 54 | 33 | 9 | 3 | Mulville et al., (2018) |
| Frobost | 28 | 64 | 8 | 0 | Mulville and Madgwick (2012) |
| Total | 42 | 49 | 6 | 3 | |
| **Lewis/Harris** | | | | | |
| Bostadh | 33 | 40 | 1 | 24 | Thoms (2003) |
| **Overall total** | **41** | **47** | **6** | **6** | |

Table 4.1.2 Faunal assemblages of selected domestic species and red deer from VA contexts in the Western Isles (data from Sharples and Smith 2009 unless otherwise stated).

Bostadh on Lewis is atypical, in that, although there was a 7% decrease in sheep bones from the LIA to VA and cattle bones remained around 40%, but the number of red deer bones more than doubled. The increased use of red deer is seen from the initial phase, where deer remains accounted for between 9-12% of the assemblage, the transitional phase (3) 21-29% (LIA to Norse,) and into Phase 4 (the Norse phase) 28-37% (Thoms 2003, 92-94). Thoms suggested that this was down to either improved hunting practices or improved trade connections (Thoms 2003, 219). However, the increasing importance of deer may be related to the lack of good quality farmland and grazing locally, meaning that any increase in agricultural activity could only occur by making use of game to conserve domestic resources.

Bostadh has few cattle dying young (seven to ten months); this has been seen as evidence of meat production by Thoms, with cattle kept over winter until they were at their prime for meat production (2003, 221). Neonatal deaths account for only 7% of the total assemblage in Phase 1, which decreases with time through the phases until they represent less than 1% in Phase 4 (the Norse phase). This does not suggest a dairy economy was being practised at Bostadh and Thoms has suggested the drop in neonatal deaths may represent improved farming practices under Norse control (Thoms 2003, 221), though with the proviso that this may reflect taphonomic processes affecting bone survival (Thoms 2003, 227).

Thoms found that in Phase 3 at Bostadh, there was an imbalance between forequarters and hindquarters, with more hindquarters being found. Thoms suggested that this was either due to the import of hindquarters or, alternatively, the export of forequarters, and may indicate that cattle were removed to another location (Thoms 2003, 220). This may point to a trade in beef or that there was a use of abandoned buildings for butchery affecting the amount of waste material present in the deposits (Thoms 2003, 220).

At Bornais in South Uist, fusion data showed 20% of cattle died in the first year, and another 40% in the second year, only a third of cattle surviving to after their fourth year. When dental records were used for dating, over 50% of cattle were dead by their first year, a quarter were dead within a month of being born. This has been suggested as evidence of a dairy strategy for cattle (Mulville 2005, 165). If the age/death rate was down to environmental factors, sheep should show a similar rate to cattle, and although a third of sheep died during the first year, around 50% reached maturity. Twice as many cattle were dead by one to two years than sheep (Mulville 2005, 165) and this would suggest different livestock management systems being used for sheep and cattle. However, the age of cattle at Kaupang were between 24 and 30 months (Barrett 2004, 87), and on a small island it may have been more effective to cull the herd by between 12-24 month.

At Cille Pheadair, South Uist, cattle were slaughter was slaughtered between 24-34 months in phases 2-4 (c.AD 945-1060), without accompanying neonatal remains. In phases 5/6 (c.AD 1070-1100), slaughter occurred between 18-30 months and it was only in later phases 7/8 (c.AD 1105-1140) that there is an increase in young cattle deaths from 1-18 months old, but more pronounced between 1-8 month (Mulville and Powell 2018, 440). Mulville et al., suggesting phases 2-6 suggest the slaughter of prime meat animals and phases 7/8, autumnal slaughter of excess young animals (2018, 440). At Beirgh, ten scapulae show butchery signs, three were unfused, deriving from animals younger than 7- 10 months and would suggest the consumption of young animals before attaining optimum weight. Thoms suggests that this shoes that this points to the death of some neonatal calves not being due to natural deaths (Thoms 2003, 174-5).

At Bostadh on Lewis, in the pre-Norse Phase 2, Thoms found that 76% of sheep/goat survived past three years old, and of those that did die, the greater number of sheep died between 18-24 months old (2003, 114). In the Norse transitional stage (Phase 3) fewer sheep survived to three years old, which Thoms put down to either feasting on younger lambs or problems of survival over the winter (2003, 115). However, taphonomic processes may have had a greater effect on the unfused bones used to age the sheep, leading to under-representation of younger sheep such as 36–48 months due to their fragility (Thoms 2003, 114-5). Cattle also showed increased mortality between 42-48 months in Phase 3 (Thoms 2003, 124).

Mulville has suggested that neonatal remains in the assemblage at Bornais point to cattle calving near to the settlement, while the lack of neonatal sheep point to them being kept away from the machair, at least during lambing time in early spring. There is the possibility that sheep neonatal remains were preferentially destroyed by scavengers, however, this was discounted by Mulville on account of the low number of scavenger species and lack of gnawed bones (Mulville 2005, 165).

The bone assemblages on South Uist show an increase in the keeping of cattle compared to sheep. Sheep were kept for one to two years and slaughtered after one shear; cattle show evidence from neonatal bones of a possible dairy economy. Mulville has suggested at Bornais that (2005, 167):

> a) Sheep were rarely brought to the settlement (except as culled animals) and may have been kept on the blacklands and/or the heather moor to the east of the island.
>
> b) Cattle were kept close to the settlement to assist calving and establish milk, before neonatal animals were killed, the cattle later removed to surrounding areas. At Cille Pheadair, isotope analysis indicate that cattle did not feed on coastal grazing, but grazed at some distance inland (Mulville et al., 2018, 463).

The bone assemblage does not tell us if male cattle predominate in neonatal assemblage, or whether live male and dry cows and were treated differently to the milk herd. Parker Pearson et al., have suggested that on South Uist an economic specialisation occurred during the VA, with different livestock management occurring at Bornish compared to Cille Pheadair (2004, 252).

On Lewis, the importance of sheep also decreased during the Viking Period; sheep remains at Bostadh dropped from 40% in Phase 1 to 25% in the Norse Phase 4 (Thoms 2003, 221). Cattle, unlike on South Uist, do not show evidence of high neonatal deaths and neonatal remains decreases in the assemblage over time. Improved husbandry practices are suggested by age of death evidence in the Norse period (2003, 221). Though lack of evidence does not rule out a dairy economy, or neonatal remains prove one (McCormick 2014, 125). Taphonomic losses may also have been heavy in Lewis due to the acidic conditions (Thoms 2003, 223), the fact that cattle seem to have been kept until they were at prime maturity would suggest a concentration on meat production (Thoms 2003, 221, 223; Mulville et al., 2018, 446). This may suggest that different livestock management systems were utilised at Bostadh compared to many sites in the Uists and that this was environmentally based (R. Foster 2017, 1 30).

Agriculture

In the pre-VA, the primary cereal crop in the Western Isles was hulled barley (*Hordeum vulgare L*) in what seems like a monoculture (Parker Pearson and Sharples 1999, 298; Church 2000, 121; Sharples et al., 2012, 244; Table 4.1.3). The preference of hulled barley has been explained by it having an advantage in the resistance to mould in areas of high rainfall and cool temperatures, despite more effort needed in removing the grains (Van Der Veen 1987, cited in Parker Pearson and Sharples 1999, 298). At Cnip in western Lewis, the presence of *Brassica rapa* (wild turnip) points to cultivation on one of the few areas of machair locally (Pankhurst and Mullin 1994, 69; Church et al*.,* 2000, 122), and *Stellaria media* (chickweed) and *Chenopedium album L*. (fat hen) are indicators of nitrogenous soils, suggests that the soil was being enhanced by manure and/or seaweed (Parker Pearson and Sharples 1999, 35; Church 2000, 122-3). The continuous cropping and monoculture on machair soils would soon exhaust them without the use of fertiliser (Smith 1994, 35; Sharples and Smith 2009, 110). The Rev. Dr. Walker reported a five-year rotation on the South Uist, fertiliser in the form of seaweed was added then bere was grown in the first year, then two years of rye, followed by two to four years of fallow (Smith 1994, 32).

The dominant species of cereal in the Western Isles remained barley in VA Bornais (Bond et al., 2005, 163), Bostadh and Galson (Church 2002, 117-119), though the monoculture is broken with the growing of oats, some rye, and flax (Bond et al., 2005, 163). Oats and barley are better suited to the high machair or transition between machair/blackland, where damper soils with a less sandy composition are found. Many weed species present in the samples from Bornais and Cille Pheadair are from damp ground, and Bond et al., suggested that this indicate the use of this transition area for cultivation or else movement onto flood prone areas of the low-lying machair (2005, 165). Rye and flax would prefer drier and sandier soils found on the machair (Bond et al., 2005, 164); the presence of an indicator species of light sandy soils such as *Spergula arvensis* (corn spurrey) at Cille Pheadair (Bond et al., 2005, 164) and *Buglossoides* sp. (gromwell) at Bornais (Bond et al., 2005, 189), has been suggested as evidence of the extension of cultivation onto drier areas of machair that were unsuited to barley growing (Bond et al., 2005, 164).

This diversification of cereal production, and along with increasing frequency of cereal grains, points to intensification and expansion of cereal growing in the VA onto what had been marginal areas under Iron Age agriculture (Bond et al., 2005, 164; Church 2002, 135-6). The results for Mound 1 Bornais, at first glance, show a huge drop in the percentage of barley; however, the number of barley grains were found to have increased by 5% and it was a massive increase in oats from one grain to 160 grains between the LIA deposits and the VA deposits that accounts for the apparent drop in barley. Oats as a crop are not as labour intensive as barley (Bond 2007, 192) and Church has referred to this increase in the use of oats as the ‘extensification of the arable economy into more marginal lands’ (2002, 135-136). This, in fact, suggests a heavy intensification of arable farming through diversification of seed crop and bringing into cultivation new land for which growing oats was suitable. The range of weed seed also suggests a range of damp ground conditions were utilised from acidic to alkaline soils during this period (Bond et al., 2005, 164).

The low levels of flax, wheat and rye have been suggested as weed contamination at Bostadh (Church 2002, 117-118). Flax as a crop has been seen as a marker of Scandinavian settlement in Orkney (Hunter 2007, 131, 187) and flax was observed at Cille Pheadair and Bornais in VA deposits (Bond et al., 2005, 164) being used for the fibre or oil (Bond and Hunter 1987, 177; Church 2002, 138; Jennings and Kruse 2005, 257; Bond 2007, 187). The place-name Linisiader NB2131 (ON *Línsetr* - flax shieling, Oftedal 1953) does suggest that specific locations were used for the growing, and possible processing, of flax, which may account for the low levels Bostadh. The nitrogen loving nature of flax (Bond 2007, 164) would make it logical to grow it close to where cattle were kept, such as at a *setr*, as this would make it easier to transport the manure to the fields.

| | Bornais -LIA Mound 1 (Sharples, 2005) | Bostadh - LIA/Norse transition (Church, 2002, 117-119) | Bornais -VA Mound 1 (Sharples, 2005) | Bostadh -VA (Church, 2002, 117-119) | Galson -VA (Church, 2002, 117-119) |
|---|---|---|---|---|---|
| Barley (*Hordeum Sativum*) | 98% | 94.7% | 47% | 72.1% | 79.9% |
| Oats (*Avena sp.*) | 0 | 4.6% | 52% | 26.3% | 19.7% |
| Wheat (*Triticum sp.*) | 1% | 0.4% | 0 | 0.4% | 0.2% |
| Rye (*Secale cereale*) | 0 | 0 | 1% | 0.3% | 0.1% |
| Flax (*Linum usitatissimum*) | 1% | 0.3% | <1% | 0.9% | 0.1% |

Table 4.1.3 Arable grains and flax found at sites during the Late Iron Age/Norse transition.

The implications of this intensification of arable production could exhaust the delicate machair soils (Smith 1994). To preserve the soil and continue intensive cropping would require high inputs of manure; even the blacklands require fertiliser to allow continued cropping (Smith 1994). The lack of evidence of any fencing or walls on the machair led Sharples to suggest that either constant herding of animals away from the crops was necessary or a form of transhumance must have been practiced (Sharples 2005, 170).

The demarcation of farming into arable/pastoral areas, already evident in the LIA, would need to have become more strongly entrenched with any intensification and diversification of arable production in areas with limited arable land and space for grazing, such as the Western Isles. The need to separate livestock from cereal growing areas, alongside an increased need for fertiliser, in the form of manure, would increase the need for cattle and, as a result, increase the need for shielings in order to provide grazing and fodder.

## 4.1.8 Distribution Norse shielings in Zone 1.

There are 85 Viking shieling names in total, 55 *setr*-names and 30 *ærgi*-names in Zone 1. Overall, *setr* and *ærgi* in Zone 1 have a complementary distribution (Figure 4.1.5), whereas *setr*-names predominate in Lewis and northern Skye, *ærgi*-names are concentrated in North and South Uist. The place-name elements are only found together along the southern coast of Harris, along the north-west of North Uist and Barra. This could well be the result of the southern portion of Zone 1 being Gaelic speaking at the time of Scandinavian colonisation, with already functioning *àirigh*-names that were appropriated by incoming Scandinavians, and if this was so, it is possible that it was here that the word was first adopted. In this scenario, Skye and Lewis would still be Pictish speaking at the time of Scandinavian settlement, and the indigenous place-names were comprehensively replaced by ON place-names, as seems to have happened in the Northern Isles (Wainwright 1962, 122).

This scenario does not explain why Gaelic and Pictish place-names were treated differently by invading Scandinavians, or why much more important pre-Viking settlements on the machair of North and South Uist were replaced by ON names, such as at Udal. Certainly, the scatter of *setr*-names between Harris and Sandray point to *setr* still being an appropriate place-name to use in certain situations. There is no proof that the Uists and Barra were Gaelic speaking prior to the VA and if they were not, then any *ærgi*-names are likely the result of an ON coining.

The environment conditions on Lewis and Skye will have affected the carrying capacity of the land, limiting population. These sparsely populated areas may have been the first areas that Scandinavian raiders felt secure and first built (or requisitioned) bases to set off on raids, which subsequently became settlements. If Lewis and Skye were settled early, then the distribution pattern may well follow Nicolaisen’s theory of the chronology of place-name generics (1976b), with *setr* possibly falling out of fashion (Kruse 2007, 7) by the time of the colonisation of the Uists and being replaced by *ærgi*. This would mean that *àirigh* must either have been encountered during the colonisation of the Uists, or else the idea brought back from travels further south. The later colonisation of Cumbria, c. AD 900 (Fellows-Jensen 1985, 74), where both *setr* and *ærgi* were still active as place-name elements would suggest that this scenario was not the case (Oram 2000, 248).

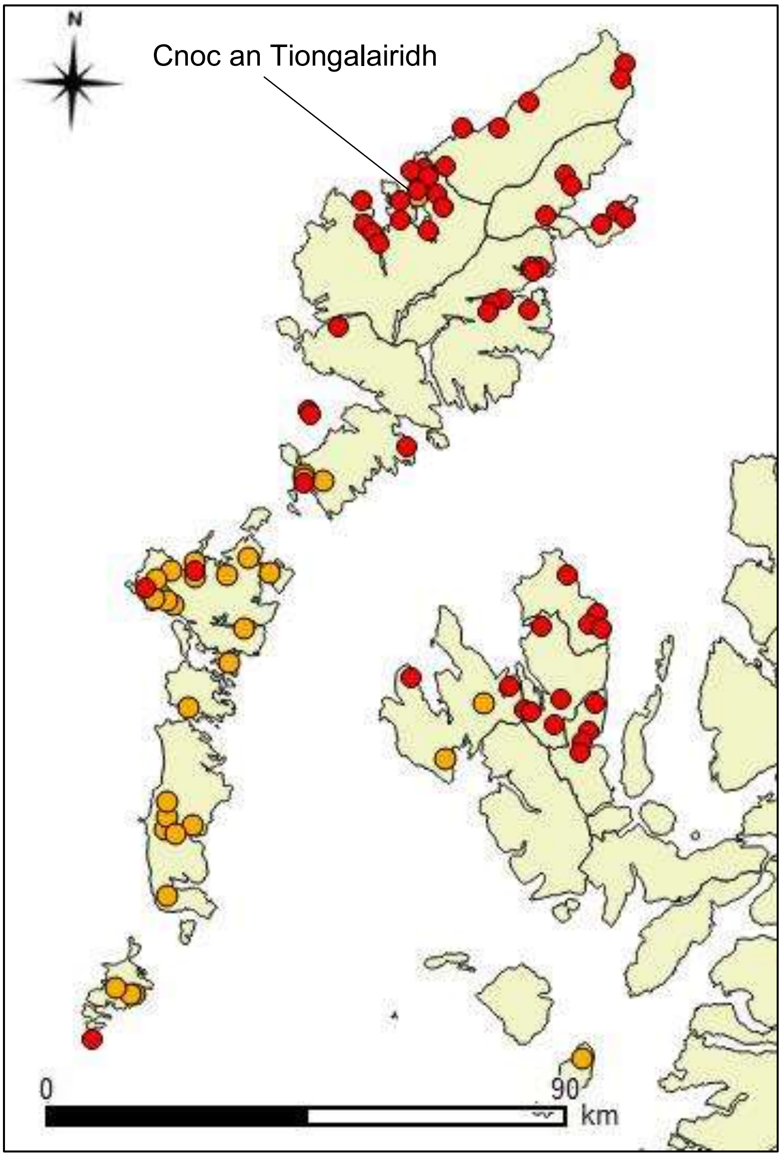



Figure 4.1.5 Distribution map of *setr*-names (red circles) and *ærgi*-names (orange circles) in Zone 1.

Alan Macniven has raised the possibility that the complimentary distribution of *setr* and *ærgi* might be connected to the MacSorley Lordship of the Isles in the 12th century (2006, 190-192). Lewis and Skye in 1156 AD were part of the Kingdom of Man, whereas the Uists, Small Isles, Mull, Islay, Jura and Arran being part of Somerled's dominion (Figure 4.1.6). It is possible that under the Gaelic MacSorleys, the use of the place-name element *àirigh* may have been spread. In areas that were, or until recently had been, ON speaking, the element may have been coined using a specific-generic word order which would look, for all intents and purposes, as a pure ON construction, especially when given an ON specific, such as a personal name. Similarly surviving simplex *ærgi*-names could well be given a Gaelic specific, giving the impression of a purely Gaelic construct; alternatively, this could involve a simple transfer to the Gaelic *àirigh*. The absence of *ærgi*-names from Arran and the Small Isles (with the exception of a possible example on Eigg) both within MacSorley control, and the fact that *ærgi*-names are found along the north-west mainland of Scotland, would suggest that, although a possibility, it is unlikely to be the only explanation, which Macniven had never suggested anyway.

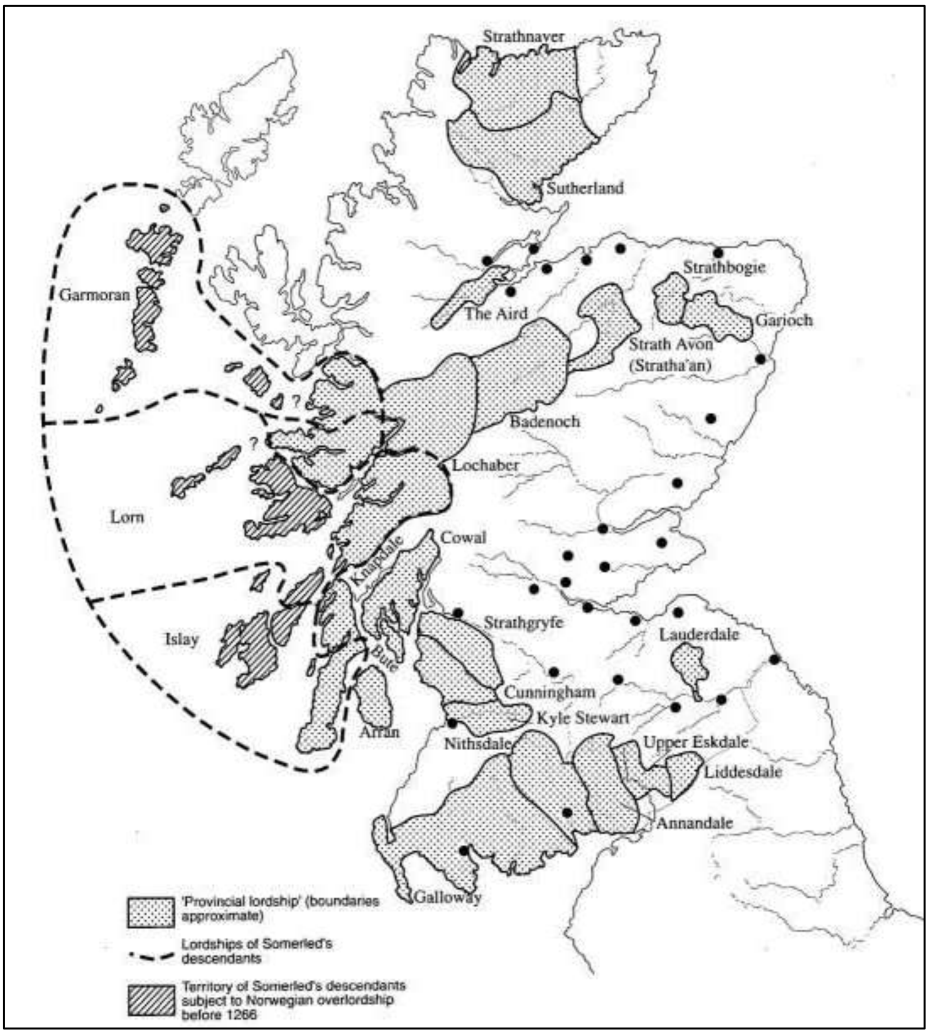



Figure 4.1.6 Map of the area controlled by the Macsorley dynasty in the dashed lines (McNeill and MacQueen, 2000).

The growing season is shorter by two months on Lewis and Skye compared to Barra for grass. Skye has far more precipitation than the Western Isles; the steeper slopes would allow water to drain into the lowlands more quickly, blanket peat formation as a result was confined to valley locations, though peaty gleys are found in south-eastern Skye (Macauley Institute 1981, http://soils.environment.gov.scot/maps/scanned-soil-maps/, accessed 14/5/14). The lower precipitation over much of

Lewis is negated by the undulating topography and combined with the drift geology and low evapotranspiration, leads to water logging of the soil and extensive blanket peat formation. In both islands, soil moisture content is likely to be high, with resulting anaerobic soil conditions that promotes the formation of peat. This in turn limits the extent of pasture and would therefore affect how VA farmers used the land.

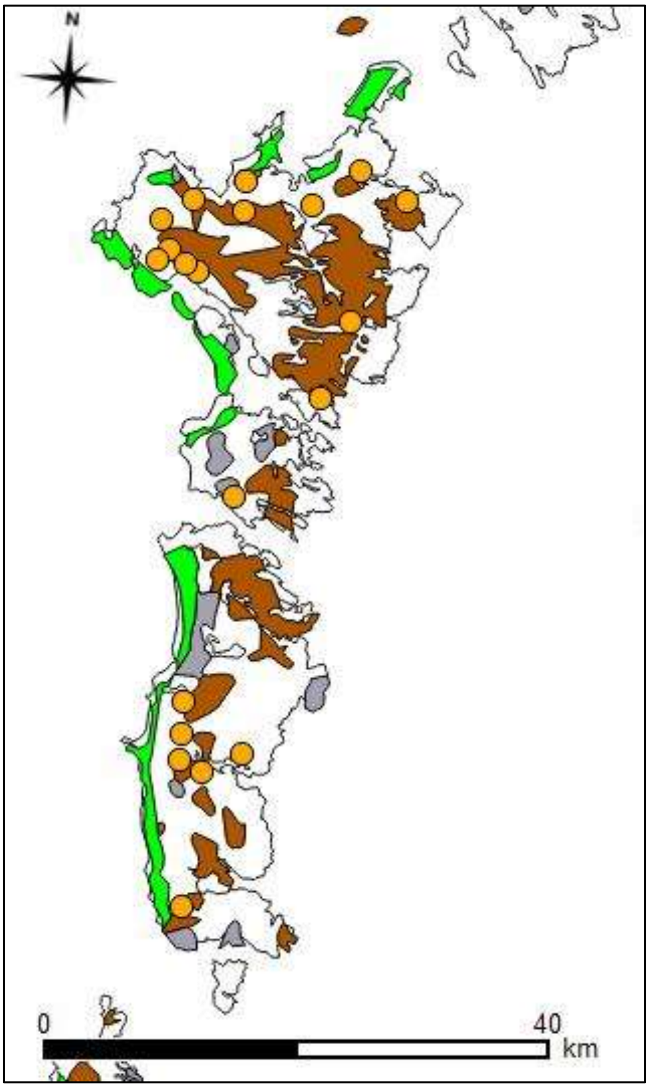



Figure 4.1.7 The location of *ærgi*-names on North and South Uist (orange circles), in relation to peat (brown shading) and machair (light green shading) (map after the British Geological Survey).

The water logging of the soil in Lewis and Skye will lead to the formation of peat, peaty gleys and podsols; this in turn will lead to vegetation dominated by acid heather heath and bog. Hardy beef cattle and calves are able to show weight gain regardless of vegetation and climate (Berry et al., 2002, 451). Dairy cattle have a higher demand for nutrient rich fodder (Saether et al., 2006b, 385; M.A. Fraser et al., 2009a, 368) to cover the extra energy requirement of producing milk (Hofsetter et al., 2011, 717); beef cattle selected vegetation not just purely for energy intake, but for nitrogen content (Berry et al., 2002, 450).

The majority of *ærgi*-names are located on the transition from machair to peat soil in the blacklands (Figure 4.1.9), where the addition of wind-blown calcareous sand improves the peat and leads to the growth of mesotrophic grassland for grazing. It was in these very areas that later arable cultivation moved during the middle ages (Parker Pearson 2012, 14). Rather than being of little use, they were, prior to the VA, under-exploited, and the likely location for the ‘extensification’ of arable cultivation suggested by Church (2002, 135-136). Lewis with its limited area of calcareous machair would not have developed large areas of mixed soil limiting the ability to develop a large-scale dairy economy, though some milking no doubt would have occurred, and its peats would have remained suitable for rough grazing land.

## 4.1.9 Summary and conclusions

The Scandinavian settlement in Skye and the Western Isles saw cultural changes in language, building style and pottery. Norse sites in both Lewis and the Uists show evidence that the inhabitants also relied on fishing, particularly herring and gadids (principly cod), during the VA (Ceron-Carrasco 2002, 170-4). Small numbers of sea bird bones were also present in assemblages, especially alcids and cormorants (*Phalacrocorax carbo L*.) at Berigh and Bornais, aswell as some Brent geese at Bornais (Thoms 2003, 141, 151; see also Mahler 2007, 296; Lucas 2008, 92; Chapter 2.2). The agriculture was at the very least intensified with the expansion of arable farming and the introduction of different cereal types and flax. Accompanying this intensification and expansion of arable farming was a complementary system of livestock management, involving an increased importance of cattle. Cattle complimented the cereal growing by providing fertiliser in the form of manure; this, however, required the use of shielings to keep the livestock from the limited arable land.

The distribution of *setr* and *ærgi*-names is complementary in the Western Isles; however, this masks different environmental factors which would affect the livestock management system used. On Lewis, the extensive blanket peat and limited machair restricted the scale of dairying and may have encouraged a livestock management system based around the production of beef. The limitations of the environment may also have encouraged an increased importance of wild game in the form of red deer as a supplement to farm produce.

The Uists, on the other hand, have extensive areas of machair for cereal production, and the transitional blacklands that allowed the expansion of cereal production with the introduction of oats. The intensification of cereal production in the VA would require manure to replenish nutrients, especially on the machair soils. Grazing of the machair ran the risk of cobalt deficiency in cattle and is likely to have required cattle to be moved to the blacklands and peaty soils of the eastern part of the islands. This would allow cereal to grow and areas of meadow in wetter areas to be used for hay mires in the machair areas and grazing and fodder collection to be practiced inland. The blackland soils, being a mixture of peat and calcareous sand, produced mesotrophic grassland that would have provided richer grazing.

Increasing specialisation of resource production, or trade, between sites is hinted at by the change in the numbers of front and hindquarters found at Bostadh and the use of specific elements denoting specialisation at settlements, such as Linsiader. This may have been to support the ‘conspicuous consumption’ of elite sites in the Western Isles, suggested by Sharples and Smith (2009, 109, 124). This would involve primary sites such as Bornais, having satellite or secondary farms specialising in production of agricultural products based on the environmental situation at each, staffed by slaves or subordinates on dependent farms (Parker Pearson et al., 2004, 252; Skre 2011, 202).

# 4.2 Case Study 2: Shetland and the Faroes (Zone 4)

## 4.2.1. Introduction

Steffen Stummann Hansen (1996, 17) pointed out the long tradition of “combining and comparing” the Faroes and Shetland (Small 1969a; Macgregor 1984, 1986; Jóhansen 1985; Stummann Hansen 2003) and also the relative anonymity of both archipelagos in the VA (Stummann Hansen 1996, 117). As a case study, Shetland and the Faroes have obvious attractions for comparing shielings, being island groups reasonably similar in latitude and climate (Figure 4.2.1). However, there are differences in the relief, topography and geology between the two island chains, which affects soil formation, vegetation and availability of cultivatable land (Stummann Hansen 1996, 117-8).

The human history is also different; Shetland has a long history of settlement prior to the VA stretching back to the Neolithic and possibly Mesolithic (Turner 1993, 23). The Faroes has some evidence of some human habitation from the 4-6th century AD (Church et al., 2013, 231), but the limited amount of evidence would suggest a relatively underexploited landscape (Jóhansen 1985, 57-8). The different human histories would also have affected the development of landscape, soils and the vegetation at the time of *landnám*, and this in turn would have an effect on the length of time taken to fully develop a farming economy (Stummann Hansen 1996, 117-8).

However, comparing these island groups may also allow a comparison of two separate *landnáms.* Shetland has been suggested as a possible early settlement area in the VA of around c.AD 800 (Brøgger 1929; Ballin Smith 2007). The settlement in Shetland may have occurred before extensive contact with Gaelic-speakers from around the Irish Sea area before the adoption of *ærgi*. The Faroe Islands, in contrast, are believed to have been settled after contact with the Gaelic-speaking world (Arge 1991, 103).

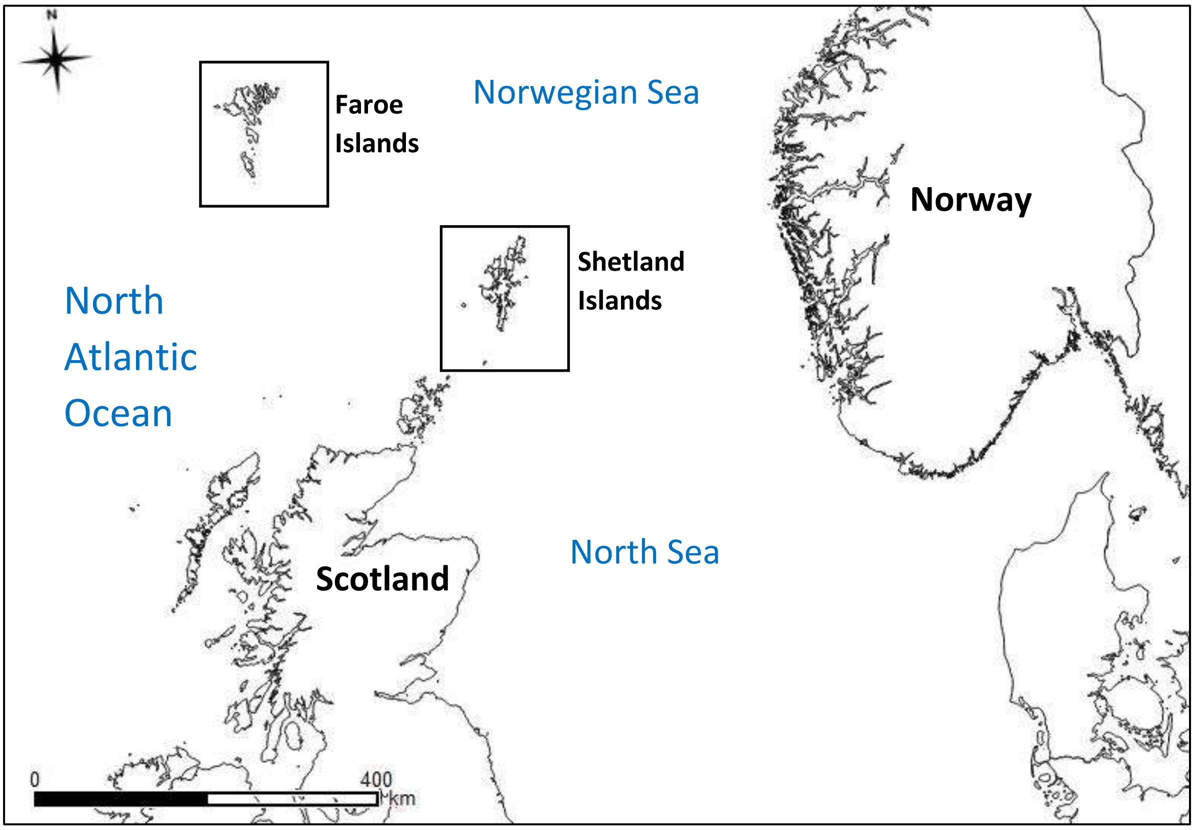



Figure 4.2.1 Location map of Shetland and the Faroes.

The *landnám* in the Faroes has been dated, on assumptions based on the *Færeyinga Saga,* to around c.AD 825 (Rafn 1833, xxxvi). As the period between the supposed *landnám* in Shetland and the Faroes is only around 25 years, naming strategies and settlement patterns should be relatively similar. An early 9th century date for a VA *landnám* in the Shetland Islands is contentious, as there is little evidence, so far, found to corroborate this assumption (Bigelow 1992, 9-10) and it is possible settlement happened simultaneously or within a short period of time. However, *setr* is not found as a farm name in the Faroes, though it is found as a topographical name, while there are around 150 *setr*-names in Shetland. *Ærgi* is uncommon in Shetland, being the name of three farms and one topographical feature, while in the Faroes there are 21 known *ærgi*-names, mostly now referring to topographical features.

What is the reason for different use of shieling names in Shetland and the Faroes? There are various questions that can be posed to help explain the complementary distribution:

1. Is the distribution pattern of *setr* and *ærgi* in Shetland and the Faroes the result of environmental differences (Dugmore et al., 2005, 25)? Did these differences make a particular shieling name inappropriate to use in certain environments (Macgregor 1986, 99)?
2. Were the islands settled by different groups of Scandinavian settlers? With one group settling in Shetland, coming from a homogenous Scandinavian culture, and a second group, who settled mainly in the Faroes, having first involved in contact with Gaelic society? Was the farming economy different at *landnám*?

3. Is there evidence that the settlement in either island group was somehow different at the time of *landnám?* The difference could be in settlement location, farming economy employed (evident in building morphology, agricultural practices).

## 4.2.2 Location

### Shetland

The Shetland and Faroe archipelagos are found in the North Atlantic Ocean. Shetland has around 100 islands, but only 16 are inhabited. Shetland is located between 59˚50'N to 60˚50'N and between 0˚40' to 2˚W, some 173km north, north-east of Caithness, on the Scottish mainland, and 338km west in Norway. The island chain stretches for 112km north to south and the land area covers around 1433km²(Dry and Robertson 1982, 1).

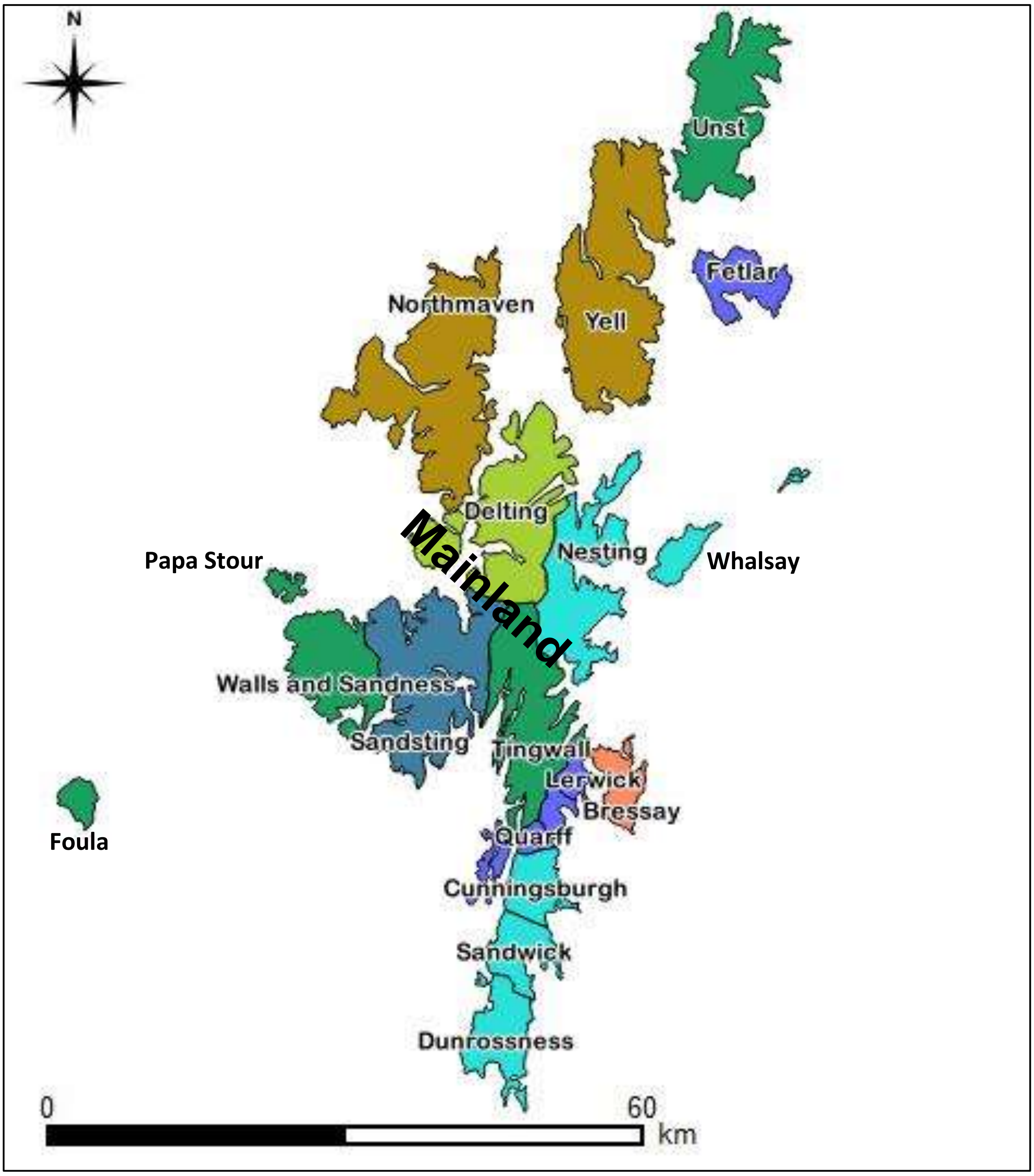



Figure 4.2.2 Map of the Shetland Islands.

The Faroes are around 300km north-west of Shetland and are between 61˚24’N to 62˚24N and 6˚15’W to 7˚41W. The archipelago consists of around 18 islands that have a land area of around 1399km2 (Rutherford 1982, 3). Tórshavn, the capital, is found on the largest island, Streymoy, and is 675km west of Norway. At its closest point, the islands are 325km north-west of Cape Wrath on the Scottish mainland

Faroe Islands

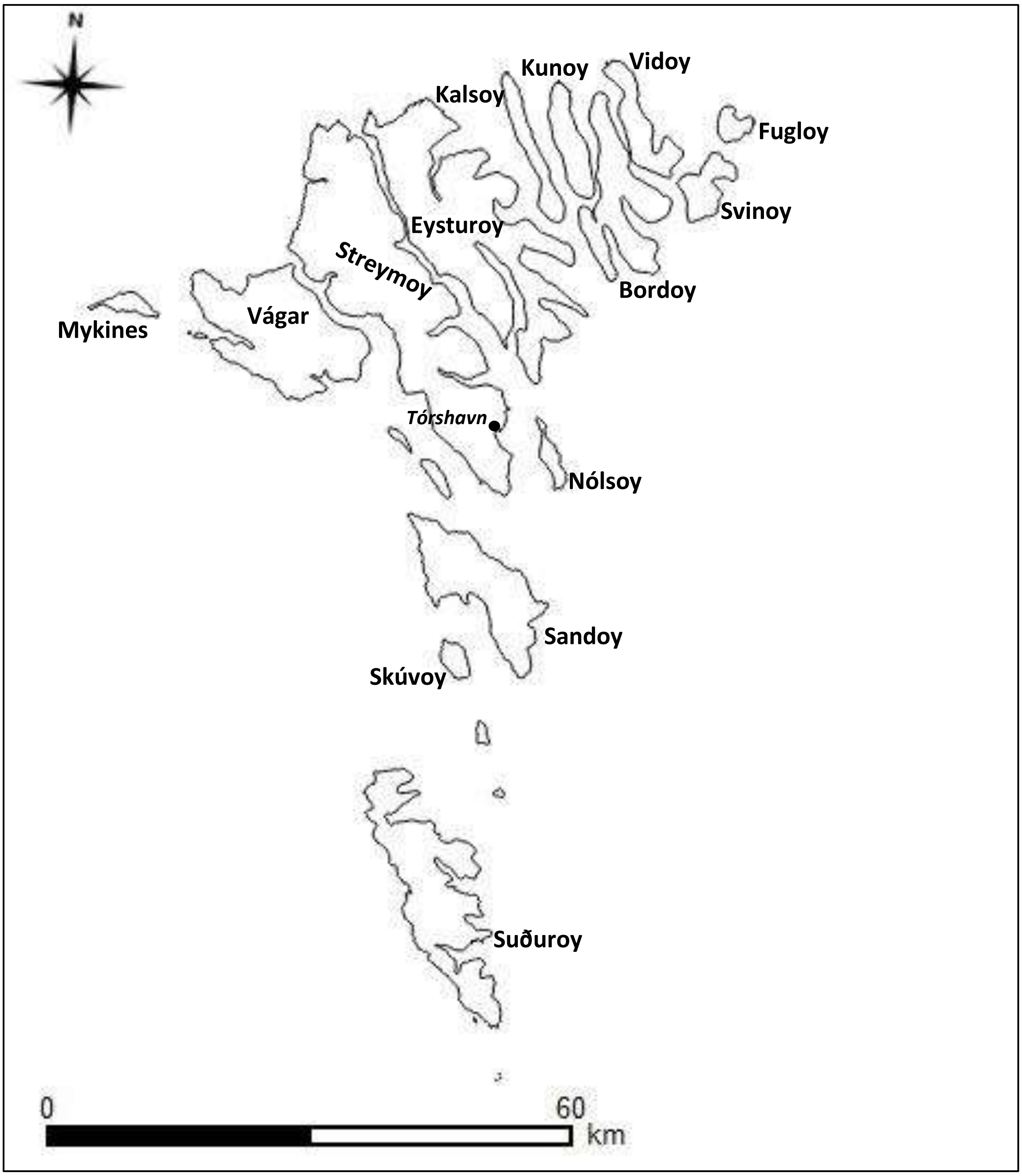



Figure 4.2.3 Map of the Faroe Islands.

### 4.2.3 Pre-*landnám* history

Shetland

The Shetland Islands have a long history of human occupation before the VA; the earliest settlement site so far found is a Neolithic site found under Sumburgh airport runway, which is dated to c.3200 BC (Downes and Lamb 2000). Though it has been suggested that evidence of earlier Mesolithic hunter-gatherers may have been lost through coastal erosion (Turner 1993, 23). Changes to a pollen diagram at Catta Ness, Lunnasting, were observed between 5500-3500 BC and have been suggested as evidence of grazing, possibly by the introduction of red deer by Mesolithic people (Bennett et al., 1992, 267).

A dense Neolithic and BA population has been suggested from abandoned field systems and house sites, especially along the western Mainland (Wainwright 1962 41-3; Harding 1990, 9; Turner 1993, 23). The population of Shetland is often referred to as '*Pictish*', though Pictish stones are found on the islands, the exact linguistic situation is not known (Armit 1990b, 207; Smith 2001, 12).

The IA saw the erection of broch towers, which Ian Armit refers to as complex Atlantic roundhouses (Armit 1990a, 438-9). Armit dates the building and use of complex Atlantic roundhouses to between the fourth and first centuries BC (Armit 1996, 145); in Shetland, they are, on average, 2.787km apart and have a primarily coastal distribution (Fojut 1982, 40). Shetland is often considered marginal because of the risks related to cereal production (Bond, Guttmann and Simpson 2004, 138;

Challinor 2004, 164). The building of complex Atlantic roundhouses, round houses and abandoned field systems would suggest a large population and that Shetland was not marginal (Harding 1990, 16; Turner et al., 2004, 123).

Sometime, between the IA and VA, some complex Atlantic roundhouses and forts had been largely abandoned (Edwards, Schofield and Swindles 2013, 83), though some may have continued to be used in a modified form. Pollen diagrams from Underhoull in Unst show an expansion of heather communities prior to the VA. Edwards, Schofield and Swindles have suggested a long period of desertion at Underhoull before reoccupation by Scandinavian settlers (2013, 84). Similar periods of abandonment have been seen at other sites such as Norwick (Ballin Smith 2007, 290), though Old Scalloway may have evidence of occupation up to the VA (Bond, Guttmann and Simpson 2004, 139).

Gerald Bigelow (1992, 14) suggests three scenarios at *landnám*: the first sees Shetland uninhabited or with a minimal population (I. Crawford 1981, 260). The second involved the assimilation of a substantial part of the 'Pictish' population through a gradual and peaceful increase in the Scandinavian presence. This is based on the possible survival of Celtic place-names in Orkney (Marwick 1923, 251-2) and continued use of Pictish architecture styles and artefacts in Orkney at Buckquoy (Ritchie, 1971 1973) and the Brough of Birsay (Hunter 1986, 173). The final scenario sees the "extermination or expulsion" of the native population by Scandinavian raiders (Bigelow 1992, 14).

## Faroes

The Irish monk Dicuil, in *De Mensura Orbis Terrae,* refers to a small set of islands inhabited by Irish anchorites (*papar*) that were 'emptied' due to Northmen pirates, leaving only sheep (trans. Tierney 1967, 75-77). This reference was suggested as referring to the Faroes by C.C. Rafn who, by comparing it with the text in the *Færeyinga Saga*, suggests a date for a Scandinavian *landnám* of around AD 825 (1833, XXXVI). Símun Arge points out problems with the chronology suggested by Rafn, as the *landnám* in the *Færeyinga Saga* is also associated with Harald Hárfager in the saga, who came to power in parts of Vestlandet some 55 years later (1991, 102).

Pollen analysis at Tjørnuvík, Streymoy and Lambi on Mykines (Jóhansen 1985, 58), and at Hov, Suðuroy (Edwards et al., 2005, 638) does suggest two settlement phases, initially between the 6th and 7th centuries and a later VA one. Jóhansen's results at Lambi on Mykines were questioned by Buckland et al. (1998). However, Church et al. have since found evidence of barley grains carbonised in domestic heaths dated to between the mid-4th to mid-6th century at Á Sondum, Sandoy (2013, 231).

There does not seem to be evidence for any large-scale settlement and this may suggest, at most, a very small population. There was little effect on the vegetation, as can be seen with the fact that it was only after the Scandinavian *landnám* that lowland tall herb communities disappeared (Jóhansen 1985, 58). This would also call into question the view the islands were full of sheep at the time of settlement (Lawson et al., 2005, 661), as these, according to Jóhansen, are preferentially grazed by livestock (1985, 59). However, this may only relate to some islands, as there is evidence Suðuroy experienced some limited pre-VA activity (Edwards et al., 2005, 646)

Shetland had a long period of human habitation, which would have had an impact on the vegetation, landscape and soils at *landnám*. The Neolithic and IA population had laid out fields and there was a history of soil improvement (Dockrill and Batt 2004, 133). This would have meant that it would be relatively easy for Scandinavian settlers to set up farms. The Faroes, on the other hand, may have had a limited number of fields with some livestock, in the form of sheep. Overall, the land would have needed to be cleared, removing scrub, setting out fields, removing some of the stones from potential arable fields and tilling the soil.

## 4.2.4 The physical environment

Geology

The Shetland Islands has a more complex geology than the Faroes. The central section of the Mainland consists of bands of the Appin Group and Argyll Group psammite, semipelite and pelite, metalimestone, and outcrops of granite. The bedrock of the western Mainland, south-eastern Mainland, Foula and Bressay, is mainly middle old red sandstone. Outcrops of igneous rock, both mafic and felsic, are found in the south-western Mainland, Sandsting and Northmavern. Yell is almost entirely composed of gneissose psammite and gneissose semipelite of the Moine supergroup.

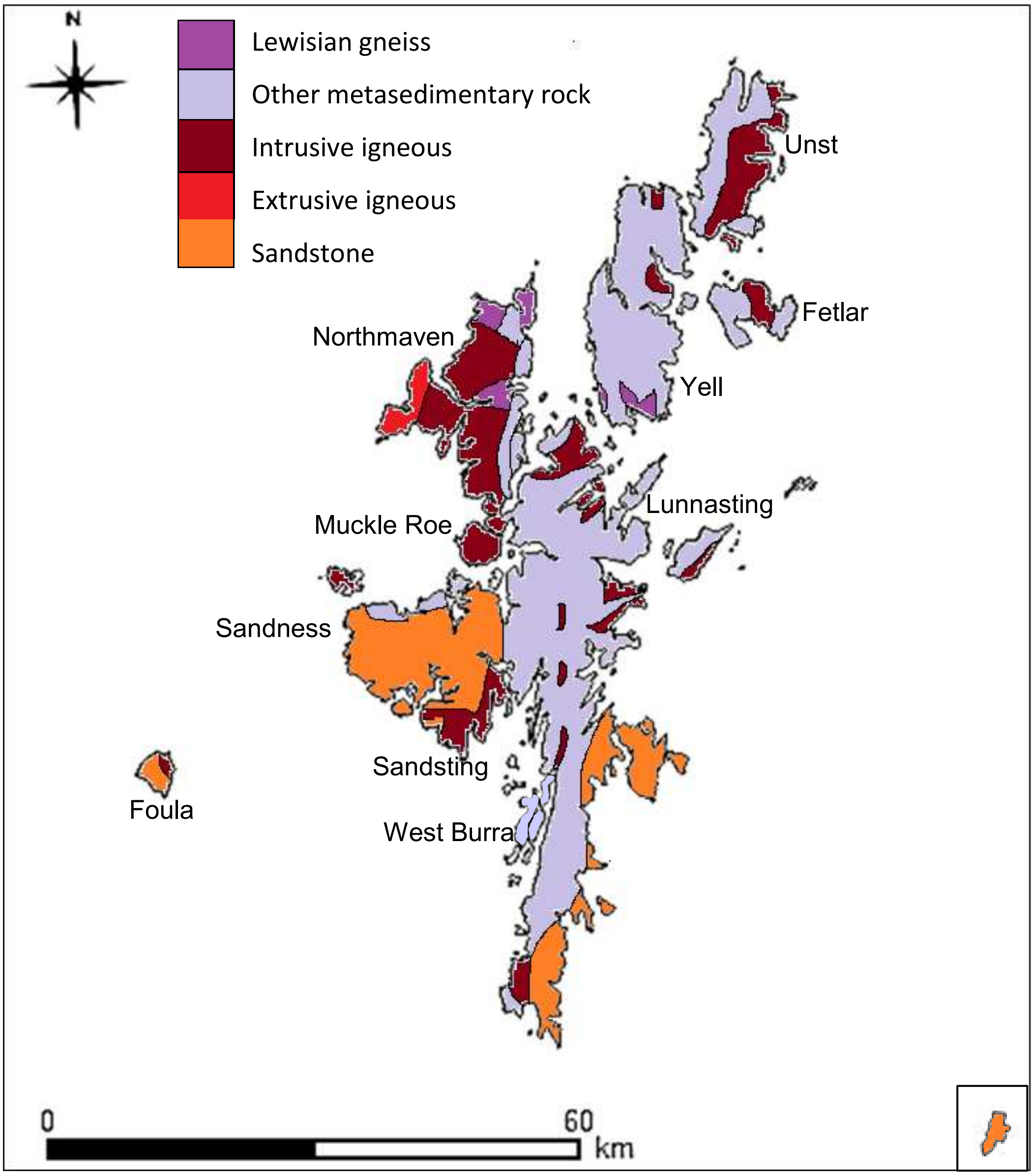



Figure 4.2.4 Simplified geological map of Shetland, Fair Isle insert map (after BGS website, accessed 24/4/2017).

Fetlar and western Unst consist of calcareous pelite and semipelite of the Appin Group; mafic igneous intrusions run down central Unst, with Unst Phyllite Group pelite along the south-eastern coast (British Geological Society website, accessed 15/4/17). Unst, Fetlar and parts of Northmaven have workable steatite deposits, a soft, easily carved, heat resistant metamorphic rock with high hydrous magnesium silicate content (Forster and Bond 2004 220; Mattila 2016, 2-4). Steatite, due to being easily worked and heat resistant, was quarried and used for domestic purposes in the VA in Norway and is also found in Scandinavian settlements in the North Atlantic (Forster and Bond 2004; Mattila 2016).

The Faroe Islands are formed almost exclusively from 60-million-year-old basalt lava flows. The flows can be divided into three main lava flows and a thin series of sedimentary strata; the lower basaltic layers are 900m thick, then a sedimentary series of clays, with some sand and pebble beds, and a thin coal seam (Noe-Nygaard 1962, 378; Rasmussen 1996, 34). A Middle Lava Series 1300m thick, and an Upper Lava Series, some 625m thick, consists of thin layers with intercalated tuffs (Noe-Nygaard 1962, 376-9). After the volcanic activity stopped, the area was weakly folded into a gentle anticline with an aspect between north-easterly to south-easterly (Noe-Nygaard, 1962 382-4; Rasmussen 1996, 34).

Topography

Much of Shetland is undulating and below 120m asl. The bedrock of Shetland was moulded by repeated glaciations during the Quaternary; during the last glaciation, the Devensian, Shetland was initially overridden by the Scandinavian ice (29-20,000 BP) (Golledge et al., 2008, 42), but later developed its own ice cap (18-16,000 BP) (Gordon, Hall and Ross 1993, 7; Golledge et al., 2008, 42). The eastern and northern isles, and the eastern half of the Mainland consists of ice smoothed rounded hills and ridges (Golledge et al., 2008, 46-8). The ridges are, on average, between 100-200m, but can be as high as 300m, with a north to south orientation (Dry and Robertson 1982, 9). The sandstones of south-eastern Mainland and western Walls are mostly below 60m and are gently inclined (Dry and Robertson 1982, 3). Glacial erosion of the more resistant igneous rock along the western half of the Mainland created a more rugged landscape at Muckle Row and Northmaven. Ronas Hill, the highest point at 405m asl, is situated on the granites in Northmaven (Dry and Robertson 1982, 3).

The Faroes rise to between 600-800m asl and reach 882m at the highest point, Slættaratindur on Eysturoy. The islands, as with Shetland, saw several separate ice ages during the Quaternary. During each glacial episode, glaciers formed on the highest points, which expanded and joined to form an ice cap up to 700m asl during the last ice age (Humlum 1996, 38). Glacial erosion did not smooth the landscape as in Shetland, but deepened pre-existing valleys, creating a glacial trough and fjord landscape (Humlum 1996, 38).

The homogenous bedrock, basalt, created a fairly uniform base for the processes of weathering and erosion. Rutherford and Taylor found two distinct land districts: a northern one formed from the Upper Basalt Series and a southern land district formed from the Middle and Lower Basalt Series (1982, 91). These are then further divided into eight land systems: three are mountain systems in the northern islands, which account for 35% of the land area. A plateau land system accounts for a further 30% and a valley land system both found in the Middle and Lower Basalt Series with moderate to steep slopes and undulating valley bottoms (1982, 91-109). Cirques, called *botnar* in Faroese, were formed at the start of glacial episode and ice retreated in to them as the climate ameliorated (Rasmussen 1982, 30; Humlum, 1996, 38).

The western coastline of the Faroes, which is open to the strong Atlantic swells, have been strongly affected by coastal erosion, creating a steep mountainous coastline (Rasmusson, 1982, 34). Lowland is restricted to a narrow coastal plain, some short glacial valleys and, at a slightly higher altitude, cirques, with a northerly or easterly aspect.

Superficial deposits

Around 40% of Shetland's superficial deposits are made up of peat, the majority being over 100cm deep, with extensive deposits on Bressay, North Roe and around Walls. Brown forest soils and noncalcareous gleys are uncommon in Shetland (Dry and Robertson 1982, 13); however, scattered deposits of noncalcareous gleys are found on Yell and across the Mainland, as are brown forest soils running along the linear ridges. West Burra, Whalsay, north-east North Roe contain humus-iron podsols. It is only on Unst that there is a greater percentage of more fertile grasslands down the east and southern coast, including brown forest soils, magnesium gleys and brown magnesium soils (1:250 000 Soil Survey of Scotland maps).

Although the Faroe Islands are on a similar latitude to Western Norway and only just north of Shetland, soil formation has been far more limited. The lower temperatures and wetter climate, along with a homogenous parent material, steep terrain and limited extent of woodland has limited the number of soil types (Rutherford and Taylor 1982, 111). Rutherford and Taylor, using the Canadian soil classification system, describe five types of soil in the Faroes: regosols, brunisols, podsols, gleysols and organic soils. Regosols are a weakly developed mineral soil, occurring on altiplanation surfaces (Rutherford and Taylor, 1982, 114), brunisols are found on moderate to well drained sites. Podsols are strongly acidic and occur where aerobic conditions prevail, and water can percolate freely through the upper part of the profile, whereas gleysols occur where the soil is frequently or continually saturated. Organic soils are often referred to as peat or bog and are characterised by being primarily composed of organic material that is saturated with water for long periods (Rutherford and Taylor 1982, 111-124).

Climate

Today, the climate of both Shetland and the Faroes is a cool and maritime one, but during the VA the climate was more favourable and is known as the Medieval

Climatic Anomaly, which lasted until the Little Ice Age (Grove, 1988; Keller and Perikaris, 2016). Today, the highest average monthly temperature at Lerwick in Shetland is 11.9˚C in July and August and lowest average 3.4˚C in February (Met Office website, accessed 14/4/17). The highest average monthly temperature for the Faroe Islands is around 11.1˚C in July and August and it is coldest in February on average around 3.7˚C. Shetland has an average annual temperature range of 8.5 ˚C, compared to the Faroes 7.4˚C, which are both mild compared to similar latitudes (Søgaard, 1996, 26). May has the highest sunshine hours in both locations, 181 hours of sunshine in Shetland (Met Office website, accessed 14/4/17) and 123 hours in the Faroes (Søgaard, 1996, 26).

Average annual rainfall at Lerwick is around 1256.8mm, with 201.6 days of rain a year. Fair Isle averages around 946.7mm rain a year, over 176.8 rain-days and at Baltasound on Unst, rainfall is 1108.1mm a year spread over 200 rain days (Met Office website, accessed 14/4/17). In the Faroes, there are 281 days with precipitation and the annual precipitation is around 1461mm. However, rainfall increases 20-30% for every 100 feet in altitude; the highest parts of Streymoy and Eysturoy receive 2000-2500mm, while the lower western island of Mykines only received 900mm (Søgaard 1996, 26).

Over much of Shetland wind speed is around 6.5m/sec; Lerwick on the eastern Mainland has 53 days of gale force winds a year (17.2m/sec for 10 minutes) (Dry and Robertson, 1982, 9). Western districts are likely to receive stronger winds, as the prevailing wind direction is from the south-west and there will be no topographic deflection. The Faroes are also exposed to strong winds from nearly every direction, but the prevailing wind is from the south-west and accounts for 50% of winds in the western isles. Many of the fjords run north to south, which deflects some of the winds, reducing wind speed along the eastern aspects. The average wind speeds range from 3.4-7.9 m/sec, but over 10% of winds reach 10 m/sec (Søgaard 1996, 26). The high wind speed makes salt spray a significant factor for vegetation in both Shetland and the Faroes (Jóhansen 1985, 63).

Vegetation

The time of deglaciation is uncertain in Shetland, though the earliest radiocarbon date of 11,730+/-110 BC from organic sediment from the Burn of Aith gives a minimum age (Birnie 1993b, 27). On deglaciation, vegetation succession occurred along with climatic amelioration, from initially Arctic species. At Murraster in west Mainland (Jóhansen, 1975, 372-4) there was an initial spread of *Salix herbacea*, *Rumex*, *Sedum* and *Artemisia* (Jóhansen 1975, 372), followed by *Corylus* increasing and *Betula* sp. and *Juniperus* reaching their maximum (Jóhansen 1975, 372). Keith Bennett's study of Murraster found the vegetation around 8350 BC to be dominated by *Gramineae*. *Betula*, which reached its maximum abundance around 6950 BC (Bennett 1993, 119-20).

Similarly, at Lang Loch 5km south-west of Lerwick, high frequencies of *Rumex* (58%) and *Salix* (25%) were found between 11850-8550 BC (Hulme and Shirriffs

1980, 798-9). During a second phase at Loch Lang between 8550-7750 BC, *Betula* (46%) and *Pinus* (16%) reach their highest maxima, *Salix, Juniperus* and *Rumex* decrease and *Poaceae* rose to between 20-30%. During a third pollen zone, dated 7750-5750 BC, *Corylus* peaked at 55%, while *Ulmus* (3%) and *Quercus* (4%) are present, and *Poaceae* pollen declined to around 10% (Hulme and Shirriffs 1980, 799).

In parts of Shetland, woodland, of varying of density, would seem to have become established by the middle of the 6$^{th}$ century BC. At Murraster by 6450 BC, a variety of AP accounted for 50% of pollen (Bennett 1993, 119-20), at Brunatwatt in west Mainland, AP reached a peak of 88.5% (Edwards and Moss 1993, 126). After 5750 BC at Lang Loch, a rise of *Ericales* and *Carex* spp. and *Potentilla*-type pollen points to the spread of moorland and blanket peat. The rise *Calluna vulgaris* was later at Murraster, around 2700 BC and also accompanied by a rise in *P. lanceolata* and a decrease in tall herb communities, was seen as an increase in grazing (Bennett, 1993, 119).

Today, the vegetation of lowland Shetland consists of *Agrostis–Festuca* grassland (NVC U4 and U5) on richer soils, and *Nardo-Juncus squarrosi* (U5 and U6) on poorer peaty base deficient soils (Jóhansen 1985, 68). Areas of wet species-rich meadows survive and include, on ungrazed fen, *Filipendula ulmaria, Luzula svlvutica, Caltha palustris*, and *Rumex acetosa,* and on grazed fen, *Carex nigra*, *Juncus articulates* and *Molinia caerulea* (Jóhansen 1985, 66). There are still some relic tall herb communities of *Angelica sylvestris*, *Silene dioica*, *Filipendula ulmaria*, *Lotus corniculatus*, *Luzula sylvatica*, *Iris pseudacorus*, *Arrhenatherum elatius*, *Heracleum sphondylium*, and *Jasione montana* (Dry and Robertson 1982, 16-18; Jóhansen 1985, 68).

Inland moorland areas consist of Atlantic heather moor *Carici binervis-Ericetum cinereae* to bog heather moor *Narthecio-Ericetum tetralicis* community. With altitude, these merge into *Vaccinio-Ericetum cinereae* community then *Alectorio-Callunetum vulgaris* and *Festuco-Racomitrietum lanuginose* community (Dry and Robertson 1982, 18). Cliff and headlands are heavily influenced by salt spray and have developed maritime communities in a zonal sequence, relative to distance from the sea (Dry and Robertson 1982, 15, 18).

In the Faroes, the earliest deposits that show post-glacial immigration of plant species to the Faroes is 8000 BC (Hansen and Johansen 1982, 35-6). At this time Arctic species, such as *Betula nana* and *Salix herbacea* were dominant, but at the end of the preboreal the climate ameliorated. *Betula nana* was replaced by *Juniperus communis nana* on dry terraces and *Salix phylicifolia* on wet depressions and moors; however, grasses and sedges were the dominant vegetation (Hansen and Johansen, 1982, 36). However, with the exception of Argisbrekka on Eysturoy, woodland is not known to have developed in the Faroes (Malmos 1990, 91).

The increasing dampness of the climate has been argued as the reason for the initiated peat formation in the Faroese (Hansen and Johansen 1982, 36), though other localised determinants have been suggested as important in initiating peat formation (Lawson et al., 2007, 24). During this period, a decline in *Juniperus* and *Salix phylicifolia* was observed, alongside an increase of *Calluna vulgaris* (Hansen and Johansen 1982, 36). Blanket peat began to accumulate in valley bottoms from 4000-3600 BC (Lawson et al., 2007, 21) and on the floors of cirques (Rasmussen 1982, 31). The vegetation of these peaty soils included *Eriophorum angustifolium, Carex panacea, C. echinate* and *C. nigra*, with *Nathericum ossifragum* and *Molinia caerulea* locally important (Hansen and Johansen 1982, 44-46). In protected bays and fjords, saline meadows developed around the mouths of streams; being damp, the soil is peaty with similar marshy vegetation. In addition, there are several species of grass including *Anthoxanthum odoratum*, *Deschampsia flexuosa*, *Agrostis tenuis*, *Festuca rubra* and *F*. *vivipara* (Hannon et al., 2001, 132).

The vegetation of the Faroes today consists of 400 known species of flowering plants; 90 species are thought to have been introduced by human settlement – there are 27 species of pteridophyte and 350 species of mosses and liverworts (Hansen and Johansen 1982, 37-38). The vegetation can be divided into three altitudinal zones: a temperate zone below 200m asl, a low alpine zone between 200-400m asl and an alpine zone above 400m (Fosaa 2010, 85). Across the three altitudinal zones are four main vegetation types (dwarf shrub vegetation, moist grassland vegetation, *Racomitrium* vegetation and open grassland) that contain 12 different plant communities in total. The temperate zone of dwarf shrub heath is found only with south facing aspect and has two plant communities, *Calluna vulgaris*-*Nardus stricta* community and *Empertrium nigrum*-*Calluna vulgaris* community (Fosaa 2004, 226; 2010, 88).

The low alpine zone is characterised by moist grassland vegetation, and contains three types of plant communities: *thymus praecox*-*Vaccinium myrtillius* community, *Nardus stricta*-*Potentilla erecta* community and *Galium saxatilis*-*Anhtoxanthum odoratum* community. Though the low alpine vegetation is usually found above 200m asl, on north facing slopes they extend down to the sea as the dwarf shrub vegetation is missing (Fosaa 2004, 226; 2010, 88). Above 400m asl, alpine vegetation has two main vegetation types, *Racomitrium* vegetation, and open grassland. Open grassland consists of four communities (Fosaa 2004, 226; 2010, 88-89).

**Summary and conclusion on the physical environment**

1. Is the distribution pattern of *setr* and *ærgi* in Shetland and the Faroes the result of environmental differences?

Geologically, the island chains are very different. The Faroes are formed from a homogenous bedrock, basalt, with a natural north-easterly to easterly aspect. Shetland has a greater variety of bedrock, and these create a greater range of landforms, soils and aspects. The average height of land in the Faroes is 300m asl, but it does rise to 882m asl. In Shetland, the average height above sea level is below 120m (Dry and Robertson 1982, 3) and the highest point is around half that of the Faroes. There is a far wider altitudinal range in the Faroes, which will lead to a greater temperature range from sea level to the plateau heights.

The landscape of the Faroes, with steep slopes and short glacial valleys, means that there is little flat land. Over 95% of the Faroes in 1996 was classed as outfield pasture (*hagi*), which means less than 5% of the land was cultivated (*bøur*) (Brandt 1996b, 82), though this is 2% higher than in Norway (Chapter 3). Around 90% of the cultivated area is used to grow winter fodder for cattle, while the *hagi* is used for sheep grazing, and peat cutting for fuel or thatching. Only 0.5% of the total land area is given over to crops in the Faroes (Brandt 1996a, 80).

In Shetland in 1912, 14% of the land was either arable or grassland, with arable alone accounting for 4.3% of the land area (Board of Agriculture for Scotland, agricultural statistics 1912, 37). Though the area under cultivation in the VA in both areas may have been smaller, this does show the difference in fertility between the two island chains. Shetland is lower-lying land, with gentler slopes and a greater variation in soil type, but, more importantly, more areas of moderate to fertile soil.

Comparing climate, the Faroes receive 205mm more rain per year on average spread over 80 more rain days per year than Shetland. Though, relatively low-lying area such as Mykines (900mm per year) receive similar precipitation to low-lying area such as Fair Isle (946mm per year). The overall higher rainfall, however, will affect grain ripening; the only cereal crop found in a VA context in the Faroes is *Hordeum* (Adderley and Simpson 2005, 713). Modern varieties of *Hordeum* require a period of grain dehydration to ripen properly (Kennedy, 2015, 133) and the extra 80 days of rain experienced in the Faroes would make it hard to ripen grain. Long periods of cloud cover mean that the sunniest month of May in the Faroes receives 58 hours less sunshine than equivalent in Shetland, also May. Reduced solar radiation inhibits grain ripening. A major difference between the two locations is that, though both are now considered marginal for growing cereal, the Faroes is and was likely to be considerably more marginal than Shetland in growing cereal (Sofus Christiansen 1991, cited in Keller and Perdikaris 2016, 39-40).

Vegetation succession after deglaciation in both island groups follows a similar pattern, if slightly staggered in the Faroes, until the *Betula* sp and *Juniperus* shrub-woodland phase. Whereas only some areas developed open *Betula* woodland in the Faroes (Malmos 1990, 91), parts of Shetland had developed mixed woodland between 7-6000 BC. Both island groups saw the formation of peat and the spread of dwarf shrub vegetation after 6000 BC.

Vegetation at the time of *landnám* in Shetland and the Faroes would have been familiar to settlers from Norway, with *Poaceae*, *Cyperaceae* and tall herb communities, to allow immediate exploitation for grazing and fodder collection (Lawson et al*.,* 2005, 661). The main difference is the far more limited capability to grow cereal in the Faroes and the fact that Shetland was already, or had been, a settled landscape, making the setting up of farms easier. Though the limited extent of tree cover in the Faroes would remove a major obstacle to clearing fields, preparing arable land and setting out fields (Turner, Dockerill and Bond 2005, 247).

## 4.2.5 The Scandinavian *landnám* in the Viking Age

**Origin of settlers**

According to the Færeyinga *Saga* (Chapter 1, 1), the first Scandinavian settler to the Faroes was Grímur kamban, who had a Gaelic byname (Gaelic *cammán*: ‘crooked fellow’) (Gammeltoft, 2007, 480). A second settler, Snæúlfur, who settled on Sandoy, was said to have been a *suðureyskur maður* (‘a man of the southern isles’, possibly the Hebrides), who had fled to the Faroes after being a *víkingu* (‘Viking’) (*Færeyinga Saga*, Chapter 4, 4). DNA studies would seem to corroborate a connection between the Faroes settlers with Britain and Ireland. In the modern Faroese population, Female mtDNA and 13% of male Y-chr of is of British or Irish origin (Als et al., 2006, 501; see also Chapter 5). For comparison, Goodacre et al. found that in Shetland 57% of female mtDNA and 55% of male Y-chr were from British or Irish ancestry (2005, 132). Though the authors point to the risk of later ‘genetic drift’ affecting the results, the data would suggest differences in the settlement population, with a higher proportion of females of Scandinavian origin being involved in the settlement of Shetland (43%), compared to the Faroes (17%). Goodacre et al. (2005, 134) suggest the results:

> ‘[A]re consistent with a common feature of human colonizing behavior: This is that migration to insecure frontier areas tends to involve a disproportionate number of lone male colonizers, whereas family groups are more likely to be abundant in secure areas that are closer to the strongholds of colonial power.’

This would explain the distribution of shieling names, with the settlement of Shetland being undertaken by primary migration (male and female) straight from an insular Scandinavian context. The settlers ignored whatever local culture and language encountered, either through political dominance, or extermination of the local population (Smith 2001, see Chapter 4). Faroese settlers included at least some secondary migration by Scandinavians who had spent some time in contact with the Gaelic-speaking world. These would be more likely males and may have taken females as wives, concubines or slaves, and who also would have encountered Gaelic practices. The timing of Scandinavian settlement in each group of islands, from archaeological evidence, would suggest had have occurred around the same time, around the mid to late 9th century (Graham-Campbell and Batey 1998, 156; Jóhansen, 1985, 58).

The occurrence of *ærgi* in Shetland would suggest that there may have been either a secondary migration to Shetland or the concept of *ærgi* was also introduced at a later date. It is possible that Shetland had been fully settled early and this left little room for new farming enterprises. Either the farming economy of Shetland did not change, or existing farming units were adapted to incorporate new ideas.

1. Were the islands settled by different groups of Scandinavian settlers? With one group settling in Shetland, coming from a homogenous Scandinavian culture, and a second group, who settled mainly in the Faroes, having first involved in contact with Gaelic society?

I would suggest from genetic studies and the distribution of shieling names, that an initial settlement of Shetland occurred straight from Norway. At the same time, other Scandinavians had settled in either the Hebrides and/or Ireland. These settlers came into contact with Gaelic practices. Some then settled in the Faroes coining specific farm units *ærgi*. In Shetland either the concept of *ærgi* was introduced or some settlers from Gaelic areas settled in Shetland and founded/renamed secondary units as *ærgi*. A possible reason *ærgi* is uncommon in Shetland is that, as the area may have been more homogenously 'Scandinavian' in character, this led to it being conservative in naming or farming practices. Rather than using new nominations or renaming existing settlements, practices may have just been changed to incorporate new ideas.

**Settlement location**

Alan Small made the point that the pattern of settlement, especially primary settlement, is limited by the geography of both areas (1969a, 149; 1969b, 158, 160). Small suggests important factors are access to the sea, flat land to build farmstead with the potential to grow cereal and extensive grazing areas (1969a, 149). Lyndsey Macgregor found primary settlement in both Shetland and the Faroes to be coastal and generally at the head of fjords and bays (1986, 86) and these settlements in the most favourable locations were given topographical names (1986, 86-7). In the Faroes, there is a good correlation between primary settlement names, present settlements and presumed archaeological sites to suggest that the settlements in the VA were similar. Arge et al. found some settlements, such as Gásadalur on Vágoy, have no easy access to the sea, but may represent secondary expansion (2005, 608).

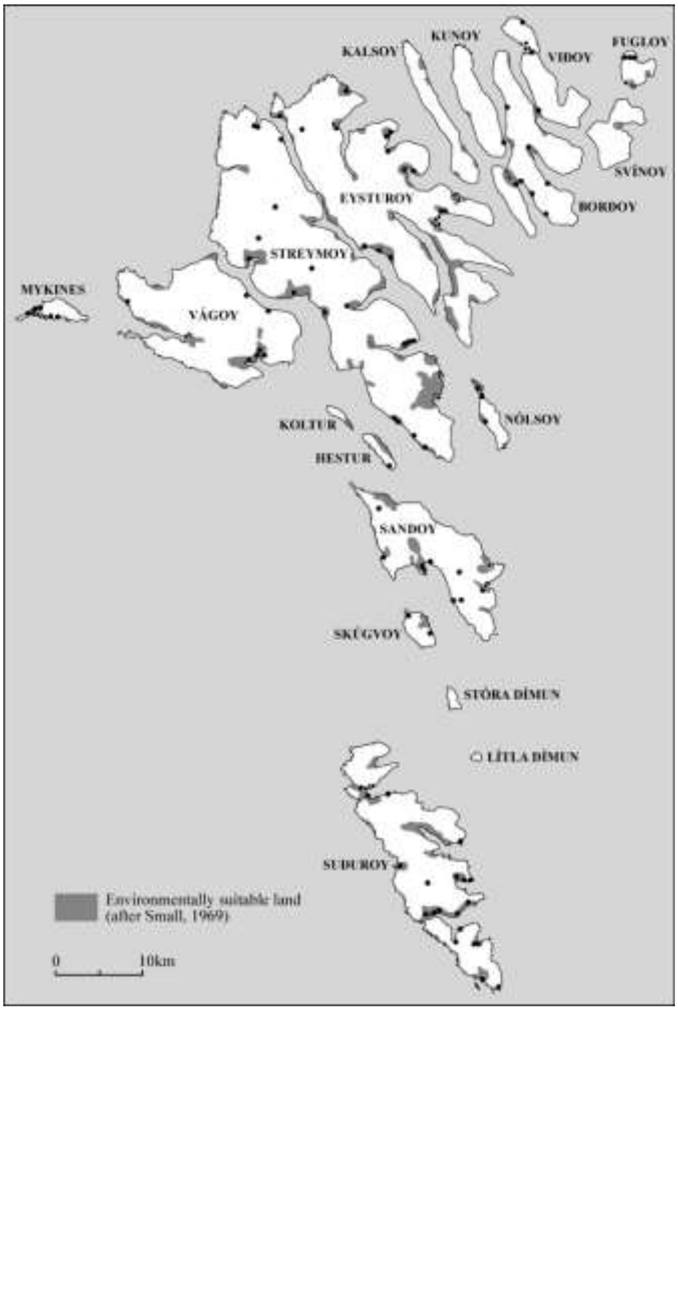



Figure 4.2.5 Environmentally suitable land (after Small 1969, 150) superimposed upon presumed Norse archaeological sites (Arge et al., 2005, 607).

The restrictions of landscape meant that settlement expansion was often confined to the division of the primary farm, creating a *bygðir*. Secondary settlements (Faroese: *býlingar)* were given their own names and the name of the primary farm was retained only as the name for the district (*bugð*) (Macgregor 1986, 86). The location of primary settlements is presumed to remained similar to the present, though it is harder to pinpoint. The more favourable landscape allowed wider dispersal of secondary settlements after the initial settlement (Macgregor 1986, 86).

The secondary settlements elements *skáli, hús* and *stofa garðr/gerði* are found in both locations, but *staðir* and *bólstaðr,* as well as *setr,* are absent from the Faroes (1986, 92). Macgregor suggests their absence from the Faroes, rather than being a result of the "provenance of the settlers", is the result of limitations imposed by the Faroese landscape on settlement expansion (1986, 99).

**Building morphology**

Early longhouses in Shetland and the Faroes are the same size and share morphological features and topographical settings with ones in Norway and other areas of Scandinavian settlement (Stummann Hansen 2003, 52). The general plan of early rural VA settlements would seem to include a byre; either an internal one or in a separate building. Internal byres have been interpreted as being present in the longhouse at Jarlshof, House 2 of Phase II (Hamilton, 1956). Setter of Belmont and the Lower House, Underhoull in Shetland (Larsen et al., 2013). External byres have been suggested as being present at Toftanes (Stumman Hansen 2000) and in Phase 2 Niðri á Toft, Kvívík (Dahl 1971).

The identification of byres is based on the evidence of paved internal areas, stalls, the presence of drains and alignment of buildings downslope; the last two points are believed to ease the removal of animal waste from byres. The Viking Unst project has challenged the assumption that all longhouses are aligned downslope (Dyer, Outram and Turner 2013, 100), but this may be a sign of specialisation of use, with some used as farms with cattle having byres that are aligned downslope and other longhouses having a different function. High phosphate concentrations can also be an indication of byres, organic phosphate coming from manure and crop residue and inorganic phosphate concentrations form hearth ash. A gully at the Hamar and the Lower House at Underhoull had high concentrations of organic waste, which is suggestive of a byre (Outram and Legg 2013, 155).

The longhouse at Belmont was aligned downslope; below the longhouse was a circular stone structure that was interpreted as a form of slurry collection point from the cattle byre (Larsen 2013). Some VA soils as at Old Scatness include unburned peat, possibly used as animal bedding and then spread as fertiliser (Bond and Simpson 2004, 142). The east end of house II, Toftanes, has been interpreted as a byre; beetle species indicate the presence of peat and small numbers of dung beetle were found (*Aphodius lapponum*). The peat may have been used as floor cover; microfossils of plants in this area have a lower diversity, but high density, suggesting large amounts of specific plants were present (Vickers et al., 2005, 701).

## 4.2.6 Farming economy

### Livestock

There are only two bone assemblages, one each for Shetland (Old Scalloway) and the Faroes (Junkarinsfløtti, Sandoy, Faroes), which runs the risk of anomalous results. At Old Scatness, the percentage of cattle bones found in the assemblages rose from 32% in the Pictish period to 62% in the Pictish/Viking interface and stayed in the mid-50% region through the Viking and Late Norse periods (Bond, Guttmann and Simpson,2004, 140-1).

The Faroese data is also problematic, in that there are few bones of a fragmented nature to allow for a confident assessment of livestock management (Brewington 2010, 9). What the data shows is a dominance of sheep/caprine (approx. 64%) over cattle (>20%), with around 14% (approx.) pigs in the earliest phase (9$^{th}$-12 century) (Brewington 2010, 8). Neonatal or foetal cattle make up 52% of this earliest phase, while sheep and pigs show less than 10% infant mortality. The number of cattle and also the number of young cattle decrease over time (Brewington 2010, 8).

**Exploitation of plant resources**

John Summer's archaeobotanical study of Upper House Underhoull, Hamar 1 and 2 found *Spergula arvensis* (corn spurrey), *Stellaria media* (common chickweed), *Polygonum aviculare* (knotgrass), *Rumex* spp. and *Lamium* spp., which are often weed taxa from arable fields. The latter two species can be indicators of cultivation of fertile soils, while *Spergula arvensis* points to cultivation of sandy soils (Summer, 2013, 146). At Hamar, this may have been a small area of sandy soil locally or it could show exploitation of the sandy soils of western Balta.

*Hordeum* (six-rowed barley) and *Linum* seed have been found in a VA context at Old Scalloway (Bond, Guttmann and Simpson 2004, 42) and cereal from *Hordeum* spp., *Avena* spp., *Triticum cf. aestivum* and seeds of *Linum usitatissimum* have been recovered from Underhoull. Taxa from wetter environments such as *Carex* spp. and *Montia fontana* (blinks) suggest damp areas were also being exploited. Summers concludes that the weed assemblage suggests cultivation close to the farm and the presence of taxa from wet habitats, along with heather, suggests a wide variety of environments being exploited (Summer 2013, 146-8, 172).

In the Faroes, a *landnám* at Hov was estimated to be between AD 850-900 by Jóhansen, where plants of the tall herb community, *Filipendula ulmaria, Caltha palustris, Rhodiola rosea, Apiaceae* and *Polypodiaceae* were eliminated shortly after the settlement (1985, 60). *Caltha palustris* later recovered and makes up 10%

of present meadows, but the other meadow plants mentioned are now confined mostly to gorges (Jóhansen 1985, 60).

Edwards et al., searched for evidence of a landnám at Hov, and found the first evidence of cereal-type pollen and expansion of microscopic charcoal c.AD 560 (2005, 638-9). This is consistent with an earlier possible Irish anchorite settlement; by c.AD 680 there were consistent levels of cereal-type pollen grains. Around AD 890 there was a reduction in *Calluna vulgaris* and *Empetrum nigrum*, and a consistent decrease in *Betula* pollen, and at some period there was also a reduction in the tall herb community (Edwards et al., 2005, 638-9, 642). This occurred at the same time as a rise in *Poaceae* pollen, which was interpreted as low-level grazing pressure and exploitation or wood resources. A later decrease in *Poaceae* began to fall around AD 1090, as *Plantago lanceolate* reached a peak, possibly as a result of increased of grazing pressure (Edwards et al., 2005, 638-9).

Plant remains from the earliest building at Toftanes on Esyturoy was dominated by plants representative of a pastoral economy, with *Poaceae* and *Cyperaceae, Ranuculus acris*-type, and *Potentilla. Calluna vulgaris L*. showing exploitation of the dwarf shrub vegetation and *Filipendula* the lowland damp tall herb meadow. Cereal pollen was uncommon and restricted to *Hordeum*-type pollen, but this may have come from wild grass, such as *Leymus arenarius L.* (lyme-grass). The lack of cereal cultivation at Toftanes is supported by a lack of weeds from arable fields (Vickers et al., 2005, 695).

At Undir Junkarinsfløtti on Sandoy, 194 cereal grains were found; the identity of 91 grains could not be determined. All the grains, bar two grains of *Avena*, were *Hordeum* grains, mainly the six-row hulled variety (*Hordeum vulgare* var. *vulgare* L.) (Church et al*.,* 2005, 192). The dominance of hulled barley was also seen at Pool, Sanday in Orkney during the Pictish/Norse interface and Norse period, phases 7.2 and 8 (Bond in Hunter et al., 2007, 179) and South Uist (Smith 1999, 298; Church 2000,121; Sharples et al., 2012, 244). Church et al*.,* make the point that except for two grains of *Avena,* there is no evidence for *Secale, Triticum* and *Linum*, which are absent from Undir Junkarinsfløtti, unlike the Western Isles (2005, 193).

Wild plant assemblages, including weed tax of arable fields such as *Brassica/Sinapis* spp., *Rumes* spp*., Spergula arvensis, Stellaria media* and *Polygonum* spp. (Church et al., 2005, 186). This would suggest that not only *Hordeum* was being grown, but the fields may have been manured, considering the presence of *Stellaria media and Rumex s*pp. (Church et al., 2007, 193). Cultivation of lighter sandy soils is suggested by the presence of *Spergula arvensis,* which was also found at Hamar in Shetland, and *Brassica/Sinapis* spp., also found at Pool, Orkney (Bond 2007, 123) and South Uist (Pankhurst and Mullin 1994, 69; Church *et al.,* 2000, 122). This would suggest that

As with the site of Toftanes, pastoral plants were found at Undir Junkarinsfløtti, such as *Poaceae, Ranunculus* spp., *Carex* spp., *Montia Fontana, Danthonia* *decumbens*, *Calluna Vulgaris* (Church *et al*., 2005, 186). The range of plant species points to a range of habitats being exploited, from the dwarf heath in the lowlands, grassy slopes and species from damp habitats. Church et al. suggest that the *Calluna* may have come from peat used for fuel (Church et al., 2005, 191). Vickers *et al*. came to the conclusion that Toftanes fitted well with the "consistent nature of the Norse farming economy across the region" (2005, 706). It would seem that Undir Junkarinsfløtti would be indistinguishable from similar Scandinavian settlements in the North Atlantic.

## 4.2.7 Shielings

In Shetland, there has been no excavation of a definite identification of a VA shieling; however, De Setters is a place-name close to the longhouse that is now called Belmont. On the basis of the De Setters name, Belmont's original function was tentatively suggested as a shieling (Waugh 2013, 11). The excavation of Belmont found the site to be a multi-phase Scandinavian farm and has cast into doubt the place-name evidence as a shieling. The earliest phase uncovered dates to the 9$^{th}$-10$^{th}$ century (Larsen 2013, 184), but there may be an earlier phase(s) yet to be uncovered (Larsen, personal communication).

Edwards and Schofield's study of a mire below Belmont found that between 500 BC-AD 860, the area was a sedge-dominated meso- and eutrophic fen surrounded by wet meadow vegetation. At the end of this zone a single grain of *Triticum cf. aestivum* (wheat) was found, along with grains of *Avena* spp., *Hordeum* and *Linum*.

The *Triticum* grain has been suggested as an import or weed among other cereal crops. Between AD 860-1300, *Poaceae* pollen decreased, while *Cyperaceae* pollen remained high and, along with an increase in other taxa of wet habitats, was seen as an expansion in wet habitat. There is no evidence of a climatic change during this period and Edwards and Schofield suggest that changes to hydrology caused by heavy trampling may have reduced soil porosity. The appearance of *Coprophilous* fungi was seen as supporting the intensification of pastoral activity on site (Edwards and Schofield 2013, 89).

The identification of flax at Belmont is interesting; there are other connections between flax (ON *Lín*) and *setr*-names; for example, Lindset (Fræna) in Norway and Linsiadar (NB210319) in the Western Isles (Oftedal 1954,383; see also Chapter 6.1). Flax, as stated in section 3.25, is a plant requiring high nitrogen input (Bond 2007, 164). Fred Bradbury suggests that flax grows best on a rich light soil, but makes the point, though, that it will grow on a variety of soils that are "not too heavy or too light" or waterlogged (1925, 23). The presence of cattle and the collection of manure and cattle urine at Belmont may point to cultivation of flax. However, unlike Hamar and Underhoull, the infield of Belmont was not manured, and was improved only by the addition of turf. Flax may not have been grown on site, as it is suggested that the infield was used for hay and light seasonal grazing. If there was a byre at Belmont, the manure was not being used to fertilise the infield; it is likely to have been transported elswwhere to be used as fertiliser for cereal and flax. This would suggest that the site acted as a subsidiary farming unit.

At Belmont, hammerscale, charcoal and slag point to iron working on site, which has similarities with *setr*-names in Norway (Bjørgo 2005, 219; Skrede 2005, 38). Large amounts of worked and unworked steatite were also found; that was interpreted as a sign that quarrying and production of nearby steatite deposits was an important part of the economy. The majority of the steatite shards found had few perforations, suggesting, other than a few reused for weights, most were not reused (Larsen et al., 2013, 194-6). Larsen et al. came to the conclusion that the economy of Belmont was “pastoralism combined with the manufacture of steatite objects” (2013, 216). The fact that the farm is on rocky marginal land and that cereal cultivation was not present at the site (2013, 210) may point to its original function being something different to an independent farm (McLeod Rivet 2013, 26).

The overall impression of Belmont, from an economic viewpoint, is of a secondary nature. The emphasis on a pastoral economy, heavy exploitation of mineral resources, and the limited amount of manuring of the infield, is very suggestive of a subsidiary farm, such as a *setr*-name. The economy of Belmont has good analogies with Svolset (Magnus 1986; Skrede 2005) and Nyset (Bjørgo 2005) and *setr*-names more generally in Norway, concerning ancillary activities along with pastoral farming (Bjørgo 2005; Hessle et al*.,* 2014).

In the Faroes, three archaeological investigations of shielings have taken place. The first was at Ergidalur in Hovsdalur, 2.6km west of Hov on Suðuroy (C. Matras 1956; Dahl, 1970). The site is 181m asl and situated in a cirque, sheltered from the prevailing wind by the cirque backwall that rises to 574m (Edwards et al., 2005, 622). The building was 5.5m by 3.5m, with a fireplace on flat stones above the floor; in the floor and fireplace were shards of large bowl-shaped pottery (Dahl 1971, 71), to the side was an unexcavated enclosure (Dahl 1970, 368).

Close to the Ergidalur site, in Hovsdalur, was subject to palynological investigation. Pre-*landnám*, *Poaceae* and *Cyperaceae* are dominant at Hovsdalur, and *Betula* pollen was constant at around 7%. However, between AD 610-1460, *Betula* pollen decreased to 5%, which was interpreted as evidence of grazing activity, but no cereal-type pollen was found. There is a steady rise in *Cyperaceae* pollen during phase 2, including the *landnám* period, and the overall picture is one of improved grazing, either intentionally or through direct manuring from pastured livestock (Edwards et al., 2005, 640). At Hovsdalur, palynological richness increases after AD 610, which was interpreted as grazing and anthropogenic activities increasing habitat diversity, but declines between A.D. 930-1210 and through phase 3, with an increase in taxa from wet environments (AD1460-1510). This may suggest increased grazing pressure (Edwards et al., 2005, 642).

The most complete excavation of an *ærgi*-name was conducted at Argisbrekka, Eysturoy. The site is on a small river delta flowing into the eastern end of the lake Eiðisvatn. The site had a small field system criss-crossed by furrows, with traces of dried and carbonised peat, which was suggested as evidence of intentional fertilisation. Grains of naked barley were found in occupational deposits, though there was no evidence of cultivation on site (Mahler 2007, 446-7). The settlement developed in two areas: a western area of 13 buildings and eastern one with seven buildings. Each settlement area consisted of a small number of individual dwellings and a couple of outhouses (2007, 447). Several of these units were found to have older units, overlaid by younger ones, and that it assumed that it was likely that only one unit was in operation at in each area at any one time (Mahler 1993, 492). Each unit had a dwelling, either 7-8m x 3.5m or 3.5-4m x 3.5m, and what was interpreted as a workhouse and store, each around 3m x 2.5m (Figure 4.2.6). All buildings had walls of turf, which Mahler noted as atypical of Faroese VA buildings, but with similarities with Iceland and Greenland (2005, 447).

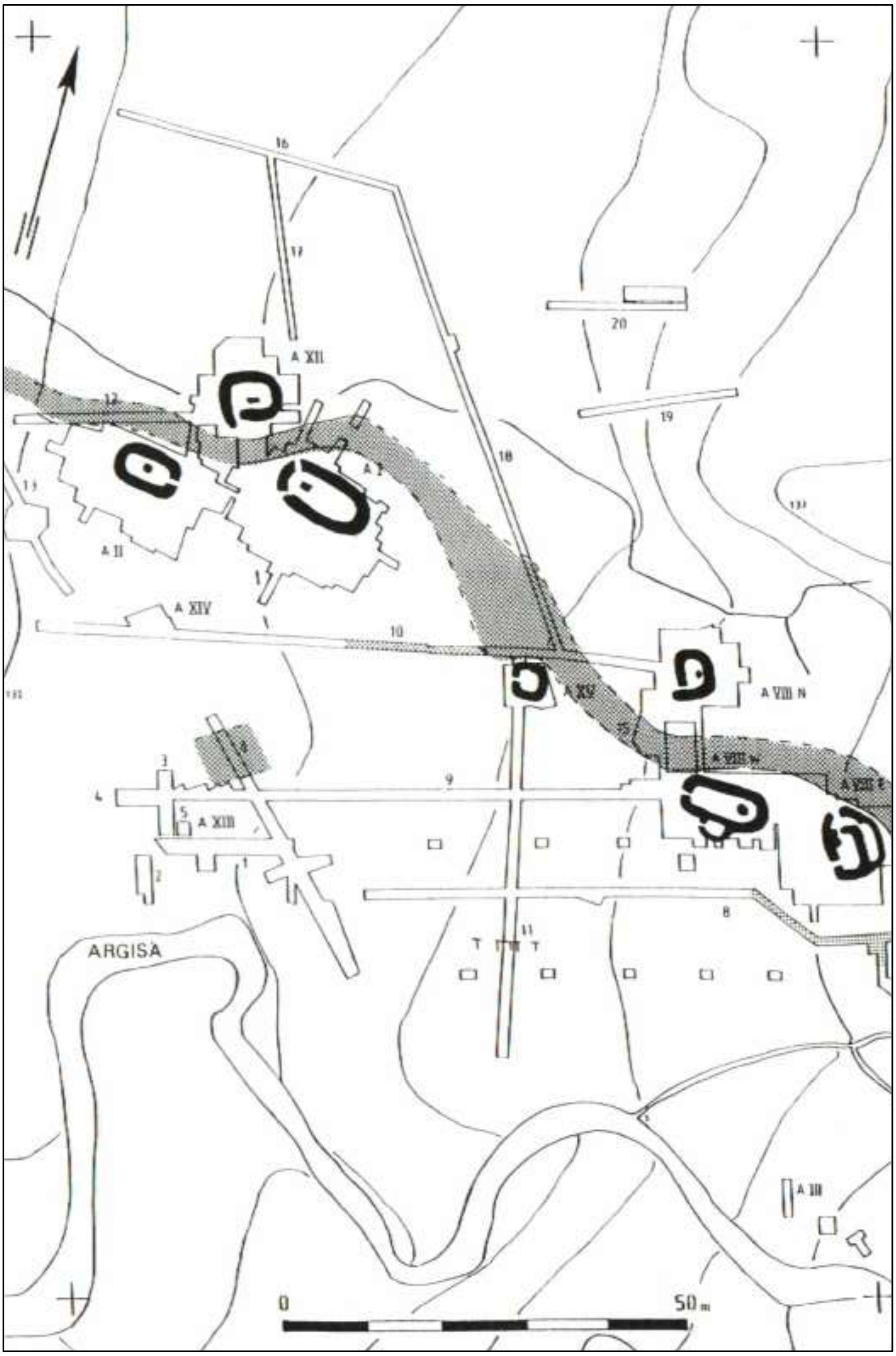



Figure 4.2.6 Plan of the site of Argisbrekka (Mahler, 1993, 491).

The settlement is believed to have been active from sometime in the 8th (possibly 7th) century and the last unit was operational in the 12th century (2007, 448). It was noted that there were very few artefacts recovered, when compared to primary sites such as Toftanes, which Mahler suggested was down to a different mode of activity or behaviour at the site (2007, 449). There were finds of steatite and local tuff and round-bottomed clay vessels showing domestic activity on site. Metal find of knives, shears, locks and slag show that economic activity of various forms may have been practised (Mahler 2007, 449). Mahler (2007 456-48) noted close parallels with finds from VA shielings in Norway (Magnus 1986, 46; Bjørgo 125-6, 218-19).

Another *ærgi*-name was identified and investigated at Niðri á Fitjurn, Skarðsvík, Fugloy. The identification was based on the minor topographical names, *Eyrgisläg* ('the hollow by the shieling'), and *Kletturin á Eyrgisläg,* i.e. 'the escarpment at the hollow by the shieling' (A.K. Matras et al., 2004). The site is on a platform around 150m above the sea; it is south-west facing. Two small structures were found, either side of a stream, and a possible collapsed building made from turf. The building was aligned downslope, approximately 8m x 6m, with a gap in the south-east corner. Around 25m south-west of the building is a curvilinear enclosure, 16m x 12m. The authors noted similarities with both Erigdalur and Argisbrekka (A.K. Matras et al., 2004, 204).

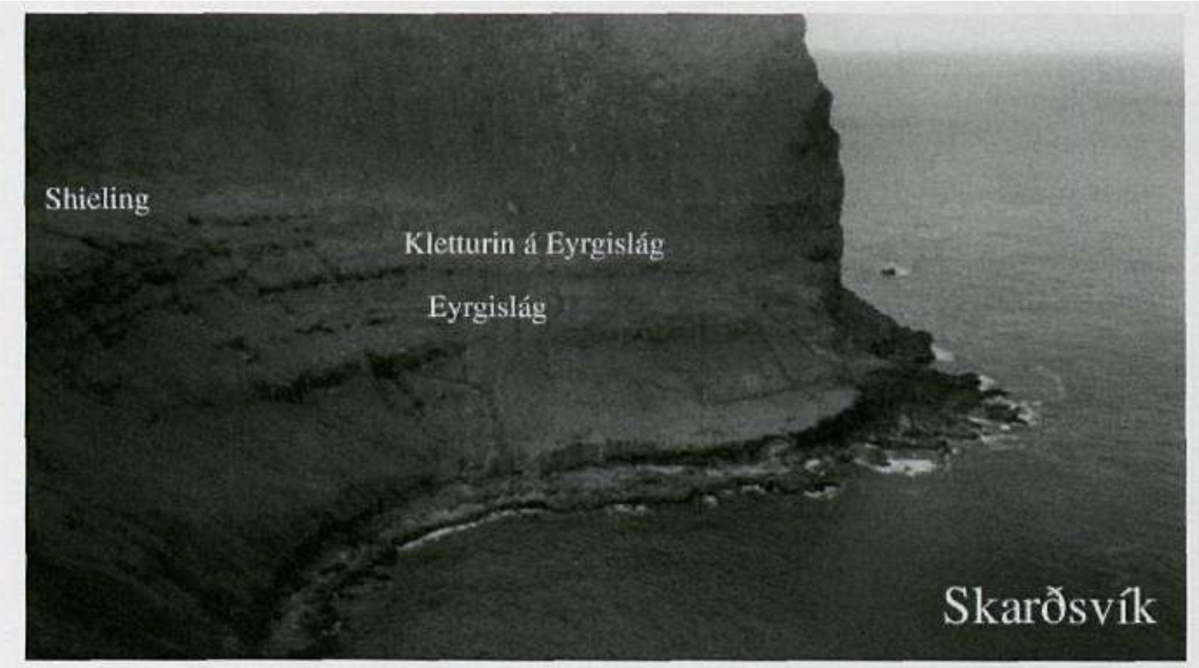


Figure 4.27 The site of at Niðri á Fitjurn, Skarðsvík, (A.K. Matras et al., 2004, 207).

Matras et al*.,* concluded that the "farming model of main farms and shielings was also established by the early settlers on Fugloy, thereby further strengthening the argument that this was the system initially established all over the Faroe Islands in the Viking Age" (2004, 207). The VA farming system in Shetland and the Faroes is so similar in relation to primary sites, building morphology, resource exploitation, including shielings that it is likely that it is the same farming system.

### 4.2.8 Summary and conclusions

Is there evidence that the settlement in either island group was somehow different at the time of *landnám?* The general morphology of buildings, especially use of byres, suggests that similar farming methods were employed, involving the winter stalling of cattle, need for fodder collection and use of manure. The range of plant remains recovered not only suggests the exploitation of similar resources and habitats between the two islands but within the wider Scandinavian settlement in Orkney and the Western Isles. This involved the growing of cereal, mainly *Hordeum*, the use of dried or burned peat and manure on fields, and the likely collection of fodder consisting of *Poaceae* and *Cyperaceae*. There would therefore seem to be no difference in the farming economy to explain the use of *ærgi* or *setr*. Ditlev Mahler concluded that "[t]here is no clear, topographical reason for this pattern … which could indicate a basic functional rather than chronological difference" (2007, 466). Mahler goes further and suggests "the word [*ærgi*] covered a certain function that probably lay beyond the scope of the Norse vocabulary – that is which differed from the function covered by *sel* and *sæter*" (2007, 467).

# Chapter 5. *Setr*-names in Scandinavian settlements in Scotland

## 5.1 Introduction

The same distinction that has traditionally been made between *setr* and *sætr* in Norway was also introduced into studies of Scandinavian settlement in Scotland and has similarly coloured the discussion. Differentiation between the two elements has been attempted by comparing pronunciation (Oftedal 1954, 375-76; Cox 1990, 111), analysis of specific elements in compound names, general location (Nicolaisen, 1969, 13) and by relative distance from the coast (Oftedal 1954, 375-76). Magne Oftedal concluded that, on the basis of a coastal distribution and lack of definite article, which he suggested as an identifying trait of *sætr*-names in Norway, the majority of names on Lewis were *setr*-names (Oftedal 1954, 375-76). Richard Cox, working on local Gaelic pronunciation, came to the conclusion that *sætr* was most likely used as a place-name element in the Hebrides (Cox 1990, 111). Gillian Fellows-Jensen has suggested a compromise, '[a]ll that can be said for certainty, then, is that some of the names must contain –*sætr* and there are no early forms to prove the other names must contain *setr*', questioning if *setr* (with the meaning of residence) was ever used in the Western Isles at all (Fellows-Jenson 1984, 161).

The assumption that *setr* was reserved mainly for a farms/dwelling, while *sætr* had the meaning of shieling, has been questioned by Richard Cox. Cox points out that both elements can have the meaning of farm/dwelling or shieling (1990, 97; see also Chapter 3.6). Cox highlights the possibility that *set*[*r*]-names originally had the meaning of shieling and it was their subsequent conversion to permanent farms that was the driving force for the development of *sætr* as a place-naming element (Cox 1990, 97; NSL 272-74). Whether this was before, during or after the VA is unknown; certainly, when Scandinavian raiders and settlers first arrived in Scotland, they did so with an already developed lexicon of place-naming elements. Even if separate meanings had developed for the elements by the VA, or that both were active place-naming elements during it, the forms are now indistinguishable from each other in the British Isles (Nicolaisen 1976b, 118; B. Crawford 1987, 102-3; Macniven 2015, 75). For simplicity I will refer to both elements as *setr* as they are indistinguishable.

The aim of this chapter is to evaluate the likely social and economic situation that lay behind the Scandinavian settlement in Scotland during the VA, and what effect this would have on the type of settlement. The geographical and topographical study of Scottish *setr*-names can be compared to that of Norwegian shielings. If there are similarities in location, this could point to the introduction of a similar agricultural economy as practised in Norway.

## 5.2 Literature review

There have been very few studies that have focussed on *setr*-names in Scotland; those that do are often regional place-name studies and do so only in passing. I will therefore only comment on work which has had most impact, or advanced a particular theory, but will incorporate other relevant works within the discussion that follows.

Anton Wilhelm Brøgger was one of the first to use habitative generic distribution patterns to study Scandinavian settlement in Scotland (1929, 89). He suggested emigration and settlement in the Northern Isles and Hebrides occurred over two generations between AD 780-850, followed by a second wave of migration to the Faroe Islands and Iceland (1929, 5). Brøgger (1929, 77) put forward the idea that the Scandinavian settlement in Scotland had its roots in Møre og Romsdal, following Magnus Olsen's work on *setr*-names in Norway (Olsen 1928, 158). Brøgger suggested that this migration was driven by overpopulation and the settlers were made up of 'peasants' and not 'pirates' who aimed to 'carve out new positions for themselves in a far country' (1929, 90). The retrospective link between the cause and nature of migration was predominantly based on what later became known as predominantly push factors (Lee 1966), which were based on neo-Malthusian ideas (Øye 2004, 83) and may have been coloured by contemporary 19$^{th}$ and 20$^{th}$ patterns in Norwegian emigration to North America.

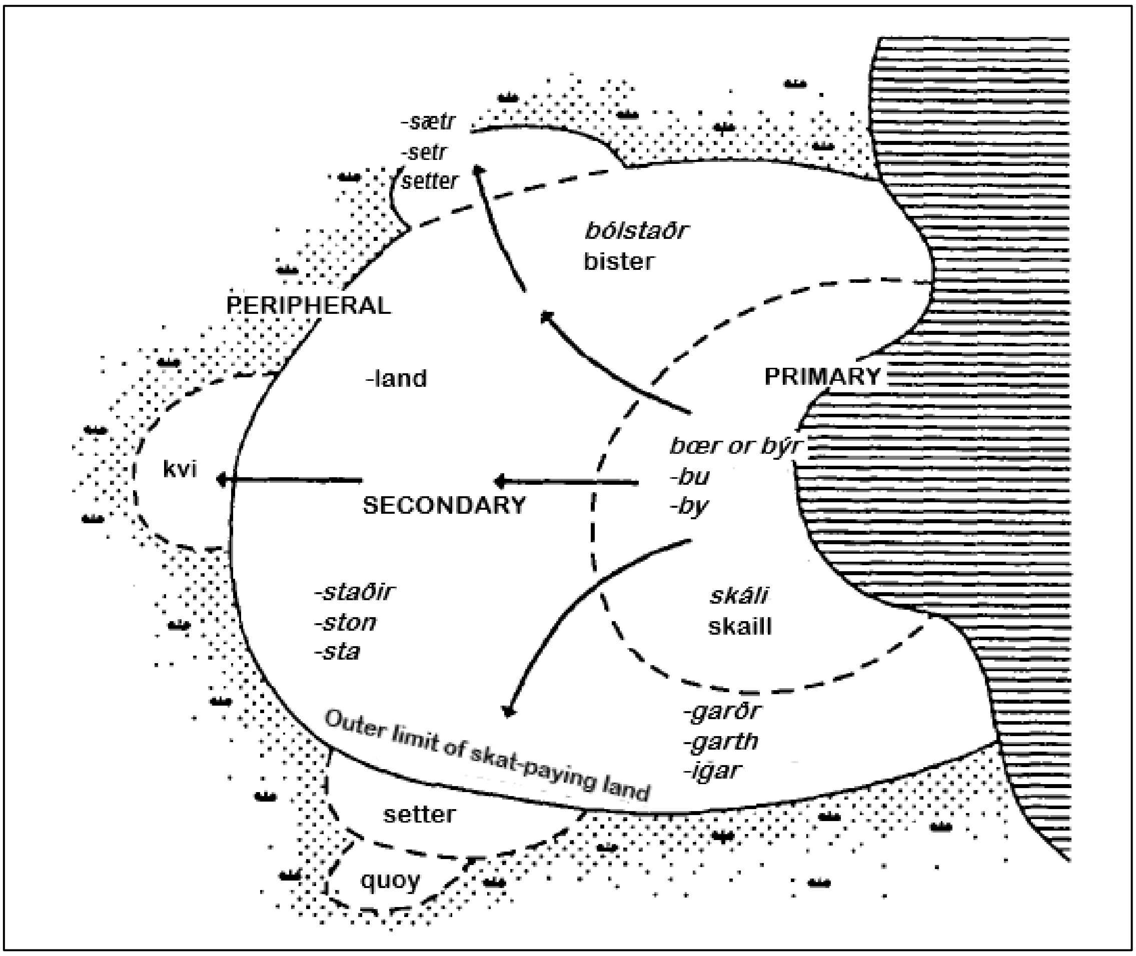



Figure 5.1 A schematic of Marwick's place-name chronology (After Bailey 1971, in Thomson 1993, 44).

Hugh Marwick produced a chronology and hierarchy of ON habitative generics found in Orkney (1952, 227-251). Marwick's theory combined the Norwegian place-name tradition of Magnus Olsen (1928), a comparison of sixteenth and seventeenth century *skat* (land tax) records in Orkney and a landscape assessment of place-names (Marwick 1952, 227-251). According to Marwick's statistical model, the ON generics *býr/boer* and *skáli* (hall) were early, typically associated with primary settlements; with later settlement expansion onto less favourable areas, leading to the use of the secondary generics *bister (bólstaðr), garðr*, and *land* (Figure 5.1).

Together with *kví/quoy* (cattle enclosure), *setr* makes up a third, younger stratum of settlement, characterised by expansion onto even less favourable and more peripheral sites (1952, 227-251). In Shetland, Brian Smith found little to contradict Marwick, but suggested *kví/quoy* were replaced in Shetland by '*setter' (setr*) and that *býr/boer*-names in Shetland were 'poverty stricken and late' and may have been created during 13th century taxation reform (1995, 28).

Bill Nicolaisen extrapolated Marwick's theory, using Scandinavian habitational generics *staðir, setr, bólstaðr* and the topographical generic *dalr* to map Scandinavian settlement (1969, 16-7; 1976b, 84-124). Nicolaisen used the distribution pattern of habitational generics to develop a settlement chronology. He theorised that a limited distribution is likely to reflect an early date, with a generic having 'went out of fashion' and been replaced by newer generic(s). In Nicolaisen's scheme, *staðir*, with its limited distribution, would be the oldest and would represent the limits of an initial settlement. This was replaced by *setr*, which was later superseded by *bólstaðr*, the youngest generic with the most widespread distribution. Nicolaisen's distribution maps were, at the time, a massive step forward in understanding Scandinavian settlement in Scotland. However, the accuracy of the data collected has been questioned, as incomplete mapping at the time meant a variety of scales were used (Taylor 2007, 103). Nicolaisen later modified his theory, suggesting that a limited distribution may not be an indicator of an earlier linguistic stratum (1989, 265).

Nicolaisen's theory has also come in for criticism concerning the distribution of the topographical generic *dalr,* and Nicolaisen's suggestion that it indicates seasonal exploitation or influence and not settlement. Alan Macniven makes the point that for a name to be 'implanted in the landscape' there must be a stable user group over a long enough period to allow them to become fixed in the local landscape (2015, 14-15). Occasional forays by ON speakers to an area are unlikely to have forced indigenous people to adopt a new name (Kruse 2004, 102-3; Macniven 2015, 14). Berit Sandnes states that, in Norway, topographical generics, even compound names, are often the oldest farms and in Orkney they are also often the most heavily scattered (2010, 7). The view that topographical names, both simplex and compound, are often the earliest place-names and given to primary settlement sites is now widely accepted (I.A. Fraser 1995a, 97; Fellow-Jensen 2000 139; Kruse 2004 105; B. Sandnes 2006 248).

Nicolaisen's theory links to the role of fashion in place-naming and this has been discussed by Arne Kruse. Kruse points out that place-names, as with personal names, experience fashions, with new names being adopted into speech communities, while some older names are discarded (2007, 7-8, see also B. Sandnes 2006, 247). The farm element *vin* f. ('natural meadow') for example, which denotes a relatively fertile central farm in Norway (Olsen 1928,190-5; Kruse 2007, 9), is largely absent from Scandinavian settlements abroad. It is found as a topographical name in Orkney and Shetland, but it seems likely, therefore, that it had fallen out of use as a habitational generic during the VA (Olsen 1928 193-5;

Jakobsen 1936, 116-9; Kruse 2007, 9). Kruse also makes the point that emigrant communities can differ from the speech community they left behind, either through conscious effort to promote in-group identity, or a 'levelling out' or 'blending' of dialectal differences (2007, 8; for a discussion concerning homogenisation of the Icelandic dialect, see Leonard 2011). Gillian Fellows-Jensen noted changes in ON personal naming customs in the Danelaw, which seemed to have been 'released from the constraints imposed in Scandinavia by the long-standing traditions of naming' (2005, 155).

Marwick and Nicolaisen based their chronologies on habitative generics all having the same meaning of a 'farm', each generic falling out of fashion and being replaced by a younger element. This assumption has been questioned by various scholars (Macgregor 1986, 84; Cox 1990, 112). Peder Gammeltoft suggests that *bólstaðr* was productive in Scandinavian settlements from the end of the 9th century, with a specific meaning of a farm created from the division of larger farm units, which would make them likely to be younger than both *staðir-* and *setr*-names (2001, 271). The wider distribution of *bólstaðr* in Scotland compared to *staðir-* and *setr*-names would seem to corroborate Nicolaisen. The emergence of *bólstaðr* as a place-naming element may suggest that the area of land available for farming was finite, which necessitated the later division of original holdings, similar to Marwick's proposal for the development of daughter settlements (evolutionary theory).

Marwick suggested that the later taxation system may have its roots in one imposed by Harald Finehair in the late 9th century (1952, 211, see also Chapter 2). However, William Thomson challenged this assumption, on the grounds that there is no evidence for systematic taxation in the 9th and 10th centuries (1993, 47-8, see also B. Crawford 1987, 86-7). Thomson questioned the notion that secondary equates to later, and puts forward the possibility that many settlements could have been created at the same time (Thomson 1993, 50). Thomson goes on to suggest that the differences in farm names was a of hierarchy based on size, location and status, and the generics describe the nature of the farm (1993, 50-1).
Socio-economic change may have seen the importance of large farming units decrease and an increased preference for a larger number of smaller settlements. This could have been a more efficient way of producing food to satisfy a larger population, or it could have been linked to the need to increase the number of retainers/supporters. A chieftain, instead of entertaining a large *lið* at a manor farm (see Chapter 3), could instead allocate land to retainers. This may link to Arne Kruse's point, that personal names start to make appearances as specific elements in place-names, both in Norway and Scandinavian settlements abroad during the VA (2007, 9-10).

Orri Vésteinsson refers to the evolutionary theory as the 'farmer model' in Iceland; wealthy independent farmers, on reaching Iceland, would claim extensive tracts of land. Each land claim would have a single farmstead, that would be divided up by subsequent generations. The alternate 'slave model' given by Vésteinsson sees a chieftain settle a large area, which is divided up between their followers, freedmen and their own multi-vill estate. The central area consisted of a primary farm, which was supported by subsidiary farming units run by slaves and the strategic plantation of subordinate settlers around the boundaries or access to strategic resources (2005, 501). Vésteinsson makes the point that the models are not mutually exclusive; theoretically, both could occur at the same time or the relative importance of each could change. Vésteinsson goes on to suggest that the farmer model was to become increasingly important during the VA (2005, 501-2) and this would suggest a changing socio-economic structure. This model fits with Gammeltoft's conclusions concerning *bólstaðr* above and would point to a dramatic change in society during the VA (2001, 271).

Nicolaisen's theory was based on Norwegian place-name chronologies that had developed over a time. However, it is clear that many place-name elements were active before the VA and in use simultaneously during it (B. Sandnes 2006, 249). In Norway some *setr*-names have 'heathen' prefixes such as Frøysetr ('*Freyja*-'), Hofsetr ('temple-'), and Helgasetr ('holy-') (Olsen, 1928, 159). These place-names are most likely given before the acceptance of Christianity (pre-AD 1000). Dahle's study of shielings in Romsdal dated the site of Frøysetsetra to BC 405-375, which was one of the oldest sites in his study (2007, 353). The interpretation of *Frø*- as relating to *Freyja* has been questioned by Lennart Elmevik in Sweden, who suggests the adjective '*frö'* is more likely to mean 'fertile' (Elmevik 1997, cited in Helleland, 1998)**.** There are some compound *setr*-names containing Christian prefixes, such as Pálsetra (Páll - ‘Paul’), Prestesetra (‘Priest’) and Klokkset (Klukkari - ‘Parish clerk’). Christian prefixes, though, are not a guarantee of a post-AD 1000 date, Olaf Rygh makes the point that these may have been simplex names that were later given a prefix (NG, Introduction, 17; Olsen 1928, 160). The accuracy of place-name chronologies is further called into question by Vorren et al., who found that *staðir*-names in Central and Northern Norway were permanently settled between the BA-RIA (1990, 99-100). It is likely that *setr* had probably been an active place-naming element in Norway from the RIA (Chapter 3.72). This creates difficulties for Nicolaisen’s model. It is unlikely that *setr* would have been retained in folk memory and only used as a replacement for *staðir* at some later date. It is more likely, as Barbara Crawford has suggested, that each element may have had a specific meaning to the ‘name-givers’. Each element, rather than denoting a ‘farm’, would characterise a type of farm or secondary unit (1995a, 8).

Vésteinsson makes the point with the farmer model, that traditional chronological approaches would assume marginal sites such as at Sveigakot in Iceland should have been established at a much later date than primary settlements. In fact, there is ample evidence that they were contemporary with the early *landnám* phase (2005, 501). Similarly, work on the development and use of shielings in Norway suggests that *setrs* were likely to be established around the same time as any primary settlements, as they were an essential part of the infield-outfield system (Chapter 3.72). This is likely to be the case whether a settler was a chieftain or an ordinary farmer, as the farming system relied on outfield productivity to maintain infield fertility. Alan Macniven has also questioned the ‘evolutionary theory’ of Marwick and Nicolaisen, which saw settlement expanding from ‘central nodal points’, suggesting that settlers are likely to have imported a social system based around a chieftain (2015, 18). The imposition of a chieftain society from Norway (F. Iversen 2005) would help explain the establishment of a variety of farming units with different generic elements concurrently, as has been suggested for Orkney by Stylegar (2004, 25). The story of Skallagrim’s *landnám* in *Egil Saga*, though written at least 200 years after the event, would seem to offer a template for early settlement (Chapter 28, 73-4). After claiming a large parcel of land, he allocated smaller proportions of it to his followers. After a primary settlement site was chosen and farm built, subsidiary farming units were set up to exploit available resources and support the main settlements. This included, in Skallagrim’s case, as well as several other farm units, a place up in the moorland to remove cattle in summer and a specialist sheep farm in the mountains, so it was said that ‘*Stóð þá á mörgum fótum fjárafli Skalla-Gríms*’ (‘Skallagrim’s wealth stood on many feet’) (*Egil Saga* Chapters 28-9, 73-6).

David Olson’s study of *Norse Settlement in the Hebrides* attempted to create a model of settlement chronology. Olson used a set of criteria to characterise settlements into primary, secondary and peripheral sites, similar to Marwick’s, but based on the site and situation characteristics (1983, 33-42). Alan Macniven makes the point that the classification could easily be adapted to place-name hierarchies (2006, 121). Olson’s model suggests that a primary site is the most favourable site and would be settled first; these sites would later develop into administrative, religious or political centres and have good access to the sea. Secondary settlements are less well endowed with favourable characteristics; often, they are more likely inland and have less potential to develop into a regional centre. The two main types of secondary settlement according to Olson are: a division of a primary settlement into two or more parts; or the separation of a parcel of land from a primary settlement, with the mother settlement retaining primacy (Figure 5.2). A peripheral settlement is the youngest settlement and will have few favourable characteristics compared to a primary settlement, and is likely to have originated as 'offshoots of primary settlements or secondary units' (Olson 1983, 35).


Figure 5.2. David Olson's hypothetical Hebridean settlement model

Peder Gammeltoft pointed out a weakness in Olson's methodology, that contraction and expansion of settlements through time could lead to a 'muddled onomastic picture' (Gammeltoft 2001 186). Settlements that were abandoned due to population contraction could theoretically become fieldnames and, consequently, fieldnames during any settlement expansion could either become a farm name, or have a new name coined (Gammeltoft 2001, 186; Macniven 2006, 122). On Islay, Alan Macniven has questioned the universality of Olson's three-grade model, due to the diverse ecology, which must call into question its suitability for studying Scandinavian settlement over anything other than very specific locations (2006, 121).

Lindsay Macgregor's comparative study of ON naming elements in Shetland, the Faroe Islands and Norway found that *staðir, setr,* and *bólstaðr* are present in Shetland and Iceland, but absent from the Faroes (1986, 85). Svarar Sigmundsson points out, *setr* is only found as a topgraphical name and is not used in farm names in Iceland (1996, 332). Macgregor makes the point that a chronological explanation cannot be used to explain their absence, as both Iceland and the Faroes are likely to have been settled around the same time (1986, 85). Macgregor also rejects Sommerfelt's argument that settlers to the Faroes originated from south-west Norway, where the use of *setr* is uncommon (1958, 221), pointing to linguistic and saga evidence that shows links to Scandinavian settlement in the Hebrides or Ireland. Macgregor proposes that there was something different about the Faroe Islands that made *setr* unsuitable as a place-name element (1986, 85). On Shetland, Macgregor suggests many of the 170 *setr*-names that were likely shielings were turned into permanent farms between AD 1000-1200 (1987, 491).

Peder Gammeltoft's MA thesis on Scandinavian Shetland not only re-evaluated Stewart's study of place-names in Shetland, but also included a geographical and topographical study (1994). The interdisciplinary approach, which Gammeltoft later used in his study of *bólstaðr* (2001), was used to create a settlement hierarchy. Gammeltoft found the location of *býr*-names as indicating primary characteristics; *bólstaðr,* though having many primary attributes, were likely associated with subdivisions of an earlier farm (1994, 121). *Staðir* were more secondary in nature, being inland or, if coastal, on poorer quality land on landing location. However, altitude and slope angle of *setr*-names were higher than *staðir*-names*,* suggesting a more marginal location, either on the edge of the cultivated area or on pasture land (1994, 121-124). For standardisation between all areas, I have conducted my own study of *setr*-names.

Although outside the study area, two studies in Cumbria, which looked at the site and situation of *setr* and *ærgi*-names, are pertinent to the discussion. William Harold Pearsall's paper came to the conclusion that the different distribution pattern of the generics could be due to the settlement occurring in two waves. An early, more homogenously Scandinavian wave responsible for the coining of *setr*-names, followed by a later 'Hiberno-Norse' wave that led to the founding of *ærgi* sites. Pearsall found that *setr*-names were more often located in the central dome of the Lake District, while *ærgi*-names had a more coastal distribution, often situated on marshy or alluvial ground, providing rich pasture (Pearsall 1961, 80-7). This would seem to be counterintuitive, as coastal sites with richer grazing would be more attractive to incoming settlers than more mountainous areas and poorer areas inland (Pearsall 1961, 80-7). A second study by Ian Whyte suggested a link between altitude and the use of different shieling place-name elements. Whyte's investigation found that while *sætr*-names are more often found inland and in mountainous terrain than *ærgi*-names, *skali*-names were also found at higher altitude than *ærgi*-names, but are more remote than *sætr*- names (Whyte 1985, 108). Whyte saw this as an evolutional sequence, with settlements being pushed into ever higher and more marginal sites over time (1985, 108-9).

## 5.3 Historical background to the Scandinavian settlement in Scotland

There are no contemporary accounts of Scandinavian settlement in Scotland, other than the vague account from the previously mentioned Annals of St Bertin (Chapter 2.1.1). Alex Woolf has suggested this reference is specifically about the islands of the Inner Hebrides and points to them being separated from the Kingdom of Dál Riata (2004, 94; 2007, 100). Woolf points out that of the four leading kindred of the Kingdom of Dál Riata, only the names of the *Cenél Comgaill* and *Cenél Loairn* survive in the districts of Cowal and Lorne on the mainland, while the names of the island-based kindred of the *Cenél nGabráin* (based around Arran and Kintyre), *Cenél nOengusa* (Islay) disappeared along with the kingdom's name (Woolf 2004, 94; Jennings and Kruse 2009a, 84). The emergence in Gaelic of the terms *Innse Gall* ('Islands of the Foreigners') for the

Hebrides and *Airer Goidel* ('coastline of the Gael') for the mainland (Woolf, 2004, 95), may point to the permanence of this split. '*Gall*' was one of the terms used to describe Scandinavians in Irish texts from the AD 850s (Jennings and Kruse 2009b, 124). However, Jennings and Kruse raise the possibility of a late 9th-10th century date for the widespread use of the terms *Innse Gall* and *Airer Goidel.* Pointing perhaps to a re-emergence of Gaelic as the dominant language along the mainland coastline, after at least some parts having been ON-speaking (Jennings and Kruse 2009b, 143-4).

There are references in Icelandic sources to Scandinavian settlers in Scotland, though their accuracy is open to question (Woolf 2007, 296; Jennings and Kruse 2009b, 129). In *Laxdæla Saga*, a *hersir* ('chieftain') called *Ketill Flatnefr* ('Ketill Flatnose') is forced to flee Norway due to the hostility of *Haraldr Hárfager* ('Harald Fine-hair'). Ketill chooses to sail to Scotland, where he had previously raided and thought the living was good over Iceland, which he contemptuously refers to as a 'fishing place/camp' (*Laxdæla Saga* Chapter 2, 49). This view of Iceland has been suggested as a projection of a 12th-13th century Icelandic perspective (Oram and Adderley 2011, 128).

Ketill settled in Scotland and is reported to have been well received by men of rank, due to his lineage and reputation (*Laxdæla Saga,* Chapter 4, 51). The saga goes on to say that Ketill married off his daughter *Auðr djúpaúðga* ('the Deep-Minded'), also referred to as *Unnr*, to *Áleifr hinn hviti* ('Óláfr the White') (*Laxdæla Saga,* Chapter 1, 47). Óláfr the White is believed to be the same person as *Amlaib*, the Norse King of Dublin mentioned in Irish sources (AU 853) (Ó Corráin 1998, 298; see Downham 2007a, 15-23). Another of Ketill's daughters, *Þórunn hyrna,* was married to *Helgi inn magri* ('the Lean'), the grandson of *Kjarval Írakonung* (Cerball of Osraige) (*Laxdæla Saga,* Chapter 1, 47; Jennings and Kruse 2009b, 129). The saga states that Ketill's grandson by *Auðr* and Óláfr the White, *Þorsteinn rauði* ('Thorstein the Red'), is reported to have raided widely in Scotland and gained half of it in treaty from the King of the Scots. However, soon after this he was killed while in Caithness, and it was from Caithness that his mother, *Auðr,* fled to Iceland (*Laxdæla Saga,* Chapter 4, 51).

*Landnámabók* (Chapter 11) and *Eyrbyggja Saga* (Chapter 1, 25) maintain *Ketill Flatnose* was ordered by King Harald Fine-hair to subdue Vikings in the west, rather than having to flee. *Eyrbyggja Saga* specifically states it was to defeat Vikings who had been raiding Norway from Orkney and the *Suðreyjar* ('Southern Isles'- Hebrides) (Chapter 1, 25). As in *Laxdæla Saga*, Ketill first defeats the Vikings, before making alliances with the leading men in the west and then takes over the Hebrides for himself.

There are chronological difficulties when comparing accounts in the sagas; for Thorstein the Red, to be old enough to go raiding in Scotland, Auðr and Óláfr must have married before Harald Fine-hair's reign (c.AD 870) and Óláfr is reported to have been killed in AD 873 (AU 872, FA 871-AD 873). Either there is a mistake in the chronology and Ketill left Norway much earlier than AD 870, or Auðr and Óláfr married some time earlier, possibly during Ketill's earlier raiding stage. Jennings and Kruse have argued that Ketill Flatnose and a *Caittil Find,* leader of a group in Ireland in the mid-850s, referred to as the *Gall-Ghàidheil*, may be the same person (Jennings and Kruse 2009b, 126-7). *Eirík's Saga rauða* does suggest Óláfr was king in Ireland when he married Auðr. Auðr along with her son Thorstein, left Ireland for the Hebrides on Óláfr's death (AU 872). It was in the Hebrides that Thorstein married *Þuríðar* ('Thurid'), the daughter of *Eyvindar Austmanns* and sister of Helgi the Lean (*Eirík's Saga rauða,* 1961, Chapter 1, 126*)*.

*Orkneyinga Saga and Haraldr Saga hins hárfagra* follow a different tradition, in that it was King Harald himself who sailed west to subdue the Vikings operating out of Shetland and Orkney (*Orkneyinga Saga,* Chapter 4, 26; *Haraldr Saga hins hárfagra,* Chapter 22, 368). In *Haraldr Saga hins hárfagra,* King Harald first defeats Vikings in the Northern Isles, and then the Hebrides (Chapter 22, 368).

*Orkneyinga Saga* (Chapter 4, 27) and *Haraldr Saga hins hárfagra* (Chapter 22, 369) both relate the story that King Harald gave Shetland and Orkney to Earl Rognvald of Møre in compensation for the death of his son during the expedition. Earl Rognvald subsequently gave the islands to his brother *Sigurðr inn Riki* ('Sigurd the Mighty). The family of Ketill Flatnose is only mentioned when Sigurd the Mighty makes an alliance with Thorstein the Red (*Haraldr Saga hins hárfagra,* 22, 369; *Orkneyinga Saga,* Chapter 5, 27; *Eirík's Saga rauða,* Chapter 1,126). Sigurd the

Mighty and Thorstein reputedly conquering Caithness and Sutherland as far as *Ekkjalsbakki* (*Orkneyinga Saga*, Chapter 5, 27), where Sigurd the Mighty was buried, which has been suggested as the River Oykell in Sutherland (B. Crawford and Taylor 2003, 1). *Orkneyinga Saga* and *Eirík's Saga rauða* diverge from *Heimskringla,* suggesting a much larger area was conquered, that not only included all of Caithness, but also large parts of Argyll, Moray, and Ross (*Orkneyinga Saga,* Chapter 5, 27; *Eirík's Saga rauða,* Chapter 1, 126). Which was only reportedly matched in extent by the Orkney Earls *Sigurðr digri* (Sigurd the Stout') and his son, *Þorfinnr inn Ríki* ('Thorfinn the Mighty') in the 10th-11th century (*Njal's Saga,* Chapter 86, 183; *Orkneyinga Saga,* Chapter 32, 75).

There may be some confusion or conflation of stories, but the sagas, if accurate, would suggest that Shetland, Orkney and the Hebrides were inhabited by Scandinavians at the time Harald Fair-hair came to power. When the Scandinavian settlement in Scotland first began is, at present, difficult to determine. Donnchadh Ó Corráin speculates that the pattern of raiding in Irish annals may point to settlement in the Northern and Western Isles, and the adjacent mainland, began between AD 790 and 825 (1998, 323). Ó Corráin suggests part of this area formed the elusive Scandinavian kingdom of *Lothlend, Laithlind,* later *Lochlainn,* first mentioned in AU 853.2 (Ó Corráin 1998, 302-7). The identification of *Laithlind* within Scotland is not universally accepted. Arne Kruse, for one, has argued that it, in fact, refers to south-west Norway (2017, 214-226). Andrew Jennings suggests that the cessation of attacks on Iona c.AD 825 may point to the start of Scandinavian settlement in the

Hebrides (1998, 41). It seems probable that settlement in the Hebrides began sometime in the first quarter of the 9th century. Though archaeological evidence for early settlement in Orkney and Shetland is elusive (Graham-Campbell and Batey 1998, 156). The distribution of furnished graves (discussed in Section 4.7) and the occurrence of the place-name generics *vin* and *heim* in the Northern Isles would suggest settlement in the early 9th century (Olsen 1928 178-9, 192-4; B. Sandnes 2006, 23; Brink 2008b, 58).

The Hebrides may also have developed into a regional polity (Sharples and Smith 2009, 109), as seen by the appearance of *toiseach Innsi Gall* in AFM 851 (AD 853) ('Chieftain of the Islands of the Foreigners), *Ladgmainn* (AFM 960.14) and *Lagmannaibh na n-Innsedh*, (AFM 972) ('Lawman of the Isles'), and even *ri Innsi Gall* AU 989.4 ('King of the Islands of the Foreigners) (Clancy 2008, 26). The Earldom in Orkney never developed into a Kingdom, but it did develop into the main centre of Scandinavian power in Scotland during the 11th century (Barrett et al., 2000, 3).

The suggestion of a single dynasty monopolising power from the 9th century portrayed in *Orkneyinga Saga* is rejected by Barrett et al. (2000, 4) who argue that the larger hoards, from the 24 known silver hoards dating to the 10th century from the Northern and Western Scotland (Graham-Campbell 1976, 117; 1995, 83-84), represent chiefly treasuries. Barrett, et al. suggest that these larger hoards may point to 'multiple competing' chieftains, and the smaller hoards represent personal ones which may link to regional instability (Barrett et al., 2000, 4). The burying of hoards has been dated from between ca.AD 935-1030, excluding one poorly recorded hoard (Graham-Campbell 1995, 83-84). While Barrett et al. suggest that the end date for hoard deposition may be due to the centralisation of power and the related decrease in conflict removing the need to hoard wealth (2000, 5). Ross Samson has argued the end of hoarding is connected to the monetisation of the economy (1991, 130), though Märit Gaimster suggests that this did not occur until the 12th century (1991, 122).

Following Frans-Arne Stylegar's observations that Scandinavian society in the Early VA was an aristocratic one (2004, 21), it could be argued that the use of terms such as 'Earl' and 'King' in Scotland point to a hierarchical society. If the social structure was also exported from Norway, then the same imperatives that occurred there would also be important in Scotland. Ross Samson points out that any early expeditions are likely to have been initiated by chieftains (1991, 126). Chieftains are likely to have been the only people who would have had the resources to build and crew large ocean-going ships, or to mount substantive raids. Settlement was also likely to have been initiated by chieftains. It is a common feature for the narrative in Icelandic family sagas, such as *Egil's Saga* (Chapter 23, 62-63; Chapter 29, 75), *Laxdæla Saga* (Chapter 3, 49-50; Chapter 5, 53), and *Eyrbyggja Saga* (Chapter 4, 28), to begin with a local chieftain boarding a ship with their family and dependents. On reaching their destination, it is also likely that these chieftains replicated the social structure from their homeland, as it was the basis of their power. Skallagrim's *landnám* described in *Egil's Saga* (Chapter 28, 73-4) and Unn's (Auðr's) in *Laxdæla Saga* (Chapter 6, 54) seem to mirror the social-economic landscape of Norway of a chieftain in a primary settlement surrounded by slaves, freedmen and followers (Thurston 2001, 33; Skre 2001, 9; 2011, 201-3, see Chapter 3.7.8).

As stated in Chapter 3.7.8, these chieftains needed a *lið* ('retinue') to project or maintain power, and this necessitated the need to participate in a prestige goods economy to attract and retain warriors (Samson 1991, 88-90; Hedeager 1992, 88; Thurston 2001, 49; Stylegar 2004, 21; Sheehan 2013, 811-14). As a market economy was not well-developed in the early VA, to obtain these luxury gifts required raiding and plunder (Skre1999, 415; Stylegar 2004, 22). Each chieftain also needed to feed his *lið* when not raiding. To accomplish this, it is likely that a 'tributary society' developed with an impetus to produce a surplus to meet these obligations (Wickham 2005; Stylegar 2004, 21, 25; see Chapter 3.7.8). As described in Chapter 3.7, this would require shielings to remove livestock from the homefield and collect winter fodder to stallfeed animals, which would produce the manure to fertilise the infields (Øyr 2011, 502). The 12th century description of Sveinn Ásleifarson found in *Orkneyinga Saga* (Chapter 105, 215) would seem to point to the continuing importance of some local chieftains, but also the socio-economic system of raiding and feasting that characterised IA and VA chieftaincy in Norway (Stylegar 2004, 23-5). The identification of a possible local magnate from the 11th century has been suggested in the Western Isles (Sharples and Smith 2009, 109; see Chapter 3.7.8).

Interestingly, Ketill Flatnose is reported to be the son of *Björn Buna* from Romsdal (*Laxdæla Saga*, Chapter 1, 47), who was himself, the son of Grim, a leading man from Sogn (*Eyrbyggja Saga*, Chapter 1, 25). Based on the work of Warmer (Warmer, 1983; 1997), Møre og Romsdal and Sogn were two areas pinpointed as a likely origin for early Viking raids by Jennings and Kruse (2009b, 129, 131, see also Chapter 3.8). These are also areas where *setr*-names are common, especially Romsdal, so there would seem to be a link between the proposed origin of some of the Scandinavian settlers and areas where *setr*-names are found in Scotland.

## 5.4 Identification of *setr*-names in Scotland

The time between an ON place-name being coined and when it was first documented in Scotland means that names survived with a variety of spellings. This is due in a large part to different language contact situations that occurred after the Norse period. Due to an absence of ON habitative place-names, a language shift from ON to Gaelic is believed to have occurred relatively quickly along the adjacent mainland to the Inner Hebrides (Kruse 2004 109; Jennings and Kruse 2009b, 141). Whereas Gaelic is not thought to have gained dominance in the Western Isles until the 12th century (Clancy 2008, 46). In the Western Isles and Tiree, phonological adaption of *setr* under the influence of Gaelic takes the form of *siadar/seadar*. The generic is often given in the anglicised form of *shader* on older maps (Nicolaisen 1969, 13; Cox 1990, 95-8). The language shift to Gaelic would have fossilised *setr*-names into the Gaelic landscape of the Hebrides (Nicolaisen 1961, 92). Although some ON habitative place-names may have been lost (Macniven 2013, 7), surviving ones are likely to represent ON coinages. Therefore, I will take *seadar/siadar* names in the Hebrides as being likely VA *setr*-names.

In Orkney, Shetland and north-eastern Caithness, ON was supplanted by Scots English (Scots) and *setr* is often rendered on modern maps as *setter or ster* (Fellows-Jensen 1984, 161). Whereas names surviving as *setter*/*seater* are more obviously *setr*-names, the rendering of *setr* as *ster* can lead to some confusion, as *ster* can also be derived from *bister* (*bolstaðr*) (Brøgger 1929, 78; Nicolaisen 1982, 82; Gammeltoft 2001, 93) and *staðir* (Waugh 1987, 62; 1989-90, 68). Another problem in Shetland is that the term *setter* remained a dialect word until modern times, where it was used to describe good grazing pasture for cattle (Edmonston, 1866, cited in Waugh, 2013). Though a *setter*-name without an early documented date may be an example of a folk memory, it could equally have been coined at any time between AD 800-1900 (Waugh 2013, 11). Due to these problems of identifying *setr* from *ster* and possible dating issues concerning *setter* in the Northern Isles, I will rely on previous scholars' research to identifying likely VA coinages for the data collection. In Orkney, I will follow Marwick (1952), Waugh in Caithness (1985), and in Shetland, Stewart (1987) and Gammeltoft (1994). Doreen Waugh was unsure whether Thruster in Wick Parish (ND289517) may have been a *bólstaðr* or *setr*-name (1985, 416-7); I have followed Gammeltoft, who assigned it as a *setr*-name (2001, 313).

In western Caithness and Sutherland, the language shift was from ON to Gaelic, with a later one to Scots (Waugh 1995, 66). It has been argued that *setr*-names in western Caithness and Sutherland were rendered as *side* or *said* in Gaelic, rather than *seadar/siadar* encountered in the Western Isles (Watson 1906, 366; Nicolaisen 1969, 13; I.A. Fraser 1979, 19-20; 1986, 29; Waugh 1985, 34; 1993, 123). The element '*side'* also occurs as a common place-name element in Scots, which had spread to the area by the 16th century at the latest (Waugh 1995, 75). This further complicates the picture, as it is feasible that some *setr*-names could also be rendered as *side* through a shift to Scots. A similar process may have occurred in Cumbria, where s*etr* has sometimes became confused with OE *side,* as it is in Ambleside (NY3704) and Annaside (SD0986) (Fellows-Jensen 1985b, 60-1).

However, it is noticeable that this only occurs in western Caithness and Sutherland, where the language contact situation was between Gaelic and ON and not in north-eastern Caithness, where there is no evidence of Gaelic being spoken (Nicolaisen 1982, 77). Doreen Waugh, following Nicolaisen (1982, 80), suggests that Gaelic may only have started to infiltrate Reay Parish in western Caithness in the 12/13th century (Waugh 1995, 66). In contrast, Gaelic may have started to make inroads into south-east Sutherland before the arrival of Norse, around AD 800, a Gaelic revival may have replaced ON, before infiltration of Scots in the 16th century (Bangor-Jones 1995, 82-3).

Nicolaisen has questioned why the rendering of *setr* as *side* or *said* only happens in Caithness and Sutherland (1969, 13-14). The question could also be asked, why does *seadar/siadar* not appear in those areas of Caithness and Sutherland that came to be Gaelic-speaking? The assumption that the language shift from ON to Gaelic would lead to a word being rendered in an identical phonetical way, in two different locations, may be open to question. However, it would take a specialist in contact linguistics and Gaelic to unravel how words may have developed due to regional differences. The regional language contact situation may have been different in the Western Isles compared to Sutherland; this may have affected the transmission of words from one language to another. This may have been the result of a variety of reasons:

- Differences in the languages involved, with a shift from ON to Gaelic in the Hebrides and possibly the presence of Scots in Caithness and Sutherland influencing pronunciation before the names were recorded.
- The dialects of Gaelic and non-Gaelic speakers. Regional variation in dialects may have affected how loanwords were adopted phonetically (Robertson, 1905, 35-44; 1906, 110-13), which may be more noticeable in place-names (Ò Maolalaigh 1998, 15).
- The relative numbers of speakers of either language (Gammeltoft 2001, 283).
- Differences in prestige of each language group in different parts of the Scotland. With the Inner Hebrides closer to the centre of Gaelic power.

- The length of time taken for Gaelic to gain dominance may have affected the transfer of place-names.

My identification of *setr*-names in the Hebrides relies on their fossilisation as *siadar* in Gaelic. In the Northern Isles and Caithness, where there is a risk *setr*-names may be later coinages, I will follow relevant scholars in identifying likely VA coinages. In Western Caithness and Sutherland there is a risk that later Scots' *side*-names could become mistaken for a ON *setr*-names and vice versa. To explain my identification of these sites as *setr*-names, I will discuss my reasoning below, which will be based on sites whose specific element is most likely ON or where there is an early spelling which suggests a *setr*-name (see Watson 1905-6, 366; Nicolaisen 1969, 13-14; I.A. Fraser 1979, 19-20; Waugh 1985, 31; 1995, 75).

- Brimside (ND049669), Waugh suggests that the specific element is ON *brim* n. ('surf') (Waugh 1985, 147). However, the site is 3.5km from the coast and on land sloping down to a small river valley. Waugh links the site to Brims Ness, 4km north on the Pentland Firth where there is the Mains of Brims (ND042710). The site of Brimside is not actually on the 'side' of Brims Ness, but on the western slope of Cairnmore Hillock, some 2-3km south of the peninsula and so Brimside cannot mean on the 'side of Brims[ness]'. This would suggest that the specific 'Brim' alludes to what Gammeltoft referred to as 'an institutional or administrative relationship' (2001, 218). It is likely that Brimside was originally *Brimsetr,* and it had the meaning of the 'shieling of the farm of Brim'.

- Bowside in Reay Parish (NC830609), which may be derived from ON *Bú-setr* (either 'shieling of the farm/dwelling' or 'cattle shieling'). This is a very common name for Norwegian shielings, being found in four municipalities in NG (Ål in Buskerud, Midtre Gauldal in Sør-Trøndelag, Ørsta in Møre og Romsdal, and Frosta in Nord-Trøndelag) and is found in 27 municipalities throughout Norway on modern maps. It is also likely to be found in Bosset in Sutherland (NC449058) (I.A. Fraser 1986, 29) and Buster on Yell in Shetland (HU464918) (Stewart 1987, 231).
- Brackside, given as Braxside on the 1876 OS map (NC951634), is likely from the ON *brekka* f. ('shieling on the slope') (Waugh 1985, 65). There are no analogous names in NG, but there are seven *Brekkeseter* (in Rollag and Sigdal in Buskerud, Bømlo in Hordaland, Ørsta in Møre og Romsdal, Leksvik in Nord-Trøndelag, Botne and Brunlanes in Vestfold); two *Brekkaset*(*ran*) (Aurland in Sogn og Fjordane and Namskogan in Nord-Trøndelag); and at least six Brekkseter or Breksæter (one in Leksvik in Nord-Trøndelag and Meldal in Sør-Trøndelag, and two each in Støren and Rennebu in Sør-Trøndelag) in the Stedsnavnarkivet. Braxside could also feasibly be derived from ScG *breac* ('variegated in colour'), though Waugh preferred the ON derivation on account of the word order (Waugh 1995, 75). See also Bragasetter on Papa Stour, Shetland (HU172594) (Stewart 1987, 238).
- Carriside (ND074590) in 1819 (Sinclair Estate Papers (Thurso) cited in Waugh, 1985) and Carryside in 1831 (Thomson's Map). Waugh suggests the specific element may contain the ON personal name *Kári* (Waugh 1985, 68;

1995, 75), though it may refer to a river name, *Kåri* (Marwick 1952, 141-2). NG only gives one occurrence in Norway, *Kariset* from Hemsedal, Buskerud. However, there are six found in Stedsnavnarkivet, three from Møre and Romsdal (Surnadal, Gjemnes and Vanylven) and one each from Telemark (Vinje), Hordaland (Semanger) and Oppland (Lesja). See also John Stewart for the derivation of Corrabreck (1987, 62), Hugh Marwick on Corrigill (1952, 141-2), Alan Macniven for Corrary (2015, 202), and Cox on Carashader (Cairisiadar), Lewis (Oftedal 1954, 385-6; Cox 1990, 103).

- Cunside (NC584514), ScG Conaisaite/Chaonasaide, ON *Kone-setr* ('women's shieling'). Kunnissett (Pont, Strathnaver; Kyle of Tongue, 2, 1560-1614, followed by Blaeu, 1654), possibly Kynasach (Arrowsmith's Map 1807, http://maps.nls.uk/joins/747.html). *Kone-setr* is not found in NG, or in the Stedsnavnarkivet, but the early spelling would seem to confirm it as a *setr*-name. The presence of a possible genitive case ending in the spelling in both Pont's and Arrowsmith's maps may designate possession. The closest similar specific elements in Norway would be the masculine personal name *Korni,* found in Kornastaðir/Konastad. See also the derivation of Conicuts, Dunrossness in Shetland (Stewart 1987, 116).
- Coulside, ScG *Cùlasaid* (NC566438), which has been suggested by Watson as *Kúlu-setr* derived from ON *kúlu-* f. ('an elevation') or *kollr- m.* ('rounded hill-shieling' or 'knoll' or an ON personal name) *-setr* (1906, 366). Possible candidates for the rounded hill include Cnoc nan Cùilean (NC597461) and Càrn an Tionail **(**NC576476), to the north-west of the settlement. In Norway,

NG names only a single Kuluset from Nes, Buskerud. However, in the Stedsnavnarkivet there are: three Kulusets in Buskerud (Nes, Ål, and Flå), a Kulset is found in Voss, Hordaland and in Selbu, Sør-Trøndelag, and there are three Kulisæter from Nord-Trøndelag (Nord-Fron, Oppland and Verdal). Stewart suggests in Shetland that the specific element of Collaster, Aithseting (HU 31804 54804), Collaster, Sandness (HU212575), Culsetter, Delting (HU335675), and Culsetter, Dunrossness (HU373152), are all derived from *kollr* m. ('knoll' – a rounded hill) (1987, 238-9).

- Deanside, ScG *Dionsait/Dionsaid* (NC591557), Watson (1906, 366) suggests that this derives from ON *Dynr-setr* (ON *Dyrnr* m. 'noisy-shieling'). There is a waterfall on Alt Dionsaid at NC594554, which may account for the link to noise and might suggest the original shieling was close to this point. NG suggests the specific element of Dynjane (Tveid, Vest-Agder) and Dyndal (Orkedalen, Sør-Trondheim) relates to noise from nearby streams. An alternative meaning may be similar to that of Dyngeset (Brønnø, Nordlands), which NG suggests may be derived from ON *dyngja* ('manure'), but with a similar meaning to Bokmål *dynn* ('mire, mud; ooze') (Haugen 1974, 107). This may refer to a stream's muddy bottom or unclean water, perhaps referring to the valley, where the nearby Rhian Burn becomes a tidal stream.
- Fallside, ScG *Folmhasaite* or *Fealasaid*, ON *Fjallsetr* (Fell-setr) (NC593526) has been suggested by Watson as being derived from ON *Fjellset* ('fell or mountain shieling'), NG gives only one Fjeldset (Klingen, Nord-Trøndelag).

Rygh suggests rather than *fjell* the specific element is the masculine personal name *Fjallarr*. In the Stedsnavnarkivet, *Fjellset* is found in 28 different municipalities. The lack of *setr*-names in NG containing the above *brekka* and *fjell* is to be expected, as the specific elements would suggest exploitation of marginal sites, which are less likely to be found in early documents, such as the Matrikkel. For a similar derivation see Fillaster, Sandsting in Shetland (HU289504) (Stewart 1987, 240).

- Hòrasaid (NC886189), ON *Þori's/Þorir's-setr* ('Thori- or Thorir's-shieling') (Watson, 1905-6, 366). Thori and Thorir are common Scandinavian personal names found in places-names in Lincolnshire and Yorkshire (Fellows-Jensen 1968, 307-9), see also the derivation of Torrabus, Islay (Macniven 2015, 285).
- Linsidemore, ScG *Lionsaid*, ON *lín-setr* ('flax-shieling') (NH541991). NG names a Linset in Sunndal, Møre og Romsdal, and two Lindsets in Nordland (Vefsn and Nesne), Nord-Trøndelag (Overhalla and Verdal), Møre og Romsdal (Eide and Vestnes) and a single name in Sør-Trøndelag (Osen). The Stedsnavnarkivet (http://www.edd.uio.no/) also has Linset in Surndadal, which is most likely the same as that reported in NG; and there are three Lindsets in Nord-Trøndelag (Namsskogan, Overhalla and Verdal); two in Møre og Romsdal (Fræna and Vestnes); and single sites in Sør-Trøndelag (Osen), Sogn og Fjordane (Stryn), Oppland (Vestre Toten), and Vestfold (Hof). Magnus Olsen made the link between some Norwegian *setr*-names and the production of flax (1928, 166, 209-10). Interestingly, the majority of

*Linsetr* names are found within coastal municipalities and this may link with the need for flax to produce fabric for sailing or possibly export. The link between Scandinavian settlement and the introduction of *Linun* is known from various Norse sites in Scotland (Bond and Hunter 1987) and makes this a good possibility as an ON formation. See also Linshader on the Isle of Lewis (NB210319) (Cox 1990, 101).

- Sandside in Reay Parish (NC952652), the specific element '*sand*' can be either ON or Scots. However, on Blaeu's map of 1662, based on Timothy Pont's manuscripts of local pronunciation, the name is given as *Sandset* (Waugh 1985, 79-80; 1995, 75-6). NG has two examples of Sandset in Nordland (Steigen and Øksnes) and a Sandsæter in Malme, Beitstaden Nord-Trøndelag (modern Steinkjer). There is a Sandset in Nordland (Øksnes) and Telemark (Tinn) in the Stedsnavnarkivet, and 12 municipalities from seven *fylke* (Buskerud, Hedmark, Nord-Trøndelag, Oppland, Rogaland, Telemark, and Vestfold) contain a Sandsæter/Sandseter. There was also the lost settlement of Sandsetter, Sandsting on Shetland (HU3348) (Stewart 1987, 240).
- Staonsaid, ON Steinset ('stony-shieling' or 'Steinn' personal name) (NC393465). NG mentions Steinset in Hurdalen, Akershus, Flesberg, Sandsvær, Sigdal, Skodje, Øvre Eker, and Nedre Eker in Buskeruds. There are also six Steinsæter in NG: two in Sogn og Fjordane (Bremanger and Holmedal); One each in Buskerud (Hole) and Møre og Romsdal (Hen). In the Stedsnavnarkivet it is found in the 29 municipalities from eight *fylke*

(Akershus, Buskerud, Hordaland, Nordland, Nord-Trøndelag, Oppland, Sogn og Fjordane, and Telemark). See also the derivation of Stanesetter on Yell, Shetland (HU549980) (Stewart 1987, 230) and Staoisha, Islay (NR403712) (Macniven 2015, 282).

## 5.5 Distribution of *setr*-names

From my study of Scotland, I identified 298 *setr*-names in total. Although the study area is large, there is a wide variation in the density of *setr*-names throughout (Figure 5.3). Shetland had the highest concentration, with 169 sites in total, including three sites on Fair Isle. After removing six reciprocating names, nine lost *setr*-names, and five which may be late formations, this leaves 149 sites to investigate. Orkney has the next highest concentration of *setr*-names in Scotland with 48, three of which are now lost, this is followed by the Isle of Lewis with 32 sites, 17 in Caithness and 15 in Skye. Sutherland has eight sites, one of which cannot be located with any certainty (Hòrasaid) and there are another nine *setr*-names scattered between the Isle of Harris and Islay. From a total of 298 *setr*-names identified in the study area, I was able to locate 275 sites that were likely coined in the VA. These 275 place-names and sites they describe will form the basis of this study to conduct a survey.

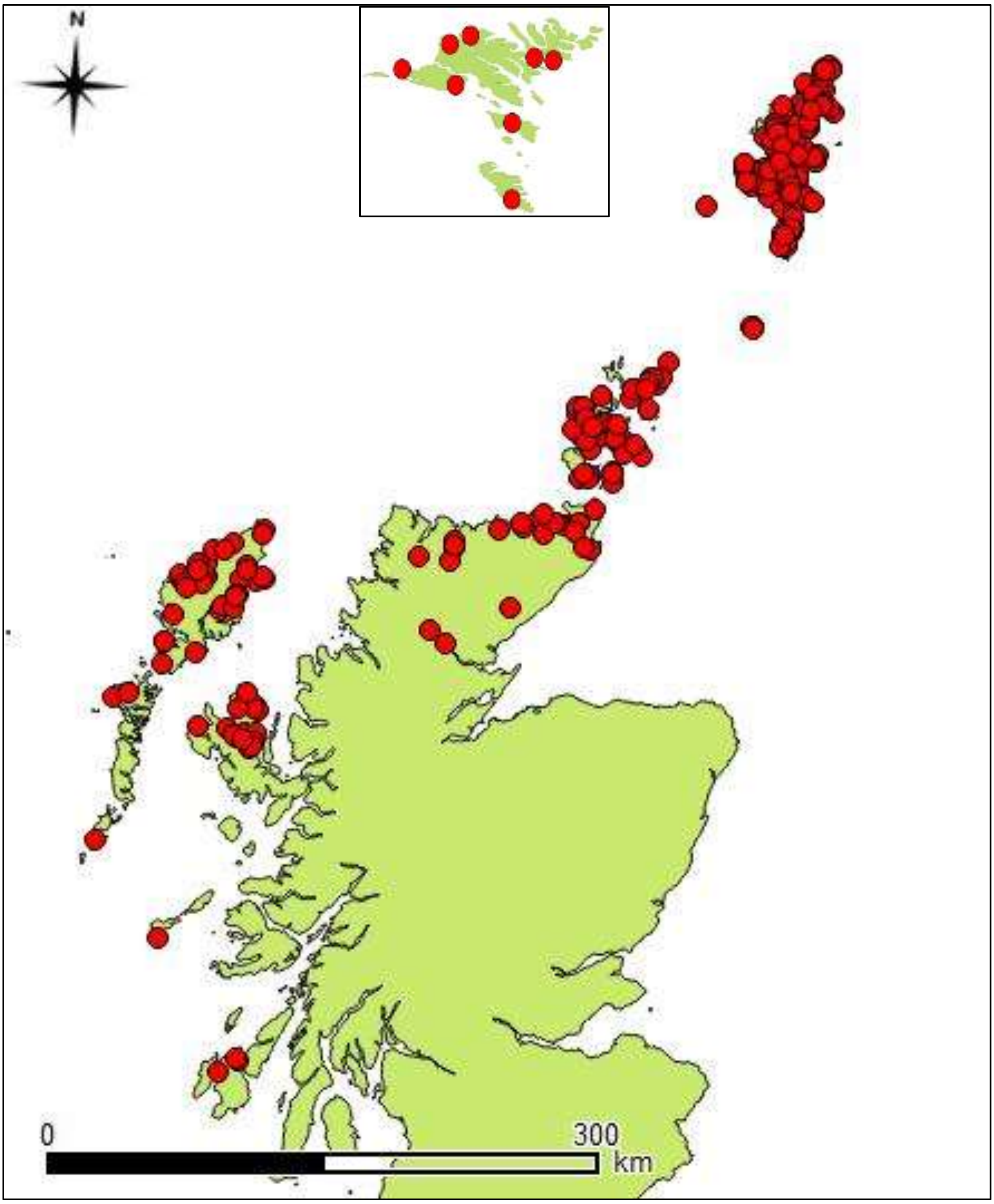


Figure 5.3 The distribution of *setr*-names in Scotland and the Faroe Islands (insert map) in this study.

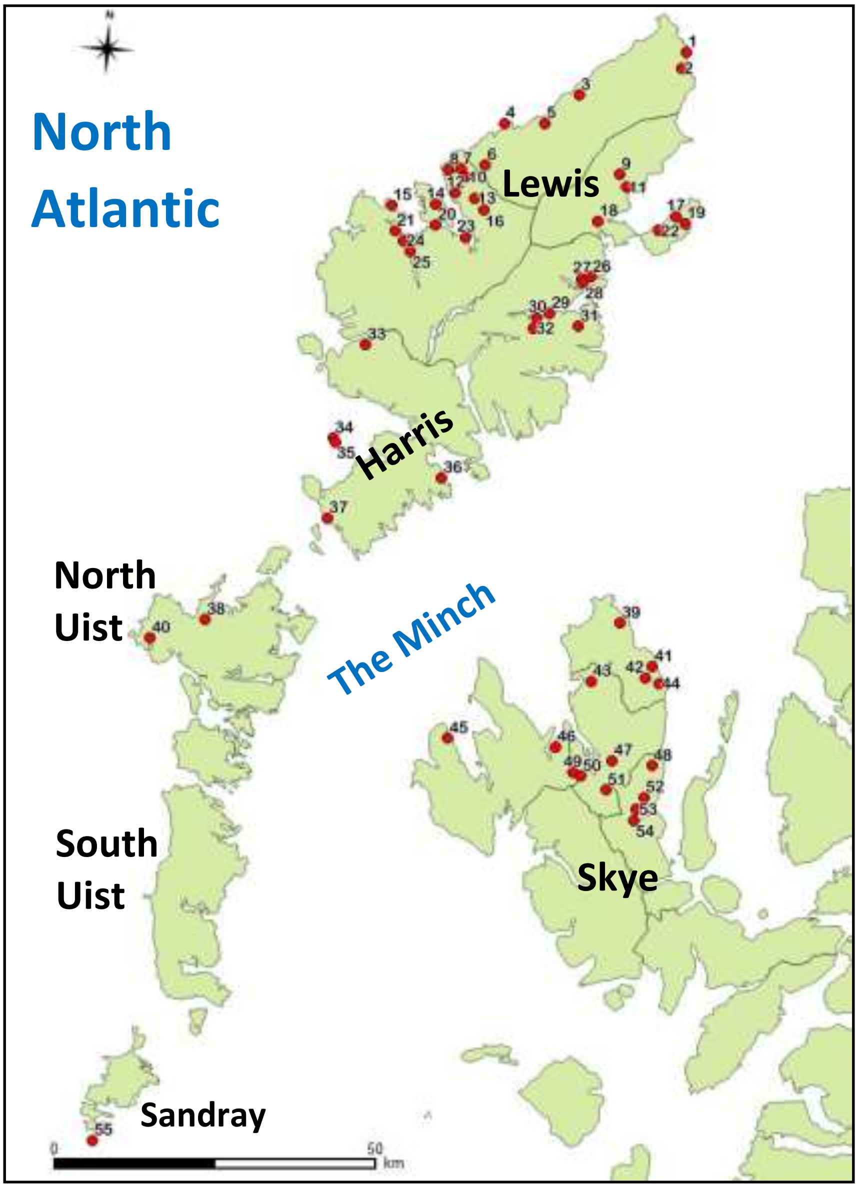



Figure 5.4 Distribution Map of *setr*-names in Zone 1: The Western Isles and Skye.

| | | | | |
|---|---|---|---|---|
| 1. Caiashader | 12. Siader | 23. Linsiadar | 34. Sheader | 45. Sheader |
| 2. Cuidhseadair | 13. Eileaster | 24. Geisiadar | 35. Vatasater | 46. Flashader |
| 3. Siadeir | 14. Eorshader | 25. Ungaisiadar | 36. Drinisheader | 47. Annishader |
| 4. Sgeir Cuidshader | 15. Cnoc Iorshader | 26. Griomsidar | 37. Kyles sheader | 48. Armishader |
| 5. Tom Shader | 16. Amhaster | 27. Hamarshader | 38. L. Eisiadair | 49. Uigshader |
| 6. Horshader | 17. Suilairshadir | 28. Hashader Mor | 39. Sheader | 50. Ben Roishader |
| 7. Cnoc Eirdshader | 18. Guershader | 29. Cearsiadair | 40. L. Brinishader | 51. Uigshader |
| 8. Laimishader | 19. Sheshadair | 30. Corriseadair | 41. Ellishader | 52. Dun Gershader |
| 9. Barashader | 20. Iarsiadair | 31. Eorshader | 42. Marishader | 53. Sulaisiader |
| 10. Borghaster | 21. Cairisiadar | 32. Airigh Shader | 43. Sheader | 54. Culeshader |
| 11. Tigh Thaisader | 22. Cnoc Ghuirshadair | 33. L. Uiseadair | 44. Herishader | 55. Sheader |

In Zone 1 (Figure 5.4), *setr*-names are concentrated on Lewis (32 sites) and Northern Skye (15 sites). Of the 80 sites in Scotland, excluding the Northern Isles, 59% are found on Lewis and Skye together. The number of *setr*-names drops considerably on the way south through Harris (three) and North Uist (two), to a single *setr*-name on Sandray, there are no *setr*-names on South Uist.

There are just four *setr*-names from the entire Inner Hebrides (Figure 5.5), a fifth, *Seadir,* Torosay on Mull, had been suggested by Anne Johnston (1990, 275). Alistair Whyte (2017, 47) has discounted this, and proposes that the initial '*s*' is a misreading of *'l'* in *Leadir,* suggesting that it refers to Liath-Dhoire (NM610368). Three of the remaining *setr*-names, are found on Islay, Erasaid (NR2965), Staoisha (NR4071), and Staoisha Eararach (NR3972) (Macniven 2015), the final *setr*-name in Zone 2 is Dun Hiader (NL9638) on Tiree (Johnston 1990, 275). Dun Hiader consists of a simplex *siadar*-name that has had Gaelic *Dùn* ('fort' or 'stronghold') attached at a later date. Cameron Gillies suggested that Staoisha may be derived from either the Gaelic for 'awry or bent' (1906, 137) or juniper, but that it probably ON *steinn* ('stone') with a genitive -*s* (1906, 158). Maceacharna suggests Staoisha comes from ON, *Steinsá* ('river of the stone') (1976, 86), while Macniven argues that *Steinnsetr* (either ON *stein* ('stone-shieling') or more probably, the ON personal name, *Steinn*) accords better with local pronunciation and there are also analogies with names in Norway (Macniven 2015, 281-3).

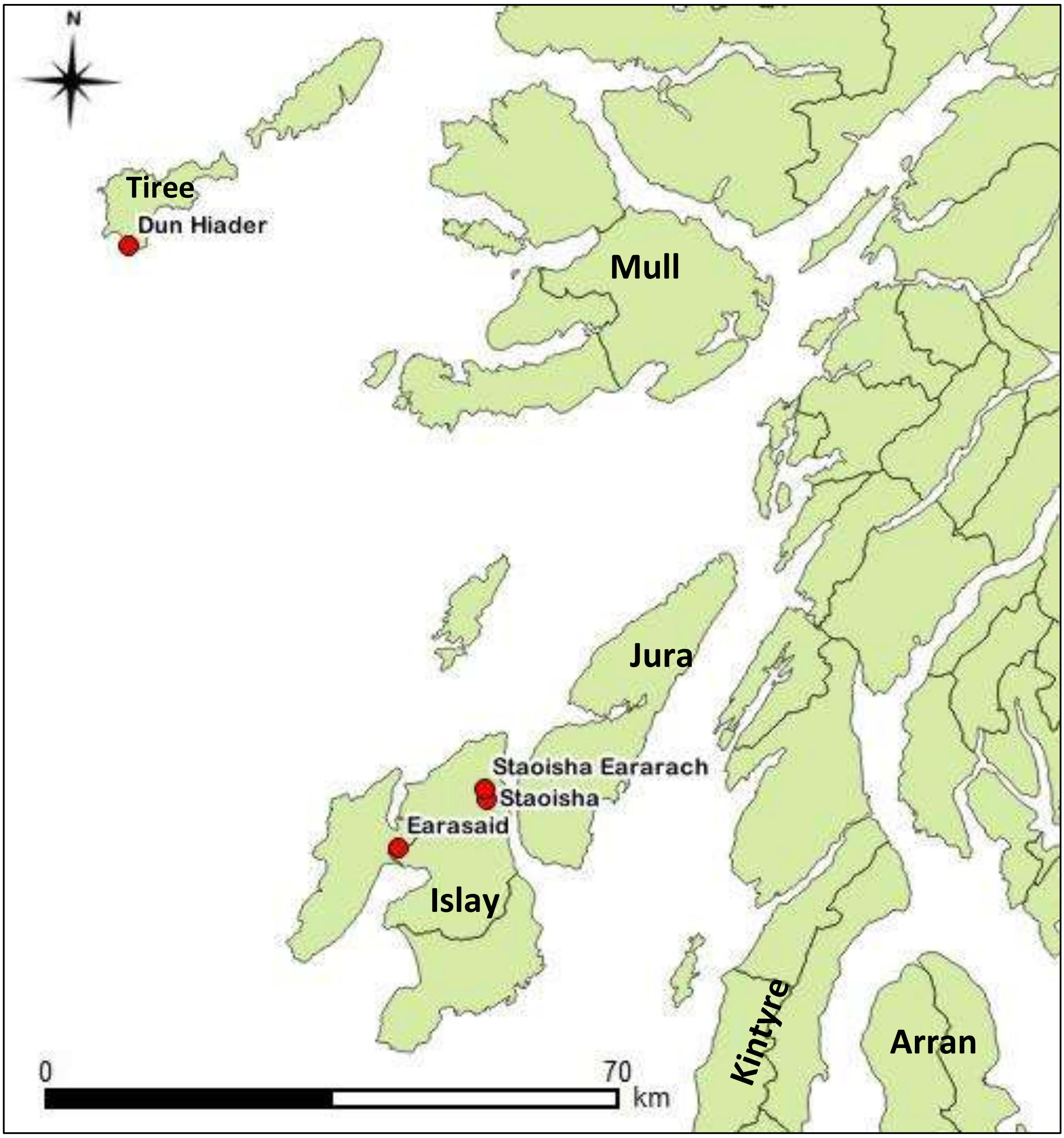


Figure 5.5 Distribution Map of *setr*-names in Zone 2: The Inner Hebrides.

The etymology of Erasaid is disputed. Cameron Gillies thought Erasaid was a purely Gaelic formation, meaning a 'women's shoulder plaid' (1906, 151). Peder Gammeltoft gives the earliest forms of Erasaid as *Herrestuid* in 1562 and *Areset* in 1628 and 1663. Based on this earliest form he found from the Register of the Privy

Seal, Gammeltoft suggests that Erasaid may be a *staðir*- rather than a *setr*-name (2006, 79). Macniven argues the compiler of the Register of the Privy Seal had problems deciphering the handwriting in the documents used for this section and *Herressuid* could have been misread as *Herrestuid* (2015, 306). Alan Macniven found five early forms that gave the generic as -*set*, including an earlier Areset from 1541 along with the same spelling in 1609, 1627, 1663 and Arreset 1614 (2015, 305). Macniven makes the point that *Herrestuid* would fit better with the other early forms and the peaty and boggy location is more likely to have been used for pasturage which would be atypical for a relatively more prestigious *staðir* settlement (2006, 190; 2015 306). The location of Erasaid, at the base of a low ridge, surrounded by low-lying marshy ground, is similar to some *setr*-names in Norwegian coastal municipalities, such as Fræna.

*Setr*-names are absent from the entire western coastline of the mainland, before rounding Cape Wrath in the north. The small cluster on Islay are the result of a detailed local place-name study (Macniven 2006, 2015), this may hint at the generic having been far more widespread than the present distribution suggests or that its use was restricted for some reason. There is the possibility that further *setr*-names may be discovered from similar in-depth place-name studies along the west coast of the Scottish mainland and islands of the Inner Hebrides, though none were found on Arran (I.A. Fraser 1999), Bute (Márkus 2012) or Coll (Johnstone 1991). The limited number of sites at present (four) mean that any regional analysis would be statistically meaningless. I will therefore incorporate the data into Zone 1.

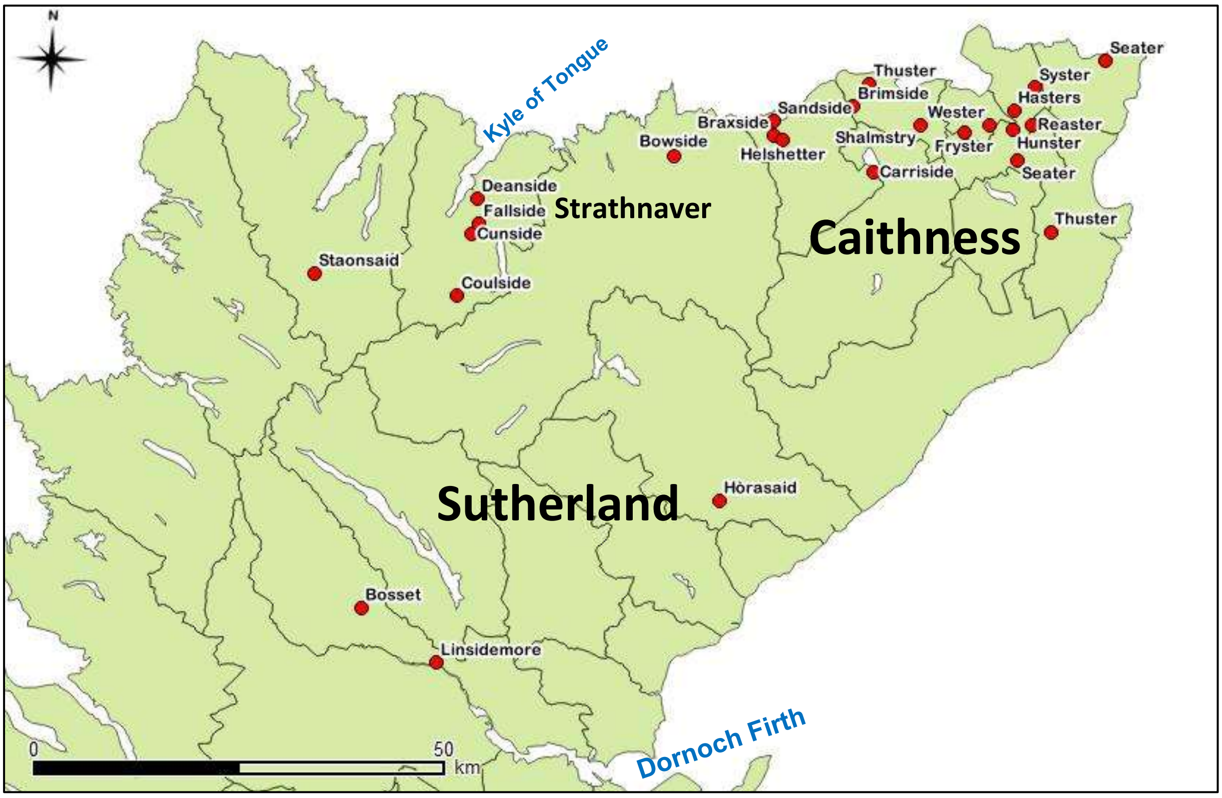



Figure 5.6 Distribution map of *setr*-names in Caithness and Sutherland.

In Caithness, *setr*-names are found parallel to the coast, stretching from Thuster, in the east, in an arc to Bowside in the west (Figure 5.6). In Sutherland there seems to have been a deeper penetration along inland river valleys than in Caithness, as seen from the Kyle of Tongue and from Loch Eriboll, along the north coast, and River Cassley and Helmsdale River down the east coast of Sutherland. However, there is a huge swath of land between Thuster in Wick Parish, Caithness and the Dornoch Firth, which is almost devoid of *setr*-names, with the exception of Horasaid.

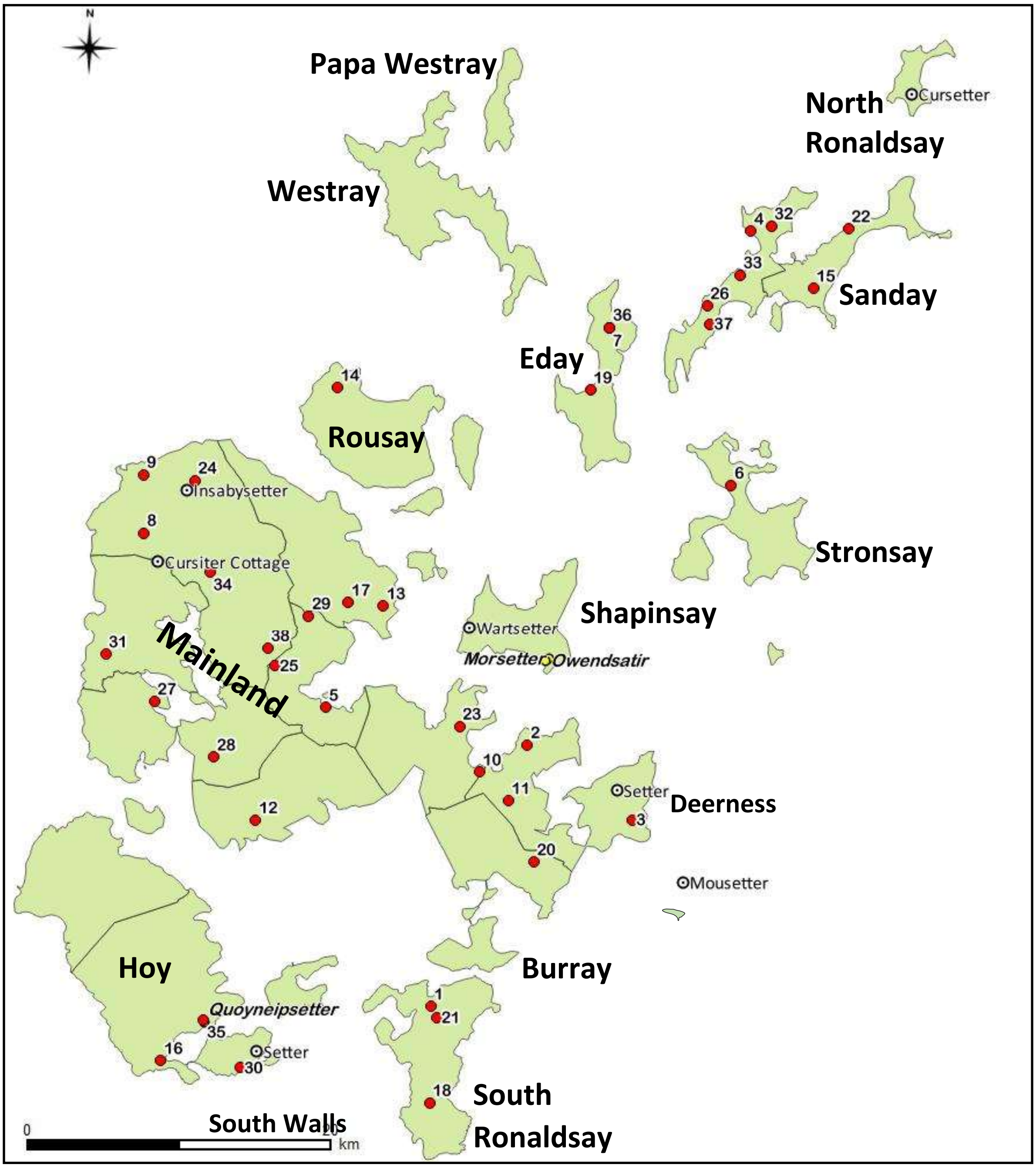



Figure 5.7 Distribution map of *setr*-names in Orkney, (lost *setr* yellow circle with names in italics, clear circle represents names not mentioned by Marwick (1952).

1. Blanster
2. Calset
3. Colster
4. Curcasetter
5. Cursiter
6. Ernsetter
7. Fold of Setter
8. Folsetter
9. Garthsetter
10. Grimsetter
11. Grotsetter
12. Inkster
13. Inkster
14. Innister
15. Maizer
16. Melsetter
17. Mossetter
18. Mossetter
19. Mussetter
20. Ocklester
21. Quoyhorsetter
22. Seater
23. Seatter
24. Setter
25. Setter
26. Setter
27. Setter
28. Setterquoy
29. Settiscarth
30. Snelsetter
31. South Setter
32. Stangasetter
33. Stiglister
34. Upper Mossetter
35. Upper Setter
36. Warsett
37. Warsetter
38. Winksetter

In the Orkney Islands (Zone 3), *setr*-names are found on most of the larger islands, with the exception of Westray and the northern part of Hoy (Figure 5.7). *Setr*-names are, on the whole, absent from the western shores of in Orkney, unless sheltered by a nearby island and from many of the smaller islands, such as Papa Westray and Burray. This may be due to the limited area making shielings redundant, however, island size alone is not a prerequisite for the use of the generic, Stronsay (13 miles$^2$), Rousay (18.8 miles$^2$), and Shapinsay (11.4 miles$^2$) only have one *setr*-name, Sanday (19.5 miles$^2$) has seven (data from Haswell-Smith 2004). Either there were many more *setr*-names that have now been lost on the three former islands or there was something distinct about Sanday which made it more suitable, or necessary, for the use of *setrs.*

In Zone 4, the 159 *setr*-names have widespread distribution in Shetland, but are notable for their absence from the north-western North Roe, Petta Dale on the mainland, and the central area of Yell. All three areas would seem ideal for the use in the shieling economy and it seems unusual that there are no *setr*-names in these localities (for a detailed discussion of *setr*-names in Shetland see Chapter 4.2).

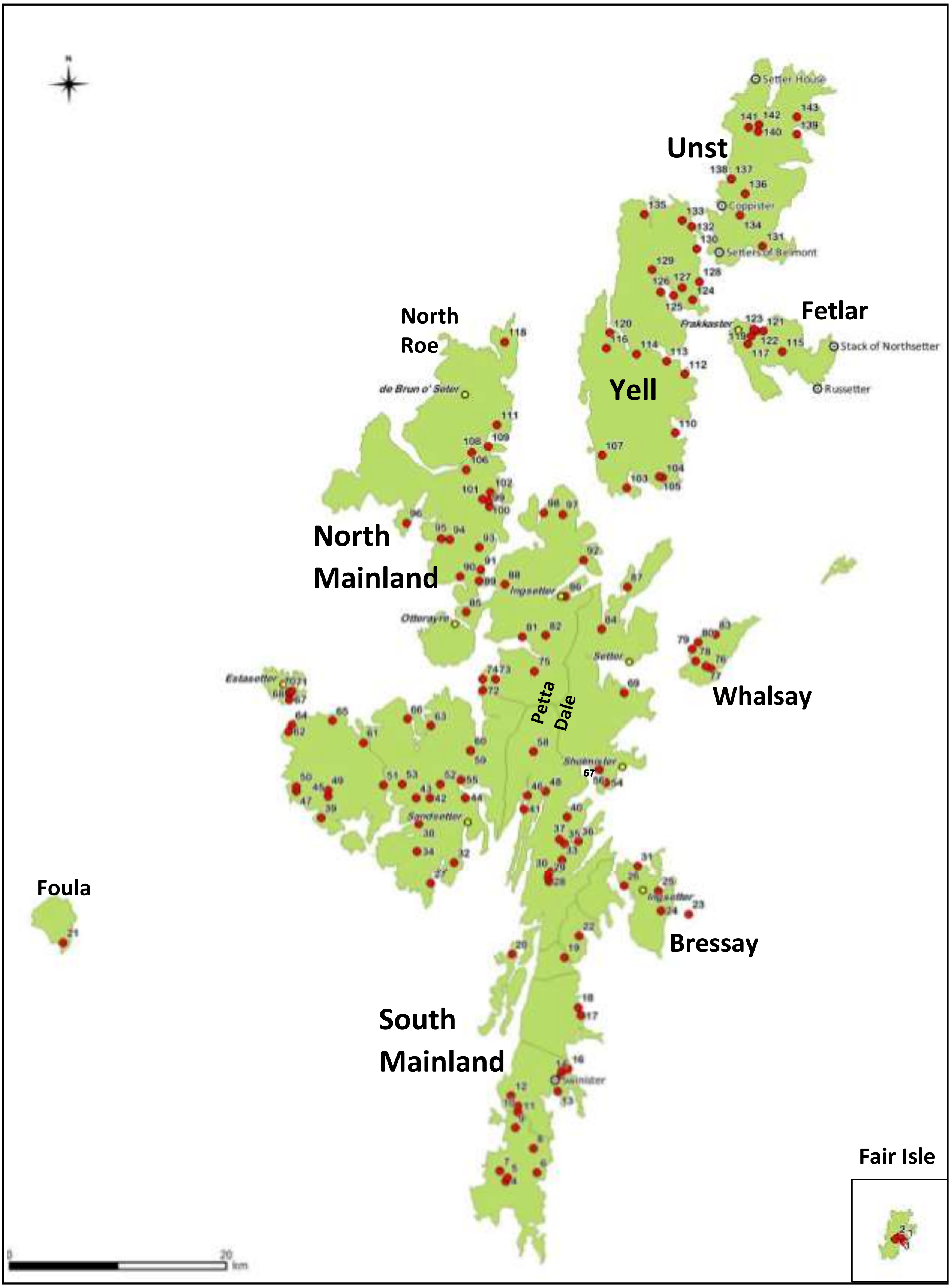



Figure 5.8 Distribution map of *setr*-names and Shetland and Fair Isle (lost *setr* yellow circle with names in italics, clear circle represents names not mentioned in Stewart).

| No. | ***Setr*-name** | No. | ***Setr*-name** | No. | ***Setr*-name** | No. | ***Setr*-name** |
|---|---|---|---|---|---|---|---|
| 1 | Vaasetter | 41 | Hellister | 81 | Mangister | 121 | Russetter |
| 2 | Setter | 42 | Sefster | 82 | Sursetter | 122 | Linksetter |
| 3 | Gilsetter | 43 | Fillaster | 83 | Challister | 123 | Uriesetter |
| 4 | Culsetter | 44 | Semblister | 84 | Tronister | 124 | Setter |
| 5 | Bakkasetter | 45 | Setter | 85 | Culsetter | 125 | Cunnister |
| 6 | Dalsetter | 46 | Huxter | 86 | Croosetter | 126 | Colvister |
| 7 | Symblisetter | 47 | Swinister | 87 | Setter | 127 | Bixsetter |
| 8 | Lusetter | 48 | Setter | 88 | Voxter | 128 | Stanesetter |
| 9 | Geosetter | 49 | Brough | 89 | Haggrister | 129 | Dalsetter |
| 10 | Williamsetter | 50 | Goster | 90 | Mangaster | 130 | Grimsetter |
| 11 | Ellister | 51 | Brouster | 91 | Lunnister | 131 | Murrister |
| 12 | Vatsetter | 52 | Glenburn | 92 | Swinister | 132 | Kellister |
| 13 | Cullister | 53 | Murraster | 93 | Clothister | 133 | Mursetter |
| 14 | Veester | 54 | Finnister | 94 | Gunnister | 134 | Gunnister |
| 15 | Cruster | 55 | Bixter | 95 | Setter | 135 | Setter |
| 16 | Setter | 56 | Assater | 96 | Niddister | 136 | Setter |
| 17 | Aithsetter | 57 | Freester | 97 | Tronaster | 137 | Selster |
| 18 | Ukinsetter | 58 | Setter | 98 | Crooksetter | 138 | Collaster |
| 19 | Couster | 59 | Collaster | 99 | Bardister | 139 | Setters (Haroldswick) |
| 20 | Setter | 60 | Houster | 100 | Nissetter | 140 | Southsetter |
| 21 | Quinister | 61 | Kellister | 101 | Turvister | 141 | Petester |
| 22 | Setter | 62 | Easter | 102 | Fiblister | 142 | Northsetter |
| 23 | Setter | 63 | Setter | 103 | Copister | 143 | Setter |
| 24 | Grimsetter | 64 | Huxter | 104 | Kettlester | 144 | Ingsetter |
| 25 | Setter | 65 | Collaster | 105 | Littlester | 145 | Sandsetter |
| 26 | Cruester | 66 | Brindister | 106 | Swinister | 146 | Sholmister |
| 27 | Scarvister | 67 | Bragasetter | 107 | Setter | 147 | Estasetter |
| 28 | Kirkasetter | 68 | Mid Setter | 108 | Oxensetter | 148 | Setter |
| 29 | South Setter | 69 | Bellister | 109 | Crooksetter | 149 | Otterayre |
| 30 | North Setter | 70 | Setter | 110 | Swarister | 150 | Ingsetter |
| 31 | Beosetter | 71 | New setter | 111 | Housetter | 151 | Brun o' Seter |
| 32 | Sauðaréttarsetr | 72 | Quiensetter | 112 | Vatsetter | 152 | Frakkaster |
| 33 | Walsetter | 73 | Voxter | 113 | Lussetter | 153 | Swinister |
| 34 | Hestinsetter | 74 | Houbansetter | 114 | Setter | 154 | Setter |
| 35 | Swinister | 75 | Barfasater | 115 | Setter | 155 | Russetter |
| 36 | Houster | 76 | Huxter | 116 | Buster | 156 | Stack of Northsetter |
| 37 | Linkster | 77 | Livister | 117 | Uskister | 157 | Setters of Belmont |
| 38 | Setter | 78 | Hamister | 118 | Setter | 158 | Coppister |
| 39 | Scarvister | 79 | Marrister | 119 | Oddsetter | 159 | Setter House |
| 40 | Vatster | 80 | Pauster | 120 | Grimister | | |

Table 5.1 *Setr*-names in Shetland.

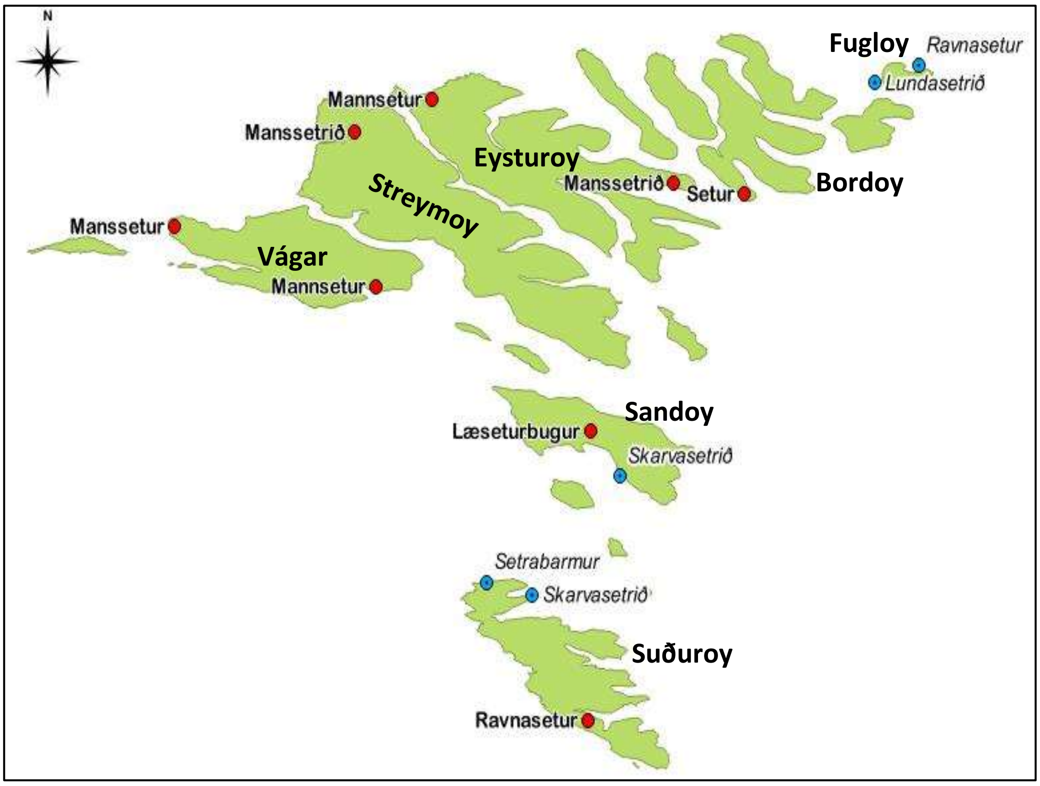



Figure 5.9 Distribution map of *setr*-names in the Faroese (coastal sites-blue and topographical *setr*-names in red).

While it has been argued that *setr*-names are now absent from the Faroes (Macgregor 1986, 85), Christian Matras gives the definition of seter (n.) as: 1. seat, 2. Place in the cliffs where birds usually sit (bird's eye). The hut (in the mountains). Matras names five topographical names in the northern islands containing *setr*: Á Setri, Å Setrinum, Kerlingasetur, Oðasetur, and Vestur à Setri (1933, 241). All of these names are no longer identifiable on modern maps (http://www.kortal.fo/ accessed online 25/8/16), though one or more of the eight possible *setr*-names that are, may be Matras's lost *setr*-names.

These eight names comprise one simplex Setur on Borðoy, five compound names share the same specific element, *man* or *mann*, and are found on Vágar, Streymoy and Eysturoy, Ravnsetur on Suðuroy, and Læsetur on Sandoy. The use of ON '*mann*' m. in relation to *setr*-names as a specific element may relate to herding of cattle predominantly by men, but would also suggest that there must have been a shieling where women were found. This may link with the concept of gender-focused activity and differentiation of farming units, with males herding dry or beef cattle at one and female milking at another (Jochens 1995, 116-18; Myrdal 2008, 64, 2011, 295). In Norway, there is only one Mansæter from, Eid, Nordre Bergenhus [Sogn og Fjordane] in NG, but the Stedsnavnarkivet lists a Manseterbakken in Meråker, Nord-Trøndelag; a Mansæter and a Mansetsætra, from Eid, Sogn og Fjordane; and Mansætra in Sør-Aurdal, Oppland.

All the possible *setur*-names in the Faroes are widely dispersed and remote, found mainly on hill tops, ridges or cols. As each name relates to a topographical feature they have been excluded from the data. However, two place-names being similar to Norwegian *setr*-name locations may link directly to likely shieling sites. The first, Ravnasetur, also on Suðuroy (Figure 5.10), is on a small platform below a steep slope, around 1.8km SSE of Vágur. The name may just have the meaning of 'a place where ravens sit'. Its location at a change of slope, with a larger platform to the NE, a nearby area of marshy vegetation (Mýrarnar) and a stream, Tormansá, to the west, is reminiscent of some upland Norwegian shielings. A horseshoe shaped structure, possibly a building, on the southeast of the knoll, and a circular abandoned enclosure between the knoll and stream to the east of the knoll (Figure 5.10), would suggest that the location has been utilised for agriculture at some time. A similar circular enclosure was reported at the potential shieling site at Skarðsvik on Fugloy (A.K. Matras 2004, 204), however, the period both sites were utilised is unknown.

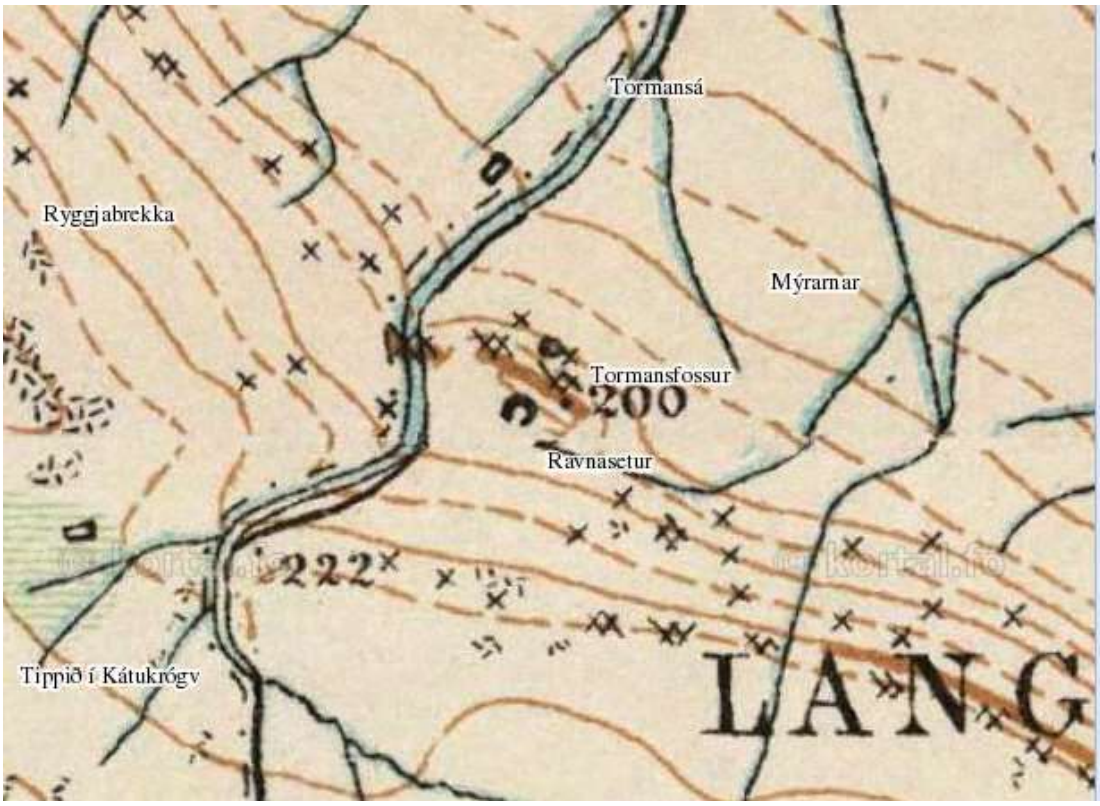


Figure 5.10 Map of Ravnasetur on Suðuroy (www.kortal.fo, accessed 4/5/17)

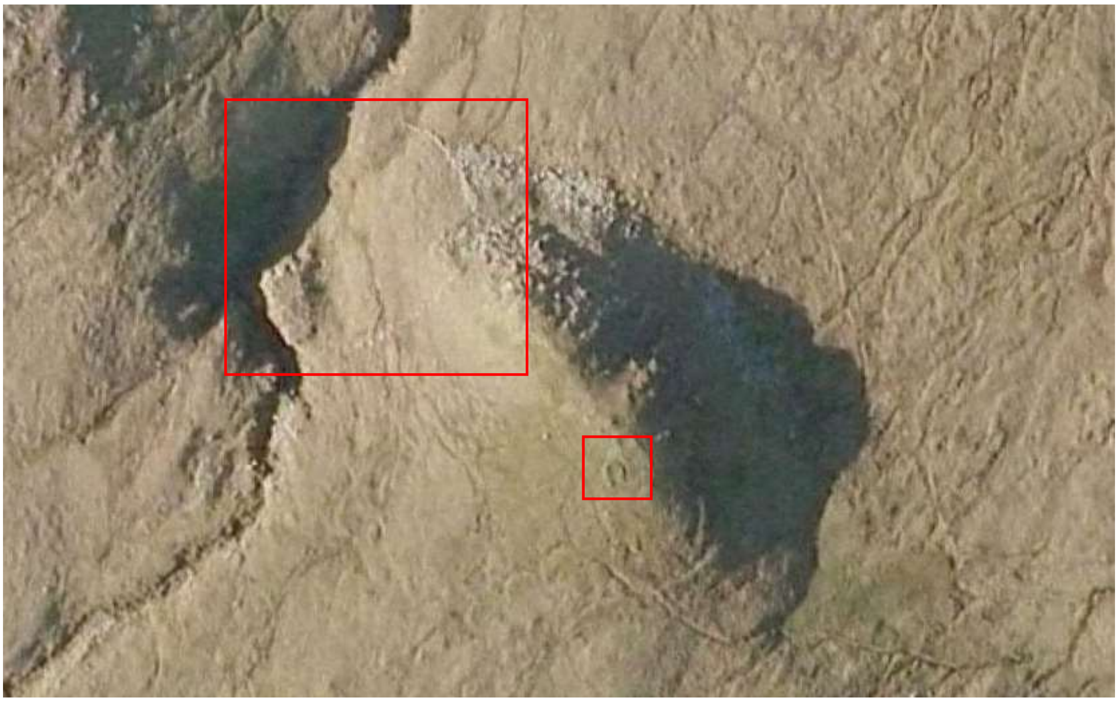


Figure 5.11 Aerial photograph of Ravnasetur on Suðuroy (www.kortal.fo, accessed 4/6/18).

The second site, Læseturbugur (Faroese *bugur*, possibly ‘curve’ or ‘bend’) on Sandoy, is around 2.82km NE of Sandur (Figure 5.11). The site is found in a small botnar with two related place-names, Læseturfossur (‘Læsetur waterfall’) and Læseturstíggjur (‘the path or ladder to Læsetur’) (Young and Clewer 1985, 66, 142, 555). This may represent a shieling site, as both cirque and lake side locations are often used for shielings in Norway (Chapter 3.13). Unfortunately, aerial photographs of the location on the Kortal website are obscured by cloud cover and the Google Maps image lacks detail. Without an archaeological or palaeobotanical investigation it is no more than speculation that this represents a shieling site.

Figure 5.12 Map of Læsetur on Sandoy (www.kortal.fo, accessed 4/5/17).

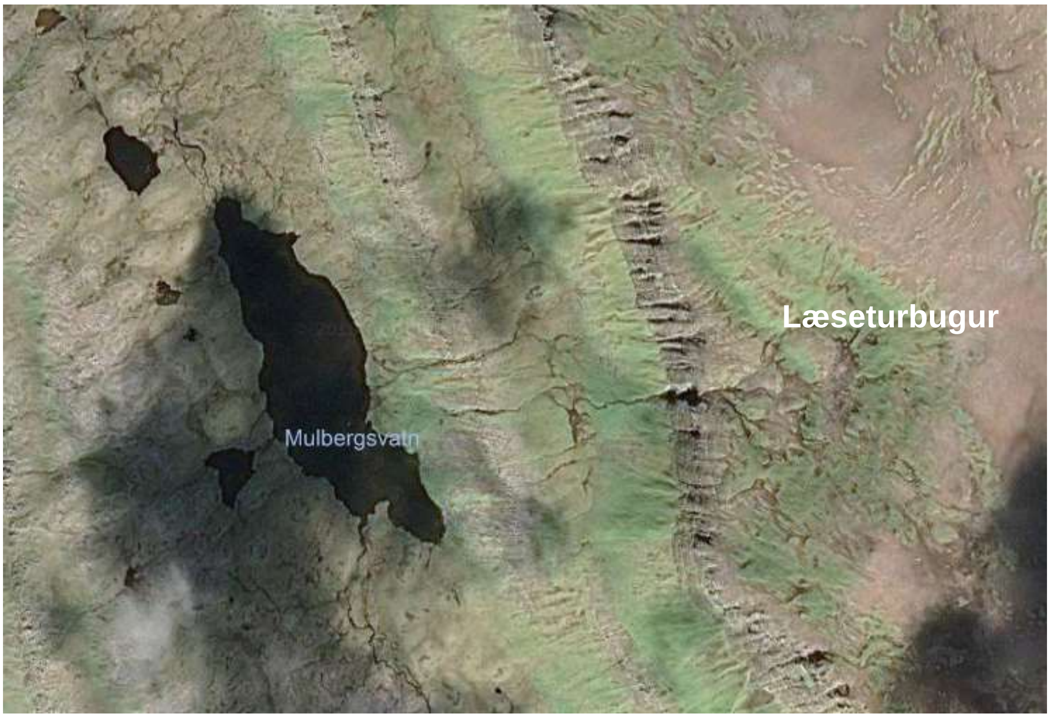


Figure 5.13 Aerial photograph of Ravnasetur on Suðuroy (Google Maps, accessed online 4/6/18).

There are also five names that refer to areas off the coast; the specific element of four of these coastal names relate to birds (Faroese *lundi m*. 'puffins', *ravn* 'ravens', *Skarvur m*. 'cormorants' or 'shags'). Names containing puffins and cormorants are likely to relate to areas of sea that are used by these birds, possibly for fishing grounds, whereas the Ravnasetur may point to ravens nesting on the nearby cliffs. The last coastal *setur*-name is Setrabarmur on Suðuroy (Figure 5.14). Setrabarmur may just mean a 'small bay to sit at anchor, among steep cliffs' (Faroese *barmur*). The bay is quite narrow and rocky and is unlikely to be a safe anchorage in anything other than calm conditions, but it may hint at a *setr*-name originally being located close by.

Figure 5.14 Map of Setrabarmur on Suðuroy (Map www.kortal.fo accessed 4/5/17)

## 5.6 Topographical survey

### Altitude

The average altitude of *setr*-names is consistent in all four zones, with a mean below 53m asl and a median between 10-40m asl (Figure 5.15). The two sites though not included in the graph, which I would suggest as being most promising as *setr*-names in the Faroese, Ravnasetur 187m asl and Læsetur 419m asl, are both higher than most *setr*-names in Scotland. However, considering the topographic constraints in the Faroes and when compared to the altitude of Norwegian shielings, they cannot be discounted as shieling sites.

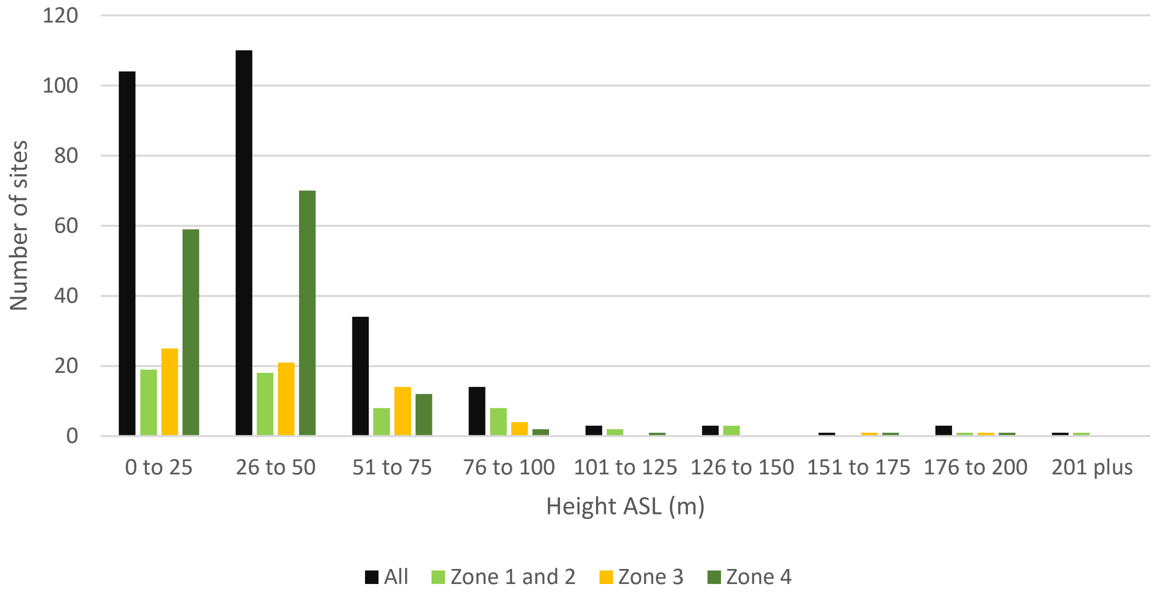



Figure 5.15. Altitude of *setr*-names in the study area.

Throughout the study area, *setr*-names are low-lying, predominantly under 100m asl (Figure 5.15). There is, of course, variation within the zones, *setr*-names in the more mountainous Skye (Zone 1), have a mean altitude of 90m asl. Whereas, on low-lying Lewis it is only 38m asl, likewise, the mean altitude for Zone 3 is 43m asl, though there is a difference of 27m between average height of sites in Caithness (62m asl) and Orkney (35m asl). However, a mean altitude of less than 200m asl cannot be considered limiting in relation plant growth or plant diversity but may relate to local geological (bedrock and/or superficial deposits) or topographical conditions

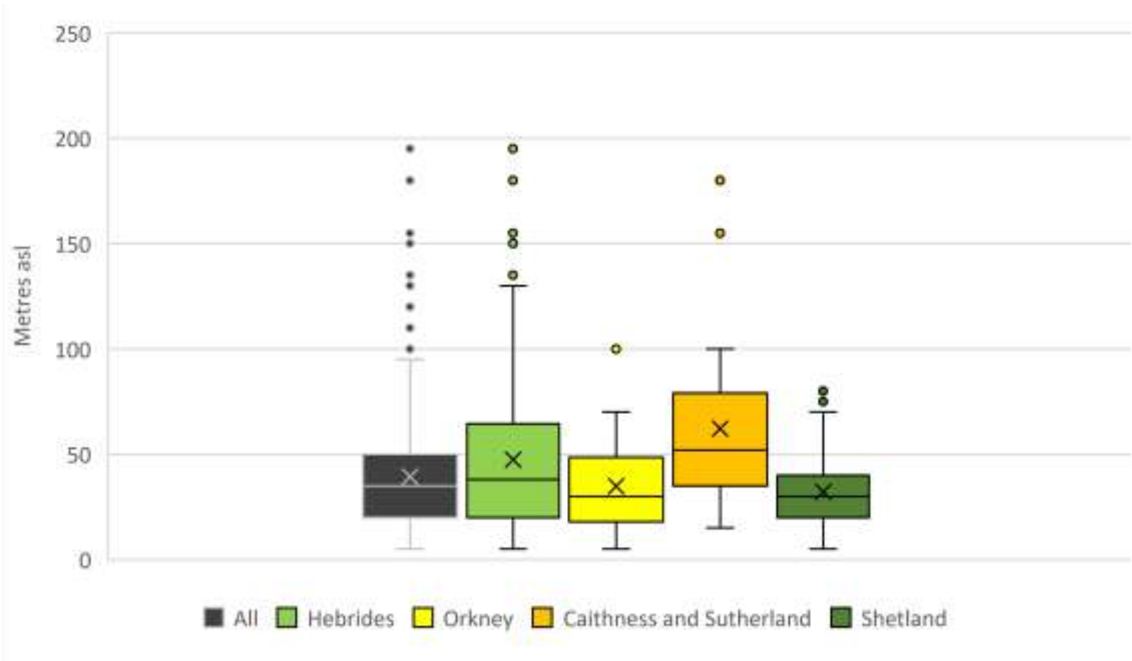



Figure 5.16 Interquartile range of *setr*-names in Scotland.

The mode is between 11-20m asl for three of the Zones, Zone 4 has a bimodal distribution, but still below 40m (Table 5.2). Although *setr*-names in Shetland, in Zone 4, have a mean, mode and median below 40m asl, all 8 *setr*-names in the Faroe Islands are found above 178m asl and 50% are located over 400m asl.

| | Mean (m) | Median (m) | Mode (m) |
|---|---|---|---|
| **All** | 50 | 35 | 11-20 |
| **Zone 1 and 2** | 53 | 40 | 11-20 |
| **Zone 3** | 43 | 37.5 | 11-20 |
| **Zone 4** | 32 | 30 | Bi-modal (11-20, 31-40) |

Table 5.2 Altitudinal Mean, Median and Mode of setr-names in the study area.

**Aspect**

The aspect of *setr*-names exhibits an even spread from north-east, through south, to north-west, it is only a purely northerly aspect which seems to have been shunned (Table 5.3). There is a preference for a south-easterly aspect, though there is only a 7% difference from the next two favoured aspects, east and south (Figure 5.17). Overall, there is a slight preference for a more easterly aspect (48%) over a westerly one (35%).

| | North | North east | East | South east | South | South west | West | North west | Total |
|---|---|---|---|---|---|---|---|---|---|
| **All** | 8 (3%) | 34 (14%) | 35 (14%) | 53 (21%) | 33 (13%) | 36 (15%) | 28 (11%) | 23 (9%) | 250 |
| **Zone 1 and 2** | 2 (4%) | 10 (17%) | 12 (21%) | 6 (11%) | 9 (19%) | 5 (8%) | 5 (8%) | 6 (12%) | 55 |
| **Zone 3** | 1 (2%) | 11 (20%) | 7 (12%) | 10 (18%) | 7 (12%) | 7 (12%) | 7 (12%) | 6 (11%) | 56 |
| **Zone 4** | 5 (4%) | 13 (9%) | 16 (11%) | 37 (27%) | 17 (12%) | 24 (17%) | 16 (12%) | 11 (8%) | 139 |

Table 5.3. General Aspect of *setr*-names in the study area.

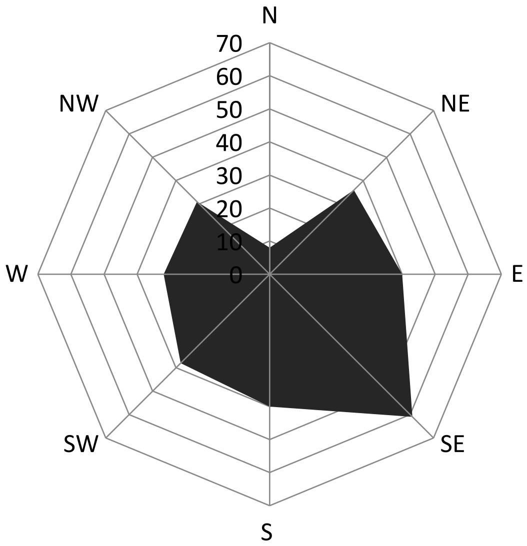


Figure 5.17. Radar chart of the aspect of *setr*-names in the study area.

There is a wide variation in aspect between the zones (Table 5.3). This could mean the aspect is random, or that it is related to local conditions. I conducted a chi squared test ($X^2$) to test whether the aspect of *setr*-names was random. I put forward a null hypothesis, 'That the aspect of *setr*-names is random'. Chi square equals 51.552 with 7 degrees of freedom, by conventional criteria the difference is considered extremely statistically significant. Comparing aspect to altitude, sites under 50m have a preference for a southern or easterly aspect, those between 50 and 100m a more likely to have a southern aspect, while those over 100m are most likely to prefer a northern of westerly aspect. The more westerly aspect of sites over 100m may be allow the air to warm up by the time the land was in full sun and this is an important factor in plant growth in grasses such as *Lolium perenne* (Perennial ryegrass) in areas with low temperatures (Höglind *et al*., 2011, 302).

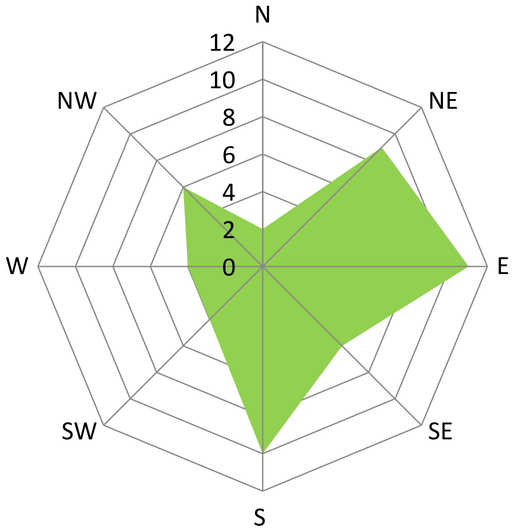



Figure 5.18 Radar chart of the aspect of setr-names in Zone 1 and 2.

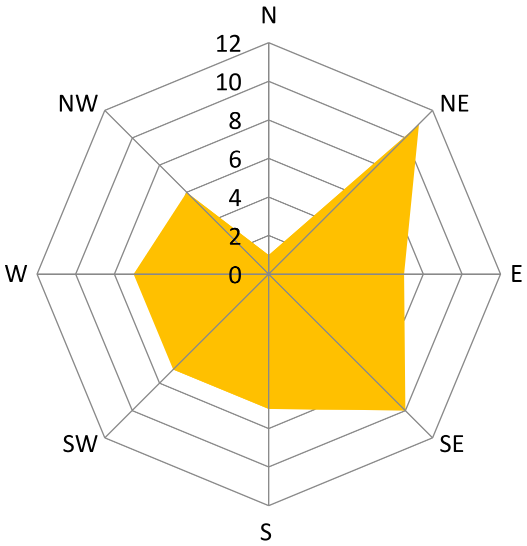



Figure 5.19 Radar chart of the aspect of *setr*-names in Zone 3.

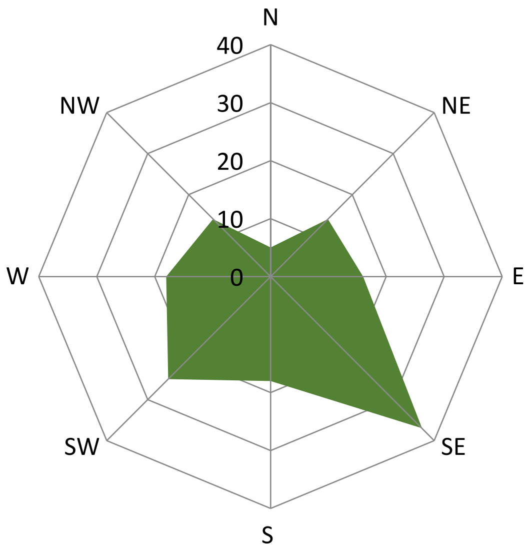



Figure 5.20. Radar chart of the aspect of *setr*-names in Zone 4.

I was also able to conduct chi squared tests for Zone 1, 3, and 4. Chi square for Zone 1 equals 11.077, and for Zone 3 chi square equals 8.857, both with 7 degrees of freedom and are not considered to be statistically significant. It is only with Zone 4 that chi square equals 33.408 with seven degrees of freedom, that it is considered to be extremely statistically significantly. As a result, I conducted a chi squared test removing Zone 4, to test how much the chi squared result for all *setr*-names was affected by Zone 4, again putting forward the 'That the aspect of all *setr*-names is random', Chi square equals of 21.408 with 7 degrees of freedom, by conventional criteria the difference is considered extremely statistically significant. The null hypothesis that the aspect of all *setr*-names was random was rejected. However, the chi squared results for individual zones did suggest that the aspect of *setr*-names in Zone 1 and Zone 3 was more random in nature. Within each regional zone there is a wide variation in aspect, in Zone 1, *setr*-names on Lewis exhibit a preference for an eastern, or southern aspect and on Skye this is more northerly. Similarly, Caithness, in Zone 3, has more of a preference for a north-easterly aspect, whereas in Orkney it is would seem to be any direction but due north.

**Bedrock Geology**

The general geological situation of *setr*-names reflects the varied geology of the study area. Around 31% of sites are located on sedimentary rocks, although sedimentary rock makes up only 20% of the total study area in Scotland. However, 23% of the *setr*-names are found in Orkney and Caithness, which are predominantly sandstone which affects the overall result. In Orkney, all *setr*-names are found on sandstone which isd the predominant base rock, similarly in Caithness, 80% *setr*-names are located on sandstone, which represents around 76% of the bedrock. In contrast, in Shetland, only 21% of sites are located on sandstone, which constitutes around 40-45% of the bedrock. A further 25% of sites are on metamorphic sedimentary rocks, mainly psammite and pelite, metamorphic igneous rock account for 24% and igneous rock account for the last 20% of sites (Figure 5.21).

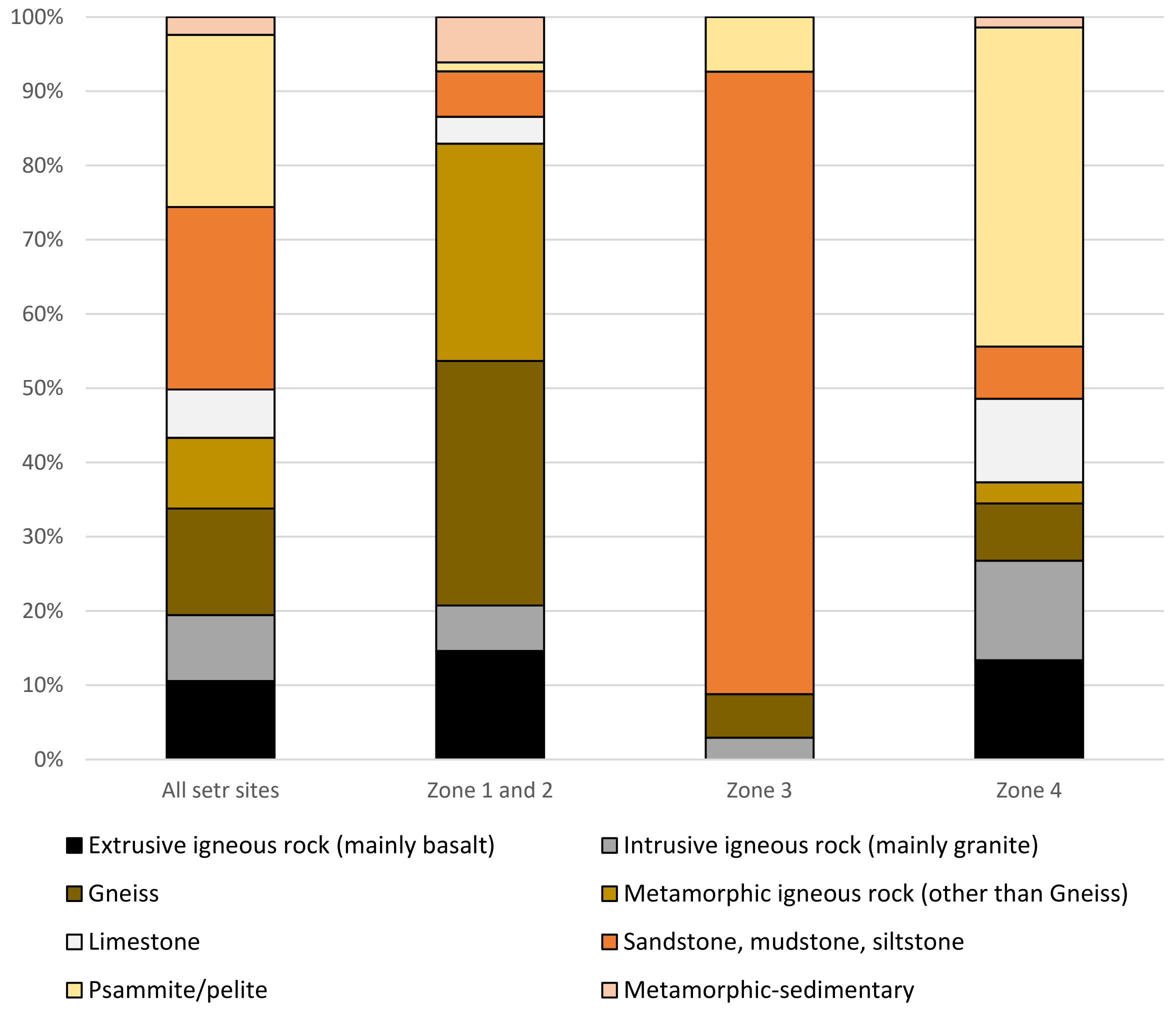



Figure 5.21 The base geology of *setr*-names in the study area.

The base geology of sites in Zone 1 follows the predominant geology with 61% of sites in the Western Isles located on gneiss and a further 33% found on igneous rock, on Skye, extrusive igneous rock such as basalt is the base rock for 72% of sites. Locations on sedimentary rock only account for 6% of *setr*-names on Lewis (1 site), but as sedimentary rock is limited to a small area near to Stornoway (6% of the bedrock of Lewis), this is to be expected. However, 28% of *setr*-names on Skye are found on or near sedimentary rock despite the geology being predominantly igneous in character. These *setr*-names are concentrated in the north of Skye, around the Waternish and Trotternish peninsulas, with Trotternish being one of the few areas of sandstone locally.

Zone 3 follows the local geology, with 84% of sites on sandstone and a further 7% on metamorphic psammite or pelite. In Zone 4, 22% of sites found on igneous rock, 19 % on sedimentary rock, and 59% of sites on metamorphic rock (46% of those on psammite or pelite).

Overall, *setr*-names are found on a variety of bedrock, the slight preference for locations with sandstone or metamorphosed sandstone, in the form of psammite and pelite bedrock. Sedimentary rock overall accounts for 31% of sites and metamorphosed sedimentary rock another 25%, compared to 20% igneous and 21% metamorphosed igneous rock.

**Superficial Deposits**

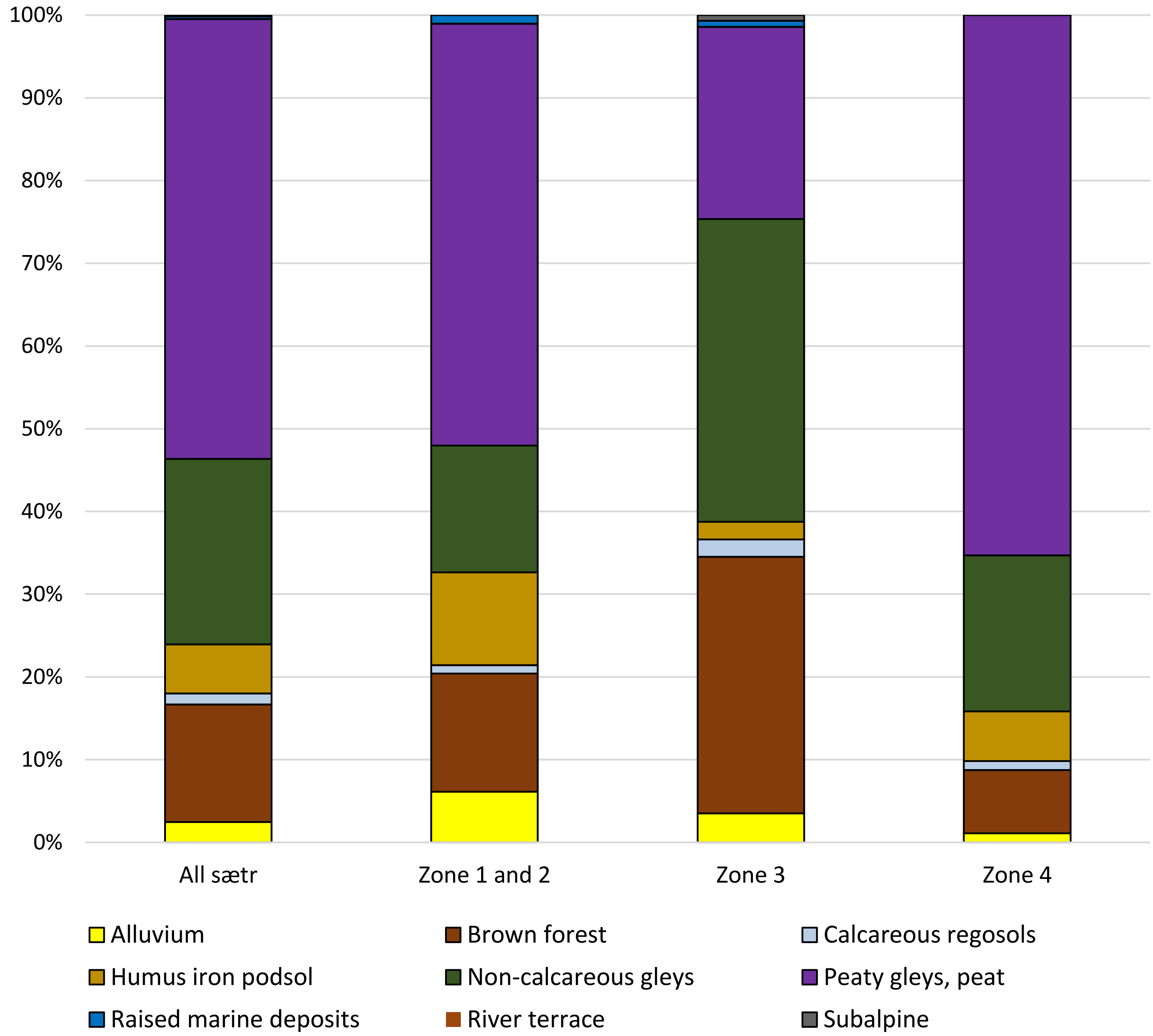



Figure 5.22 Superficial deposits around *setr*-names in the study area.

Very few *setr*-names are located on the most fertile alluvium and river terraces (<6 %), but around half are found on peaty soils which are considered poor (Figure 5.22). Peat is cultivatable with drainage and the addition of nitrogen (Macauley

Institute, http://soils.environment.gov.scot/ maps/scanned-soil-maps/, accessed 14/5/14), though this would require considerable time and labour. A further fifth of sites are located on or near to non-calcareous gleys, which are poorly drained soils, but are good for pasture, especially dairy, though they can develop into peatland when drainage is impeded (www.macaulay.ac.uk). Only 14% are situated on brown forest soils and rankers and 3% are found on what would be now considered fertile land.

Overall, *setr*-names are most likely to be situated close to poor quality soils, mainly peats (53%), a further 23% of soils are non-calcareous gleys, leaving only 24% of soils that are considered fertile or improvable (Table 5.4). Zones 1 and 4 follow the overall trend of being located near to peat or gleys. Only in Zone 3 are sites more likely to be situated on more fertile soils, with 31% near brown forest soils, 37% non-calcareous gleys and only 23% are close to less fertile peaty soils.

| | **All *sætr* (%)** | **Zone 1/2 (%)** | **Zone 3 (%)** | **Zone 4 (%)** |
|---|---|---|---|---|
| **Alluvium** | 3 | 6 | 3 | 1 |
| **Brown forest** | 14 | 14 | 31 | 8 |
| **Calcareous regosols** | 1 | 0 | 2 | 1 |
| **Humus-iron podsol** | 6 | 11 | 2 | 6 |
| **Noncalcareous gleys** | 23 | 16 | 37 | 19 |
| **Peat and peaty gleys** | 53 | 52 | 23 | 65 |
| **Raised marine deposits** | 0 | 1 | 1 | 0 |
| **River terrace** | 0 | 0 | 0 | 0 |
| **Subalpine soil** | 0 | 0 | 1 | 0 |

Table 5.4 Soil types found in the vicinity of *sætr*-names.

**Present Day Vegetation**

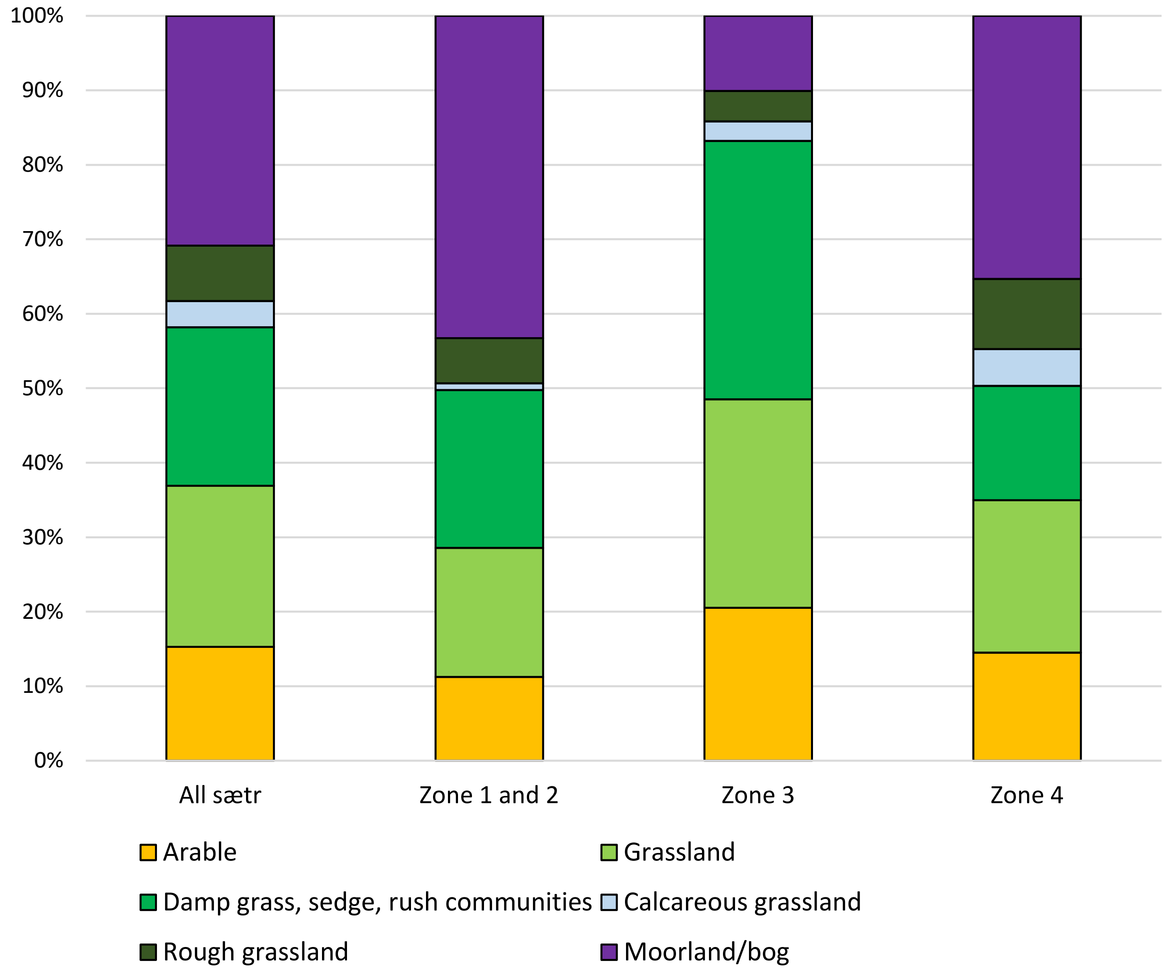



Figure 5.23 Present day vegetation at *setr*-names in the study area.

Around 38% of *setr-names* are located on what would be now considered poor quality grazing, mainly moorland and bog (Figure 5.23). Moderate to good quality grazing land accounts for 68% of sites, with 15% being used today for arable land, areas with wet or damp grassland stands at 21%. Zones 1, 2 and 4 closely match the averages for grazing, but sites in Zone 1 and 2 are 12% more likely to be situated near moorland and bog. Surprisingly, considering the concentration of

Machair in the Hebrides, only 1% are found near calcareous grassland, compared to an overall figure of 4%. Zone 3 differs from the average with only 10% of sites near moorland and a greater percentage of sites on acid grassland (28%) and especially damp grassland (35%).

Arable land now accounts for between 10-24 % of land at *setr*- names, grazing land between 32-63 % and rough grazing anything between 14 and 49 % of the land (Table 5.5). In most areas, there is a fairly even split between mesotrophic grassland and the grassland characteristic of wetter soil conditions, with the exception of Zone 3. In Zone 3, 23% of sites in Orkney are fertile enough to be used as arable, in Caithness this is only 15%, this is the highest percentage for any area in the study. Sites with access to areas of damp grassland account for 53% of sites in Caithness, but only 25% of sites in Orkney, however, a further 11% of sites in Orkney are near to swamp vegetation characterised by *Carex* species on peaty soils and *Carex* and tall herb species on less acidic soils.

| | **All *setr*** | **Zone 1** | **Zone 3** | **Zone 4** |
|---|---|---|---|---|
| **Arable** | 15 | 11 | 20 | 15 |
| **Mesotrophic Grassland** | 22 | 18 | 28 | 21 |
| **Damp grass, sedge, rush communities** | 21 | 21 | 35 | 15 |
| **Calcareous grassland** | 4 | 1 | 3 | 5 |
| **Rough grassland** | 7 | 6 | 4 | 9 |
| **Moorland/bog** | 31 | 43 | 10 | 35 |

Table 5.5 Present day vegetation around *setr*-names in the study area.

**Distance from the sea**

Overall, setr-names show a marked preference for coastal locations, with sites on average just over a Kilometre from the sea (Table 5.6). The median distance, however, is 373m, suggesting a coastal distribution pattern, while the mode is even closer to the coast at between 101-200m inland. Overall, 56% of sites are within 500m of the coast, 75% within 1km and 89% within 2km of the coast.

| | **All *setr*-names** | **Zone 1 and 2** | **Zone 3** | **Zone 4** |
|---|---|---|---|---|
| **Mean** | 1108m | 885m | 2969m | 613m |
| **Median** | 373m | 543m | 1225m | 437m |
| **Mode** | 101-200m | 1-100m | 301-400m | 101-200m |

Table 5.6 Distance from the sea of *setr*-names (m).

This was to be expected in Zones 1, 2 and 4, being Island archipelagos, with 49% of sites in Zone 1 and 55% in Shetland are less than 500m from the coast. However, only 26% are within 500m of the coast in Orkney, with a mean of 1056m (median 749m), while in Caithness *setr*-names are on average 4553m inland (median 4445m) and in Sutherland sites are 12077m inland on average, though the median distance is 7620m.

**General location factors**

| | All *setr* | Zone 1 and 2 | Zone 3 | Zone 4 |
|---|---|---|---|---|
| **Lower course valley** | 3 (1%) | 0 | 3 (7%) | 0 |
| **Middle course valley** | 25 (16%) | 12 (28%) | 5 (12%) | 8 (7%) |
| **Upper course valley** | 143 (82%) | 31 (72%) | 10 (81%) | 102 (93%) |

Table 5.7 Location of *setr*-names in comparison to the size of rivers.

Only 1% of sites were found on the lower course of a river, *setr*-names in all zones are predominantly found in the upper course (Table 5.7). Considering the distribution of *setr*-names, which is predominantly on island chains, this should be expected. The relatively small area means a limited drainage basin, which would preclude the development of large river and valley before reaching the sea. Even so, only 17% of sites are found on the middle course, this again points to sites that exploit less favourable areas of *setr*-names. Zone 3 has the greatest number of sites located along the lower course of rivers and on wider flood plain, but this still only accounts for 7% of valley sites. This is to be expected, as it is only in Caithness that there is an extensive hinterland to allow the development of a river from a large drainage basin. However, the overall distribution pattern is actually similar to other zones. This would suggest that even though Caithness different geologically and possibly hydrologically, the site and situation of *setr*-names was fairly similar.

**General location factors**

| | **All setr-names** | **Zone 1 and 2** | **Zone 3** | **Zone 4** |
|---|---|---|---|---|
| **Gently sloping to flat** | 75 | 78 | 83 | 69 |
| **Moderately sloping** | 17 | 18 | 9 | 21 |
| **Steep sloping** | 8 | 4 | 8 | 10 |

Table 5.8 General relief pattern of *setr*-names (%).

When looking at general locational factors, around 70% of *setr*-names are located on flat or gently sloping land (Table 5.8). Only 10% or less of sites are found on land that would be considered steep, 31% of sites in Zone 4 would be considered moderate to steeply sloping though this accounts for less than 20% in the other Zones.

| | **All *setr*-names** | **Zone 1 and 2** | **Zone 3** | **Zone 4** |
|---|---|---|---|---|
| **Flood plain or meadow** | 93 (13%) | 8 (5%) | 20 (15%) | 41 (12%) |
| **Stream disgorges from uplands** | 70 (10%) | 32 (21%) | 7 (5%) | 29 (8%) |
| **Loch** | 74 (10%) | 21(13%) | 13 (10%) | 38 (11%) |
| **Marsh** | 91 (13%) | 13 (8%) | 21 (15%) | 53 (15%) |
| **Hill top/plateau** | 49 (7%) | 19 (12%) | 7 (5%) | 22 (7%) |
| **Mid slope** | 40 (6%) | 7 (4%) | 11 (8%) | 18 (5%) |
| **Base of slope/change of slope** | 151 (21%) | 24 (15%) | 25 (18%) | 78 (22%) |
| **Raised area in flat** | 22 (3%) | 9 (6%) | 2 (1%) | 11 (3%) |
| **Peninsula (sea)** | 60 (9%) | 16 (10%) | 15 (11%) | 29 (8%) |
| **Dun** | 13 (2) | 8 (5%) | 1 (1%) | 4 (1%) |
| **Burnt mound, cairn** | 43 (6) | 0 | 15 (11%) | 28 (8%) |

Table 5.9 General location factors of *setr*-names.

The key locational factors behind *setr*-names are that they are found at the base of slope or at a break of slope (21%), this is sometimes where a river flowing down steep slopes meets flatter ground reducing its velocity and competence to carry bedload (10%). Sites are also often close to marshland (13%) or loch sides (10%) for to grazing and hay making, 13% of sites are situated beside flood plains or with access to meadow land, probably for grazing, though this is more likely in Zone 3.

| | **Zone 1 and 2** | **Zone 3** | **Zone 4** |
|---|---|---|---|
| **Aspect** | South and North-easterly | North-easterly and south-easterly | South-easterly |
| **Altitude**<br>**Below 100m**<br>**Below 150m** | <br>88%<br>95% | <br>97%<br>97% | <br>96%<br>99% |
| **Soil quality** | 6% fertile<br>41% moderately fertile | 4% fertile<br>70% moderately fertile | 2% fertile<br>38% moderately fertile |
| **Vegetation type** | Arable-11%<br>Grazing-40%<br>Rough grazing-49% | Arable-20%<br>Grazing-63%<br>Rough grazing-14% | Arable-15%<br>Grazing-36%<br>Rough grazing-44% |
| **Key Locational factors** | 1. Flat or gently slope (78%)<br>2. Stream disgorging (21%)<br>3. Base/change of slope (15%)<br>4. Loch (13%) | 1. Flat or gently slope (82%)<br>2. Base/change of slope (18%)<br>3. Flood plain/ Meadow (15%)<br>4. Marsh (15%) | 1. Flat or gently slope (69%)<br>2. Base/change of slope (22%)<br>3. Marsh (25%)<br>4. Flood plain/ Meadow (12%) |

Table 5.10 Regional characteristics of *setr*-names.

Aspect varies, though there is an easterly preference, *setr*-names are low-lying and found where soil is moderate to poor. Comparing the top three factors in each of the zones, other than slope: 1) base of slope is a main locational factor in all zones, 2) where a stream discharging on to flatter ground seems to be important in Zones 1 and 2, 4) meadow land which is important in Zones 3, and 4) marshy land is important in Zones 3 and 4.

## 4.7 Discussion

The distribution of *setr*-names has a distinct pattern: by far the highest densities are found in the north-western and north-eastern extremities of what is now Scotland. Interestingly the number of sites decrease with proximity to the centres of Gaelic power in Argyll at Dunadd and Cowal, and Pictish power centres around the Moray Firth (S. Foster 2014, 99-101). The distribution pattern from my study (Figure 5.24) is very similar to the general pattern found by Nicolaisen (1976). Though Nicolaisen under-estimated the number of potential *setr*-names, especially in the Western Isles and Sutherland, there was also some misidentification in Mull and north-east Caithness, possibly mistaking sites ending with '*ster*' as *setr*-names (Waugh 1993, 123).

The surviving distribution pattern of *setr*-names seem to mirror areas where ON is believed to have survived the longest. ON is believed to held dominance until the 12th century or possibly later in the Western Isles (Clancy 2008, 46), until sometime after the 14th century in Caithness (Waugh 1993, 127) and, arguably until the late 17th to 18th century in the Northern Isles (Barnes 1991, 429; Knooihuizen 2006, 112, B. Sandnes 2010, 24). The length of time would have allowed ON place-names to become cemented into the landscape before Gaelic took hold (Gammeltoft 2006, 55).

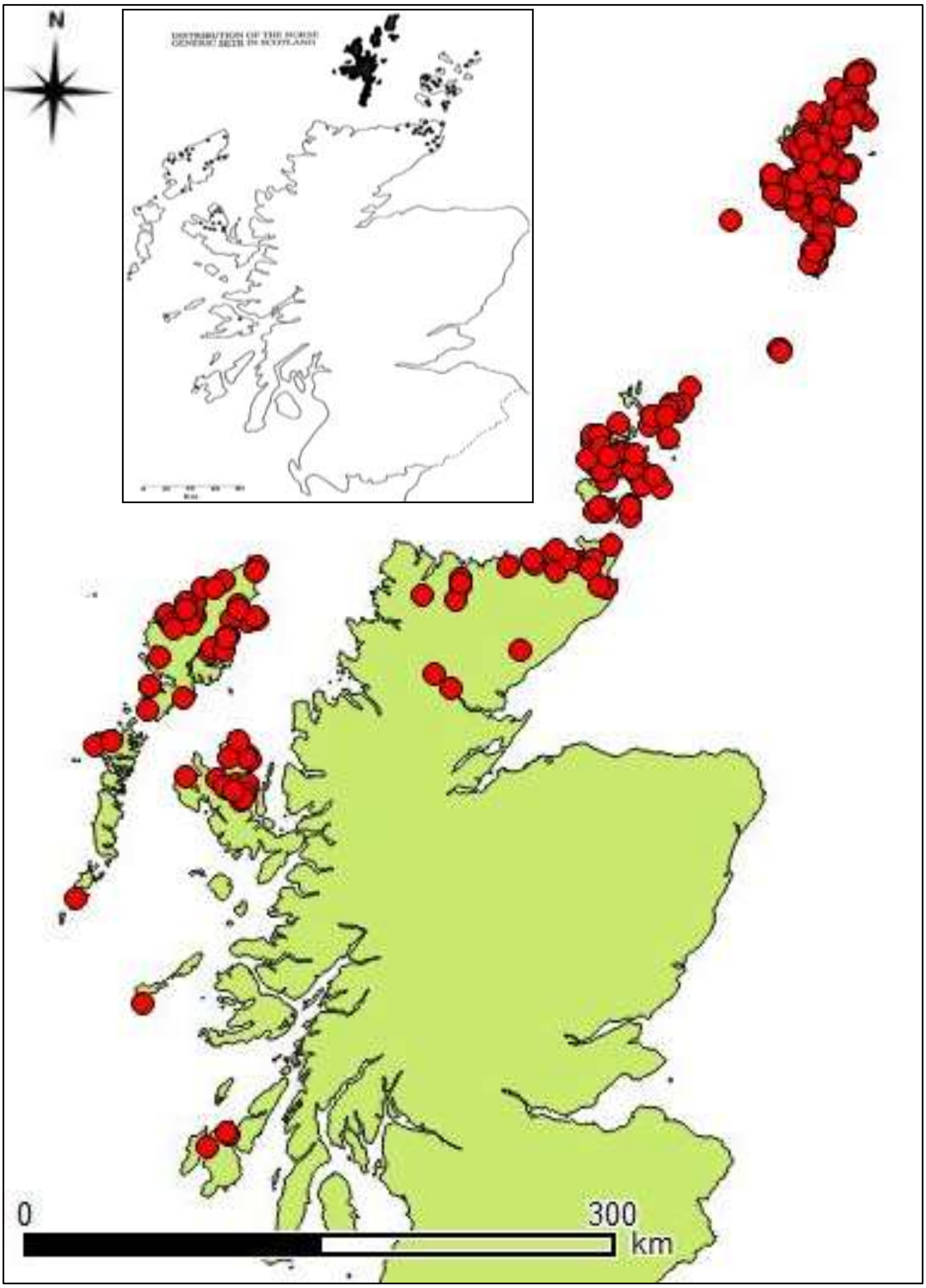


Figure 5.24 Distribution map of *setr*-names in Scotland from my study. Insert map shows the distribution map of *setr*-names in Scotland from Nicolaisen (1976b).

In the northern half of the Hebrides, it is only the island names of Lewis, Uist and Skye that are thought to be pre-Norse (Kruse 2005 157; Gammeltoft 2007 487). Nicolaisen went as far as suggesting that the region was an effectively 'nameless landscape' in the eyes of the incoming Scandinavian settlers (1979-80, 110). It is unsurprising that Lewis should contain *setr*-names; what is surprising is the complete absence in the Uists, which I will discuss in Chapter 6.1.

The relative absence of *setr*-names throughout the whole of Zone 2 may link to the early Gaelicisation of this area, especially in the Inner Hebrides (Kruse 2004, 109; Jennings and Kruse 2009b, 141; Oram and Adderley 2011, 131-2). Andrew Jennings and Arne Kruse have attempted to explain the distribution pattern of ON habitative elements in the Hebrides, through a relative timescale of Gaelicisation. Jennings and Kruse split the western littoral of Scotland into an outer zone, with ON secondary or habitative elements, and an inner zone, where only the primary settlements have ON names. The survival of pre-Norse names in the inner zone is suggested as evidence of the continued existence of a Gaelic-speaking population. Jennings and Kruse also argue that this area also saw a rapid re-Gaelicisation after the initial Scandinavian settlement, which led to secondary names being coined in Gaelic (Jennings and Kruse 2009b, 138–43).

The assumption being that naming was chronological, with secondary, or daughter settlements being created sometime after the initial takeover of primary sites. Jennings and Kruse, using Gammeltoft's timeline of when *bólstaðr* was productive, suggest that Scandinavian settlers underwent a ‘process of naturalisation’ with the Gaelic inhabitants over a ‘generation or two’, leading to secondary settlements being given Gaelic names (2009b, 143). This would suggest the resurgence of Gaelic would have had to occur in a very short period of time, but this may not have allowed the names of primary settlements to become mono-referential and therefore stop the local population reverting to the original Gaelic name.

The theory does not take into account the infield-outfield system practised, which is found throughout Scandinavian settlements, which would have necessitated the almost immediate founding of shielings to support the infield fertility and collect winter fodder (see Chapter 3). Though, the milder climate, compared to Norway, may have dispensed with the need to collect as much winter fodder, which may have also decreased the need for shielings. The infields would, however, still need to be fertilised by manure to ensure against soil exhaustion and the appearance of shielings; the occurrence of both *setr* and *ærgi* in Cumbria would discount this theory, being settled later and at a more southern latitude.

Alternatively, the lack of *setr*-names may suggest that Scandinavian settlement in some parts of the inner zone was different to that practised in the Northern and Western Isles. Andrew Jennings has highlighted the clustering of ON names in western Kintyre, which avoid areas with concentrations of pre-Norse archaeological sites, suggestive of a high density of native inhabitants (Jennings 1996, 117; Jennings and Kruse 2009b, 143). The clustering of Norse settlement names has also been suggested in another frontier zone around the Cromarty Firth in Easter Ross by Barbara Crawford and Simon Taylor (2003, 18-19). Alistair Whyte on Mull (2017, 150-1), Gilbert Márkus on Bute (2012, 29), and Thomas Clancy in Galloway (2008, 41) have suggested that Scandinavian settlement in these areas may have followed an elite take-over model. In this model, primary estates were controlled by incoming Scandinavian settlers, but retained a substantive native population, and in the Inner Hebrides these would have been Gaelic-speaking. The Gaelic-speaking inhabitants may have worked the estates and, possibly, also controlled nearby secondary units; there may have even been the retention of subservient Gaelic lords to administer the pre-existing tributary system (Márkus 2012, 29). Within this theory, the relatively small number of ON speakers would quickly become assimilated into the Gaelic speech community and it must be assumed that, either, secondary farm units were retained with their Gaelic name, new names were coined in Gaelic, or minor ON names quickly lost their lexical meaning and were replaced by Gaelic ones.

However, Alan Macniven's study of Scandinavian settlement in Islay would seem to suggest a completely different view. Macniven noted that many of the Gaelic names were late coinages and he argued for a comprehensive ON settlement on Islay, which was obscured by the long period that Gaelic was dominant on Islay (2015, 64). Macniven was drawing on pre-modern and modern examples to illustrate how population change in an island environment can be completed in a relatively short space of time (2015, 110-117). On Islay, Macniven envisaged a large scale and comprehensive settlement by ON-speakers and the possible forcible removal and replacement of the local Gaelic-speaking inhabitants (2015, 105-120; see also Jennings and Kruse 2005, 255-6). Anne Johnston's study of place-names in the Inner Hebrides also found that there were no Gaelic names that could definitely be assigned to a pre-VA date (1991, 315).

Alistair Whyte's recent PhD study of Scandinavian settlement on the Isle of Mull found a more mixed situation. Whyte compared the Scandinavian settlement in Moloros and Forsa districts of Mull to Macniven's and Jennings' and Kruse's theories. Whyte saw no evidence on Mull for a 'culturally transformative plantation of Norse settlers' from Macniven's model, suggesting areas of Gaelic-speech continued throughout the Norse period (2017, 150-1). Whyte found clustered ON settlements that were suggestive of a 'dominant Norse elite' taking over and naming primary settlements. Unlike Jennings and Kruse's model for the inner zone, Whyte also found evidence of ON secondary names, suggesting involvement in pastoral activity: Gaodhail, ON *Geitar* f. *vǫllr* m. ('she-goat field') (2017, 227-28); Rhoail (2017, 288-91) and Rossal, both suggested as ON *hross* n. *vǫllr* m. ('horse field') (2017, 292-5).

Whyte makes a very important point, that Scandinavian settlement could have occurred in waves, each slightly different in characteristics. Whyte links this to possible geo-political changes in the Irish Sea area (2017, 80-83), suggesting an initial high-status settlement involving the takeover of primary sites. This was followed sometime later by a secondary settlement of lower status individuals, who settled in more peripheral areas (2017, 151-3). Andrew Jennings has also raised the possibility that Scandinavian settlement in Kintyre may be the result of a similar secondary migration during the latter part of the 9th century (2004, 107). This view has parallels with the possible settlement of *Ingimundr* in the Wirral, after the Scandinavian expulsion from Dublin in AD 902 (Wainwright 1948, 147-69; Griffiths 2010, 15; 2015, 34).

However, Whyte does not consider that the ON peripheral settlements, rather than being due to difference in chronology compared to the primary sites, could be evidence of a Scandinavian multi-vill estate. The formation of secondary settlement names relating to animals is known from Scandinavia, which either relate to their function or else to the tribute paid from specialisation in production (F. Iversen 2005, 140-1). The evidence of continued use of ON secondary names would suggest continuity in the farming system from early settlement. There is also a precedent in Cumbria of primary sites retaining their pre-VA name, but with the formation of ON secondary names (Fellows-Jensen 1985b, 75-80). A substantial part of the Scandinavian settlement in Cumbria has also been linked to the secondary migrations after the expulsion from Dublin (N. Higham 1985, 48-9). There may, therefore, be a common factor behind this possible later secondary migration of a less aggressively ‘Norse’ nature that was more open and accommodating to indigenous populations and practices.

The settlement within Scotland and even among the different zones in this study may therefore be more complex. Areas that were potentially settled earlier (Orkney, Shetland, and Caithness), or with greater numbers of settlers, or that were more securely held from other speech communities (Lewis), exhibit a strong ON place-naming tradition. In other areas, such as Mull and Kintyre, the evidence for a comprehensive ON naming tradition is weaker and may point to a lower density of settlement, or lower prestige of the ON community within these areas. The proximity of the Inner Hebrides to the Gaelic Kingdom of Dàl Riata has been suggested as a possible reason for the difference in intensity of Scandinavian place-name evidence (Kruse 2004, 109; Jennings and Kruse 2009b, 141; see Chapter 5.5).

However, Islay, sitting between the Gaelic-speaking heartlands of Ulster and Argyll, at the southern end of *Innse Gall*, would seem to show a comprehensive ON settlement (Macniven 2015, 105-120). Macniven suggests that Islay's relative fertility and/or position at the northern approach of the North Channel, which made it strategically important as a way to exert control of this seaway between the Hebrides and the Irish Sea (2006, 37). There may have therefore been specific reasons to explain a more intensive Scandinavian settlement of Islay. However, Alan Macniven suggests that the Norse settlement of other islands of the Inner Hebrides may have been just as intensive as in the Northern and Western Isles and that the long influence of Gaelic may have obscured the evidence (2015, 120).

The distribution of furnished graves has been used as evidence of Scandinavian people in the VA, as the use of grave goods was not only extremely rare in IA graves in Britain and Ireland (Harrison 2008, 40), but also in a Christian context (Harrison 2008, 46). Furnished grave mounds in Norway were symbols of power and a land ownership (Skre 2001, 10). Though, graves of less important members of society may be missed, as they have few or no identifiable goods or because of different burial methods. The distribution of furnished graves can therefore be seen as evidence of the early movement of Scandinavian people before Christianity had been accepted. Scandinavian graves after Christianity was widely accepted would be unrecognisable from local Christian ones and this may lead to later Scandinavian settlements, possibly due to secondary migration being missed.

The distribution pattern of *setr*-names may have been affected by the loss of many ON names over the intervening years of Gaelic-speech and changes due to agricultural improvement as suggested by Alan Small in Easter Ross (1986, 209). Another possibility is the effect the Highland Clearances had on the retention of minor names, especially ON ones. An area of future research might be a comparison of place-name retention, between an area that saw large numbers of people displaced and areas that retained a large part of the population during the Clearances. This may shed some further light on reasons for the distribution pattern of ON place-names.

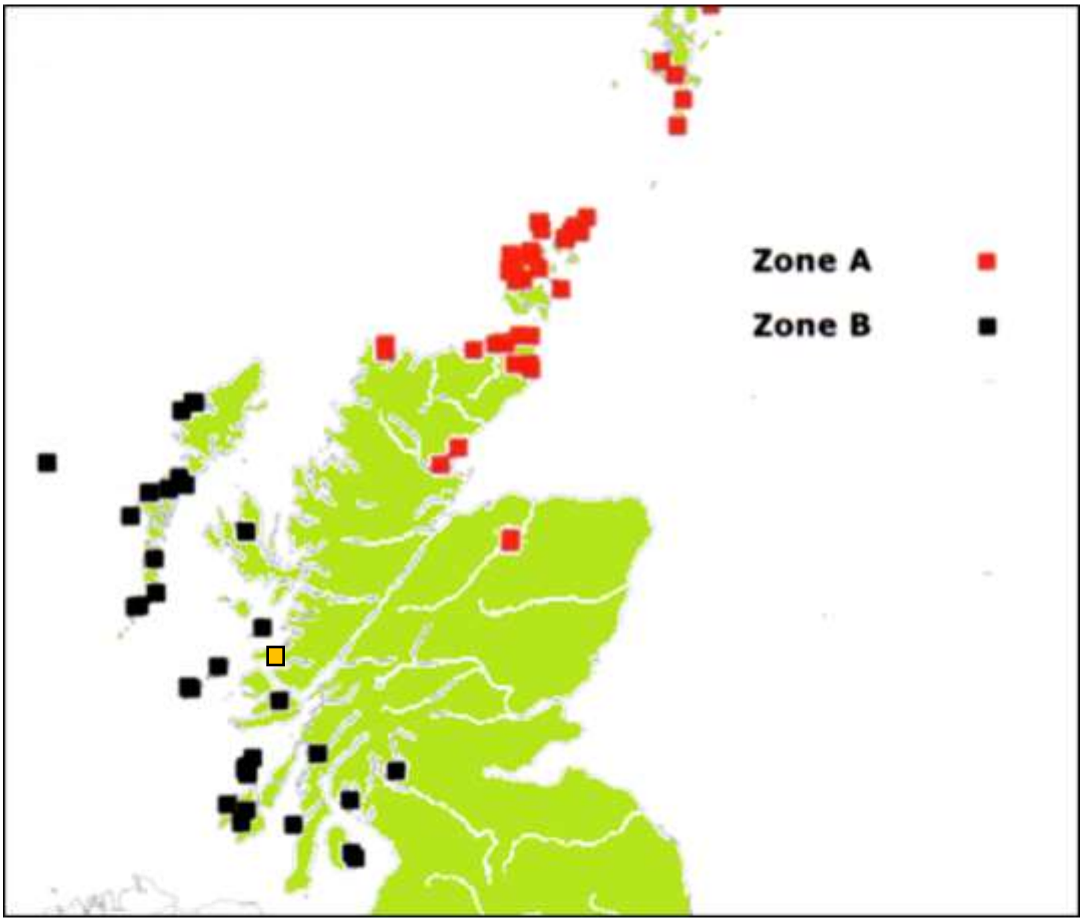


Figure 5.25 Viking Age furnished burial sites (after Harrison 2008, 291), the Ardnamurchan boat burial is the orange centred square (Harris et al., 2008, 291).

When comparing the site and situation of *setr*-names in Scotland and Norway, what becomes obvious is there are subtle differences to their location. The altitude of *setr*-names in Scotland on average are much lower than in Norway, a mean of 50m asl in Scotland compared to 206m asl for *setr*-names in coastal area of Norway. Over 78% of setr-names in Scotland are 50m asl or less, with only 3% above 100m asl and none over 200m.

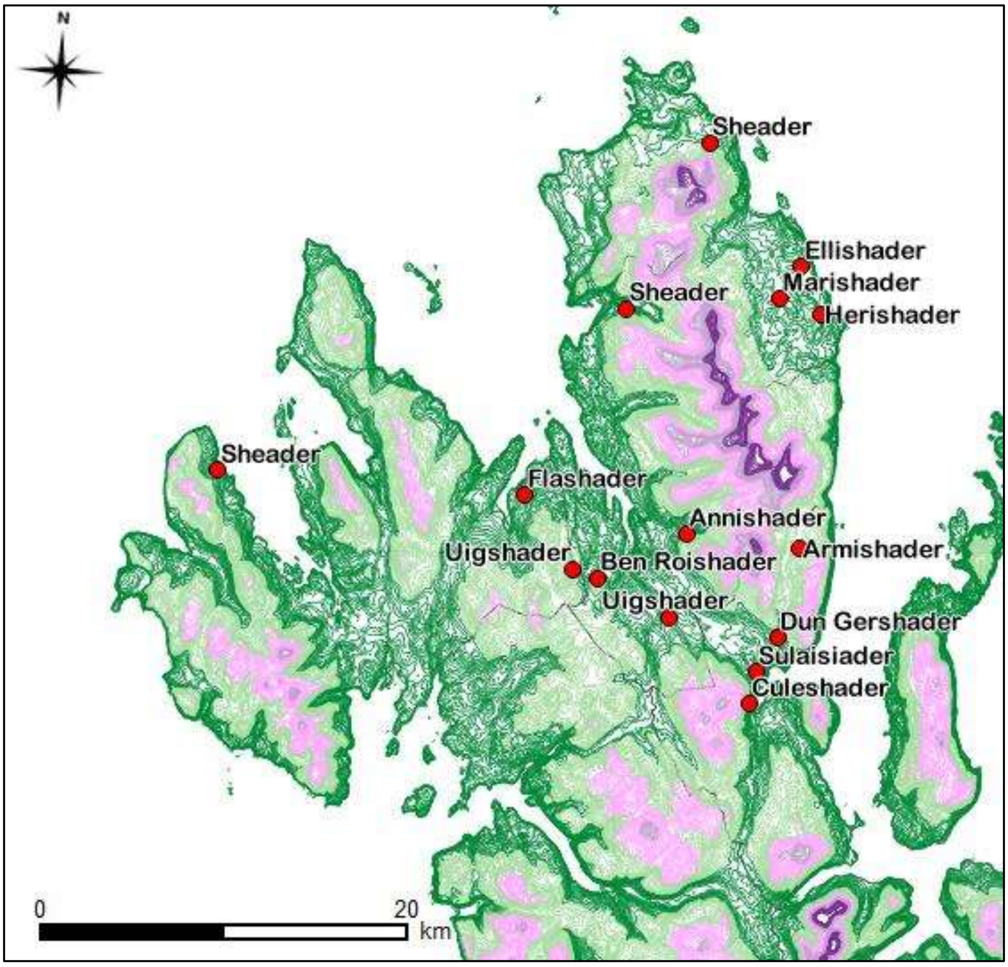



Figure 5.26 Map of *setr*-names on Skye, showing the topography: 2-120m dark green; 121-243m light green; 244-365m light purple, 366-488m purple; >489m dark purple (GIS data from OS Digimap accessed online 15/6/18).

The availability of arable land in Zones 2 and 3 compared to Norway, may explain the lower altitude of setr-names in Scotland. The greater availability of fertile land meaning less ‘marginal’ sites could be utilised as shielings. however, these zones account for only 26% of setr-names in Scotland, and even on Skye, with its more mountainous terrain (Figure 5.26) and comparable proportion of arable land to Norway (Table 5.11), the average height is 90m asl, with 66% below 100m and

100% below 200m asl. The closet parallels in Norwegian are to be found in Fræna (mean 117m asl, 61% <100m asl, 13% <200m asl) and Levanger (mean 122m asl, 21% <100m asl, 66% <200m asl). This may suggest that *setr*-names were not shoe-horned into the pre-existing cultural landscape, but sites were specifically chosen, and the people had the ability to enforce their decisions.

| | | **Arable** | **Hay** | **Permanent grass (pasture)** | **Mountain and heathland** |
|---|---|---|---|---|---|
| Western Isles and Skye (Zone 1) | Zone 1 | 4 | 0.2 | 5 | 91 |
| | Lewis | 4 | 0.07 | 3 | 93 |
| | Harris, North and South Uist | 6 | 0.3 | 15 | 79 |
| | Skye | 3 | 0.2 | 1 | 96 |
| Inner Hebrides (Zone 2) | Zone 2 (except the western coast of Sutherland, which is incorporated within Sutherland) | 9 | 1 | 7 | 83 |
| | Islay | 8 | 1 | 10 | 81 |
| | Mull | 4 | 2 | 4 | 90 |
| | Kintyre | 37 | 3 | 29 | 31 |
| | Arran | 13 | 1 | 9 | 77 |
| | Bute and Cumbrae | 30 | 1 | 22 | 47 |
| | Wester Ross | 2 | 1 | 1 | 96 |
| Zone 3 | Zone 3 | 17 | 0.4 | 4 | 78 |
| | Orkney | 57 | 0.4 | 11 | 31 |
| | Caithness | 26 | 1 | 8 | 65 |
| | Sutherland | 5 | 0.3 | 1 | 93 |
| | Easter Ross | 18 | 0.2 | 3 | 79 |
| Zone 4 | Shetland | 4.5 | 0.4 | 10 | 85 |

Table 5.11 Land use percentages from areas of Scandinavian settlement (figures rounded up, except those for hay) in Scottish zones (Board of Agriculture for Scotland 1912, 52-57).

The fact that most *setr*-names in Scotland are found on islands limits that overall effectiveness for comparisons with Norway, especially for the inland municipalities. However, an overall mean distance of 1100m inland for *setr*-names is comparable with Bremanger in Norway (mean of 1228m). In Shetland, *setr*-names average half this (613m); however, sea level in Shetland has the same growing season as Dalwhinnie at (350m asl) in the central Highlands (Spence 1979). It is only in Caithness and Sutherland that there is a comparable hinterland to mainland Norway. In Caithness, the distance from the sea is on average 4553m, which is similar to Nesset (4260m), Sogndal (4198m) and Levanger (4586m) in Norway. In Sutherland, *setr*-names are on average 12077m inland, this is far greater than any of the Norwegian municipalities I studied, and may be due to the limited area of arable (5%) and permanent grazing/hay land (3.6%) (Table 5.11). Alternatively, *setr*-names in Sutherland may suggest that Scandinavian settlers felt safe enough to set up settlements far inland along river valleys, and that there was a ON-speaking community for long enough and secure enough to pass on the names when the language shifted to Gaelic in western and southern Sutherland.

*Setr*-names have a generally southern to a south-westerly aspect in Norway, compared to a more easterly aspect in Scotland, specifically an east to north-easterly aspect in the Hebrides and Orkney and Caithness. A north-easterly aspect is to be expected in Caithness, as the land has a general slope in that direction, but it is not in the Hebrides. As island archipelagos, there are a variety of aspects available and choice of site may be related to the need to choose grazing areas protected from south-westerly storms and the resulting sea spray, or the effect aspect has on the timing for fresh grass. In Shetland, a more southerly aspect for *setr*-names, may be due to the higher latitude and the effect this has on the start of the growing season.

Gneiss is the dominant rock type in Zones 1 and the northern part of the opposite mainland coastline, which would be the same type of rock as found in much of Western Norway and suggests that settlers knew how to best make use of the land, as it was familiar to many settlers. Only in Zone 3, with extensive areas of sandstone, would there be different geological conditions to most of Norway. Bremanger is the only area in Norway with significant areas of sandstone, but only 30% of *setr*-names are situated on sandstone, while 56% are situated on gneiss. Orkney's homogenous bedrock means all sites are on sandstone bedrock, while this accounts for 48% of sites in Caithness.

| **Agricultural classification** | **Norway** | | | **Scotland** | | | |
|---|---|---|---|---|---|---|---|
| | **Coastal Zone** | **Inland Zone** | **Levanger Trøndelag** | **Zone 1 and 2** | **Zone 3** | **Zone 4** | ***Setr* average** |
| **Fertile** | 10 | 14 | 44 | 20 | 37 | 10 | 18 |
| **Moderately fertile** | 15 | 20 | 28 | 28 | 39 | 25 | 29 |
| **Poor** | 75 | 66 | 28 | 52 | 24 | 65 | 53 |

Table 5.12 Comparison on soil fertility between *setr*-names in Norwegian and Scotland.

When looking at superficial deposits (Table 5.12), *setr*-names in all zones in Scotland are found on more fertile soils than in either inland or coastal areas of Norway, with the exception of Levanger. The closest parallel to Norwegian averages is found in Shetland, perhaps unsurprisingly at 60˚N, it is on a similar latitude to parts of Hordaland and though geologically more diverse, soils are likely to have developed under similar climatic conditions.

*Setr*-names in Zone 3 stand out as being the most fertile of Scottish *setr*-names, reflecting the arable potential of this area; interestingly, the relative soil quality is similar to that found Levanger, Nord-Trøndelag. In fact, *setr*-names in Caithness are very similar to Levanger, with 41% of sites on fertile soil, 26% moderately fertile and 33% on soils that are considered infertile. This does point to the use of relatively fertile sites for shielings when there is a surfeit of potential farmland. This may suggest that the use of *setr*-names in Scotland was not just about making use of 'marginal' land, but was an integral part of the farming system used in Scandinavian settlement in Scotland and similar to that practised in Norway. Another point is that settlers must have been powerful enough as a group to first carve out these farms and shielings from an already inhabited landscape and second to hold on to what was prime agricultural land to allow the name to be accepted.

There are similarities concerning the percentage of sites on platforms on slopes, in cirques or valley head locations, lake shore and dry sites in marshy areas. There are differences: Norway has more sites in valley locations, but this may be down to the more mountainous terrain in Norway limiting potential sites. The steep valley sides impede soil accumulation on the slopes, leading to the exploitation of plateaus, platforms and the floor of side valleys for shielings (Chapter 3.13).

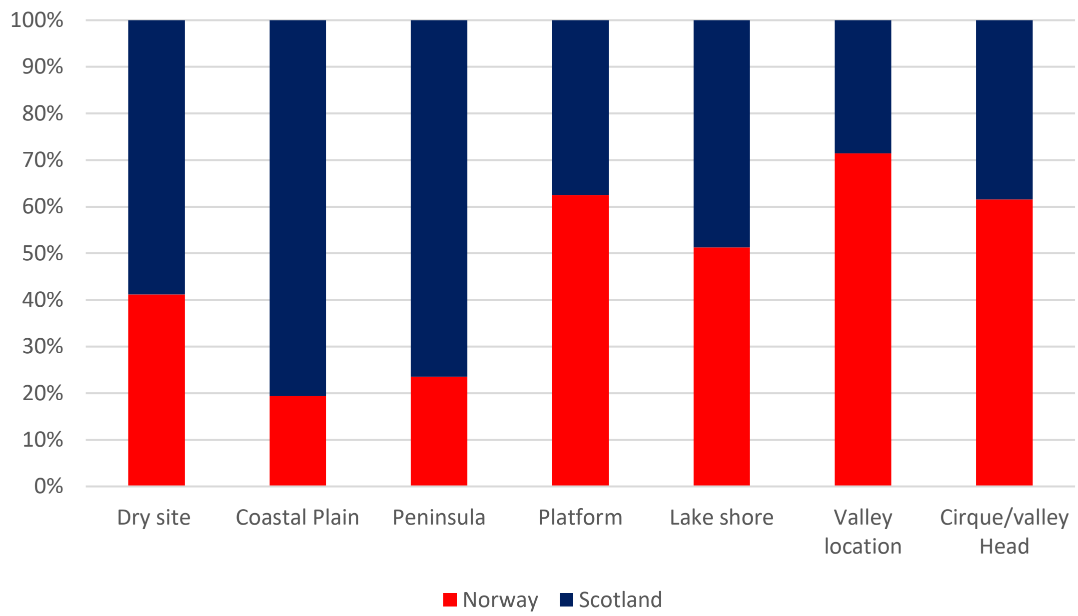



Figure 5.27 A comparison of *setr* location in Norway and Scotland.

A higher percentage of *setr*-names in Scotland that are located on coastal plains and on peninsulas are found in Shetland and Orkney (Figure 5.28). This is to be expected, considering the topography of these archipelagos. However, the appropriation of these coastal lowland sites, along with the relative fertility of the soils, suggests that incoming Scandinavian settlers chose more fertile sites for their shielings than they had in Norway. This would seem to be logical for an incoming dominant culture to claim not only the best land for primary settlement, but relatively rich sites for secondary settlements. Though it could be argued these relatively rich sites, when compared to Norwegian shielings, may point to the derivation being the traditional view of *setr* as a residence. The fact that only between 10-18% *setr*-names, on average, are located on arable land today would suggest that grazing was a more important determinant than crops. The pastoral nature of *setr*-name location, linked to the likely farming system used, as seen in the use of byres and manuring, would, however, point to *setr*-names being used as shielings. As such, they would seem to be direct parallels with Norwegian farming in the VA and the use as areas of summer grazing, winter fodder collection and possibly ancillary activities.

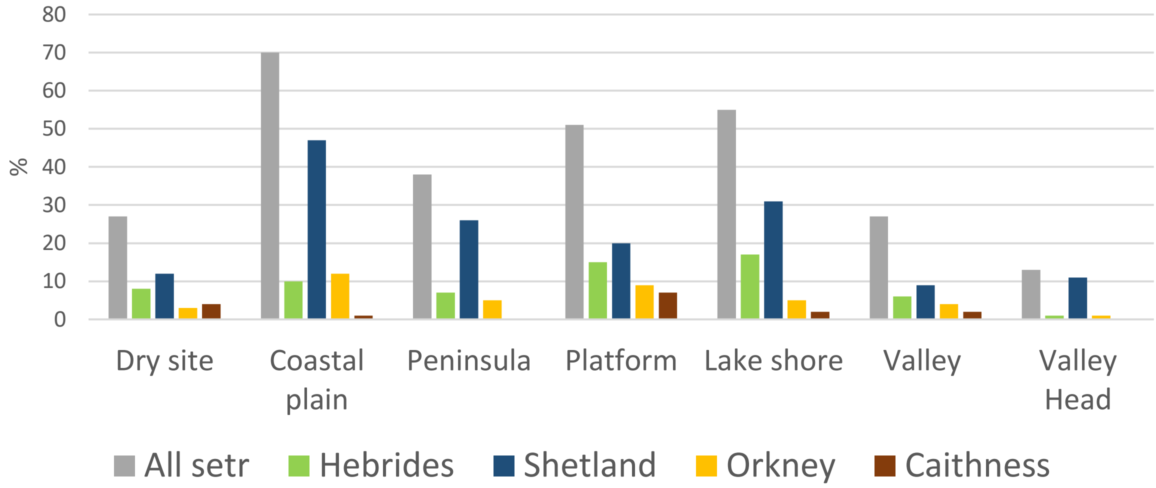



Figure 5.28 Types of *setr*-locations in Scotland.

Ideally, the climate, fertility and locational factors of setr-names should be compared to their home farms. However, only one shieling, Brimside, can be directly linked to a primary settlement, the specific element of setr-names mostly refers to personal names, usage, shape, size, or topographical relationship (see Gammeltoft 2001, 228-30). This gives no clue as to the possible home farm and considering changes to land use, administrative units and settlement location (Parker Pearson 2012, 14; see Chapter 2.4 above).

## 4.8 Summary and conclusions

In conclusion, the distribution of *setr*-names in Scotland mirrors known, or suggested, areas of Scandinavian settlement and correlates with the distribution of VA furnished burials. However, it is likely that *setr*-names had a wider distribution pattern originally, especially in areas settled early, considering the socio-economic context of any settlement. It is also likely that the language shift to Gaelic, the later expulsion of population during the Clearances, and allied agricultural changes led to the loss of ON place-names. This is especially true in areas with a low population density, such as the western littoral and inland areas of Sutherland and Easter Ross. The area between Skye and the Cape Wrath is an area that retains ON topographical names, but ON habitative names are absent, which is strange, but paralleled in the Inner Hebrides. Furnished graves or Norse buildings are also absent in this area and would suggest that it requires an in-depth study of place-name evidence, especially minor names, in a similar vein to Alan Macniven's study of Islay (2015).

There is a slight difference in the general location of *setr*-names in Norway and Scandinavian settlements in Scotland. This difference may be due to the relative topography, with areas of Scandinavian settled in Scotland having lower relief and generally richer soils. The fertility of these areas may have attracted large scale settlement, or there may have been an opportunity to settle these areas due to political instability. Alternatively, the general fertility may have allowed a higher density of ON-speakers and place-names, which insulated the place-names from being replaced following any language shift, compared to areas that were less fertile and consequently lower density of population.

Overall, the general location of *setr*-names in Scotland would seem to be similar to Norwegian *setr*-names*.* This, along with the introduction of byres and evidence for manuring of infields, suggests that the same farming system was implemented in Scandinavian settlements in Scotland as had developed in Norway. The choice of slightly richer shieling sites may be explained as a new dominant group having the power to requisition sites for their secondary settlements, either by killing the previous owners or enslaving them (Smith 2001, 20; Jennings and Kruse 2005, 256). It may, however, be due to the relative fertility of the land in areas of Scandinavian settlement in Scotland.

This would seem more likely if the settlement was based on the same social hierarchy as found in Norway (see Chapter 3.7.8). This would have seen chieftains founding settlements in the British Isles, which according to the sagas and Irish annals, would seem to be in direct competition at times (Macniven 2013, 14). The situation is similar to Carole Crumley's theory of '*heterarchy*' (1995, 3), which Neil Price adopted in his study of the VA, as '*hydrarchy*' (2014, 56), with various leaders in direct competition (Raffield 2016, 333; Price 2014, 56-8; see Chapter 3.7.8). Chieftains would need to attract and maintain a large *lið*, to preserve their own power base against rivals. To achieve this would not only involve the opportunity to gain wealth through raiding, but also involve the need to feed the *lið* through the winter (Raffield 2013, 213; 2016, 311; Price 2014, 57-8).

The need to produce large amounts of food and drink, as later required by chieftains such as Sveinn Ásleifarson in *Orkneyinga Saga,* would have necessitated an intensive farming system, that in turn would require shielings. As in Norway, shielings would provide summer grazing and fodder collection opportunities; fodder would then be used in the stallfeeding of livestock during the winter. Byres allowed the efficient collection of manure and urine (see Chapter 3.7.5 and 4b.3.4) to fertilise the infield. The infield produced hay, flax and grain; the grain could then be used to feed the household, livestock, or make beer (see Chapter 3.7.8). The intensification of farming, seen at primary settlements in the Western Isles (Bond et al*.,* 2005, 164) and Northern Isles (Bond, Guttmann and Simpson 2004, 141; Turner et al, 2010, 204; Edwards and Schofield 2013, 89) during the early part of the VA may be a result of this competition between rival magnates.

# Chapter 6: *Ærgi*-names in Scotland and the Faroes

## 6.1 Introduction

Early documents relating to *ærgi*-names are rare, making it difficult to determine the correct form in ON (Grant 2003, 128). The earliest surviving references to *ærgi*-names in Cumbria date from the 11th and 12th century and in Scotland date from the 15th century, but some do not appear on the documentary record until the 19th century. The spelling of names in Britain was not standardised until the 19th century (I.A. Fraser 1974, 12), and spellings from early documents often relied on an individual author's preference (Sedgefield 1924, 6). *Ærgi* is found in a number of different forms in surviving documents and maps, in Scotland, *ærgi* appears as: *arie, ary, ery,* and *sary* (MacBain 1922, 290-91), and in England as: *aige, arhe, arne, arie, erg, erhe, erwe, aige* (Fellows-Jensen 1978, 22). This may also be a result of differences in regional pronunciation or local tradition.

CV settled on the headword *erg* (1874, 133) and this example was followed by Heggstad and Torp (1909, 825) and Hugh Smith (1956). It was the term '*erg'* that was used in the EPNS volumes and by later scholars, such as Mary Higham (1977-78). Gillian Fellows-Jensen questioned the choice of *erg* as the headword. *Erg* is found in only a single Danish translation of *Orkneyinga saga* found in the Royal Library Stockholm (Cod.Isl.Papp. 39 fol. cited in Fellows-Jensen 2002, 91). Fellows-Jensen suggested that this is a mistake by a sixteenth-century Danish translator attempting to render the Gaelic element *àirigh/áirge* into Danish. An Icelandic version of *Orkneyinga Saga,* found in the fourteenth century *Flateyjarbok*, names the shieling as '*Þeira Er heita Ásgrimsærgin'* (*Flateyjarbok*, cited in Fellows-Jensen 1980, 67, 2002, 91). '*Ásgrim's-ærgi'* has been suggested as referring to modern Assery in Caithness (Fellows-Jensen 1980, 67; 2002, 91). The Danish translator reading an Icelandic version of *Orkneyinga Saga*, mistook the Icelandic *ærgin* to be a suffixed neuter plural with the definite article *–in,* rather than *ærgi* with the definite article *-n* (Fellows-Jensen 1980, 68; 2002, 91). Gillian Fellows-Jensen, following Christian Matras, who identified the element in Faroese place-names*,* gave the headword as *ærgi,* with nominative plural *ǽrgir,* genitive singular *ǽrgis*, genitive plural *ǽrgja,* and dative plural *ǽrgum* (1956, 52-53). The correct form of the headword is now accepted as *ærgi* and this is the term I will use in this thesis.

Figure 6.1 The general location of Assery in Caithness in the centre of the photograph, the possible site of *Ásgrimsærgin* (Author's Photograph).

## 6.2 Definition of ON *ærgi*

CV gave the definition of *erg* [*ærgi*] (n.) as: 'Gael. word, answering to the Scot. *shiel* or *shieling'* (1873, 133). This is a rather vague definition and one which could be used to describe *setr*-names and cannot be used to differentiate the function of each name. This may be due to the original appellative meaning of *ærgi*-names being short lived, over time changes to language or agricultural practice left *ærgi*-names as fossilised relics in the onomastic landscape. Claire Downham has suggested a similar situation for the use of the term '*Viking*' where there is a divergence between the original meaning and later usage (Downham 2012, 1). To try to ascertain the possible meaning of *ærgi*, and to help explain why the term was adopted, it is necessary to look at the original meaning of the word in its source language, Gaelic.

A Scottish origin for ON *ærgi* has been suggested by various scholars on account of the relative absence of the place-name in Ireland (Fellows-Jensen 1980, 68-69; 2002, 92; M.C. Higham 1977-78, 347; Downham 2007b, 84), and the perceived urban nature of Scandinavian settlement in Ireland (Fellow-Jensen 1980, 68-69). The etymology of the Scottish Gaelic *àirigh (f.)* is disputed (Fellows-Jensen 2002, 91). Edward Dwelly suggests the ScG definitions of *àirigh* (pl. -*ean*, and -*nean*), as meaning: 1. Summer residence for herdsman and cattle; 2. Hill pasture; 3. Level green land among hills; 4. Wild plum (1973, 20). Alexander MacBain defines *àirigh* as: 1. Hill pasture, or 2. Shieling (1911, 10).

Dwelly's and MacBain's definition of *àirigh,* as denoting a hill pasture or shieling, relates to the meaning of the term in Scotland at the time of writing, and this could be the result of later changes of agricultural practices (Cox 2002, 122-3; Raven 2005, 384, 463; James 2009, 54). A possible reason for this was the general growth in population from the 16th to the 17th century, and the resulting black cattle trade that saw a proliferation of *àirigh*-names on new and recolonised sites (James 2009, 16, 54). These sites were primarily concerned with providing summer grazing to allow the keeping of the maximum number of cattle possible for the droving trade. It is unlikely that 6$^{th}$-8$^{th}$ century farming communities were concerned with anything but provisioning their own households and providing a surplus for *bès tige* ('food rent') (Kelly 1997, 446) or *còe* ('winter hospitality') for their lord (Kelly 1997, 320).

If the ScG meaning of *àirigh* is relatively modern, then it seems logical to look at the OIr equivalent, *áirge* (Cox 2002, 101, 123; A.K. Matras et al., 2004, 208). Alan Macniven has questioned whether the information on early society from Irish law codes reflects an ideal or a standardised reality (2006, 48). However, these documents are the only contemporary evidence for the use of the term *áirge* in a pre-Viking context, and the term was therefore known and used within Irish society, something that cannot be proven for pre-VA Scotland. There are three reasons to look at Ireland and OIr *áirge* as a possible source of *ærgi*:

1) ScG *àirigh* was originally derived from OIr *áirge* and was introduced to Scotland by either Gaelic-speakers in Dàl Riata or by later Norse settlers, possibly as *ærgi.*

2) ScG and OIr are not believed to have diverged until after the 12th century (Grant 2002, 71) and the original meaning of *àirigh* and *áirge* may have been the same.

3) There is evidence of cultural contact in Ireland between Gaelic and Scandinavian.

Alexander MacBain, in his definition of the ScG *àirigh*, equated the Scottish term with the OIr *áirge /àirghe*, (pl. *-righe* and *-rgheadha),* giving the definition of the OIr *áirge* as: 1. Place where cows are; 2. A dairy; 3. A herd of cattle (1911, 10). The definitions of *áirge* in Irish sources is a similarly vague as *àirigh* (Lucas 1989, 65). John O'Brien (1832, 13) and Joseph Vendryas et al., (1959, 45) give meaning as that attached: 1. A herd, 2. A place for summer grazing. Patrick Dineen is more specific, suggesting: 1. Herd of cattle, 2. Pasture, 3. Herdsman's hut, 4. Milk herd (1970, 24); and O'Sullivan and Quinn give the meaning of *áirge* as: 1. Place for milking cattle, 2. Herd of cattle 3. Troop or band (1964). The OIr definition of *áirge* has a closer link to some form of dairying than the Scottish *àirigh*, which I will argue is important.

## 6.3 General Distribution Pattern of *ærgi*-names

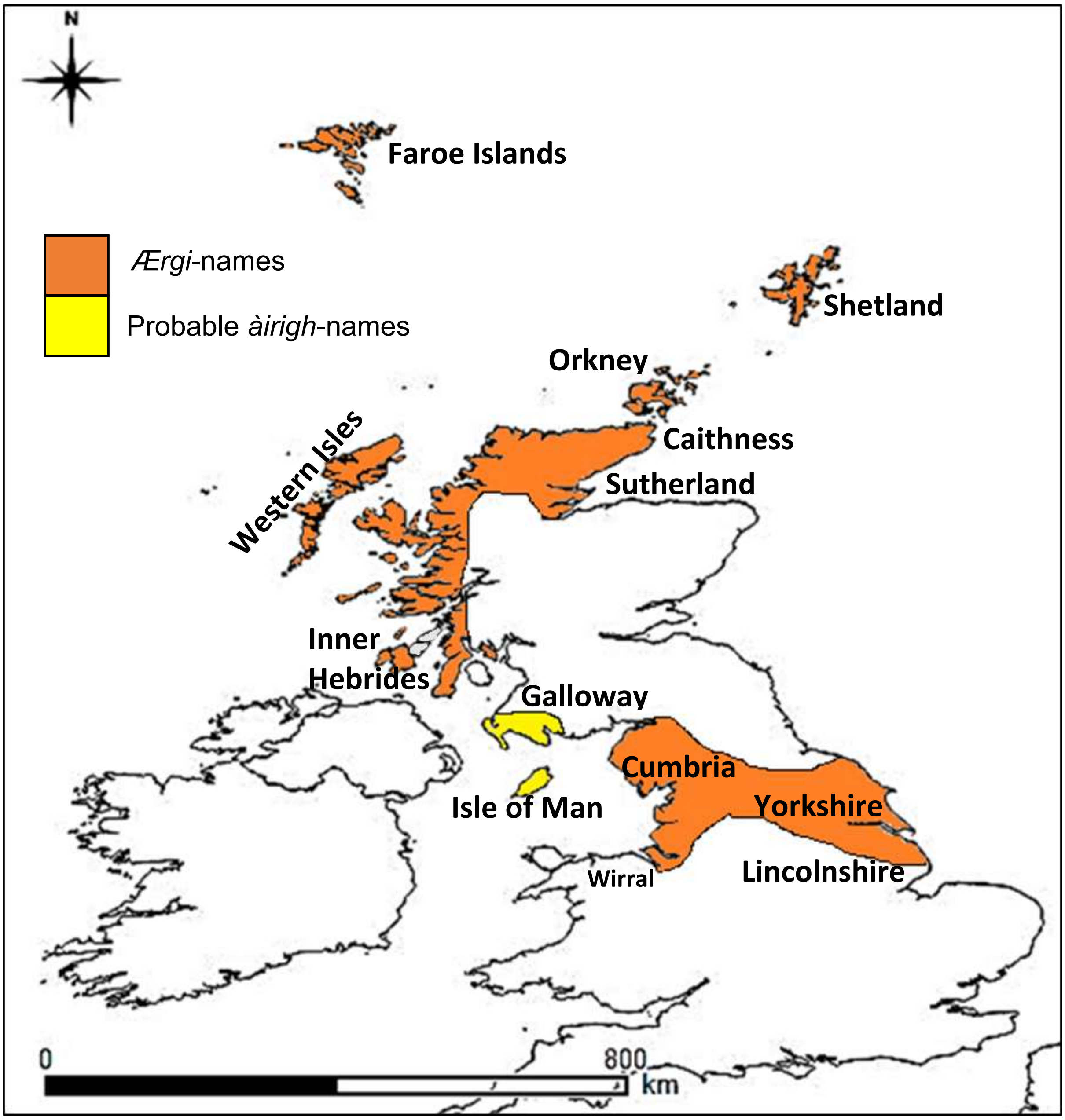



Figure 6.2 General distribution map of *ærgi*-names in Britain and the Faroes.

*Ærgi*-names are absent from Scandinavia and as Alison Grant points out, the word 'is not native to the Scandinavian languages' (Grant 2003, 128), yet it is found in several areas of Scandinavian settlement in Britain. *Ærgi-names* are found in the Faroes and Northern Isles, through Caithness, Sutherland, Wester Ross, Western Isles and Inner Hebrides. In England the distribution is concentrated in Lancashire, Cumbria, the North and West Ridings of Yorkshire, and *ærgi* occurs sporadically in the East Riding of Yorkshire and very rarely in Cheshire and Lincolnshire (Fellows-Jensen 1977-8, 20).

## 6.4 Identification of ærgi-names

A lack of documentation from the VA is especially true for Scotland. This creates a problem as the identification of early forms of a place-name is of the utmost importance in identification of the generic and of the form of the generic. However, *ærgi* was adopted into ON from Gaelic, and ON was later supplanted by Gaelic, but early documents are most often written in Latin or English, which creates a variety of problems (Oftedal 1981, 186). The Anglicisation of Gaelic names led Ian Fraser to make the point that many are now unintelligible to Gaelic speakers, making it difficult, if not impossible, to recognise what the initial element was (1974, 12). For example, Gaelic has been spoken in the Western Isles from around the 12th century until the present (Jennings 1996, 72; Clancy 2008, 46), surviving *ærgi*-names, may have been given a Gaelic prefix or suffix, or adjusted to conform to Gaelic word order or phonetics by the time they were written down, or, on being recognised by Gaelic speakers as a cognate with its Gaelic mother word, re-adopted and replaced with the Gaelic *àirigh*. Either way, any *ærgi* would be unrecognisable as an ON term (Olson 1983, 210).

Magne Oftedal (1954), Nicolaisen (1969) and Donald Macauley (1971-72) had 'shattered this myth of infallibility' surrounding OS maps, as Ian Fraser puts it, with examples of Gaelic names being wrongly spelt or located (I.A. Fraser 1974, 12). Oftedal went so far as to state that it was an example of 'ignorance and disrespect' by the OS and Post Office towards Gaelic names (Oftedal 1962, 48, 1981, 184). Attempts to rectify this, through the use of standard forms for common place-name elements, may improve the situation for most Gaelic elements (I.A. Fraser 1974, 12). However, the similarities in pronunciation of Gaelic *àirigh* and ON *ærgi* by a Gaelic-speaker, after several hundred years of Gaelic dominance, would be difficult if not impossible to differentiate between the two. It is likely that the Gaelic *àirigh* would be used by the OS, the standardisation of spelling of Gaelic by the OS would almost certainly exaggerate this, masking regional variations in pronunciation and any potential phonetic signature of elements, such as *ærgi*.

I searched for place-names with a specific-generic word order that had the endings -*ary, -sary, -ery,* and *-arge* (MacBain 1922, 290-91), for example Gunisary (NF798492) and Brunery (NM725719). Gaelic *àirigh*-names have also been found in a specific-generic word order (Olson 1983, 210; Chapter 6.8), there is also a danger of confusion between *ærgi/àirigh* where a specific is susceptible to non-cognate substitution (Townend 2002, 59), such as Miol-àirigh in Knoydart

(NM789991), which may contain as a specific element either the ON *melr* ('wild oats, lyme grass, sand-hill') (CV 1874, 423) or Gaelic *meall* ('lump, hill') (MacBain 1911, 245). I removed examples which contained a Gaelic specific element or a possible non-cognate substitution, unless a scholar has made a reasonable argument that the place-name contained *ærgi* and not *àirigh*.

A key indicator was the presence of medial /s/ found in *–sary*, along with a number of genitive case endings to designate possession: /*-s*/, /*-a*/, /*-ar*/, /*-u*/, and /*-na*/, which are dependent on gender, declension and number, can be pointers to the ON origin of place-names (Macniven 2015, 39). However, Alan Macniven makes the point that 'neither the absence of a grammatically correct genitive marker nor indeed the presence of an apparently inaccurate one, necessarily preclude a Norse origins' (2015, 40). Where such genitive cases are found, I have also included these in my database of *ærgi*-names.

Place-names ending in *–gary* could theoretically contain *ærgi,* such as Langary (ON 'Long' *ærgi*) (MacBain 1922, 291). However, the generic may be derived from ON *garð/gerði*; which was adopted as a loanword in Gaelic as *geàrraidh*, anglicised as *–gary* on OS maps ('dwelling' or 'land around a dwelling') (MacBain 1922, 291; Cox 2002, 123). Richard Cox has suggested abandoned settlements were sometimes givem the name *geàrraidh* after the collapse of the shieling system (Cox 2002, 123). I have therefore excluded *–gary* sites from the survey, though some may represent *ærgi*-names.

In England and the Faroe Islands, *ærgi* occurs as in its simplex form (Fellows-Jensen 2002, 93); it is not, however, found as a simplex in Gaelic Scotland. This may be due to simplex *ærgi*-names being absorbed as a cognate of *àirigh* during the process of Gaelicisation in the post-VA (Oram 1995, 130). Simplex *ærgi*-names could have been left as a simplex *àirigh*, or given a Gaelic post-position specific, either way they would now be indistinguishable from Gaelic *àirigh* (Olson 1983, 210).

The similarity between ON *ærgi* or ScG *àirigh* in Gaelic speaking areas of Scotland has led to confusion concerning the correct identification of place-name element. Anke-Beate Stahl's study of Barra place-names suggested that although the shieling sites, Earsary and Skallary, contained ON personal names as specifics, *Erikr* and *Skolli* respectively, Stahl gave the generic as ScG *àirigh* (2000, 106). Ian Fraser, in comparison, suggests the generic in the place-names Savary (ScG *samh* 'sorrel' or 'juniper') and Fiunary (ScG *fionn* 'white') in Argyll are ON *ærgi*, despite the specific elements likely being derived from Gaelic (Fraser 1995b, 236). The location of both the latter two sites, opposite the Isle of Mull, whose site and situation are similar to other *ærgi*-names, may point to a Gaelic specific having replaced an ON specific, or simply added later to a ON simplex name.

I have included Corrary/Corràirigh/Choroiridh/Corraire as ON place-names. The specific element '*còrr*' has sometimes given a Gaelic derivation: Gillies gave the ScG *còrr* as meaning 'excess, out growth' (1906, 14); MacBain suggests *còrr* as meaning 'snout, corner, point' (MacBain 1911, 90-1); and Maceacharna proposes ‘slope’ (1976, 116). This would suggest that the generic element was most likely *àirigh* and the name being a Gaelic compound name. There are problems with assigning a Gaelic derivation for Corrary names; the word order is more usual in ON than Gaelic and when you look at the distribution pattern, there is a close correlation between areas of Scandinavian settlement and Corrary names in Scotland (Figure 6.3), while it is absent from Gaelic heartlands in Argyll. I have followed Hugh Marwick (1952, 141-2) who suggests either a stream name or an ON personal-name, *Kárr* or *Kári*, as the possible derivation of the specific (see also Corrigill in Marwick 1952, 141-2; Corval Hill in Márkus 2012, 9; Corrary in Macniven 2015, 202). Interestingly, just east of Erjafossur, a possible *ærgi*-name on Suðuroy in the Faroes, is the name í Kóri, where a stream descends steep slope.

Ideally, Gaelic *àirigh*-names would be surveyed to compare the location factors with *ærgi*-names. However, the lack of early documentation and the risk that many *àirigh*-names may been coined as a result of post-medieval husbandry practices make any comparison redundant (I.A. Fraser 1995b, 235, Cox 2002, 101, 123).

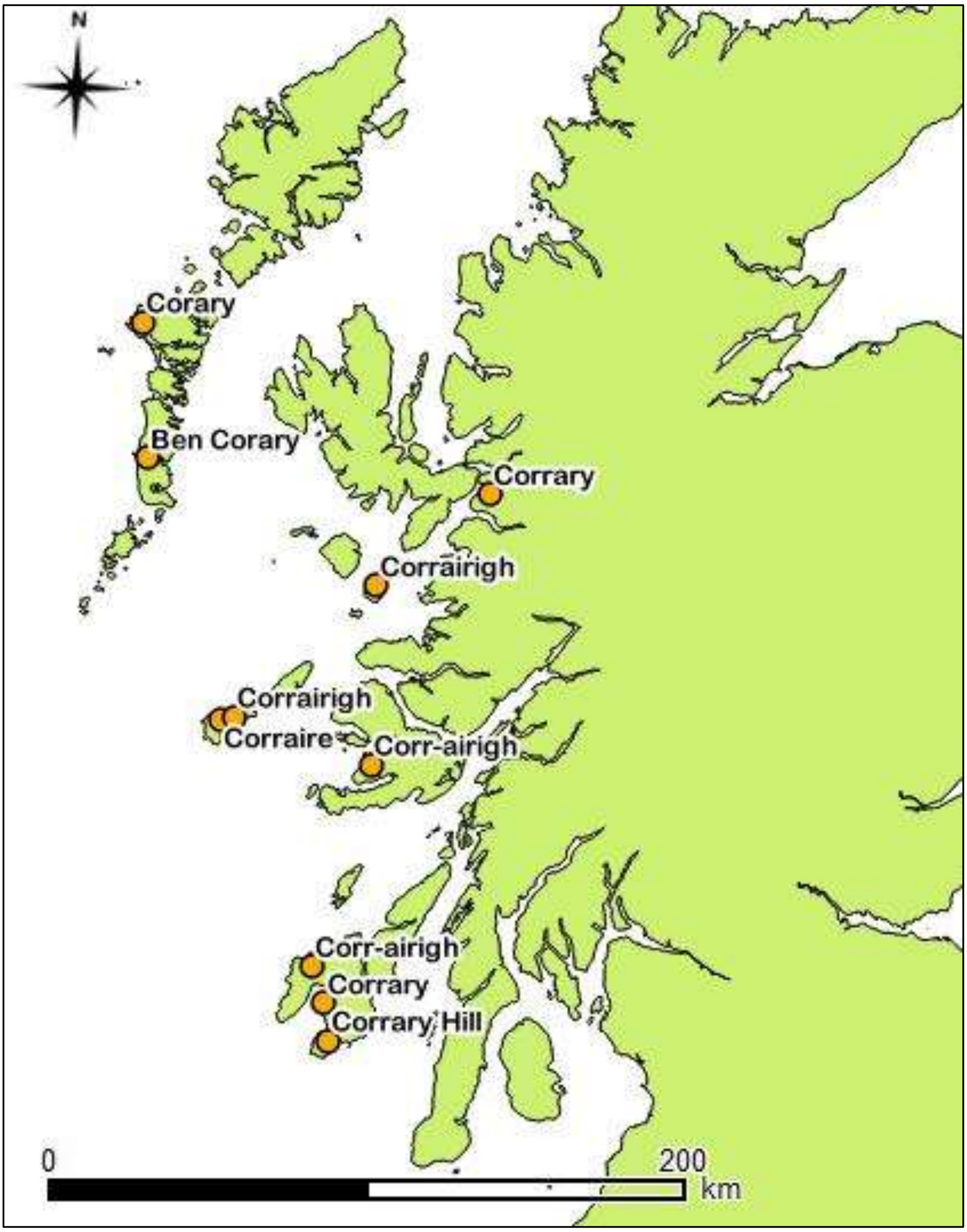


Figure 6.3 Distribution map of Corrary sites.

## 6.5 Distribution of *ærgi*-names in Scotland*

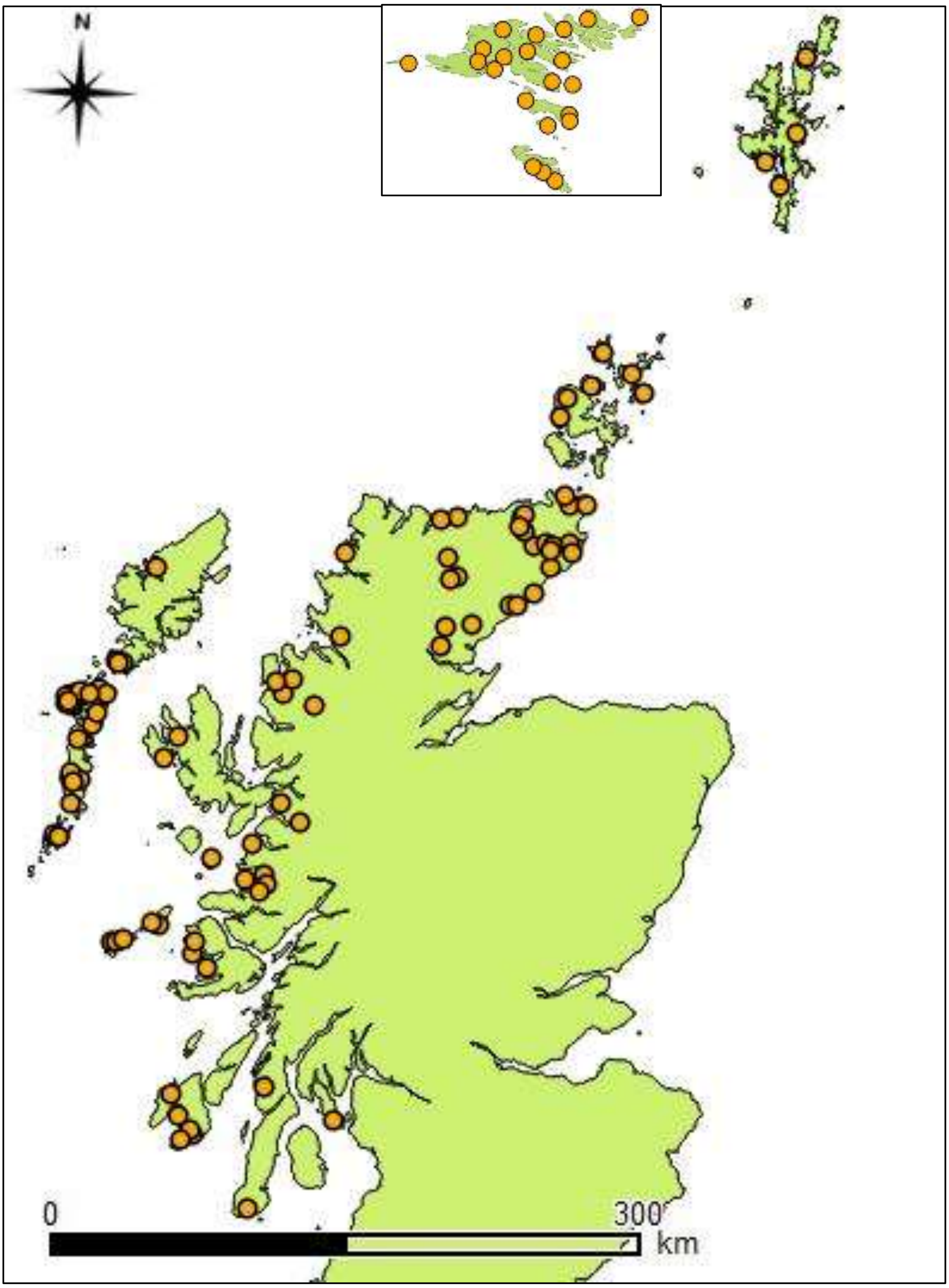



Figure. 6.4 Distribution map of *ærgi*-names in Scotland and the Faroe Islands.

Using the criteria outlined earlier, 94 *ærgi*-names on the Scottish mainland and Islands were identified (Figure 6.4). I was unable to identify a location for 13 topographical features to conduct a survey. In the Faroe Islands there are 21 *ærgi*-names, 20 of which are topographical, of which 18 were identifiable locations (Dahl 1970, 361-8; Mahler 1993, 495). However, I was unable to accurately locate two sites, Argisbrekka on Mykines, and Ærgisfløttur near Dalur in the Faroe Islands (Dahl 1970, 363-366; Ditlev Mahler pers comm). In my survey, I found 115 *ærgi*-names in total; however, I could only locate 100 *ærgi*-names sufficiently to conduct a survey.

In Zone 1, there are 30 *ærgi*-names, 26 of which are located between the Isle of Harris in the north and Barra in the south (Figure 6.5). There are only two *ærgi*-names on Skye and one on Eigg in the Small Isles. North and South Uist have the largest concentration with 18 sites. *Ærgi*-names are almost completely absent from the Isle of Lewis, except for the single topographical name Cnoc an Tiongalairidh (NB1937), which is missing from the Ordnance Survey (Cox 2002, 220).

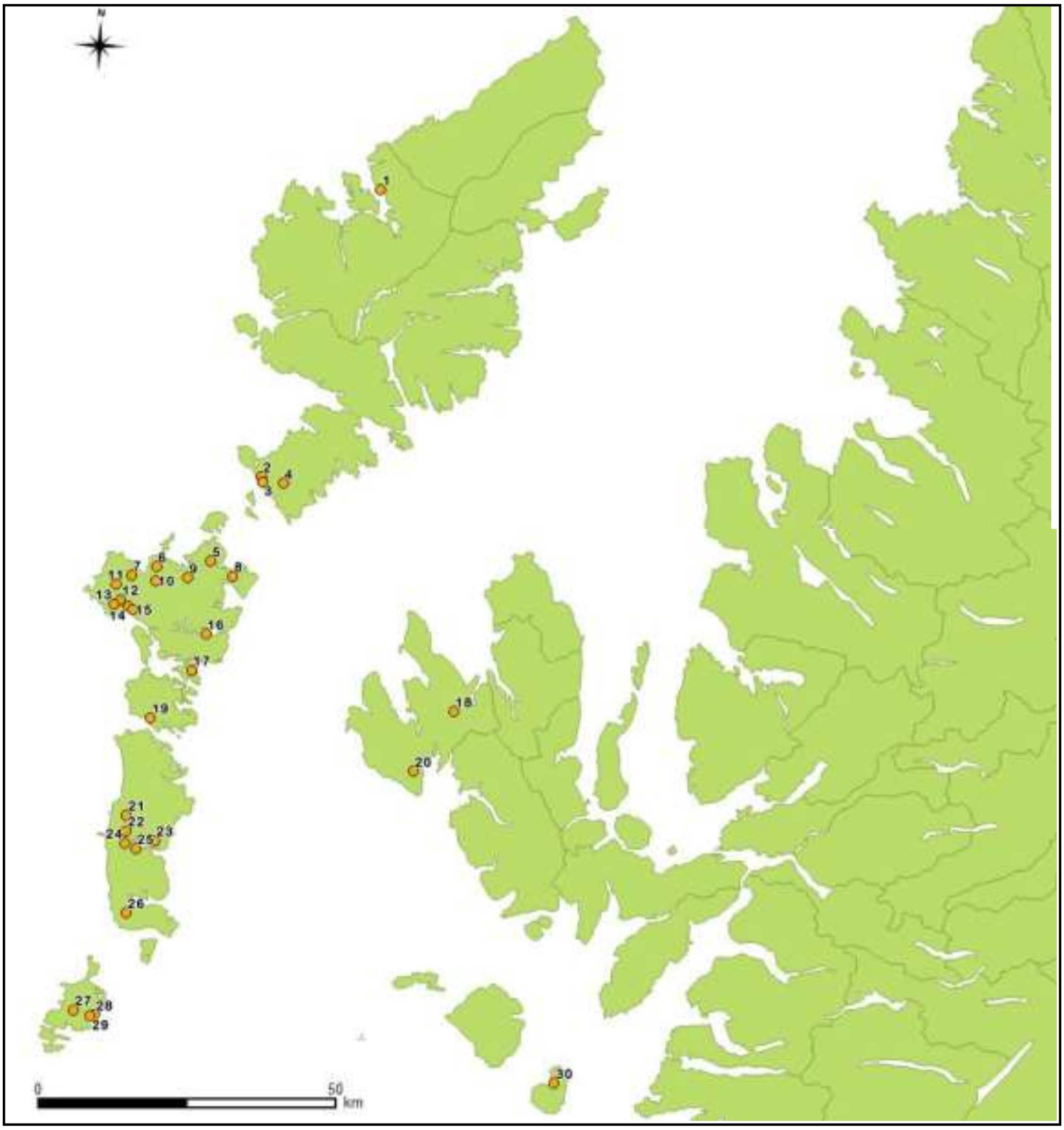



Figure 6.5 Distribution map of *ærgi*-names in Zone 1.

1. Cnoc an Tiongalairidh
2. Greanary
3. L. Vassary
4. Allt Reisary
5. Honary
6. L. Sandary
7. Buile Risary
8. L. Aulasary
9. Maari
10. Bogarh Aulasary
11. Corary
12. L. Vausary
13. L. Sandary
14. Horisary
15. Dusary
16. Obisary
17. L. Hornary
18. Heisary Burn
19. Gunisary
20. Soarary
21. L. Vaccasary
22. L. Hoxary
23. Altisary
24. Ben Corary
25. Unasary
26. Trossary
27. Alt Gunnary
28. Ersary
29. Skallary
30. Corrairigh

The fact that there is only one *ærgi*-name on Lewis compared to the large numbers of *àirigh*-names on Lewis (Figure 6.6), may point to some *ærgi*-names having been replaced by *àirigh* or another generic over time. The lack of good quality farmland on Lewis may have contributed to this, as any reasonably fertile sites were soon converted from seasonally occupied farms into permanent farmsteads, and in doing so gained a new generic element*.* However, *ærgi*-names are found on Harris and the Uists, which may have undergone a similar language shift, and this may point to the particular conditions on Lewis making it unsuitable for the widescale use of *ærgi* as a place-name.

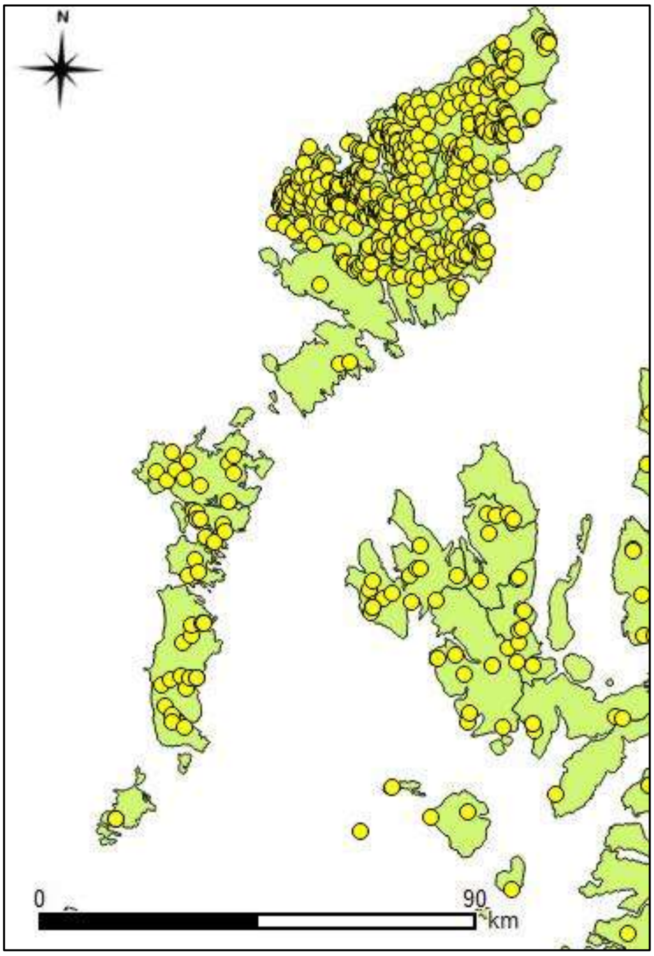



Figure 6.6 Distribution map of Gaelic *àirigh*-names in the Western Isles.

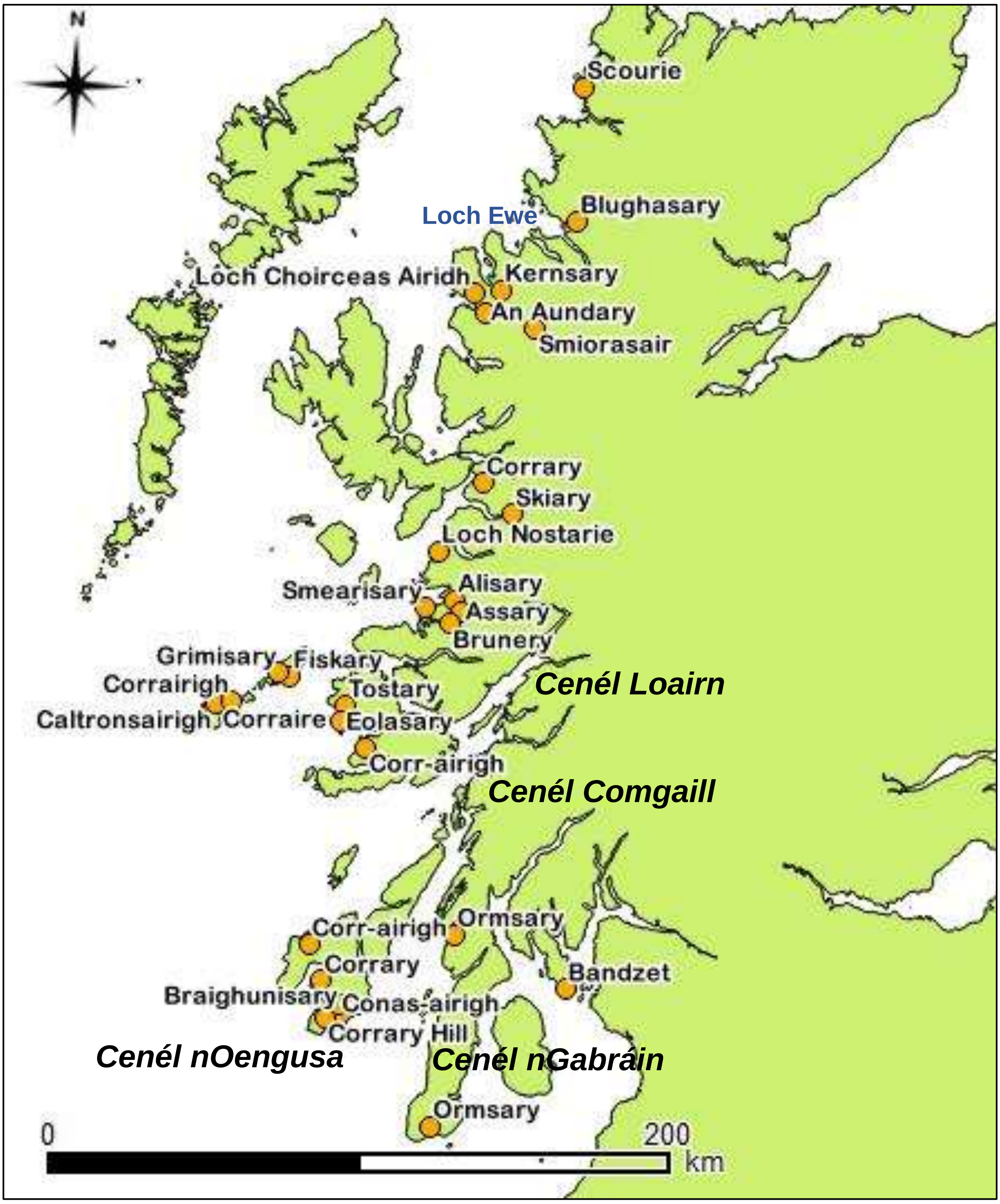



Figure 6.7 Distribution map of *ærgi*-names in Zone 2 with the location of the four leading kindred of the Kingdom of Dál Riata named.

In the southern half of Zone 2, there are small concentrations of *ærgi*-names on Islay, Mull, Coll and Tiree and on Mainland north from Ardnamurchan (Figure 6.7). The area south of Loch Linnie, encompassing the Cenél Comgaill and Cenél Loairn of the Gaelic Kingdom of Dál Riata, does not contain any *ærgi*-names. Brandzet (NS095544) on the Isle of Bute, is the most south-easterly site and is included as an early spelling as Bransare in 1440 (Márkus 2012b, 165), which Gilbert Márkus suggests is an *ærgi*-names with the ON personal name *Brandr* as the specific element (Márkus 2012b, 165).

In the northern half of Zone 2, there are 13 *ærgi*-names dotted along the west coast of Mainland Scotland, running north from Ardnamurchan and into Sutherland, with two small concentrations of names centred in Moidart and Loch Ewe. The scattered distribution in the northern part of Zone 2, especially when compared to the other zones, might suggest that some sites may have been lost through renaming, abandonment, or having undergone a process of Gaelicisation, as suggested for Lewis in Zone 1. The small concentrations of names found north of Ardnamurchan may point to small islands of ON settlement along an inhospitable coastline, as proposed by Ian Fraser (1994, 76).

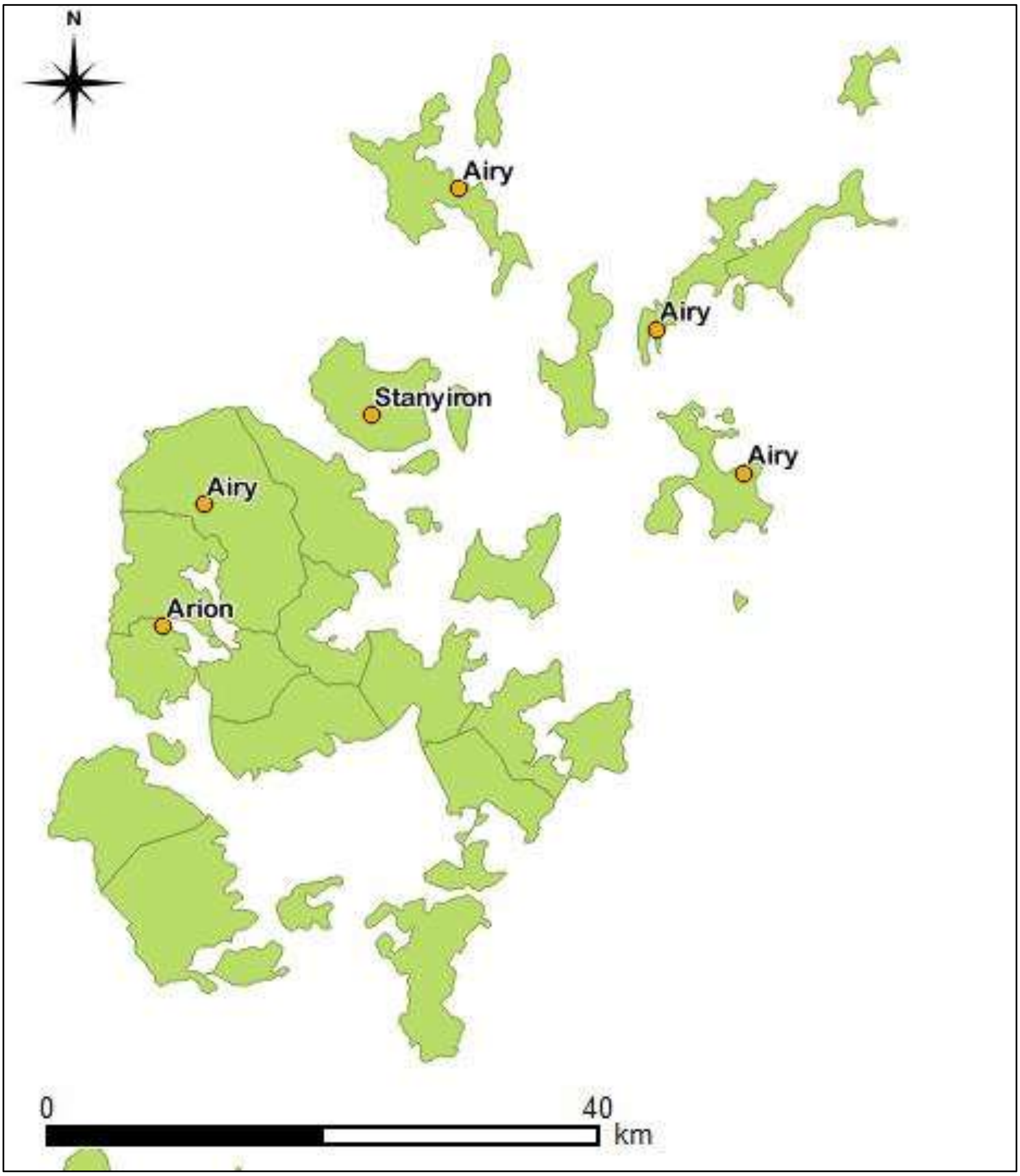



Figure 6.8 Distribution map of *ærgi*-names in Orkney (Zone 3). Stanyiron or Steenis-iron is given as Earying 1621 and Airing 1624 (Marwick 1952, 165)

Zone 3 is split between Orkney (Figure 6.8), with only 6 *ærgi*-names, Caithness, with 14 sites, and a further 12 sites spread between Sutherland and Easter Ross (Figure 6.9). In Orkney *ærgi*-names have a northern distribution and scattered over five islands, Westray, Stronsay, Sanday, Rousay (1 site on each) and the Mainland (2 sites). In Caithness, *ærgi*-names are found in an arc. 30km south and west of John o' Groats, only three sites situated around Duncansby Head. In Sutherland, *ærgi*-names have a far more scattered distribution, with some are split between a coastal distribution and inland areas along major river valleys, such as Strathnaver.

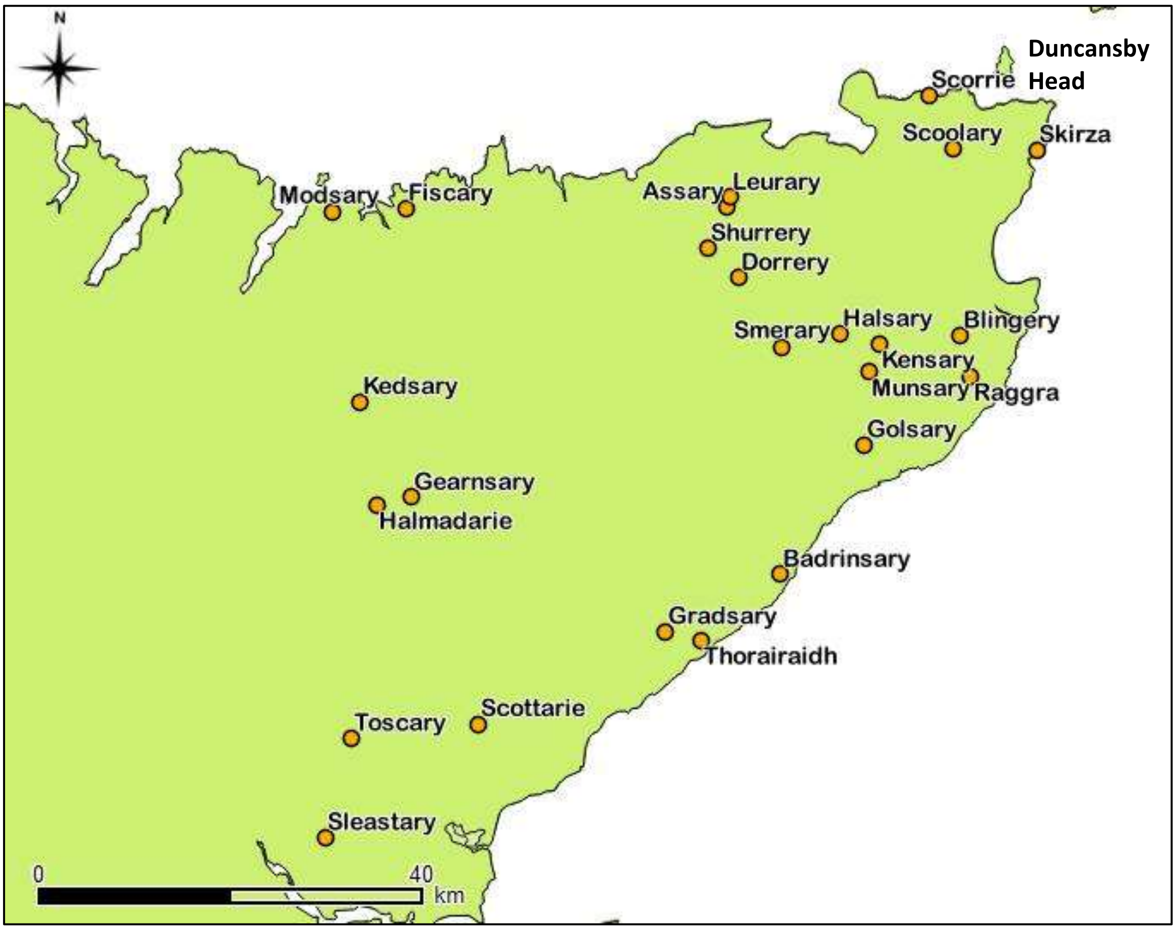


Figure 6.9 Distribution map of *ærgi*-names in Caithness and Sutherland (Zone 3).

As in Zone 3, there is a distinct split in the density and distribution of *ærgi*-names in Zone 4 between Shetland (Figure 6.10), with 4 *ærgi*-names, and the Faroe Islands with 21 (Figure 6.11). While the four *ærgi*-names in Shetland are widely dispersed, *ærgi*-names are found on 11 of the 18 islands in the Faroes and many of the larger islands contain 3 or 4 *ærgi*-names each (see Chapter 4b).

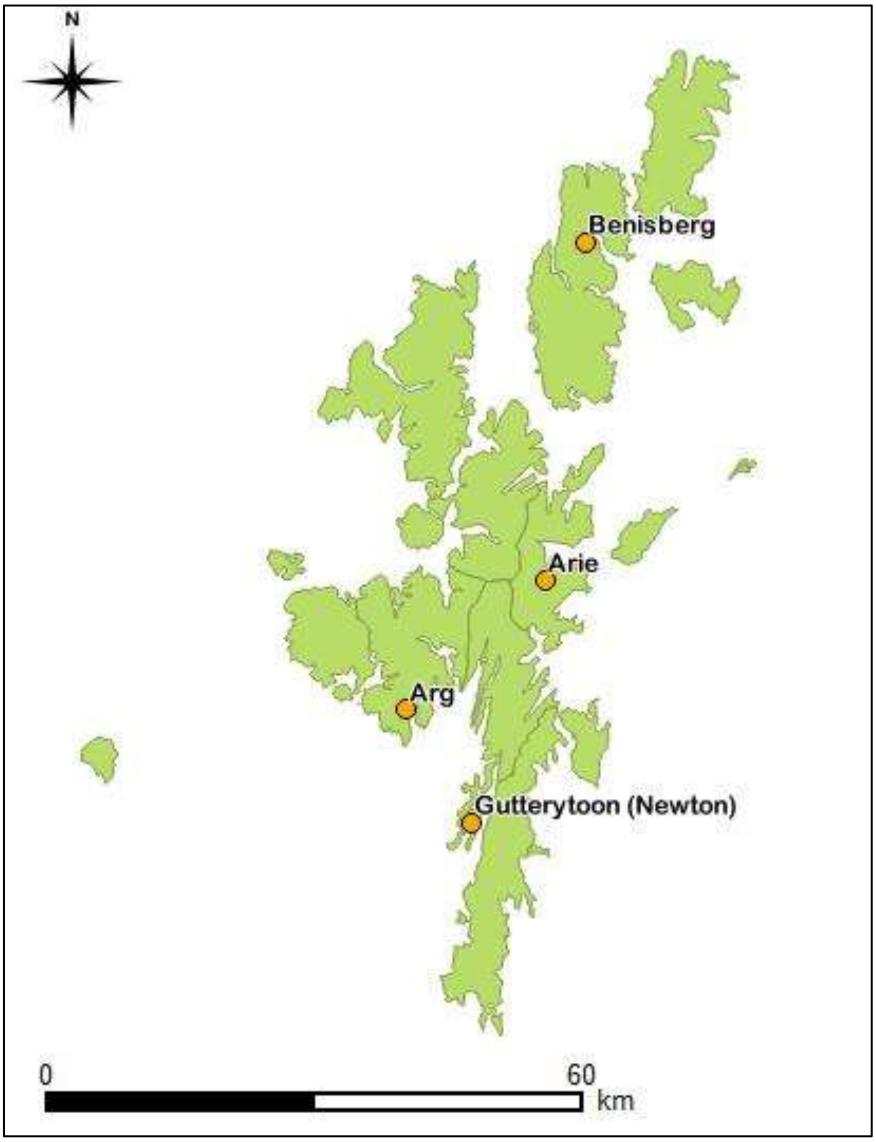



Figure 6.10 Distribution map of *ærgi*-names in Shetland (Zone 4). Gutterytoon (now Newton) is given as an *ærgi*-name by Stewart (1987, 279).

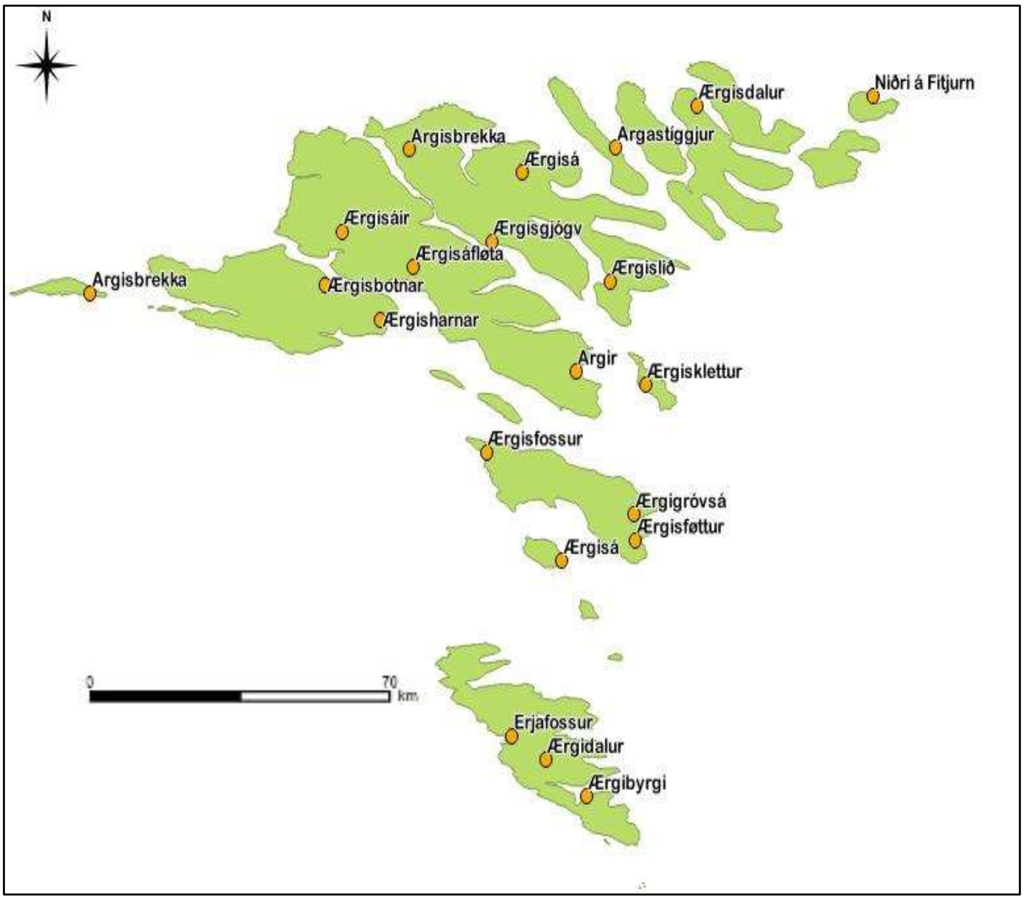



Figure 6.11 Distribution of *ærgi*-names in the Faroes (Zone 4) (for the identification of Niðri á Fitjurn as a *ærgi*-name see A.K. Matras et al., 2004).

The overall distribution pattern in the study area, shows a high density of *ærgi*-names in the Uists, Caithness and the Faroe Islands. This contrasts with low numbers of *ærgi*-names on Skye, Lewis, the Northern isles. This may be down to regional usage with areas that contained a larger Gaelic contingent (either indigenous or introduced by Scandinavian settlers) being more likely to use *ærgi*. Alternatively, specific environmental conditions may have been important in the use of the generic restricting its use. However, it is likely that the distribution pattern is affected by differing survival rate of the generic. If the present distribution is a result of variation in the survival rate, there are various scenarios which may account for this:

1. Was there was a sudden change in agricultural practices, this may lead to the generic losing meaning and being renamed to reflect a new function.
2. Post-VA language change from ON to Gaelic may have either led to the renaming of settlements, or, alternatively, to the term being adopted to Gaelic speech patterns and now being no longer recognisable as the ON term or indistinguishable from ScG *àirigh,* and this may link to the length of time ON was spoken in a particular region (Jennings and Kruse 2009).
3. The distribution may point to specific locational factors governing the use of the generic and this may account for the distribution.
4. A combination of all three depending on regional circumstances.

## 6.6 The Language Contact Situation in Scotland

Some scholars have argued for contact between Norway and parts of the British Isles prior to the VA (AD 793), involving small scale trading (Roesdahl 1980, 148), raiding (Bonde et al*.,* 1993, 582), or settlement (O'Corrain 1972, in I. Crawford 1981, 263). There is no archaeological evidence to prove O'Corrain's early settlement model, neither is it likely that early raiding or trading would involve extensive language contact (Samuels 1972, 92-93; Myers-Scotton 2002, 41-48). Trading and raiding are transient in nature and do not lead to stable and continuous contact, only with trading is there some need for bilingualism, which would fit Ansaldo's theory of ports and markets as linguistic mixing pots (2009, 8). However, unlike Dublin during the later VA (Downham 2007a, 34), Roesdahl's suggested ports and markets in Ireland at this early stage would have been overwhelmingly Gaelic-speaking. Gaelic would likely be the dominant language creating the right situation for borrowing of Gaelic words into ON. However, the number of bilinguals, and general bilingualism, needed for trade is likely to have been small, which may account for some lexical transfer, but this would be limited to the topic of trade itself and specific items traded (Weinreich 1968, 3). The small numbers of merchants that would have been involved in such pre-VA trade and the fact they are likely to have been confined to ports, means it is unlikely that they would have come into contact with specialist agricultural terminology. Neither would it be likely for raiders to ask the locals the name of the secondary settlements that they were raiding, so the borrowing of a word with a very specific meaning is more likely to have occurred during a settlement phase (Kruse 2005 169-70).

Gaelic and ON were mutually incomprehensible (Sommerfelt 1983, 74,), so language contact in this type of situation would seem to promote the formation of a pidgin language, if people were to communicate (Samuels 1972, 93). Alf Sommerfelt had proposed that a pidgin language may have developed between ON and Gaelic during an initial period of contact (1983, 74) and lately Claire Downham has also raised the possibility of a 'pidgin or heavily accented Gaelic' being spoken in the later Viking ports in Ireland (Downham 2015, 375). Downham makes reference to the speech of merchants being referred to as *gibgab* (Bergin et al., 1907-13 in Downham 2015, 375)*,* while the 10th century Irish text *Airec Menman Uraid Maic Coisse* refers to the *Gall-gòidil* (*Gall Ghàidheil***)** speech as *gicgoc*. Downham suggests these term(s) may be onomatopoeic (2015, 375) and would seem to have a similar meaning as the Greek *βαρβαροφώνων* (speaking a foreign tongue) (*Iliad*, bk 2, line 867). Britta Schulze-Thulin defines the Gaelic term *gicgoc* as 'chatter', and believes it is a loanword from the ON *gigga (ok) gugga* (to babble) (Shultz-Thulin 1996, 111). This may suggest that the early bilinguals, whether Scandinavians attempting to speak Gaelic, or, more likely, Gaels making efforts at speaking ON, were contemptuously referred to by ON-speakers as '*gigga (ok) gugga'*. The fact that the Irish term was itself an adoption of an ON phrase, points to ON dominance in the language contact. This, allied with the paucity of Gaelic loanwords in ON, would suggest any pidgin (or creole) language, if it existed, was extremely short lived, and quickly absorbed into the dominant ON in settlement areas. The *Vita Findani* (c. AD 840), make reference to the need for Irish to make use of an interpreter when communicating with Vikings, *'sumptis secum comitibus pariter et interprete'* ('taking with him some followers and an interpreter') (trans. O' Nolan 1962, 156, Etchingham 2013, 63).

The text does not say whether the 'interpreter' was able to speak to the 'Vikings' in ON or another language, such as OE or Latin. This would, however, suggest that bilingualism was as uncommon among Gaelic-speakers as among ON-speakers during the early contact period and suggests only limited contact. Following

Thomason's scale of contact, this would account for 'only limited borrowing of non-basic vocabulary, mostly nouns' (Thomason 2001, 69). Alison Grant, when looking at inversion-compounds in England, has suggested that if a creole had developed it was short lived and only used by a relatively limited number of people and the uncorrupted form of Gaelic that developed after the VA suggests the two languages remained linguistically distinct (Grant 2003, 98).

***Gall Ghàidheil***

Considering the lack of evidence for bilingualism, there is one group whose name is suggestive of a more widespread and stronger bilingualism, the earlier mentioned *Gall Ghàidheil* ('Foreigner-Gaels'). Andrew Jennings has suggested that the name points to a mixed Gaelic and Norse ethnicity (1996, 66; see also Clancy 2008, 20-21). A mixed bilingual group would facilitate language 'interference' and may account for specialist terms being transferred from one language to another (Weinreich 1968, 3-4). Alex Woolf has suggested the term was reused by later chroniclers to distinguish Gaelicised Scandinavians from those who had little contact with Gaelic culture (Woolf 2004, 96).

Thomas Clancy, pointing to the short life span of the term in the chronicles, proposes that the *Gall Ghàidheil* made up a discrete and coherent ethnic group that was situated entirely in Ireland (2008, 24). Alan Macniven also highlights the limited timeframe the *Gall Ghàidheil* are reported to be active, but raises the possibility they represent a 'limited resource', the sons of subjugated Gaelic chieftains from the Hebrides, enlisted to fight for the Norse in Ireland, who were quickly used up in fighting (2015, 114). The limited number of chronicle entries and the time scale would suggest that the impact of any mixed hybrid society would seem to have been limited. It is unlikely considering the limited timeframe and the limited number of other Gaelic loanwords into ON that the *Gall Ghàidheil* were responsible for the adoption of *ærgi*.

**Word order**

The appearance of Scandinavian place-names which follow Gaelic naming tradition has been seen as evidence for linguistic contact between Gaelic and ON speakers (Nicolaisen 2001, 143, Grant 2003, 96). ON place-names usually follow a specific-generic word order; Gaelic place-names, by contrast, follow a generic-specific word order (Parsons 2011, 115, 117). Generic-specific word order in place-names has gained the name of 'inversion compounds', though this term is only true from an ON or Old English (OE) perspective and not a Celtic one.

The use of word order in the use of specific and generic to identify Gaelic and ON place-names generally holds true; however, Ian Fraser has shown that in some ScG place-names the specific element can prefix a generic, as in *Salachàirigh* (willow-shieling) on Skye (NG430305) (1995, 235). Berit Sandnes has also pointed out that in proto-Scandinavian, the generic could precede the specific in place-names and has also suggested the early use of post-positioned specifics in ON, as in *Eyin Helga* (Island the Holy) (Sandnes 2010, 11). Sandnes has suggested that the use of post-positioned specifics fell out of use in Norway after the VA and existing ones were ‘adjusted’ to a prefix position, but in the Northern Isles, place-names may still have been formed with a post-position specific quite late (Sandnes 2010, 11).

In Cumbria, ON compound place-names are found in generic-specific order, such as Bouthswardhout (ON *Buđ Svarhǫfđi ‘Svarhǫfđi’s* booth’) (Fellows-Jensen 1985a, 72), but also containing Gaelic elements (Grant 2003, 78), such as Setmurthy (ON *setr* and Gaelic personal name *Muiredach*) (Armstrong et al., 1950, 433-4) and Gilcambon (ON *gil* and Gaelic personal name *Cambán, ‘Cambán’*s ravine’) (Armstrong et al., 1950, 196-7). The use of generic-specific word order and Gaelic elements in ON place-names in the North-West of England is unusual, as the area is not believed to have been Gaelic speaking prior to the VA (Parsons 2011, 121). This then may point to a step migration from Norway initially to Gaelic-speaking areas, where Gaelic elements were adopted, and then through secondary migrations to non-Gaelic-speaking areas, such as Cumbria (Downham 2012, 5).

The adoption of a Gaelic ‘generic-specific’ word order would indicate more intense contact than the casual borrowing associated purely with loanwords (Thomason 2001 69-70). Alison Grant makes the point that it is unusual for a dominant group to change its grammatical pattern to that of a subordinate group without adopting a large number of loanwords (2002, 78-9). In light of this, Grant suggests that names with a generic-specific word order in North-West England were initially coined by

Gaelic speakers who had accompanied Scandinavian settlers, but had shifted to speaking a regional dialect of ON (Grant 2002, 80-81, 2003, 126-127). David Parsons, in contrast, argues that despite the Gaelic word order and personal names, the overwhelming ON lexicon points to the names being coined by ON-speakers that had been influenced by Gaelic (Parsons 2011, 117).

Place-names that exhibit a mixed linguistic heritage, such as many of the names with a generic-specific word order or loanwords, have been referred to as 'hybrid' names (Oram 2000, 5). Richard Cox and Peder Gammeltoft have questioned the use of the term 'hybrid' in place-names, where there are borrowed elements (Cox 1988-89, 1, Gammeltoft 2007, 481). Cox suggests that: 'hybrid [*has*] a more specialised sense…. i.e. one which also implies linguistic and, presumably, social and political contact' (Cox 1988-89, 2). The term 'ex-nomine onomastic units' has been coined by Richard Cox to describe place-names that have lost their lexical meaning and were elements are being used only as a qualifier (1988-89, 3). The place-name '*Àirigh Shader*' (NB315177) on the Isle of Lewis, has the literal meaning of 'shieling shieling'; it is likely that the earlier ON *setr* (shader) lost its lexical meaning and was then used as a qualifier to a ScG *àirigh*.

**Borrowing**

Despite ON-speakers living in parts of Ireland and the western littoral of Scotland for over 300 years (c. AD 800-1100), very few Gaelic words were borrowed into ON. This must point to the different status of the respective languages, with ON gaining dominance during colonisation and retaining this high status up to and after c.1100. The high status of ON would not only seem to have made it resistant to Gaelic during the Viking period, but after it as well, allowing time for ON words to be adopted into Gaelic. This may also be the result of different contact situations, with a sudden ON military takeover at the start of the VA followed by a gradual Gaelic infiltration at the end of the VA, allowing for more ON loans into ScG (Samuels 1972, 92-93, Stewart 2004, 396, Gammeltoft 2004, 74).

| | **Gaelic loanwords in ON (Schulze-Thulin 2001, Gammeltoft 2004, 64).** | **ON loanwords in OIr (Schulze-Thulin 1996) (3 nouns adopted as personal names omitted)** | **ON loanwords in ScG (Gammeltoft 2004, 63)** |
|---|---|---|---|
| **Total number of loans** | 40 | 70 | c. 200 |
| **Farming and everyday use** | 18 (45%) | 27 (38%) | 66 (33%) |
| **Flora and fauna** | 10 (25%) | 10 (14%) | 19 (9%) |
| **Seafaring** | 1 (2%) | 17 (24%) | 34 (17%) |
| **Topography and settlement** | 3 (7%) | 4 (6%) | 35 (17%) |
| **Physical appearance and anatomy** | 5 (13%) | 3 (4%) | 9 (5%) |
| **Behaviour and psychological state** | 1 (3%) | 2 (3%) | 19 (10%) |

Table 6.1 Gaelic and ON loan words (after Schulze-Thulin 1996, 2001, Gammeltoft 2004, 63-64).

Britta Schulze-Thulin found only 40 Gaelic loanwords in ON (2004) compared to 70 ON loanwords in Irish (1996), yet Peder Gammeltofts study of Alexander MacBain's 'Etymological Dictionary of the Gaelic Language', found around 200 ON loanwords (2004, 63). The limited number of Gaelic loanwords in ON and a similarly low number of ON loans in Irish, when compared to ScG, would suggest that the contact situation was different in Scotland compared to Ireland. This would seem to be provide evidence for Kenneth Jackson's view that the Norse presence in Scotland was more intensive than Ireland (1975, 4-5) and the previously held belief that Scandinavian settlement in Ireland was purely urban in nature (Worsaae 1852, 314-15, Fellow-Jensen 1980, 68-69, Hodges 1982, 195).

There is an overall ratio of 1:5 Gaelic/ON elements when comparing loanwords, in western Lewis Cox foun the ratio to be 1:15 (Cox 1991, 486). It would seem ON comprehensively and suddenly replaced the language(s) of the Western Isles (Nicolaisen 1961, 91), but the Norse-period may have been followed by a longer period of bilingualism or a gentler shift to Gaelic in the Western Isles to allow for the greater number of loanwords (Cox 1991). ON elements were more readily adopted into Gaelic than had been the case of Gaelic to ON, and this must point to the different status of the respective languages at the time of language shift was occuring. ON was likely to have been the dominant language after colonisation and retained a relative high status during the early expansion of the *Gàidhealtachd* in the Western Isles. Alternatively, this may point to different contact situations, with an abrupt ON military takeover at the start of the VA followed by a gradual Gaelic infiltration at the end of the it, creating contrasting conditions for language contact. The length of time that ON and Gaelic had been in contact by the end of the VA may also have eased the adoption of ON terms. Gaelic-speakers in the 12th century may have been exposed to many ON terms during their lifetime, whereas as the start of the VA both language groups were ignorant of each other other, which would reduce the likelihood of words being adopted.

The majority of Gaelic loanwords in ON relate to either farming and everyday use or flora and fauna, and hint at an 'intimate' contact situation, for at least some sections of the society, to allow such terms to pass from one language to another (Gammeltoft 2004, 65). This would suggest that there were at least some people who were bilingual in order to explain the meaning of the terms (Gammeltoft 2004, 65) and, as language is often learned at work, it may suggest that Gaelic-speaking people were employed (or forced) to work in the fields or in the home (Myers-Scotton 2002, 37). It is therefore possible other Gaelic terms were present in the ON spoken in some or all of the western 'colonies', which are now lost. Peder Gammeltoft has highlighted the different nature of the borrowing of place-name elements from Gaelic to ON and vice versa, in that ON loans can be habitational or topographical in nature, whereas Gaelic loans, such as *crò* and *àirigh* are specifically related to farming practices (Gammeltoft 2004, 73-74). This suggests that Scandinavian settlers renamed the environment they found, but came into contact with new ideas related to farming practice; likewise, Gaelic-speaking people also borrowed words for farming and everyday terms, but also seafaring, topographical and settlement names.

The specialised borrowing and use of terminology for specific topics would seem to suggest the specialisation of languages proposed by Weinreich (1968, 3). Alternatively, these loanwords may represent 'need–filling' nomination for new things or ideas. Alison Grant concluded that it was a purely lexical transfer of the Gaelic *àirigh* into ON as *ærgi* (Grant 2003, iii, 166). If *ærgi* had the same meaning as *setr*, then its adoption into ON, according to Weinreich (1968, 54-56), should have seen the abandonment of the corresponding ON element *setr* and its replacement by *ærgi*, or led to the specialisation of each term. The use of *ærgi* as a place-name during the colonisation of the Faroe Islands (Dahl 1970, 1971, Mahler 1992, 1995), the later use of *setr* as a place-name in north-western Iceland (Svarar Sigmundsson 1996, 332) and the later, again, use of both elements in Cumbria, which was settled c. AD 902, would cast doubt on the former suggestion (Oram 1987, 134). Lindsay Macgregor has suggested the complementary distribution of *setr* and *ærgi* in the Faroe Islands and Shetland relates to the 'constraints of the landscape' which limited the appropriateness or viability of each place-name. This would suggest that the adoption *of ærgi* had either led to a specialisation in the use of each element, or was motivated by a 'need-filling' capacity and the element may be considered as a 'cultural borrowing'. Either scenario would suggest that the characteristic landscape features necessary for the coining of each place-name element would be considerably different and leading to different types of location/environment being selected for each.

**Preaspiration**

Preaspiration is a breath before the consonants *p*, *t*, and *c*, which is found in the ScG spoken in the Western Isles, in Icelandic, in certain dialects of Norwegian, and Faroese to a degree (Oftedal 1994, 99). Magnus Oftedal believes preaspiration to be a Norse feature found only in the ScG spoken on Lewis and the mainland coast opposite, and suggests that this is the most Nordic-like system, being similar to that spoken in the extreme south-west of Norway (Oftedal 1994, 99).

Pavel Iosad suggests that preaspiration is a phenomenon of both Scottish and Ulster Gaelic, and he proposes that the 'Lewis and Irish preaspiration are of the same type' (Iosad 2015, 3). Iosad comes to the conclusion that although contact cannot be denied between Gaelic and ON, the distribution of preaspiration 'shows little cohesion with areas of strong Norse influence' and that similarities could have been the result of 'typologically common processes' (Iosad 2015, 11) rather than it definitely being contact induced. Gammeltoft (2004, 57) points out that preaspiration, though rare in languages generally (found in 1 %), is found in a number of areas of the Atlantic coast of north-west Europe and may be a vestige of a wider phenomenon (Gammeltoft 2004).

**Summary and Conclusions**

The fact that ON comprehensively and suddenly replaced the preceding language(s) in areas of Scandinavian settlement, such as the Western Isles (Nicolaisen 1961, 91), makes it likely that any period of bilingualism would have been relatively short lived. The unequal status of ON to Gaelic meant very few Gaelic loans entered ON, but after the VA, ON elements were much more readily adopted into Gaelic.

The evidence points to a language shift from Gaelic and/or Pictish to ON in areas of Scandinavian settlement, and the evidence for the development of a pidgin/creole language is inconclusive and at best short-lived. The dominance of ON within areas of Scandinavian settlement means it is likely that Gaelic words entered ON through the adoption of a loanword (Grant 2003, 177). Peder Gammeltoft concluded that the Gaelic influence on ON consisted mainly of lexical loans and that this is evidence of a less intensive character of the contact (Gammeltoft 2004, 67). The most likely scenario, in my view, is that the majority of Gaelic loanwords fulfilled a 'need-filling' capacity for a new innovation. As the modern ScG definition of *àirigh* would not fulfil this capacity, being too similar to ON *setr* in meaning, I would agree with Cox (1992, 139; 2002, 220) and Macniven (2015, 69), who suggest that the original meaning had a closer link to OIr *áirge.*

The adoption of the term may have occurred in the western littoral of Scotland, especially the islands of the Southern Hebrides. The area corresponds to the well-documented early historical kingdom of Dàl Riata and would have had a Gaelic-speaking population at the start of the VA (Bannerman 1974, J.E. Fraser, 2009). As argued earlier, it would be wrong to discount Ireland as a possible location for the adoption. This view has been partly based on the idea that the Scandinavian settlement in Ireland was confined to small urban centres (Fellow-Jensen 1980, 68-69). This was taken to an extreme by Richard Hodges, who proposed that these Scandinavian settlements in Ireland imported their goods from other settlements in England, with no other economic interaction other than to plunder in Ireland (1982, 195). Bradley makes the point that in the rest of Europe, Scandinavian settlement was essentially rural in nature, and it is only in Ireland that it is suggested that isolated pockets of Scandinavians were only found in towns along the coast (Bradley 1988, 49). Bradley argues that the Icelandic terms *Dyflinarskiri* (*Landnámbók*) or *Dyflinarskidi* (*Magnus Barelegs Saga*), meaning 'the shire of Dublin', rather than being restricted to the town defences, would have had to cover a large hinterland that supplied food stuffs and other raw materials (1988, 52, A.K. Matras et al*.* 2004, 209). The population of the hinterland with its larger Gaelic contingent resulted in a mixed material culture which would be indistinguishable from native Irish elsewhere (Bradley 1988, 68). Ò Cuív, likewise, highlights the borrowing of personal names between Gaels and Scandinavians in Irish annals and Icelandic Sagas as evidence of there being some degree of bilingualism (1998, 79-80).

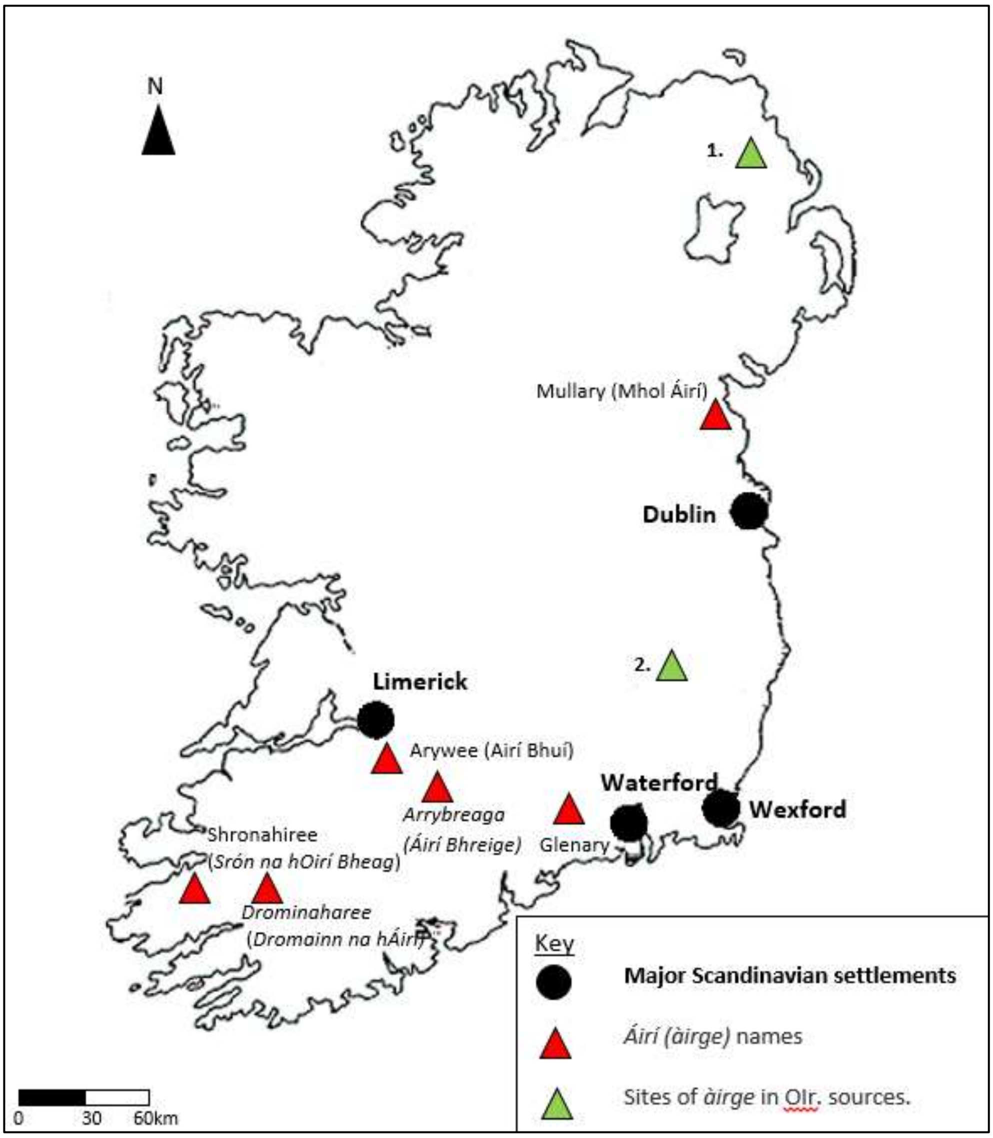



Figure 6.12. Map of *áirge* names in Ireland from Logainm.ie and the location of *áirge* names from OIr. Sources: 1. *Sliab Miss* (Slemish, Antrim) (*Ancient Laws of Ireland,* 1, 133); 2. *Slèib Mairge* (Slievemargie, Co. Laois) (*Ancient Laws of Ireland,* 1, 132).

The elimination of Ireland as a possible source area for the adoption of *ærgi* into ON has been questioned by Anna Katrin Matras et al. who cite five place-names which may contain *áirge,* found by Breandán Ó Cíobháin's detailed survey of the south and south-west of Ireland (Ó Cíobháin 1978, cited in A.K. Matras et al., 2004, 209). It is likely that, as more detailed surveys of Irish place-names are undertaken, more *áirge* names will come to light.

The uncertainty around the etymology of *áirge* is partly due to the term disappearing in Ireland as a place-name element at an early date and being replaced by the far more common *búaile* (cattle fold, summer pasture) (Lucas 1989, 31-33, Kelly 1997, 41). There is, however, a clear distinction made in legal sources between the *senlis*/*senbaile* (old/home farm) and *áirge* (Ancient Laws of Ireland, in Kelly 1997, 44). The term used for a milking place at the *senbaile* was *macha* (milking yards) (Kelly 1997, 501)*,* which is often linked with *lías* (farmyard) (Kelly 1997, 363-4). Another term that can have the same meaning of milking place is *búaile*, but only in connection with transhumance. Lucas suggests that *búaile* was used when cows were milked on the hill pasture, but that it had the same meaning as *áirge*, which it replaced in Ireland (1989, 31-33). Fergus Kelly points out that the original meaning of *búaile* may *have* just meant a 'cattle enclosure' (1997, 41), whereas *áirge* specifically referred to a 'summer milking place' (1997, 44). The reason why *áirge* was replaced is not known (Lucas, 1989, 17, Kelly 1997, 119), but the variety of names for a milking place may suggest that it had a very specific meaning within the pastoral economy of Ireland, and may also explain its loss through a need for simplification of farming terminology, or just changing practice.

Of the 16 references to *áirge* in the electronic Dictionary of the Irish Language (*eDIL*) search engine, 7 are associated with milking cows, byres or cowsheds, and the remaining 9 have a more general reference to herds of cattle. The definition of *áirge* in OIr has been based on the translation of this small number of texts, which has led to the vagueness concerning the meaning of *áirge,* which shift between a general meaning of cattle herd or summer grazing on the one hand, to a specific meaning of a milk herd or dairy on the other. Considering the importance of dairying and dairy herds in Irish society (Kelly 1997, 27), I would suggest *áirge* is more likely to be used to refer to the milk herd or milking place than just a herd of cattle (dry cows, bullocks, older calves) (Kelly 1997, 27) and it has been later translators that have misunderstood a specific farming term and given it a more general definition (Lucas 1989, 65).

The *eDIL* database contains only two references to *áirge* as a milking place in the mountains: *dul ó faithchi in senlis for airgi* (Ancient Laws of Ireland 1901, 132) and Comm. *bui for airghi ⁊ da bai dhec aice* (*Lives of saints from the Book of Lismore,* Stokes 1890). The first reference found in the Senchus Mor only refers to removing the cattle from *senbaile* ('old or winter farm') to the *áirge,* and the reference to 'in the mountains' has been added to the English translation and may only have had the meaning of summer grazing/milking place (Hancock et al., 1865, 132). I would suggest that the meaning of mountain dairy for *áirge* is tenuous, and it had a more general meaning of summer dairy, which sometimes was found in mountains depending on the local topography. The *áirge* in *Bethu Brigte was* described as a dairy where butter was made (accessed online 14/5/15 at https://celt.ucc.ie/published/T201002/index.html), and though hagiographies cannot be taken as historical truth, it does give a specific meaning for the use of *áirge* in a contemporary setting.

| | |
|---|---|
| **Herd of cattle** | • airge .i. armentum (*Irish glosses*, 754, Stokes 1860).<br>• olc lind bith cen airghi . . . ragaid di bhāi duitsi (*The Birth and Life of St. Moling*, 41, Stokes 1906).<br>• secht n-á.¤ leis.uii. fichit bo cacha hairge, Anecd. i 1.8 (*Scéla Cano Maic Gartnáin*, 8, Binchey 1963).<br>• conna farcaibset leis acht vii m-bai ┐ tarb bale i robatar na vii n-airghe (*The Yellow Book of Lecan* 113b8, Atkinson 1896).<br>• go ttuccsat airgheadha ┐ greadha iomdha leó (AFM 1288.5, O'Donovan 1951).<br>• deoch acht crú a n-airgead nó a n-each / . . . ní fhuair M. (*Ériu* 1904, iv 224.9).<br>• mac Briain bhronnus airgheadha (: ailgheana), (*The bardic poems of Tadhg Dall Ó Huiginn*, 16.11, Knott 1922).<br>• dá ró 'n-ar ndáil-ne Dia féin / ní bhia bó ná áirghe ar m'óidh (*Dioghluim dána*, 42.29, McKenna 1938).<br>• ar sgaoileadh each nó áirgheadh, 74.64. tréuda ┐ airighe (Gen. xiii 5). |
| **Place for milking cows, byre, cowshed** | • do tét ind ingen . . . dond airgi búi oc sliab Miss (*Athirne and Amairgen son of Ecet Salach,* Book of Leinster, 436, in *Irish texts* i 34.1 Fraser et al., 1931-34).<br>• luid . . . dia airge .i. ceppán i Sléib Mairge, 25 . eter a portaibh-sium ┐ a airgeda (Book of Leinster, formerly Lebar na Núachongbála, 1246, MS folio 286a, 35, *Lives of saints from the Book of Lismore*, 2917, Stokes 1890).<br>• tuc lat do macc isin airge (*Three middle-Irish homilies on the lives of saints Patrick, Brigit and Columba*, 8.9, Stokes 1877).<br>• seacht ndoirse ar a dhúnadh ┐ . . . seacht n-airghe fā c[h]omhair gacha doruis dīoph (*Feis Tighe Chonáin* 1393, Maud 1936, 3, [iii]-xi, 98). |
| **Summer milking-places in the mountains** | • dul ó faithchi in senlis for airgi (*Ancient Laws of Ireland*, i 132.12, 1901).<br>• Comm. bui for airghi ┐ da bai dhec aice (*Lives of saints from the Book of Lismore*, 1267, Stokes 1890). |
| **Transferred to dairy produce** | • robaoi áirgi laisim o muindtir ┐ taiscit on muindtir `he had dairying and store of victuals given him by the monastery' (*The Monastery of Tallaght*, 159.11, 1911). |

Table 6.2 Reference to *áirge in OIr* sources (*eDil,* accessed 4/11/14 http://www.dil.ie/

The documentary evidence for farming in Ireland is very clear in showing that agriculture was based around dairy farming. The eighth-century Irish law text, *Críth*

*Gablach,* give members of the population a social-economic grade according to the number of cattle they owned, among the three main grades of free commoners. The lowest grade, called the *ócaire,* rented a small farm from his *aire* ('lord'). The average *ócaire* could inherit land worth seven *cumals* (unit of value based on the price of a female slave) and was expected to have 7 cows, a bull and an ox, 7 pigs and 7 sheep. The average *bóaire* ('cow freeman'), the highest grade of free commoner, could inherit land worth fourteen *cumals*, and was expected to have 10 cows, 10 sheep and 10 pigs, as well as a bull and oxen, while the highest rank of *bóaire, mruigfer,* should have 20 cows, 20 sheep and 20 pigs, 2 bulls and 6 oxen (Kelly 1997, 111). The impracticality of these precise livestock quotas for social ranking has been commented upon by Kelly (1997, 8, 111), but archaeological excavations seem to show that cattle do seem to have represented the most important livestock resource, accounting on average for 40-50% of early medieval bone assemblages (McCormick 2014, 121, 124), the majority of which were female (McCormick 1992, 204).

The pre-eminence of cattle was such that they were used as a unit of value, especially milk cows (Lucas 1989, 3-4). The basic unit of value according to Irish law codes was the *laulgach, bó mór* or *bó mlicht* ('milch cow') and was the equivalent of an ounce of silver (AL V, 392). A 'milch cow' reached her maximum value at 6 years old on the birth of her third calf ('*bó threlóeg'*), a *bóinlóeg* ('in-calf heifer') was only worth two thirds that of a milch cow, and a *bó sesc* ('dry cow'), not in milk, was half the value of a milch cow (Kelly 1997, 64-65). In comparison, a *colpthach firenn* (‘two-year-old bullock’), representing an animal maturing into a prime beef animal, is worth just over two thirds of a *colpthach* (‘two-year-old heifer’), which is itself only one third the value of a milch cow (Kelly 1997, 62). Male cattle, other than oxen, were not given a value after three years old (McCormick 2014, 122) and this has been suggested as evidence of male cattle being slaughtered for meat at this time (McCormick 2014, 122).

Neonatal slaughter, which has been suggested as evidence of a dairy economy by Payne (1973, 281), is not evident in Irish bone assemblages (McCormick 2014, 122). This has been linked to the primitive nature of Irish cattle that required the presence of calves to let down their milk (McCormick 1992, 202-3). McCormick suggests a distinct two-phase slaughter pattern in Ireland, with two-year-old animals, representing animals not needed for dairying, breeding or traction being fattened and killed as part of a producer/consumer regime. A second older group of animals that were slaughtered may suggest consumer sites, with animals brought in from elsewhere, possibly old milk cows (2014, 122). The value attached to milk cows highlights the importance of dairying over meat production in Irish society prior to the VA (Lucas 1989, 4, Kelly 1997, 37, McCormick 2008, 210).

The plunge churn, which allowed the production of large amounts of butter (Myrdal 1988, 132), has not been identified in Northern Europe before 8-9th century and was not common in Northern Europe until c. AD 1000 (Myrdal 1988, 128-9). Janken Myrdal has argued that the less efficient shake churns continued to be used in

Northern Europe until that time (Myrdal 1988, 128-9). The plunge churn would allow more butter to be made and would therefore encourage the keeping of relatively large dairy herds close to a dairy, or *ærg*i. This would have been new to Scandinavians used to a more general shieling where some milk was made, cattle grazed, and craft work was completed (see Chapter 2).

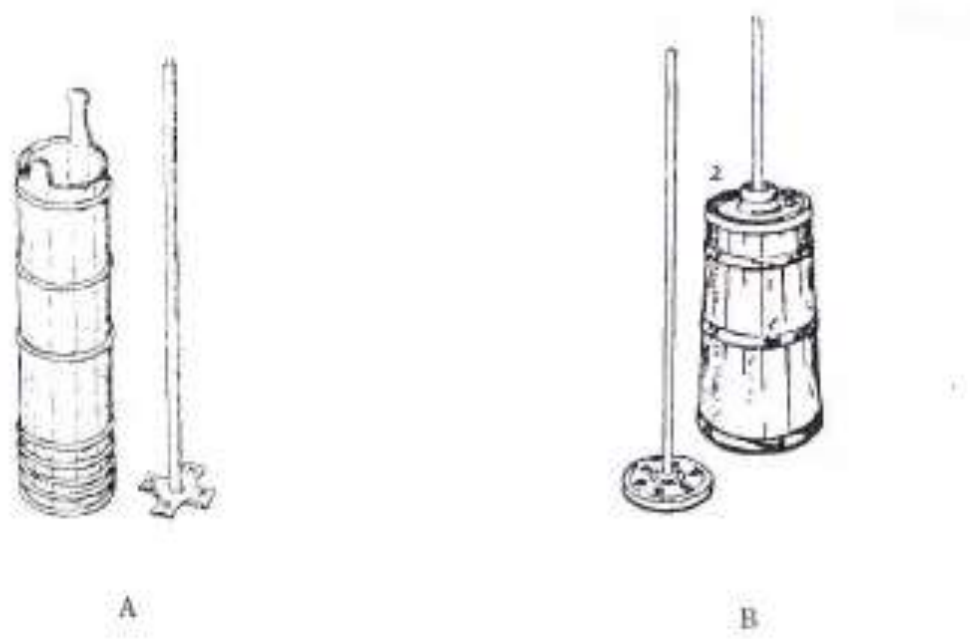



Figure 6.13 Plunge churns from A: Dalecalia, Sweden (Levander 1947 in Myrdal 1988) and B: Yorkshire (Hartley and Ingilby 1968 in Myrdal 1988)

Myrdal, however, has also suggested that the plunge churn was not in use in Ireland in the pre-VA (1988, 127). Earwood reports a bog butter churn from Ternakill, Co. Galway, which has been radiocarbon dated to around AD 1040-1270 (1997, 31). However, Hencken found what has been identified as a churn stave, in the excavation of Ballinderry No. 2 crannog, Co. Offaly, which has been dated to between the 7$^{th}$ and 8$^{th}$ century (Hencken 1942, 58-60; Comey 2003-4, 37-8). This may suggest plunge churns were in use in pre-VA in Ireland.

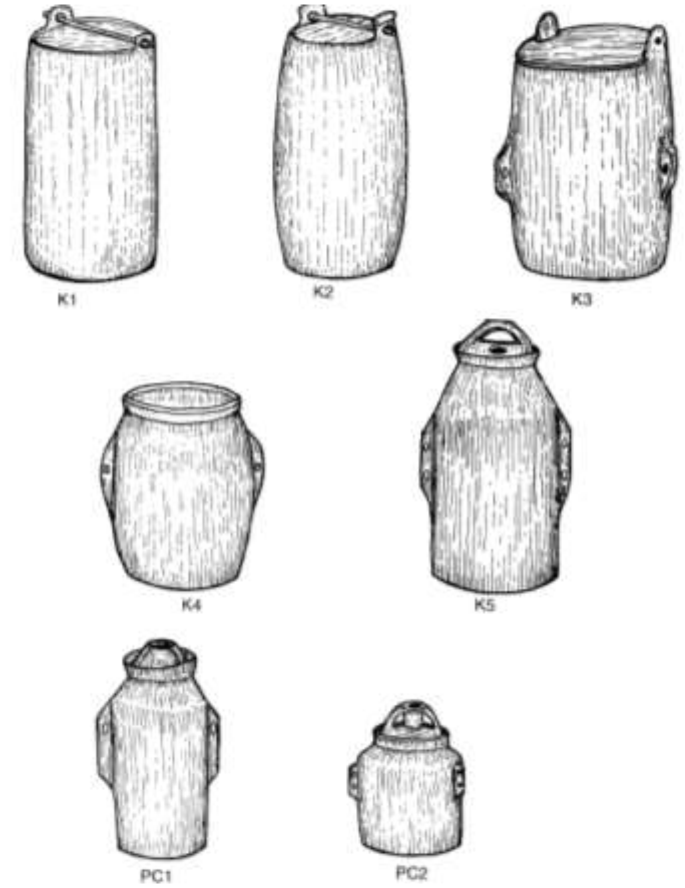



Figure 6.14 Selection of Kegs (K) and Plunge Churns (PC) recovered with bog butter (Earwood 1997, 26).

Earwood also points out the only difference between churns and similar-shaped kegs is a hole in the lid of the churn (1997, 31), and vessels identified as kegs may well have been used as plunge churns. The date of the earliest keg has been calibrated from the bog butter it was found to hold, to around 400-350 BC (Earwood 1997, 27). Not all plunge churns had lids and it is a possibility that some of the recovered kegs were used as plunge churns. The wide distribution of the 274-bog butter finds in Ireland according to Earwood (1997, 25) is equally suggestive of widespread use of dairying and date back to at least c. 400 BC (Earwood 1997, 27; Cronin et al*.,* 2007, 1019). Bog butter is a whitish solid fatty mass that has been deposited in peat bogs, where the anaerobic conditions preserve it. Chemical analysis point to an absence of salt from the deposits (Earwood 1997, 25), which suggest burial in bogs may have been a way of preserving the butter (Cronin et al., 2007, 1019), though Estyn Evans has suggested ritual as a factor (1947, 61). What it does show is that a surplus of butter was being produced over 1000 years before Viking incursions occurred in Ireland and suggests that the society had the technology and knowledge to produce relatively large amounts of dairy products.

One key difference between the Norse and Gaelic farming systems involved the feeding outside of cattle all year. Bede in his 8th century text, *Ecclesiastical History of the English People,* wrote that 'there is no need to store hay in summer for winter use or to build stables for beasts' (Chapter 1, 46) and the 13th century *Konungs Skuggsjá* noted, 'all through the winter the cattle find their feed in the open' (Larson, 1917, 105), though the authors' knowledge of Ireland is questionable as they go on to say that due to the temperate climate 'the inhabitants wear almost no clothes there in winter or summer' (Larson, 1917, 105-6).

Hay is not believed to have been collected for winter feeding in Ireland (Lucas 1989, 37), Irish law texts refer to cattle that were fed in winter on *etham ndíguin* ('preserved grassland') (AL 4, 90, Kelly 1997, 45). The use of differentiated grazing regimes can be seen in Irish sources with the most prized beef cattle, referred to as *bò thùir,* never being grazed on *fràech no foigdech* ('heather or furze/gorse'), but only on *liugrfèr glasfeòir 7 arbar* ('green grass and corn') (Lebor na hUidre 2122-24, Kelly 1997, 45). This suggests there was grazing land on larger farming estates, but not necessarily on smaller ones, being parcelled out according to the type of vegetation found there.

As stated earlier, Irish dairy farming does not fit into the dairy model proposed by Payne, who suggested that a cull of young calves was needed to preserve the milk yield. Once lactation had been stimulated calves would compete for milk, lowering yield and so would be killed while very young (Payne 1973, 281). Evidence from excavations in Ireland given in Figure 6.15, show that very few calves were killed and almost none below the age of 5 months, which would not fit with the dairy strategy proposed by Payne (McCormick 2014, 125).

The absence of young calves in bone assemblages has been explained by the primitive nature of Irish cattle, which refused to allow milk let down unless the calf was near (Lucas 1989, 47-55; Kelly 1997, 39; McCormick, 1992, 202). William Camden, writing in 1586, found that 'cows are certain to give no milk in Ireland, unless either their own calves be set by them alive, or the skin of it stuffed with straw, to represent the live one' (www.visionofbritain.org.uk/travellers/Camden accessed on 17/4/18; Lucas 1989, 52). To milk cows, the calves would need to be separated from their mothers to restrict the calf's feeding and allow the mother to be milked. The *Senchus Mór* states it was an offence to leave a way open for another person's calves and cattle to get together (AL 1, 232; Kelly 1997, 439-40), which would seem to corroborate the view that Irish dairying did not involve neonatal culls. Interestingly, to the north-west of the proposed location of Argisbrekka, on Mykines in the Faroes, is Kálvadalur ('calf dale'), a place-name indicating the keeping of calves in a specific location. Ditlev Mahler has suggested this location may have a link to the proposed *ærgi* on Mykines (personal communication). This may suggest the importation by ON settlers of an Irish dairy system to the Faroes, one based around dairying but where the calves were not killed, but separated from their mothers to restrict their access to milk.

Irish bone assemblages, according to McCormick, have a two-stage age-slaughter pattern (Figure 6.15). The first involves animals around 2 years old (prime meat animal), where it is likely those cattle not needed for dairying, traction or breeding were fattened and killed; the second involved older animals around 7 years old (McCormick 2014, 122). Around 77 % of the assemblages from the 10-11th century were female and may have been dairy cattle at the end of their productive life (McCormick 1992, 204). The bone assemblage for Fishshamble Street in Dublin, which mainly consisted of these older cattle, hints at Viking Dublin being integrated in some way into the Irish dairy system, at least as an outlet for these older animals.

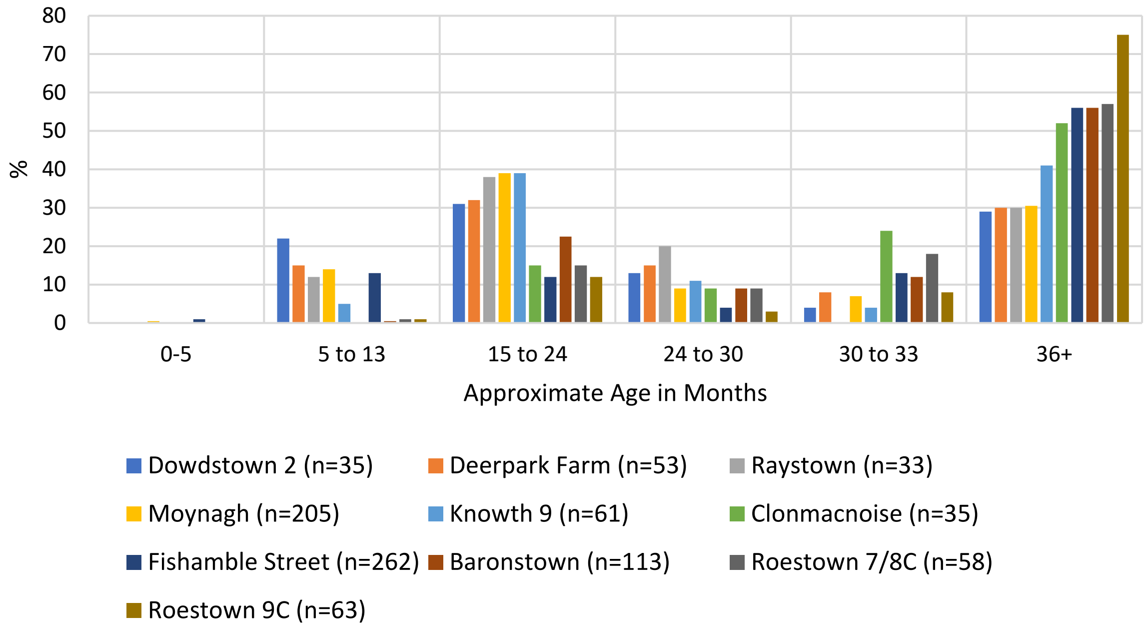



Figure 6.15 Cattle age-slaughter pattern in Ireland (after McCormick 2014, 125).

A further connection between Scandinavian settlers and the dairying is found in the Irish loan word for a type of spancel, *laingfitir* (also found in Manx and SG), which comes from the ON *lang-fjöttur* ('long fetter)' and was used to immobilise the cow during milking by tying the front and hind legs together (Cormacs Glossary cited in Lucas 1989, 45). There were already several names for a spancel in OIr: a *buarach* (literally 'cow fetter') which tied the rear two legs together with a short rope; *airchomal* (mainly used in connection with horses), and some regional ones such as *crobh-nasc* in Connemara (Lucas 1989, 44-45). The transmission of this ON term *lang-fjöttur* seems to have also fulfilled a need-filling motive for a new innovation within OIr. This suggests that there was more than just an urban dimension to Scandinavian settlement in Ireland. It implies that Gaelic-speakers would have to have been in close contact with ON-speakers in a farming environment to have learned the word and the technique.

I would argue that Scandinavian settlers, on coming into contact with Gaelic-speakers, found an agricultural system superficially similar to their own, in that it was based on cattle. However, this system was one highly geared towards dairying, with specific subsidiary farming units, such as *ærgi*, given over to producing dairy products. The most likely reason for the adoption of *ærgi* by Scandinavian settlers is the connection with intensive dairying found in either Ireland or the Gaelic Dál Riata. It is therefore likely that the site and situation of *ærgi*-names may have characteristics which make them more favourable to dairy cattle.

## 6.7 Topographical survey

To test whether *ærgi*-names share common locational factors, or whether regional factors may affect the choice of location, I undertook a site and situation study.

**Altitude**

Overall, *ærgi*-names are low-lying with 74% below 100m asl (Figure 6.16); in Zones 1 and 2, *ærgi*-names show an even more marked preference for lowland locations, with 94% located below 100m in Zone 1 and 92% in Zone 2. Soarary (NG239404) on Skye lies at 200 m asl and is the only site over 100m asl n Zone 1. The specific element is likely to be ON *sauðr* m. (‘sheep’) (MacBain 1922, 173, Forbes 1923, 77) and may point to a link with the Icelandic tradition of using specific milking shielings (*sel*) for sheep. This may be a result of a lack of quality grazing for cattle locally, leading to a reliance on sheep milk.

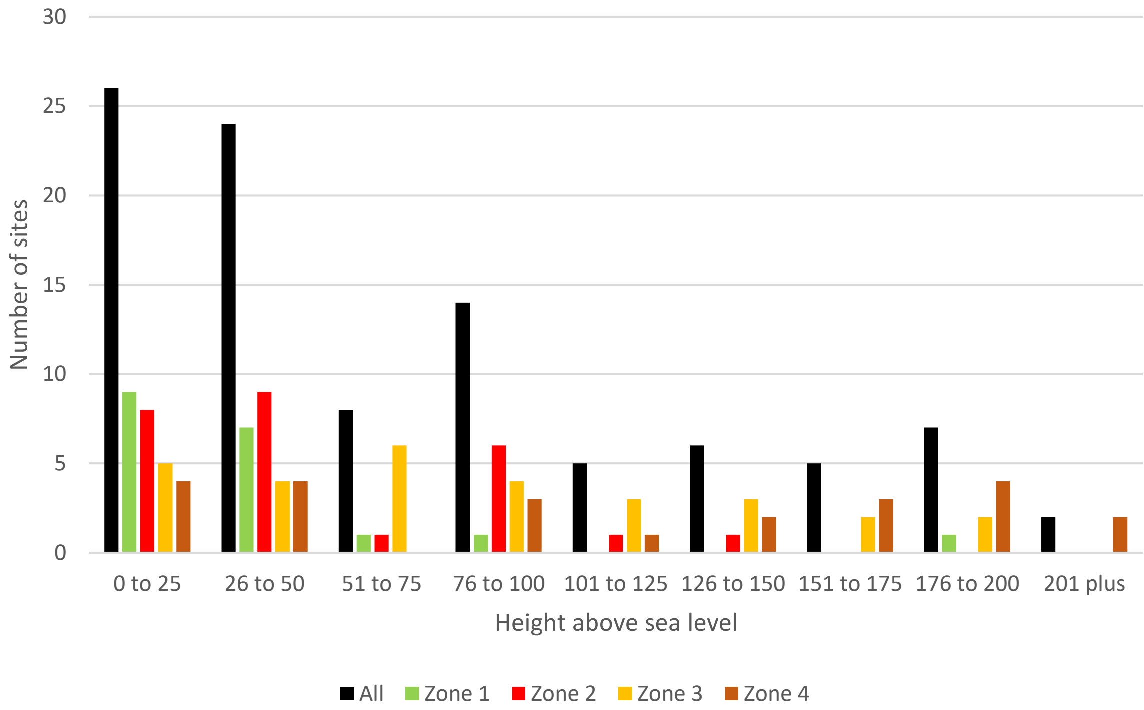



Figure 6.16 Height above sea level of *ærgi*-names in Scotland and the Faroes.

Only 65% of sites are below 100m asl in Zone 3 and this falls to 39% in Zone 4, where only 61% are below 150m asl. The only two sites above 300m asl are found on the Faroese Islands; Ærgisbotnur on Vágar (GMS -7°10'57.83", 62°6'6.35"), lies at 360m asl and Ærgisáir on Streymoy (GMS -7°8'44.02", 62°10'34.55"), is found around 348m asl. Ditlev Mahler found the mean height of the 7 *ærgi*-names he surveyed to be around 70m asl, but this included the results from four suggested *ærgi* sites (Mahler 1993, 495). The identification of these four sites as *ærgi*-names (Kvínadalur, Í Hópinum, Borðoyavik 1, Borðoyavik 2) rests on their similarity of archaeological remains to known *ærgi*-names (Mahler 1993, 496-501). Though on probability these four sites are *ærgi*-names, I have not included them in my survey as they do not retain the generic element. When these four sites in Mahler's survey are removed, the mean rises to 140m asl and the median to 135m asl.

| | Mean (m) | Median (m) | Mode (m) |
|---|---|---|---|
| **All** | 77 | 54 | 0-10 |
| **Zone 1** | 40 | 30 | 41-50 |
| **Zone 2** | 52 | 35 | Bi-modal (31-40 and 91-100) |
| **Zone 3** | 86 | 85 | Multi modal |
| **Zone 4** | 119 | 104 | 181-190 |

Table 6.3 Comparison of Mode, Median and Mean heights of *ærgi*-names.

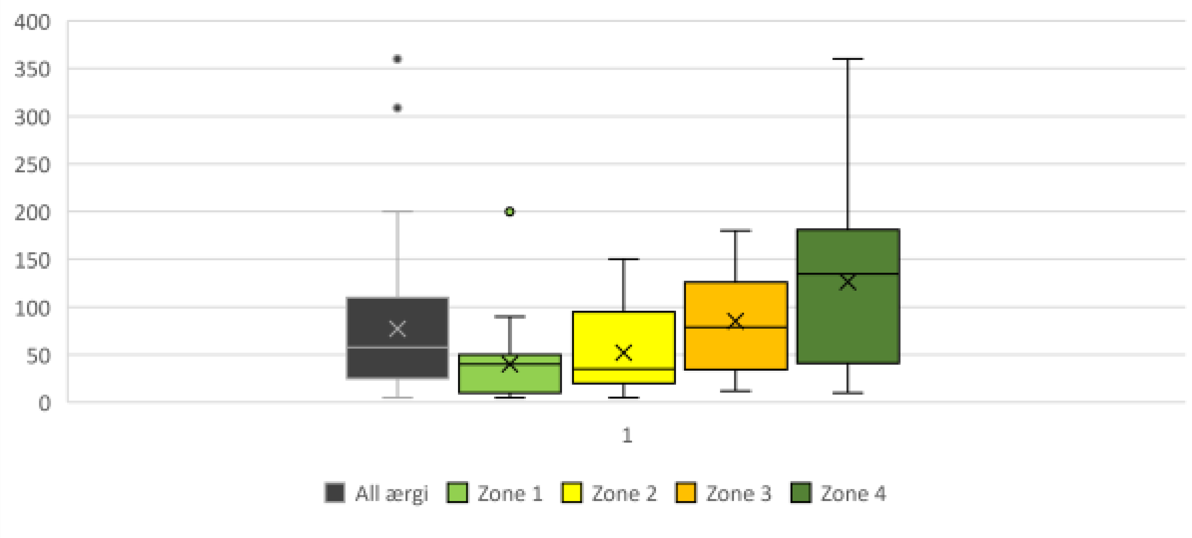



Figure 6.17 Interquartile range of *ærgi*-names in Scotland.

The mean altitude for all *ærgi*-names is around 77m asl. There is a very close correlation between the results for mean, median and mode in Zones 1 and 2, which points to the use of similar locations for *ærgi*-names despite a difference in the topography between the Western Isles, Inner Hebrides and west coast of the mainland. Zone 2, unlike Zone 1, has a potentially wider range of sites at different altitudes to be exploited, but *ærgi*-names are consistently located below 150m asl.

| | All | Zone 1 | Zone 2 | Zone 3 | Zone 4 |
|---|---|---|---|---|---|
| Below 100m | 74% | 94% | 92% | 65% | 39% |
| Below 150m | 86% | 94% | 100% | 87% | 61% |

Table 6.4 Height above sea level of *ærgi*-names (%).

The mean and median height in Zone 3 increases to over 80m, which is almost twice that of Zones 1 and 2. Zones 3 is also multi modal, which may be a consequence of the more varied topography in these two zones, or it may be a result of local environmental conditions or limitations forcing the use of different landscape criteria when coining *ærgi*-names. The altitude of sites in Zone 4 is very different to the other zones, the median and mode are much higher, between one and a half and two times the average for those found in Scotland, though there is a difference between Shetland and the Faroes. In Shetland, however, the limited number of sites are very low-lying, with a mean altitude of 20m asl.


Figure 6.18 Grimsary, Coll (NM1756), 33m asl (author's photograph).

**Aspect**

A southerly aspect predominates for *ærgi*-names (58%), which is unsurprising in the Northern Hemisphere (Table 6.5). There is a preference for a southern aspect, but the distribution between north-east through south to west is fairly even, which may suggest aspect was not a specific location factor. The variation in aspects led me to test whether the aspect of *ærgi*-names was random, so I conducted a *Chi squared test ($X^2$).* I put forward the null hypothesis that "The orientation of *ærgi*-names is random."

| | North | North east | East | South east | South | South west | West | North west | Total |
|---|---|---|---|---|---|---|---|---|---|
| **All** | 4 (4%) | 14 (15%) | 12 (13%) | 18 (19%) | 15 (16%) | 11 (11%) | 15 (16%) | 6 (6%) | 95 |
| **Zone 1** | 1 (5.5%) | 1 (5.5%) | 1 (5.5%) | 5 (28%) | 4 (22%) | 3 (17%) | 2 (11%) | 1 (5.5%) | 18 |
| **Zone 2** | 0 | 3 (13%) | 0 | 3 (13%) | 7 (28%) | 4 (14%) | 7 (28%) | 1 (4%) | 25 |
| **Zone 3** | 0 | 4 (8%) | 6 (20%) | 8 (28%) | 4 (12%) | 2 (8%) | 3 (12%) | 2 (12%) | 29 |
| **Zone 4** | 3 (14%) | 6 (26%) | 5 (22%) | 2 (8%) | 0 | 2 (8%) | 3 (14%) | 2 (8%) | 23 |

Table 6.5 The aspect of *ærgi*-names.

Chi squared equaled 13.379 with 7 degrees of freedom and the two-tailed P value equals 0.0634. By conventional criteria, this difference is considered to be not quite statistically significant. Using the results in Table 6.5, a radial diagram was completed to illustrate the lack of preferred orientation. A chi squared test was not attempted for individual zones, as they had an expected value of less than five; however, a radial diagram has been included to compare the orientation in the different regions.

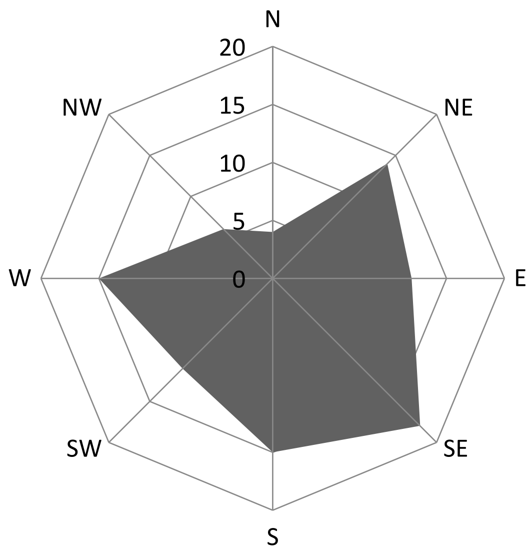



Figure 6.19 Radar chart of the aspect of all *ærgi*-names.

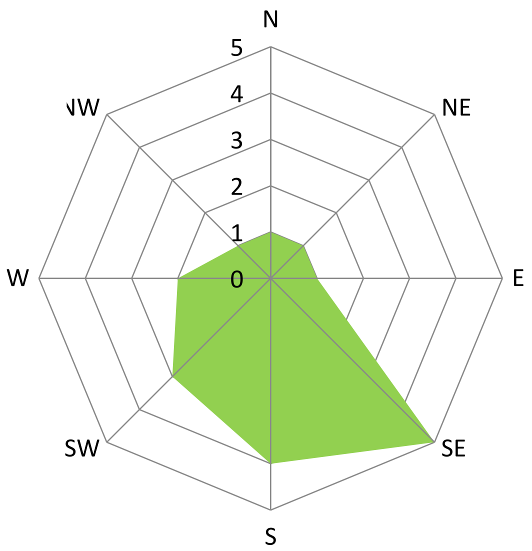



Figure 6.20 Radar chart of the aspect of *ærgi*-names in Zone 1.

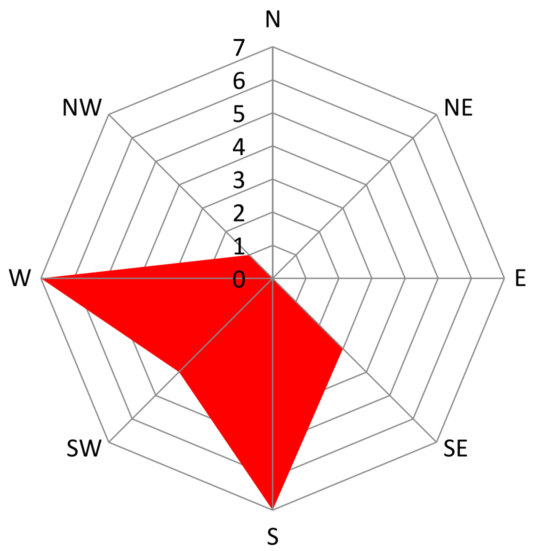



Figure 6.21 Radar chart of the aspect of *ærgi*-names in Zone 2.

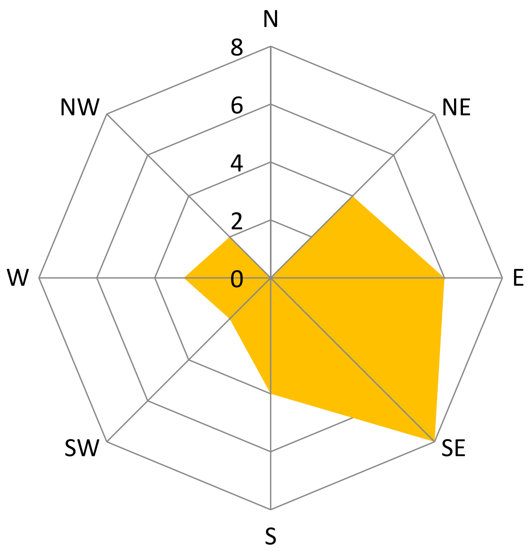



Figure 6.22 Radar chart of the aspect of *ærgi*-names in Zone 3.

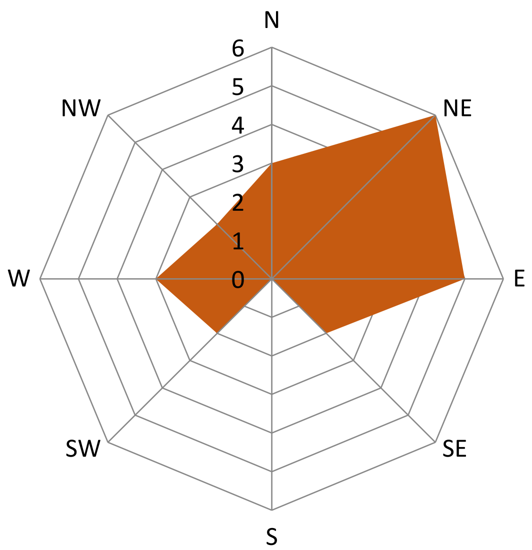



Figure 6.23 Radar chart of the aspect of *ærgi*-names in Zone 4.

The regional radial diagrams, explains why there was no clear orientation in aspect as each zone had a preferred aspect. In Zone 1, 67% of *ærgi*-names exhibit a south to south-easterly aspect, but this aspect accounts for only 16% of sites in Zone 4.

Zone 2 has the highest preference for a westerly aspect (46%), whereas 56% of *ærgi*-names in Zone 3 and Zone 4 have an easterly aspect, south-easterly in Zone 3 and north-easterly in Zone 4. A northerly aspect accounts for 48% of *ærgi*-names in Zone 4, but only 17% of *ærgi*-names in the other zones. This would suggest that the most favourable aspect is not just a case of 'southern is best', but is reliant on local environmental or topographical factors.

### Bedrock Geology

The geology of Scotland is varied both nationally, there are also specific areas which have a uniform geology, such as Western Isles (gneiss), Caithness and Orkney (sandstone). The Faroe Islands are almost exclusively composed of basalt. Overall the location of ærgi-names follows the predominant local geology, so *ærgi*-names are predominantly located on gneiss in the Western Isles, on sandstone in Caithness, and on Basalt in the Faroe Islands.  It is only Zone 2 that has a more varied geology, and this is reflected in the distribution of *ærgi*-names.

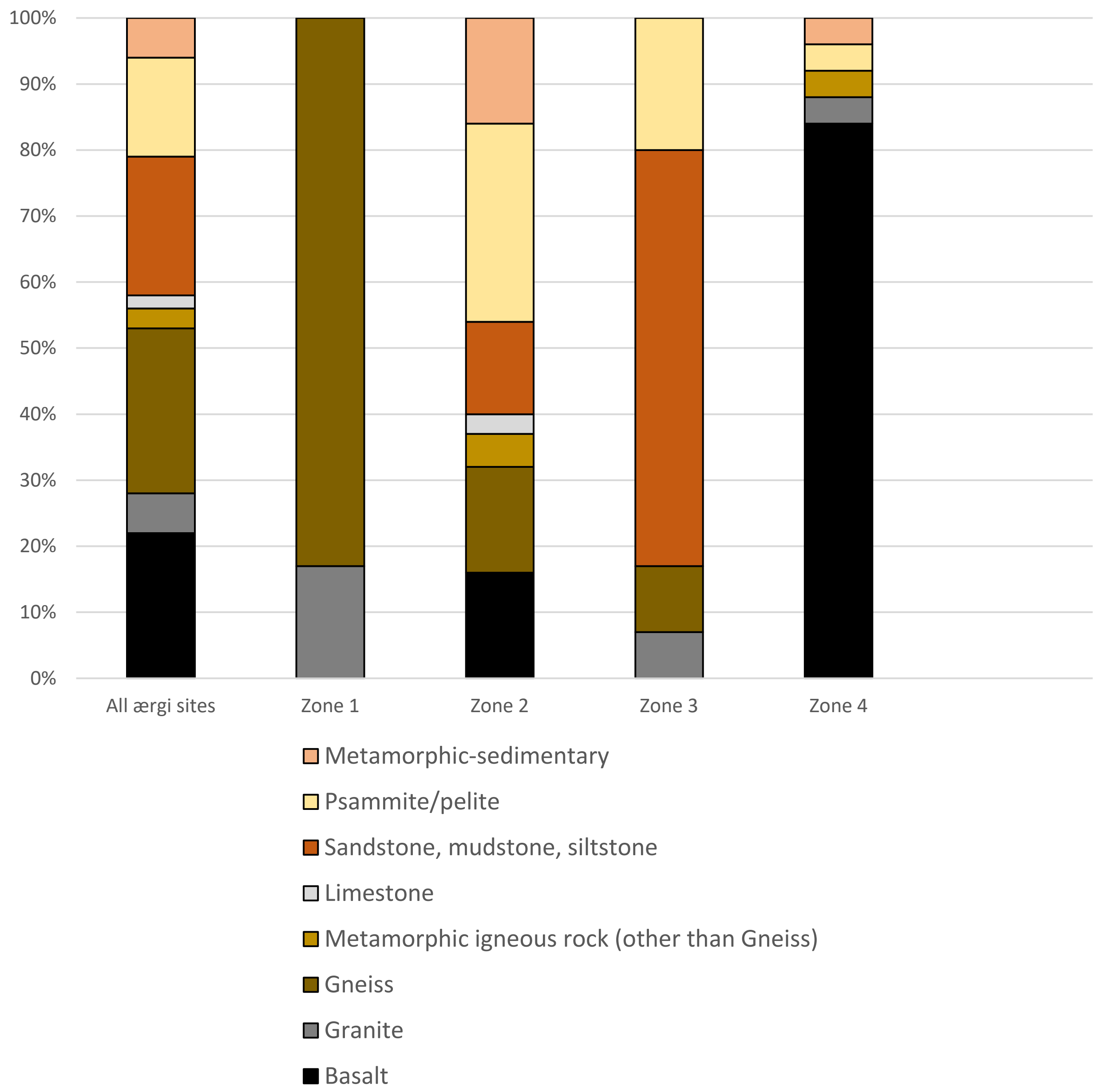



Figure 6.24 Comparison of bedrock geology of *ærgi*-names in Scotland and the Faroes.

Though geology alone may be able to explain the initial attraction of a site where the geology is more varied, in areas of more uniform geology it can tell us very little.

In areas with a more complex geology, such as parts of Zone 2, locally uncommon bedrock may create an environmentally favourable site for particular agricultural practices. To investigate both these suggestions, I will need to compare the geology with other factors and this will be attempted in the discussion section.

**Superficial Deposits**

Around 14% of the soils around *ærgi*-names were formed from alluvium, Zone 4 has the largest preference for alluvial soils (24%). However, the higher altitude, north-easterly aspect and cool wet climate of the Faroese *ærgi*-names would limit soil formation (Rutherford and Taylor 1981, 231). The basaltic rock combined with the aspect and climate may produce at best only relatively moderately fertile soils rather than prime agricultural land (see Chapter 6.2). Alluvial soils were often used for meadow land due to the tall herb communities that grow on them (Þorláksson, 2011, 213) and were important for grazing and fodder collection (Orri Vésteinsson 1998, 7-8).

Only 0.5% of *ærgi*-names were close to river terrace soils and raised marine deposits accounted for 3% of soils. River terrace soils were the preferred location for early settlements in England and Denmark due to their fertility and ease of cultivation (Hamerow 2002, 10), while raised marine deposits make up the bulk of arable land in Norway. This would suggest that the ability to grow cereal crops was not a primary motivation in the initial selection of *ærgi* sites.

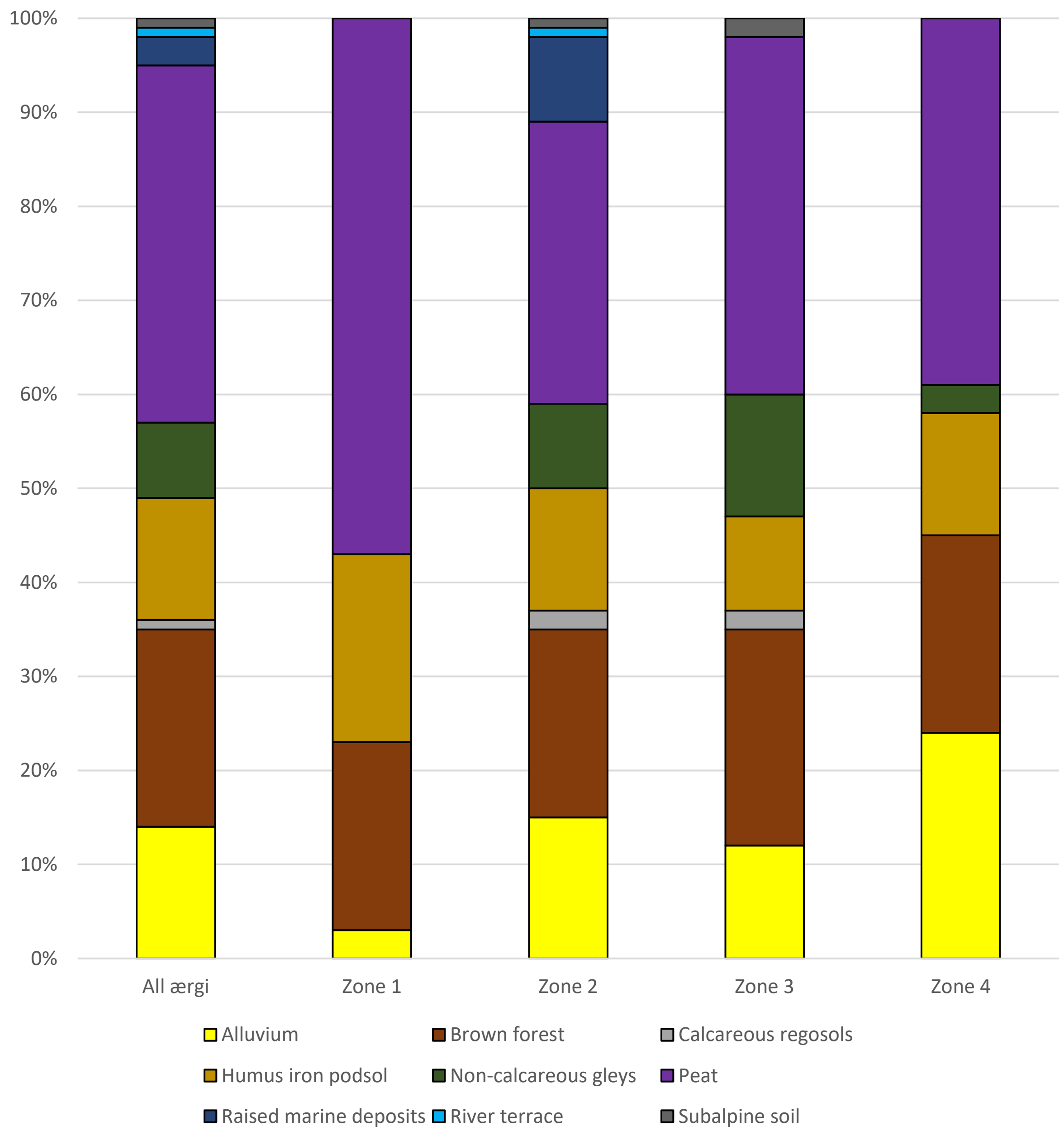



Figure 6.25 Comparison of Superficial Deposits of *ærgi*-names in Scotland and the Faroes.

One third of sites are found near or on peat and peaty gleyed soils, but in Zone 1 this rises to two thirds of the sites and the limited topographic and geological variation in South Uist may have limited the number of soils formed. This suggests that environmental factors limited the range of potential sites for the use of *ærgi* as a place-name in Zone 1, and this may point to specific locational factors behind the use of the place-name elements in this region (see Chapter 6.1).

The soils around *ærgi*-names in Zone 1, would appear less fertile than other zones, only one is located near to alluvial soil and none are found on the calcareous machair soils. The first point may be explained by the limited rainfall (Chapter 6.1) and the limited area of the islands restricting the development of large rivers and alluvial plains, but the lack of sites on the machair is important, as cereal cultivation in South Uist in the pre-Viking and VA periods was concentrated on machair areas (Parker Pearson, 2012, 12). The absence of *ærgi*-names from what was prime agricultural land gives further credence to the idea of the secondary, or subsidiary, nature of the generic. However, their location on the edge of machair areas in both North and South Uist, is where the calcareous machair soil becomes mixed with humus soils to form the moderately fertile soils later known as the blacklands (Parker Pearson 2017, 14; see Chapter 6.1). This may suggest that relative fertility may have been a factor in site location and these sites represent moderately fertile areas rather than poor quality land.

| | All *ærgi* (%) | Zone 1 (%) | | Zone 2 (%) | Zone 3 (%) | Zone 4 (%) |
|---|---|---|---|---|---|---|
| **Alluvium** | 14 | 3 | | 15 | 12 | 24 |
| **Brown forest** | 21 | 20 | | 20 | 23 | 21 |
| **Calcareous regosols** | 1 | 0 | | 2 | 2 | 0 |
| **Humus-iron podsols** | 13 | 20 | | 13 | 10 | 13 |
| **Noncalcareous gleys** | 8 | 0 | | 9 | 13 | 3 |
| **Peat and peaty gleys** | 38 | 57 | | 30 | 38 | 39 |
| **Raised marine deposits** | 3 | 0 | | 9 | 0 | 0 |
| **River terrace** | 1 | 0 | | 1 | 0 | 0 |
| **Subalpine soil** | 1 | 0 | | 1 | 2 | 0 |

Table 6.6 Soil types found in the vicinity of *ærgi*-names.

The soils around *ærgi*-names in Zone 1, would appear less fertile than other zones, only one is located near to alluvial soil and none are found on the calcareous machair soils. The first point may be explained by the limited rainfall (Chapter 6.1) and the limited area of the islands restricting the development of large rivers and alluvial plains, but the lack of sites on the machair is important, as cereal cultivation in South Uist in the pre-Viking and VA periods was concentrated on machair areas (Parker Pearson, 2012, 12). The absence of *ærgi*-names from what was prime agricultural land gives further credence to the idea of the secondary, or subsidiary, nature of the generic. However, their location on the edge of machair areas in both North and South Uist, is where the calcareous machair soil becomes mixed with humus soils to form the moderately fertile soils later known as the blacklands (Parker Pearson 2017, 14; see Chapter 6.1). This may suggest that relative fertility may have been a factor in site location and these sites represent moderately fertile areas rather than poor quality land.

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Overall, 55% of all sites are found on or near moderate to good quality soil according to the Macaulay Institute (alluvium 14%, brown forest soils 21%, humus-iron podsols 13%, and noncalcareous gleys 8%). These soils are capable of providing rich pasture land and some, at least, are capable of being converted to arable land.

**Present Day Vegetation**

Present day vegetation around *ærgi*-names is obviously linked to the environmental and topographical factors. There is a clear link between present day arable land and soil type, with, on average, 15% of *ærgi*-names located near present day arable land. much of this arable land is based on alluvial soils, which were used as meadow land prior to modern drainage. This may well be related to the more uniform topography, climate and geology in the Faroe Islands that limit the potential sites for *ærgi*-names.

Overall, grazing land accounts for 59% of present day vegetation around *ærgi*-names. There is a preference for neutral or mesotrophic grassland (25%), followed by communities from damper soils, such as sedge mire and rush pasture (19%), and moorland and bog represent 26% of vegetation. In Zone 1 there is a clear 14/14% split between mesotrophic grassland and sedge and rush grazing. Zone 1 has the highest percentage of poorer grazing land, with 59% being rough grazing, moorland and bog. This may be a result of the limitations on grazing imposed by geology, altitude, total area and climate in the Western Isles forcing the use of less favourable locations for shielings. It is interesting that Zone 1 has less than 1% of *ærgi*-names located on calcareous grassland (machair), the Western Isles has the largest area of machair in Scotland, and, as has already been stated, contained the prime settlement areas (Parker Pearson, 2012, 12).

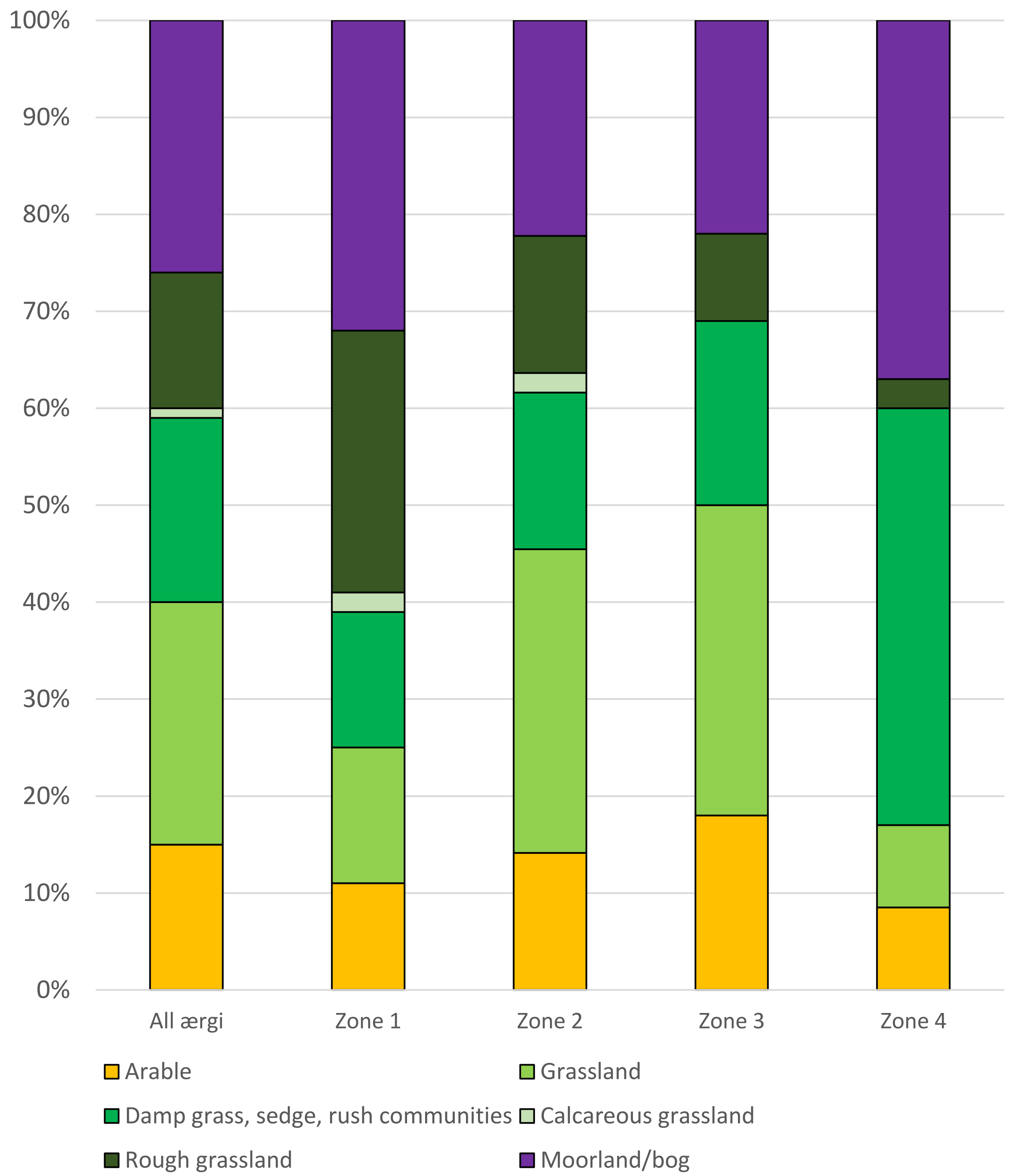


Figure 6.26 Present day vegetation in the vicinity of *ærgi*-names.

Zone 2 and Zone 3 are very similar in the types of vegetation, especially in the preference for mesotrophic grassland. Whereas, rough grazing accounts for 27% in

Zone 1, it is only between 3-9% in Zones 3 and 4, and sites in Zone 4 are situated close to areas plant communities of damper conditions.

| | All *ærgi* | Zone 1 | Zone 2 | Zone 3 | Zone 4 |
|---|---|---|---|---|---|
| **Arable** | 15 | 11 | 14 | 18 | 8.5 |
| **Mesotrophic Grassland** | 25 | 14 | 31 | 32 | 8.5 |
| **Damp grass, sedge, rush communities** | 19 | 14 | 16 | 19 | 43 |
| **Calcareous grassland** | 1 | 2 | 2 | 0 | 0 |
| **Rough grassland** | 14 | 27 | 14 | 9 | 3 |
| **Moorland/bog** | 26 | 32 | 22 | 22 | 37 |

Table 6.7 Present day vegetation in the vicinity of *ærgi*-names (%).

Areas of moorland and bog, which represent the least attractive grazing for cattle (Gordon 1989, 73, M.D. Fraser et al., 2009b, 190), still account for the second highest type of vegetation cover found at *ærgi* sites (22%); this rises to 37% in Zone 4 (32%). There is a clear difference in site location in relation to moorland and bog vegetation between Scottish *ærgi*-names and those found in the Faroe Islands (see Chapter 6.2).

The variety of vegetation communities found in the vicinity of ærgi-names would suggest that Zone 2 and 3 share similar locational factors in relation to soil type. Zone 1 and 4 are more distinct in choice of location in this regard and will be dealt with in more detail in Chapter 6.

### Distance from the sea

The majority of *ærgi*-names are found within 6km of the coast, although the distance increases to 7km in Zone 3. However, there are distinct differences even within some zones; *ærgi* sites in Orkney (Zone 3), unsurprisingly for an island archipelago, are found far closer to the sea (mean distance of 1020m, median 853m) than those in Caithness which are located on average 6951m inland (median 5150m), and in Sutherland this increases to an average distance of 10186m, but with a median distance of 4110m.

| | **All *ærgi*-names** | **Zone 1** | **Zone 2** | **Zone 3** | **Zone 4** |
|---|---|---|---|---|---|
| Mean | 2113m | 1494m | 2842m | 7157m | 738m |
| Median | 1220m | 1217m | 1410m | 4655m | 459m |

Table 6.8 Distance from the sea of *ærgi*-names (m).

An average distance of less than 6000m from the coast is heavily influenced by the number of *ærgi* sites on islands, but even in Caithness and Sutherland, 61% are less than 8000m from the coast. Ditlev Mahler found *ærgi*-names in the Faroe Islands to be between 4-5km from the supposed primary settlement (1993, 495). If primary settlements are found on the richer more fertile coastal plains, in the Western Isles and Caithness for instance, then even a distance of 8km is not particularly far for transhumance.

**General locational factors**

| | All *ærgi* | Zone 1 | Zone 2 | Zone 3 | Zone 4 |
|---|---|---|---|---|---|
| **Lower course river Valley** | 1 (2%) | 0 (0%) | 0 (0%) | 1 (7%) | 0 (0%) |
| **Middle course river valley** | 18 (30%) | 1 (12%) | 10 (53%) | 3 (20%) | 4 (34%) |
| **Upper course river valley** | 40 (68%) | 7 (88%) | 9 (47%) | 11 (73%) | 13 (76%) |

Table 6.9 Characteristics of rivers associated with *ærgi*-names.

Overall, sites along the upper course of rivers are preferred and account for 68% of sites located on water courses, less than 2% are found along the lower course of rivers. Only in Zone 2 are there more sites along the middle course of rivers than the upper course (Table 6.9). The overwhelming preference for upper course sites suggests the exploitation of secondary sites away from prime habitation.

**General locational factors**

There is a marked preference for gently sloping or flat areas (average 85%), and only 7% of sites are found on steep slopes (fig. 21). Zone 4 has the highest number of sites on steep slopes, as it has been suggested that the distinct topography of the Faroe Islands limited good quality sites (Arge 2005, 24; see Chapter 6.2).

| | All *ærgi* | Zone 1 | Zone 2 | Zone 3 | Zone 4 |
|---|---|---|---|---|---|
| **Gently sloping to flat** | 85 | 81 | 92 | 82 | 85 |
| **Moderately sloping** | 8 | 14 | 0 | 14 | 0 |
| **Steep sloping** | 7 | 5 | 8 | 4 | 15 |

Table 6.10 The general relief of *ærgi*-names.

Cattle are far more tolerant of sloping land than is generally thought and some will choose to graze on relatively steep slopes at certain times of year (Steyaert et al., 2001, 395). However, cattle have been shown to prefer slopes of less than 10% (Gillen et al., 1984, 551). The angle of slope affects soil depth, nutrient leaching and moisture content of the soil, which in turn effects vegetation type and, as a consequence, grazing (Gorham 1953). The overwhelming preference for gently sloping land would seem to suggest that it was not the case that any old pasture was provided for cattle, but again, that the use of *ærgi* as a place-name reflects sites that are locally favourable.

| | All *ærgi* names | Zone 1 | Zone 2 | Zone 3 | Zone 4 |
|---|---|---|---|---|---|
| Flood plain or meadow | 46 (20%) | 8 (18%) | 17 (26%) | 10 (19%) | 3 (6%) |
| Stream disgorges from uplands | 29 (13%) | 6 (14%) | 12 (18%) | 1 (2%) | 12 (26%) |
| Loch | 27 (12%) | 7 (16%) | 6 (9%) | 12 (23%) | 7 (15%) |
| Marsh | 12 (5%) | 7 (16%) | 5 (8%) | 6 (12%) | 3 (7%) |
| Hill top/plateau | 15 (7%) | 0 | 2 (3%) | 7 (14%) | 3 (7%) |
| Mid-slope | 10 (4%) | 1 (2%) | 4 (6%) | 5 (10%) | 2 (2%) |
| Base of slope/change of slope | 44 (19%) | 9 (21%) | 16 (24%) | 6 (12%) | 17 (37%) |
| Raised area in flat | 6 (3%) | 1 (2%) | 2 (3%) | 1 (2%) | 0 |
| Peninsula (sea) | 10 (5%) | 5 (11%) | 2 (5%) | 3 (6%) | 0 |

Table 6.11 General location factors of *ærgi*-names.

Only 4% of sites are found mid-slope (Table 6.11), but 19% are at the base of a slope or change of slope. Not only would a site at the base of slopes have deeper soils through slope wash (Gorham 1953), but a constant supply of water draining from the uplands keeping the soil less prone to water stress in drier periods. Grass would, as a result, have a longer growing period than if on a slope. Gilbert et al. observed cows and calves grazing more at the bottom of slopes than either mid-slope or the top of slopes (2011, 67).

The base of a slope or where there is a change of slope angle are the most favoured locations for *ærgi*-names in Zones 1 and 4. A fifth of *ærgi*-names are situated on flood plains or water meadows, sites that are seasonally water-logged, but as seen in Table 6.9, the majority of these sites are in relatively small middle and upper course river valleys. these locations, however, create locally fertile soils due to the accumulation of sediment and nutrients. Interestingly, only 12% of sites in Zone 3 are found at the base of a slope or change of slope, and this may be due to the porous sandstone bedrock reducing the throughflow of water through the soil.

Many of these locally fertile sites also have relatively high soil moisture levels. Flood plains with riparian meadows, wet flushes, marshland and loch sides have the conditions that promote the growth of tall fen communities and *Carex*-grassland. These sites see the first flush of growth in spring and the damp soil helps promote grass growth over a longer period. Sites on a slope, in contrast, may suffer water stress due to the decrease in precipitation during the summer, reducing grass growth and thus limiting the grazing potential of that site. Overall, 53% of sites are found close to locations with higher soil moisture levels.

Caithness and Orkney in Zone 3 have a low-lying topography and a predominantly sandstone geology, soil moisture can percolate down and there is increased possibility of water stress for plants during dry periods. Zone 3 has the highest percentage of sites close to lakes and marshland (35%), which would provide pasture during dry summer months. North and South Uist (Zone 1), have low levels of total rainfall and likewise show a preference for these types of sites.

## Summary of locational factors

The general altitude of *ærgi*-names is low-lying, with 74% below 100m asl and 86% below 150m asl, and the locations are flat or gently sloping (85%). There is a south to south-easterly aspect for *ærgi*-names, although each zone has a distinct local preference. There are some similarities between Zones 1 and 3, which both share a south-easterly aspect, and Zones 2 has a westerly one.

| | **Zone 1** | **Zone 2** | **Zone 3** | **Zone 4** |
|---|---|---|---|---|
| **Aspect** | South or south-easterly | South or west | South-east | North-east<br>East |
| **Altitude**<br>**Below 100m**<br>**Below 150m** | 94%<br>94% | 92%<br>100% | 65%<br>87% | 39%<br>61% |
| **Soil quality** | 3% fertile<br>40% moderately fertile | 25% fertile<br>35% moderately fertile | 12% fertile<br>46% moderately fertile | 61% moderately fertile |
| **Vegetation type** | 4% on vegetation that has good (17%) to moderate (44%) agricultural potential. | 62% on vegetation that has good (17%) to moderate (45%) agricultural potential. | 59% on vegetation that has good (13%) to moderate (46%) agricultural potential. | 62% on vegetation that has good (8.5%) to moderate (51.5%) agricultural potential. |
| **Key locational factors** | 5. Flat or gentle slope (81%)<br>6. Meadow (24%)<br>7. Base/change of slope (17%)<br>8. Loch (17%)<br>9. Stream disgorging (13%) | 1. Flat or gentle slope (92%)<br>2. Base/change of slope (21%)<br>3. Flood plain/meadow (21%)<br>4. Stream disgorges (20%) | 1. Flat or gentle slope (82%)<br>2. Near a loch (23%)<br>3. Meadow (19%)<br>4. Hill top (14%) | 1. Flat or gentle slope (85%)<br>2. Base/change of slope (36%)<br>3. Stream disgorging (26%)<br>4. Near a lake (15%) |

Table 6.12 General location factors of *ærgi*-names in each zone.

There is a general preference for moderate to good quality soil (61%); while 39% of soils around *ærgi*-names are poor peaty or subalpine soils. Generally, *ærgi*-

names are likely to be situated on moderate soils such as brown forest soils (21%), humus iron podsols (13%) and the less fertile noncalcareous gleys (8%).

The link between soils and vegetation highlighted by the fact today few *ærgi*-names are situated near land that is now used for cereal growing (15%), though 26% are found close to heather moorland and bog, which links with the 34% of soils being of limited potential. Over 44% of sites are near a mix of mesotrophic grassland and mire communities; there is an equal mix of the two grazing lands in Zone 1, Zone 2 and 3 share a preference for mesotrophic grassland, while in Zones 4 there is a preference for the mire communities. This suggests that the land was not chosen for its arable potential, but the quality of the grazing was crucial, and a range of grazing would allow for animals to be kept at the location for a longer period or for fodder to be collected. The conditions within each zone dictated which site offered the best potential grazing.

The variation in locational factors would seem to suggest that when coining *ærgi*-names locations that provided the best local pasture were chosen, and in each zone, this was linked to the environmental conditions. I will investigate these in the relevant case studies.

## 6.8 Discussion

The adoption of *ærg*i by ON-speakers is likely a have been a lexical loan (Grant 2003, 166) and when it was adopted it either had the same general function as a *setr*, but once adopted it led to a specialisation of use of *setr* and *ærg*i (Weinrich 1968, 54-56); or second, the term related to a different or new concept encountered by Scandinavian settlers and its adoption fulfilled a need-filling motive (Antilla 1989, 155). Either scenario would most probably lead to different environmental factors influencing the siting of each element in the landscape, as the function for each was different. The most likely reason for the adoption of *ærgi* by Scandinavian settlers is the connection with intensive dairying found in Ireland, or possibly in the Hebrides.

The site characteristics of *ærgi*-names are low-lying with the mean height asl of 85m, median 79m and mode of less than 10m. The fact that 97% of *ærgi*-names are also found on gently sloping land, while only 6% are found on steep slopes, also points to the favourable location of *ærg*i-names. The ScG definition of *àirigh* as hill pasture, given by Dwelly and MacBain, can be discounted for *ærgi*-names as they are rarely found on hills, though they are located on level ground among hills, and this points to exploitation of favourable locations within upland zones.

The effect of altitude on the composition of milk and dairy products has been shown in various studies (Bovolenta et al., 1998; Bugaud et al., 2001a; Bugaud et al., 2002; Coulon, Hauwuy, and Dupont 2001b). Bugaud et al. found milk yield was lower in mountainous environments (2001b, 411), and milk from highlands also contains a higher content of unsaturated fatty acids compared to lowland milk (Collomb et al., 2002). Bugaud et al. (2001b, 412) found cattle grazing mountain pastures increased the proportion of long chain unsaturated fatty acids, making the milk less nutritious. Bugaud et al*.,* suggested that this is a result of either cooler temperatures or the mosaic of plant communities found at higher altitude forcing cattle to walk further to access their favoured vegetation. Hessle et al. noted that traditional Swedish mountain cows in central Sweden, walked on average 25% longer distances than modern Holstein cows on similar pasture (2014, 338; Bele et al., 2015, 4 reported similar findings in Norwegian mountain pastures). VA Cattle are more likely to have been closer to traditional multi-purpose mountain cattle than modern dairy breeds and so keeping cows for milking at low level and close to the home farm would have improved milk quality.

Being situated at lower altitude makes it probable that these sites were close to the main farm, similar to Fellows-Jensen's *heimseter* (Fellows-Jensen 1985a, 74-75). Ditlev Mahler noted that Faroese *ærgi* tend to be on average 3km from the supposed main farm (1993, 495). If dairy cattle are being herded long distances and especially if uphill, it would put additional strain on the animals, which may affect milk yield. Berry et al. found a large decline in live weight and milk yield of dairy cows transported to alpine pasture (2002, 451).

The majority of *ærgi*-names have some form of southern aspect, though the topography of the Faroes favours a north-easterly aspect (see Table 6.5). Locations with a southern aspect are warmer and less likely to suffer from frost conditions (Nadal-Romero et al., 2014, 1713) as they are likely to warm up quicker in spring and promote fresh grass growth earlier in spring (Anslow and Green 1967, 118; Peacock 1976, 229). Dairy cows have been found to selectively feed on nutrient rich vegetation containing a high protein content, such as *Carex* species (Hessle et al*.,* 2014, 341).

South-facing slopes, due to warmer temperatures, are at risk of low levels of soil moisture in summer (Sigua et al., 2011, 67; Hishi et al*.,* 2014, 344). This can lead to lower levels of phosphorus (Sigua et al., 2011, 65-66) and nitrogen during the growing season (Hishi et al*.,* 2014, 344). Vegetation with a high nitrogen content is selectively fed on by beef cattle (Berry et al*.,* 2002, 450-1) and a northern aspect would be more favourable to beef production than a southern aspect.

*Ærgi*-names under 50m predominantly have a southern or westerly aspect, between 50-100m the aspect is either southern or easterly, while above 100m it is easterly. When comparing aspect and altitude, the aspect would not seem to be affected by altitude (see Table 6.3). In Zone 2, the mountain chain running north to south down the west coast of Scotland, limits the length of sunlight from an easterly direction, making a south-westerly to westerly the preferred aspect, which is also the direction of the prevailing wind. The prevailing wind in Zone 1 comes from the southwest, however, the cyclonic nature of the predominant weather system can mean the wind can come from a variety of directions. Strong winds can be expected from any direction south-southeast to west-northwest and even north, but not from the northeast or east. The prevailing wind in Zone 3 and 4 is also south westerly, therefore three out of four of the zones prefer an aspect that is sheltered fro the direction of the prevailing wind and this may have been an important factor where land was open to the full power of the wind such as in Zones 1, 3 and 4.

Vegetation composition has been shown to affect milk (Bugaud et al*.,* 2001b, 412), and as altitudinal change affects vegetation composition (Nagy and Grabherr 2009, 6) this is a consideration for dairying. Not only are thermophilous species lost with altitude, but the shortened growing season is out of tolerance of many species (Nagy and Grabherr 2009; Larcher et al*.,* 2010). Nagy and Grabherr (2009) report a drop of 3 species for every 200 metres of elevation (1˚C drop in temperature), meaning there is less floristic diversity for selective grazing by cattle. *Ærgi* sites, being located on average below 100m asl, have a wide floristic base for their general location and grass growth will also begin early due to the temperature being milder than that of higher altitudes (Anslow and Green 1967, 118; Peacock 1976, 229). However, this is not the case in the Faroes (see Chapter 4.2.5), where the steep topography, limited soil development and restricted floristic diversity, means altitude does not have a major effect on the range of plants (Hansen and Johansen 1982, 37-38). *Ærgi*-names in the Faroes are located at higher altitude and in locations which are relatively fertile, within the context of the Faroes (see Chapter 4.2.5).

The altitude combined with the general location factors of *ærgi*-names: flood plains and meadowland (21%); marsh (9%); and near lochs (14%), would fulfil the dietary needs of dairy cows especially in relation to the preference for *Carex* species observed by Hessle et al. (2014, 341). On Rhum, Gordon found that in spring, cattle selected marsh, herb-rich heath and *Agrostis-Festuca* communities to feed on, changing in summer to concentrate just on the mesotrophic *Agrostis-Festuca* communities. The riparian communities found along the rivers, marshland and lochs would provide ideal grazing not only for cattle generally, but more specifically dairy cows.

The superficial deposits further emphasise the fertile nature of *ærgi*-names with around 50% of land surrounding *ærgi* sites being able to support rich grazing, and approximately a further 10% moderate grazing. Only in Zone 1 is the soil, on face value, likely to support mainly rough grazing, though this is less apparent when the local conditions are taken into account (see the Zone 1 case study). The present-day vegetation follows quite closely the soil characteristics with around 60% grazing land or arable in all but Zone 1. The amount of present-day arable land is similar to the amount of alluvial soil found at *ærgi*-names, though this is unlikely to have been used for arable during the VA, it would have created excellent meadow land for hay production (Vésteinsson 1998, 7-8; Þorláksson 2011, 213).

The secondary nature of sites is illustrated by the fact that only 68% of *ærgi*-names are situated on the upper courses of rivers. The general locational factors seem to suggest that quality of potential grazing land was a key factor in choice of location for *ærg*i-names, with 37% of the vegetation being some form of riparian or marsh vegetation. Interestingly Zone 3, which is mainly underlain by porous sandstone, has 54% of sites, and Zone 1, with low annual rainfall, has the highest results for proximity to these vegetation types.

Another 32% of *ærg*i-names are located at the base of a slope, where alluvial fans form and slope wash can lead to accumulation of soil and minerals. This will create deeper and richer soils that will improve the quality of grazing and be naturally fertilised throughout the year, and by continuous summer grazing cattle would also improve fertility from the addition of dung (Bele et al., 2015, 7).

To summarise, *ærgi*-names are 15% more likely to be found on soil types considered fertile than *setr*-names. They are more likely to be located along the middle courses of rivers and on small flood plains or river meadows than *setr*-names, especially in Zone 4, but are almost double the distance from the sea, 2km on average compared to 1km for *setr*-names. The general situation of *ærgi*-names would seem to be areas that are moderately fertile compared to the surrounding environment and in general in locations that are more favourable than *setr*-names.

## 6.9 Conclusion

The dominance of ON within areas of Scandinavian settlement means it is likely that *ærgi* entered ON through the adoption of a loanword (Grant 2003, 177). Peder Gammeltoft concluded that the Gaelic influence on ON consisted mainly of lexical loans and that this is evidence of a less intensive character of contact (Gammeltoft 2004, 67). The most likely scenario, in my view, is that *àirigh/àirge* was a new concept encountered by Scandinavian settlers in the Inner Hebrides, or more likely Ireland, and entered ON in a 'need-filling' capacity.

The modern definitions given for ScG *àirigh* and OIr *áirge* as hill pasture or shieling are unlikely to reflect the meaning of the terms at the start of the VA. The ScG *àirigh* is more likely to be the result of adaption of the term to encompass later agricultural practices in Scotland during the rise of the black cattle trade. The general rarity of the term in Ireland would point to the term falling out of use at an early date, and this may suggest that it was associated only with high status farms and therefore did not have a widespread distribution. My preferred definition is that it refers to an intensive dairy which is more likely to have been found as part of a larger multi-ville estates. Small farming units may not have had the number of dairy cattle to need a specific shieling for dairying and may have been similar to early modern boolying.

The importance of dairying to OIr society is found in Irish law codes, bone assemblages and agricultural terms. The comparison between bones from

Kaupang and VA Fishamble Street in Dublin really highlights a difference in the farming economy between Norway and Ireland. I have argued that the adoption of *ærg*i fulfilled a need-filling motive, as incoming Scandinavians, on encountering an intensive dairy economy in Ireland or the Hebrides which they were not familiar with, needed a new nomination.

The site and situation of *ærgi*-names would also seem to corroborate their identification with dairy operations. The low-lying nature, vegetation and general location factors would be favourable to dairy cows and this seems to back up the link between ON *ærgi* and the definition of the OIr, *áirge* as a dairy. Regional difference in location can be explained as the result of choosing more favourable sites in different environments, rather than a difference in function.

The Gaelic farming system was based around dairy and not beef production, whereas *setr*-names in Norway were multi-purpose farming units with pasture for extensive grazing, with *setr* being used for iron-working, hunting and craftwork (see Chapter 3). Rather than referring to a generic summer grazing, *ærgi*-names were most likely intensive dairy units. Milk cattle were separated from dry and beef cattle in early summer, enjoying better quality grazing in the lowlands on pockets of good quality grazing inland (Bil 1990, 160), allowing higher and better-quality milk yields (M.D. Fraser et al., 2009b, 368). The dry and beef cattle were driven to rough grazing further away where they could prosper (Berry et al., 2002, 448) as there was not the need for extra nutrients to produce milk (Hofsetter et al., 2011, 717). As milk production dropped through the summer months the milk herd was then driven to less rich grazing to allow the grassland to recover.

Once adopted, sometime in the 9th century, it was transferred to new settlement areas during later migrations, such as the Faroe Islands and Cumbria, but it was only an active place-name element for a limited time. On the basis of the absence of *ærgi* in the *Seyðabrævið* (AD 1298) (Arge 2005, 32, Mahler 2007, 475), *ærgi* would seem to have fallen out of use sometime before 14th century (see Chapter 4.2). A climatic downturn in the North Atlantic has been suggested around the 13th century (Lamb 1965, 16-17; Ogilvie et al., 2000, 38), and this may have been in part responsible by forcing a change in the agricultural system. Once the lexical meaning was lost the names became mono-referential as seen by the fossilised topographical names found in the Faroe Islands.

# Chapter 7. Conclusion

The main aim of this thesis was to explain why Scandinavian settlers in Scotland in the VA adopted the Gaelic term, *àirigh*/*áirge* to describe shieling sites, when they already had the ON generic element *setr*. The problems of studying the VA, such as a lack of early documentary sources and the limited, and patchy, nature of archaeological material are amplified when studying secondary settlements. In comparison to farms, shielings are rarely excavated, nor do they appear in the limited early documentary record. This has meant the study of Scandinavian settlement in Scotland during the VA has often relied on fiscal documents from the High Medieval Period, or ethnographic accounts from as late as the 18th-19th century. Their usefulness rests on one of two pillars: the assumption that the later fiscal system had its roots in the VA, for which there is no evidence (Thomson 1993, 48; Gammeltoft 2001, 272; see also Chapter 2.4); or the status level of settlements staying the same. This is a logical assumption when it comes to primary settlements that are likely to be situated on the best land, and would therefore retain a high value, but is less so with secondary settlements, which may be more susceptible to economic change, though the status of either can change (Sauer 1941, 20; Thomson 1987, 47-48; 1993, 60; B. Crawford 2006, 29). Another problem with the statistical method is that fiscal records do not uniformly survive and those that do, are inconsistent in the way they assess land.

Similarly, comparing ethnographic accounts, relies on practices from several hundred years after the VA. Comparing Gaelic and Norwegian shieling practices from the early modern period, or using these relatively modern practices as a proxy for VA ones is unsound, without evidence to corroborate VA use (Odner 1972, 627; Bil 1989, 160; Dodgshon 1993a, 389, 396). Many of the studies of *ærgi*- and *setr*-names, and VA shielings in general, such as, Mary Higham (1977-78), Gillian Fellows-Jensen (1985b), Patrycja Kupriec (2016) put too much emphasis on later ethnographic accounts. For example, Dr Walker's survey in AD 1763 of the Hebrides, which post-dates the end of Scotland's VA by 500 years, states that hay was first mown on Skye only 30 years prior to his survey (1765 (1980), 208-9). Archaeological and paleobotanical investigations from VA Scandinavian sites in Norway and settlements abroad, strongly imply winter fodder was an integral part of the Norse farming system. References to hay and fodder are also explicitly mentioned in both Norwegian (Larson 1935) and Icelandic law codes (Dennis et al., 2006). This would suggest that a blanket acceptance of 17th century ethnographic accounts of shieling in Scotland, may be of limited use when studying VA shieling practices.

What is likely to have remained relatively unchanged since any Norse *landnám,* is the landscape around a settlement and at least traces of the resources it potentially could provide. However, the landscape needs to be seen in the context of how a Scandinavian settler would have perceived it (Guelke 1982b, 38). Though, we can never truly put ourselves in a settler's position, archaeological and paleobotanical studies allow us to gain some understanding of how these settlers utilised the land.

This information can be compared to the present-day locations of shielings to give some appreciation of the relative importance of locational factors.

The development of shielings in Norway was a product of environmental and social factors. Environmental constraints, imposed by glaciation on the landscape and climate on vegetation, limited the areas of fertile land and severely limited total area of arable land. Secondly, social obligations within all levels of Norse society emphasised the need to produce a surplus as part of a tributary society (Odner 1972, 642; Hedeager 1992, 89; Brink 1999, 424; Skre 1999, 415). The heterarchical nature of Norse society in the IA and VA and the competition this generated (Thurston 2001, 51; Bjørkan Bukkemoen 2016, 123; Grønnesby 2016, 144), may have been important factors in the drive to increase output of agricultural produce. This need to intensify production, especially of grain, led to the development of an infield/outfield system of agriculture. Primary settlements (farms) grew hay and cereal in the infield and shielings provided summer grazing and opportunities collect winter fodder. Stalling in winter, of at least some of the animals, had many potential benefits, possibly the most important being the efficient collection of manure and urine to fertilise the infield. Ditlev Mahler describes the farm and shieling, forming a complex whole within a decentralised farming economy (1993, 488). The importance of shieling can be seen in the distribution of *setr*-names in relatively fertile areas such as Levanger in Norway, and Orkney and Caithness in Scotland. This would suggest that the shieling system was important regardless of the general fertility of an area to intensively use the available arable land in a sustainable way.

In the same way that ethnographic accounts have affected the study of shielings in Scotland, the use of the 17th century dairy economy in Norway as a model for VA practices has also come under scrutiny (Mahler, 1998, 57; Bjørgo, 2005, 225; Sindbæk, 2011, 108). Bjørgo concluded that in Inner Sogn during the VA, dairying may not have been an important part of the shieling economy, which focussed more on accessing summer grazing and winter fodder collection. Bjørgo did not rule out some dairy activity, however, the preservation of evidence for ancillary activities, such as hunting, textile manufacture and iron smelting, is not suggestive of a time intensive dairy operation (Bjørgo, 2005, 225).

The initial raiding and settlement in Scotland during the VA, is likely to have been undertaken, if saga accounts are to be believed, under a similar social system as practiced in Norway, which was based around a prestige economy and tributary society. The introduction of buildings that were morphologically similar to contemporary Norwegian longhouses, that also shared similar artefactual assemblages would suggest the introduction of a Scandinavian economic model (Larsen and Stummann Hansen 2001, 115-17; Amorosi et al*.,* 1992, 169). The use of *setr* as a place-name element and settlements with internal or external byres, is strongly suggestive of the infield/outfield system that was practised in Norway. The density of *setr*-names in Shetland and Lewis, along with the almost complete replacement of any pre-Norse place-names in these locations, may also be indicative of a homogenously Norse settlement. The distribution of furnished insular graves in the Northern Isles and Hebrides (Harrison 2008, 291) may also be indicative of a more aggressively Scandinavian settlement within these limited areas.

The location of *setr*-names in Scotland, shares close similarities with coastal municipalities of Norway. Rather than this being an indication of the origin of settlers, it is most probably due to closer topographical similarities between Norwegian coastal municipalities and areas of Scandinavian settlement in Scotland. The general location of *setr*-names would also suggest that a similar infield/outfield system was practiced, which is itself suggestive of culturally predicted Norse choices by settlers. The selection of slightly more fertile locations in Scotland, may well be a result of the relative fertility of the land compared to Norway, or the dominance of Scandinavian settlers allowed them to choose these sites for secondary settlements.

The link between *setr*-names and early areas of settlement might suggest that the element fell out of fashion by the time the Inner Hebrides was settled. However, the use of *setr* as a place-name element in Scandinavian settlements in Cumbria, and possibly in Iceland and the Faroese, would suggest that it was still active as a place-name element until, at least, the early 10$^{th}$ century. The uneven distribution of ON habitative elements, including *setr*, may be a result of the uneven density of

Scandinavian settlement and early Gaelicisation of some areas, as suggested by Jennings and Kruse (2009b). Alternatively, Alan Small's suggestion concerning the period of Gaelic speech combined with agricultural change may have affected the surviving distribution pattern (1986, 209).

Doreen Waugh has suggested the complementary distribution of *setr*- and *ærgi*-names in Caithness may be evidence of a contact zone between ON and Gaelic (1993, 123). Alternatively, the distribution could be due to chronology, where *setr*-names were coined after an initial settlement along the coast of Caithness. The later campaigns of Sigurd *inn riki* ('the Mighty') and Thorstein the Red expanded Norse control inland into Sutherland. The presence of Thorstein may account for *ærgi*-names in Caithness and Sutherland. His connection through his father and grandfather to the Irish Sea region, provides a possible link with potential settlers from the Hebrides, coming as part of Thorstein's forces to Caithness and settling in these newly won area, bringing *ærgi* with them from Gaelic areas. However, this is purely conjecture and the distribution pattern of the two generics also mirrors the later extent of Scots and Gaelic speaking areas. Setr would more likely survived as a place-name in a Scots milieu, while *ærgi* would likewise survive in a Gaelic one.

The problem concerning the adoption of *ærgi*, has been that it was believed to have same appellative meaning as *setr*. Contact linguistic theory suggests that the adoption of a loanword, which has the same or similar meaning to a word in the adopting language, would lead to either one of the terms being abandoned or acquiring specialisation of usage (Weinreich 1968, 54-56). The other alternative is that *ærgi* had a different meaning to *setr* when adopted, a ‘concrete loanword’ according to Weinreich (1968, 53); fulfilling a ‘need-filling motive’ in ON. Though we have no real knowledge of the farming system used within Gaelic-speaking areas of Scotland before the VA. Irish agriculture at the time was one still closely connected with dairying. However, the only reference that has survived describing an operational *airge* in pre-VA Ireland is found in the *Bethu Brigte* (Chapter 12, accessed online *https://celt.ucc.ie/published/T201002/index.html), which states it was a dairy where butter was made, though a hagiography, which should be viewed with scepticism, it does suggest that Scandinavians came into contact with a new agricultural system, one based around intensive dairying in Gaelic areas. This would also fit into the evidence concerning loanwords from Gaelic into ON, where 45% relate to farming and everyday use (Schulze-Thulin 2001; Gammeltoft 2004).

Overall, 55% of *ærgi*-names in Scotland are found at sites with slightly richer soils, such as valley locations, at the base of a slope or where a river disgorges onto lowland areas. This compares to 35% of *setr*-names. *Ærgi*-names are also found on slightly richer grazing land in all zones, except Zone 3, where 86% of *setr*-names are situated on fertile or moderately fertile vegetation compared to 69% of *ærgi*-names. The difference in locational factors are highlighted in the location of *setr*-names in Lewis and *ærgi*-names in the Uists (Chapter 6.1). The richer grazing would be better suited to lactating dairy cattle (Tolkemp et al., 1998, 2669). There are three *ærgi*-names on the OS six-inch to one-mile sheets for Scotland that share the specific element ON *smjör* ('butter'), Smearisary (NM647772), Smiorasair (NH002670) and Smerary (ND120478) (I.A. Fraser, 1995, 101; Fellows-Jensen, 1980, 70; 2000, 139). The term '*smjör*', as *smora* can have the meaning in the dialect of Shetland of clover (*Trifolium repens*) (Graham 1984) and in Orkney dialect, *smero*/*smerow*/*smuiro*, can mean clover, birds-foot trefoil (*Lotus corniculatus*) or tormentil (*Potentilla erecta*) (Flaws and Lamb 1996). The use of use *smjör* in place-names may signify areas of rich grazing to use for milk production. The specific element is not used as a specific element in *setr*-names in Scotland and is possibly found in only two topographical *setr*-names in Buskerud Norway, in Smørseterdalen, Lier municipality and Smørsethallin, Nes municipality. This may suggest that *ærgi*-names are more closely linked to dairying than *setr*-names. It is possible that *støl*-names in Norway may have been used as dairy sites alongside *setr*-names. The limited number of *støl*-names in Shetland, two according to Stewart (1987, 262), and its absence from most other areas of Scandinavian settlement in Britain and the Faroes may suggest that *støl* was not productive as a place-name during the VA. This may be due to the origin of settlers coming from areas such as Møre og Romsdal and Trøndelag, where *støl* is not common in place-names, or that it developed during the latter part of the VA. Myrdal's suggestion that plunge churns (Myrdal 1988, 132) were not commonly used in Scandinavia until the 11th century, would also point to intensive dairying being introduced at a later date.

The most logical solution to explain the adoption of *ærgi,* is that an intensive dairy economy (*áirge*) was encountered in Gaelic areas of the Irish sea region. This may have been confined to upper echelons of Gaelic society considering the limited number of *áirge* place-names in Ireland, but it may have been more common in Gaelic speaking areas of Scotland.  Scandinavian settlers may have adapted their own farming economy to incorporate this new concept and used it when coining new shielings names or establishing or appropriating new shieling lands.

The Northern Isles, Caithness, and possibly Lewis, may have been settled early in the VA. All three areas are believed to have been Pictish at the time of the Viking *Adventus* and, therefore, not Gaelic-speaking, though Richard Cox has argued that Lewis was Gaelic-speaking (1991, 488, for a discussion see Chapter 6.1). If these areas had been fully settled before the adoption of *ærgi*, there may not have been room to fit new settlements into the landscape. It is possible that the concept of dairying was introduced by converting some settlements, but not renaming them as *ærgi*-names. For instance, Pool on Sanday, Orkney has been suggested as practicing a dairy economy on the basis of high instance of neonatal mortality from the LIA through to the Late Norse period (Mulville, Bond and Craig, 2005, 173-9). However, the link between the neonatal mortality in cattle and a dairy economy has been questioned (McCormick, 1992, 208). The death of 20-25% of animals aged between 18 months to four-year-old animals at Pool, has been suggested as a gradual removal for meat (Bond, 2007, 219). The few older animals in the assemblage, is also not suggestive of a dairy economy, as older animals would be needed to maintain the milk herd. Bond does raise the possibility that older cattle may have been removed elsewhere, but the limited number of bones, especially from adult males, along with the few adult female bones showing wear consistent with use in traction, is not consistent with intensive dairying (Bond, 2007, 220; Hunter, 2007, 144). Bond concludes that the evidence from the Neolithic Pool is most consistent with a non-intensive form of cattle husbandry, which may have included some milking, but involved a cull of calves in the Autumn (Bond, 2007, 224). It was only in the Late Norse Period, Phase 8.2 at Pool, that there was a decrease in the removal of cattle over 2-years old, which may suggest a move to a more intense dairy economy (Bond, 2007, 219). The switch to a more intensive dairy operation, if it did occur, is likely to have been a later Norse innovation and not the appropriation of a pre-existing enterprise.

Overall, I would agree with Ditlev Mahler who concluded that, ‘However the decentralised farming system was not just directly transposed to the new homelands, but was itself subject to adaption. Three major factors are relevant here: the local topography in question, indigenous cultural influences and the internal development of the economy of which the system itself was a part’ (1993, 501).

It is possible that during a period of intensive contact with Gaelic-speaking people, the concept of an intensive summer dairy was adopted, possibly with the associated technology of plunge churns and use of salt to preserve dairy products.

The association in Ireland of *áirge* with dairying and the three *ærgi*-names that share the specific element '*smjör*' ('butter'), along with Salter, ON or OE '*salt*' n. ('Salt-*ærgi*') in Cumbria (NY058169) (Fellows-Jensen, 1985a, 67), would seem to show a strong link with dairying.

In conclusion, Scandinavian settlers imported an infield/outfield system from Norway when they settled in areas outside Scandinavia such as the Northern Isles and Caithness. This system was, open to new concepts and technology and on encountering Gaelic dairying operations somewhere in the Irish Sea region, they adopted the OIr *áirge*, which they incorporated into their own farming system. *Ærgi* once adopted was used as name for shielings on relatively rich grazing land, that could accommodate the nutritional demands of a dairy herd, such as in the blacklands of the Uists. *Ærgi* was spread through secondary migration to Cumbria, the Faroese, and, possibly Caithness and Sutherland. The occurrence of *setr* for shieling names in Cumbria, and possible the Faroes, would suggest that it was retained as a place-name element and may have held a more general meaning of summer grazing. The absence of both generics from Iceland is unusual and may point to the special characteristic of Iceland, either during the settlement stage, or due to changes to livestock management in the years following the settlement.

# Bibliography

## Primary sources

AL: *Ancient Laws of Ireland*. Hancock, W.N. (vols. I, II), Editor O'Mahony, T., Rev. (vols. I, II, III, IV), O'Donovan, J., (vols. I, II, III, V), O'Curry, E. (1794-1862) (vols. III, V), Hennessy, W. M., (1828-1889) (vol. IV), Richey, A.G. (vols. III, IV), Atkinson, R., (1839-1908) (vol. V). Senchus Mór: introduction to Senchus Mór and Athgabhail, or, Law of Distress, as contained in the Harleian manuscripts. Thom; Longman. (1865); v. II: Senchus Mór pt.2: Law of Distress, laws of hostage-sureties, fosterage, saer-stock tenure, daer-stock tenure, and of social connexions. Thom; Longman (1869), lx, 448; v. III: Senchus Mór (conclusion) being the Corus Bescna, or Customary law, and the Book of Aicill. Thom; Longman, (1873), clxxi, 600; v. IV: Din Techtugad and certain other selected Brehon Law tracts. Thom; Longman (1879); v. V: Uraicecht Becc and certain other selected Brehon Law tracts. Thom; Longman, (1901), xvi, 596; v. VI: Glossary to volumes I-V, Thom; Longman, (1901), vi, 792. Dublin, Thom.

*Andomnán of Iona Life of St Columba*. Translated by Sharpe, R. (1995). London, Penguin.

*Anecdota from Irish manuscripts*. Bergin, O., Best, R.I., Meyer, K., O'Keeffe, J.G. (eds.) (1873-1913). M. Niemeyer. I-V. Accessed online 4/12/14 at https://archive.org/details/anecdotafromiris00berg.

ASC: *Anglo-Saxon Chronicle*. Translated and Edited by Swanton M.J. (2000). London, Phoenix Press.

*Annales Bertiniani* (1883). Waitz, R.C. (ed.) MGH, Scriptores rerum Germanicarum in usum scholarum, Hanover.

AC: *Annals of Clonmacnoise*. Translated by Mageoghagan, C. & Murphy, D., (1896). The Annals of Clonmacnoise: being annals of Ireland, from the earliest period to A.D. 1408, Dublin: Printed at the University Press for the Royal Society of Antiquaries of Ireland.

AI: *Annals of Inisfallen*. Translated and Edited Mac Airt, S. The Annals of Inisfallen MS. Rawlinson B. 503 (Dublin 1951). Accessed online 6/6/14 at https://celt.ucc.ie//published/T100004/index.html.

AFM: *Annals of the Four Masters*. Translated and Edited O'Donovan, J. Annala Rioghachta Eireann: Annals of the kingdom of Ireland by the Four Masters, from the earliest period to the year 1616, 7 vols. Dublin, Hodges & Smith, (1856). Accessed online 6/6/14 at https://celt.ucc.ie//published/T100005A/index.html.

AT: *Annals of Tigernach*. Translated and Edited Whitley Stokes. 'The Annals of Tigernach', Revue Celtique 18 (1897) 303, 390–1. Accessed online 6/6/14 at https://celt.ucc.ie//published/T100002A/index.html.

AU-*Annals of Ulster*, vol 1. Translated and edited by Hennessy, W. (1887). Kessinger, Dublin.

*Annals St Bertin* (1991). Nelson, J.L. (ed.). Manchester.

Arrowsmith, A. (1807). *Map of Scotland constructed from original materials*. London. Accessed online 17/12/16 at http://maps.nls.uk/joins/747.html.

Bede. *Ecclesiastical History of the English People*. Farmer, D. (ed.). Translated by Sherley-Price, L. (1991). London, Penguin.

*Bethu Brigte*. Donnchadh Ó hAodha (ed.), Donnchadh Ó hAodha (trans), First edition, Dublin Institute for Advanced Studies, Dublin (1978). Accessed 14/5/15 https://celt.ucc.ie/published/T201002/index.html.

*Birth and life of St Mo Ling [The*]. Translated by Whitley Stokes (1906). Paris, Librairie Honoré Champion. Accessed online 15/5/14 at https://celt.ucc.ie/published/T201003.html.

Blaeu, J. (1654). *Strath-navernia, Strath-navern Map*. Accessed online 18/10/15 at http://maps.nls.uk/view/00000470.

Blaeu, J. (1654). *Atlas of Scotland.* accessed on 20/6/14 at maps.nls.uk/view/00000473.

*Brennu-Njáls Saga*, in Icelandic accessed online 2/5/15 at http://sagadb.org.

*Cáin Lánamna.* Translated and Edited by Donnchadh Ó Corráin, Early medieval law, c. 700–1200. In Bourke, A., Kilfeather, S., Luddy, M., Mac Curtain, M., Meaney, G., Ní Dhonnchadha, M., O'Dowd, M., and Wills, C. (eds.), *The Field Day anthology of Irish writing*. Volume 4, New York and Cork, Cork University Press in association with Field Day (2002) page 6–44: 22–26. Accessed online 20,5/15 at https://celt.ucc.ie//published/T102030/index.html.

Camden, W. and Holland, P. (1610). *Britain, or A chorographicall description of the most flourishing kingdomes, England, Scotland, and Ireland, and the ilands adioyning, out of the depth of antiquitie: beautified vvith mappes of the severall shires of England: vvritten first in Latine by William Camden Clarenceux K. of A.* Translated newly into English by Holland, P. Doctour in Physick: finally, revised, amended, and enlarged with sundry additions by the said author, Londini: Bishop & Norton. Accessed online 17/4/18 at http://www.visionofbritain.org.uk/travellers/Camden/34.

CS: *Chronicum scottorum*: A Chronicle of Irish Affairs, from the earliest times to A.D. 1135, with a supplement containing the events from 1141 to 1150. William M. Hennessy (ed). London, Longmans, Green, Reader, and Dyer (1866). Accessed online 8/6/14 at https://celt.ucc.ie//published/T100016/index.html.

CV: Cleasby, R. and Vigfusson, G. (1874) *An Icelandic-English Dictionary*. Initiated by Richard Cleasby, subsequently revised, enlarged and completed by Gudbrand Vigfusson (2nd edn 1957, repr. 1962, with a supplement by Sir William Craigie Oxford: Clarendon Press); online at 8/8/13 <http://lexicon.ff.cuni.cz/texts/oi_cleasbyvigfusson_about.html>.

*Críth Gablach*. Binchy, D.A. (1941). Stationery Office, Dublin.

Dicuil. *De mensura orbis terrae*. Translated and edited by Parthey, G. (1870). Berolini. Accessed online 14/1/16 at 9/8/16 https://archive.org/details/dicuililiberdem01dicugoog.

*Dioghluim dána*. McKenna, L., (1938). Oifig an tSoláthair. 2, iii, [1], 642. Notes Selections from the Irish metrical sagas, for school-room use. "Filidh do chum na duana san leabhar so": p. 624. "Fuirmeacha ainm" (text from Irish grammatical tracts, Bergin, O. J. (ed.), *Eriu*, ix, 635-640. Dublin, Oifig an TSolá air.

*Egil's Saga*. Translated by Palsson, H. and Edwards, P. (1976). London, Penguin.

*Egils Saga Skalla-Grímssonar*, in Icelandic accessed online 4/5/15 at http://sagadb.org.

*Eirik the Red and Other Icelandic Sagas* (1961). Translated by Jones, G. Oxford, Oxford University Press.

*Eirík's Saga Rauða*, in Icelandic at http://www.sagadb.org (accessed 4/5/15).

*Ériu* (1904). Notes Supplements accompany some vols. Royal Irish Academy. Accessed online (4/12/14) at http://www.dil.ie/search?q=airge.

*Eyrbyggja Saga* in Icelandic accessed online 21/5/15 at http://www.sagadb.org.

*Eyrbyggja Saga*. Translated by Palsson, H. and Edwards, P. (1976). London, Penguin.

*Færeyinga Saga*, in Icelandic accessed online 10/5/15 at http://sagadb.org.

*Færeyinga Saga or The Tale of Thrond of Gate*. Translated by York Powell, F. (1896). London, David Nutt (rep 1995).

*Feis Tighe Chonáin*. Joynt, M. (ed.) (1936). Publisher Stationery Office, 3, [iii]-xi, 98. Accessed online 4/12/14 at https://celt.ucc.ie/published/G303010.html.

*Flateyjarbok* (Gks 1005 fol.) accessed online 20/5/18 https://handrit.is/en/manuscript/imaging/is/GKS02-1005#page/1v++(8+of+480)/mode/2up.

FA: *Fragmentary Annals*: Joan N. Radner (ed. and trans.) Fragmentary annals of Ireland (Dublin 1978). Accessed online 6/6/14 at https://celt.ucc.ie//published/T100017/index.html.

*Gísla saga Súrssonar*, In Icelandic accessed online 20/5/15at http://sagadb.org.

Gordon, R. (1642). *Cathenesia descripta ex magna ejusdem charta quam lustravit et descripsit Timoth. Pont.* Accessed online 20/6/14 at maps.nls.uk/view/00000277.

*Grettir's Saga*. Translated by Scudder, B. (2005). London, Penguin.

*Grettis Saga*, in Icelandic accessed online 15/5/15 at http://sagadb.org.

*Hænsa-Þóris saga*, in Icelandic accessed online 10/4/15 at http://sagadb.org.

*Haraldr Saga hins hárfagra*, in *The Heimskringla*. Snorri Sturluson and translated by Laing, S. (1844). London. Longman, Brown, Green and Longmans.

*Hen-Thorir's Saga, in Eirik the Red and other Icelandic Sagas.* Translated by Jones, G. (1999). Oxford, Oxford University Press.

*Historia Normannorum*. Translated by Christiansen, E. (1998). History of the Normans. Woodbridge. Boydell Press.

*Hrafnkel's Saga and other Sagas*. Translated by Palsson, H. (1971). London, Penguin.

*Hrafnkels saga freysgoða*, in Icelandic accessed online 11/5/15 at http://www.sagadb.org.

*Iliad*. Translated by Murray, A.T. & Wyatt, W.F. (1999). Second edition revised by Wyatt. W.F. London, Harvard University Press.

*Irish glosses: a mediaeval tract on Latin declension, with examples explained in Irish, to which are added The Lorica of Gildas with the gloss there on, and a selection of glosses from the Book of Armagh.* Stokes, Whitley, (ed.). Dublin, The Archaeological and Celtic Society (1860), iii, 206.

*Irish texts*. Fraser, J., Grosjean, P., Rev., and O'Keeffe, J.G., (eds.) (1865-1937). London, Sheed and Ward.

*Íslendingabók*. Translated by Paul Bibire (ed.). Crail (1996).

Kirk, J. (1772). *Book of Plans of the Parish of Loth, The Property of the Countess of Sutherland, containing threeteen different farms / surveyed and planed by John Kirk*. Accessed online 2/2/2015 http://maps.nls.uk/estates/golspie-loth/plan.cfm?id=2455.

*Konungs skuggsjá* (*Speculum regale*). Translated by Larson, L. (1917). The King's mirror. Scandinavian monographs; v. 35. London: American-Scandinavian Foundation Humphrey Milford.

*Landnámabók: The Book of Settlements*. Translated by Hermann Pálsson and Paul Edwards (2006). Winnipeg, Manitoba.

*Laxdæla Saga,* in Icelandic, accessed online 15/4/15 at http://sagadb.org.

*Laxdæla Saga*. Translated by Magnusson, Magnus and Palsson, H. (1969). London, Penguin.

*Lives of saints from the Book of Lismore*. Stokes, Whitley, (ed.) (1890). Clarendon press. cxx, 411. Accessed online 4/12/14 at https://celt.ucc.ie//published/G201001/index.html

*Monastery of Tallaght* [The]. Gwynn, E.J. (ed.), (1911). XXIX Num. 5, 115-179. Accessed online 4/12/14 at http://www.ucd.ie/tlh/text/gp.pria.29.001.text.html.

*Njáls Saga*. Translated by Palsson, H. and Edwards, P. (1960). London, Penguin.

Ó Huiginn, Tadhg Dal. *The bardic poems of Tadhg Dall Ó Huiginn: A bhfuil aguinn dár chum Tadhg Dall Ó hUiginn* (1550-1591), idir mholadh agus marbhnadh, aoir agus ábhacht iomarbháigh agus iomchasaoid. (c.1550-1617). Knott, E., (ed.). Simpkin, Marshall, Hamilton, Kent & Co. (1922, 1926), I-II. Accessed online (4/12/14) at https://celt.ucc.ie/published/G402563.html.

*Orkneyinga Saga: The History of the Earls of Orkney*. Translated by Palsson, H. and Edwards, P. (1978). London, Penguin.

Pont, T. (c. 1583-1614). *Strathnaver; Kyle of Tongue* (Pont 2). Accessed online 17/10/15 at http://maps.nls.uk/view/00002283.

Roy, W. (1747–55). *The Military Survey of Scotland supervised by William Roy. The Great Map: The Military Survey of Scotland 1747–55*: William Roy, with introductory essays by Yolande Hodson, Chris Tabraham and Charles Withers (Edinburgh: Birlinn, 2007). Accessed online (5/7/14) at http://maps.nls.uk/roy/index.html.

*Scéla Cano Maic Gartnáin*. Translated by Binchy, D.A. (1963). Dublin Institute for Advanced Studies, xxviii.

*St Olaf's Saga*, in Heimskringla. Dent, Everyman Library.

Thomson, J. (1832). *Caithness Shire, Atlas of Scotland*. Accessed on 20/6/14 at maps.nls.uk/view/74400135.

*Betha Brigte*, in *Three middle-Irish homilies on the lives of saints Patrick, Brigit and Columba.* Stokes, Whitley, (ed.) (1877) xii, 64. Accessed online 4/12/14 at https://celt.ucc.ie/published/G201010.html.

*Triads of Ireland* [The]. Translated by Meyer, K. (1906). Hodges & Figgis. xvi, 54. Accessed online (4/12/14) https://celt.ucc.ie/published/T103006.html.

*Yellow Book of Lecan* [The]. Translated by Atkinson, R. (1896). Dublin, Royal Irish Academy House.

## Secondary sources

Aarseth, I. (2008). Glaciation come and go: Quaternary to Holocene (Pleistocene); 2.6 Ma-11,500 years ago. In Ramberg, I.B., Beyhni, I., Nøttvedt, A., and Rangnes, K. (eds), *The Making of a land: Geology of Norway*. Trondheim, The Norsk Geologisk Forening, 490.

Abrams, L. (2012). Diaspora and identity in the Viking Age. *Early Medieval Europe*, 20, 17-38.

Abrams, L. and Parsons, D.N. (2007). Place-Names and history of Scandinavian Settlement in England. In Hines, J., Lane, A., and Redknapp, M. (eds) *Land, Sea and Home: Settlement in the Viking Period*. Society for Medieval Monograph 20. Leeds, Maney, 379-431.

Adderley, W.P. and Simpson, I.A. (2005). Early-Norse Home-Field Productivity in the Faroe Islands. *Human Ecology*, 33, 5, 711-736.

Ainiala, T. (1997). On Perpetuation, Demise and Change in Place Names. In Pitkänen, R.L. and Mallat, K. (eds), *You name it*. Finish Literature Society, Helsinki, 106–115.

Akselberg, G. (2005). Names Composed in *-staðir* in Shetland and Western Norway. Continuity or Discontinuity? Gammeltoft, P., Hough, C., and Waugh, D., (eds), *Cultural Contacts in the North Atlantic Region: The Evidence of Names*. Lerwick, The Shetland Times Ltd, 5-24.

Albrethsen, S.E. (1991) Saeters in the Norse eastern settlement of østerbygden in southwest Greenland, *Acta Borealia*, 8:1, 15-28.

Albrethsen, S.E. and Keller, C. (1986). The use of Sæter in Norse Medieval Greenland. *Arctic Anthropology*, 23:1-2, 91-107.

Als, T.D., Jorgensen, T.H., Børglum, A.D., Petersen, P.A. Ole Mors, and Wang, A.G. (2006). Highly discrepant proportions of female and male Scandinavian and British Isles ancestry within the isolated population of the Faroe Islands. *European Journal of Human Genetics*, 14:4, 497-504.

Ambrosiani, B. (1974) Comments on Iron Age Farms in SW- Norway. *Norwegian Archaeological Review*, 7:1, 39-40.

Amedeo, D., and Golledge, R.G. (1975). *An introduction to scientific reasoning in geography*. New York.

Amorosi, T., Buckland, P.C., Olafsson, G., Sadler, J.P. and Skidmore, P. (1992). Site status and the palaeoecological record: A discussion of results from Bessastadir, Iceland. In Morris, C. D. and Rackham, D. J. (eds), *Norse and Later Settlement and Subsistence in the North Atlantic*. University of Glasgow Department of Archaeology, Glasgow, 169–192.

Anderson, J. (1873). Introduction and notes. In '*The Orkneyinga Saga'* (1873), Hjaltalin, J.A. and Goudie (trans), Anderson, J. (ed). Edmonston and Douglas, Edinburgh.

Anderson, P.S. (1991). Norse settlement in the Hebrides what happened to the natives and what happened to the Norse immigrants, in Wood, I. and Lund, N. (eds), *People and Places in Northern Europe 500-1600*, Essays in Honour of Peter Hayes Sawyer (Boydell Press: Woodbridge), 131-147.

Anderson, P.S. (1995) The Norwegian background. In Crawford, B.E. (ed), *Scandinavian Settlement in Northern Britain: Thirteen Studies of Place-Names in Their Historical Context*. London, Leicester University Press,16-25.

Andersson, T. (1997). Name formation and other word formation. In Pitkänen, R.L. and Mallat, K. (eds), *You name it*. Finnish Literature Society, Helsinki, 47-53.

Angus, S. (1991). Climate and vegetation of the Outer Hebrides. In R.J. Pankhurst, and J.M. Mullin, (eds). *Flora of the Outer Hebrides*. London: Natural History Museum, 28-31.

Angus, S. (1997). *The Outer Hebrides: the shaping of the islands*. Cambridge and Isle of Harris. White Horse Press.

Ansaldo, U. (2009). *Contact Languages: Ecology and Evolution in Asia*. Cambridge.

Anslow, R.C. and Green, J.O. (1967). The seasonal growth of pasture grasses. *Journal of Agricultural Science*, 68, 109-122.

Anthony, D. (1990). Migration in archaeology: the baby and the bathwater. *American Anthropologist*, 92:4, 895-914.

Anthony, D. (1997). Prehistoric Migration as Social Process, In Chapman, J. and Hamerow, H. (eds.), *Migrations and Invasions in Archaeological Explanation*. BAR International Series 664. Oxford, 21-32.

Antilla, R. (1989). *Historical and Comparative Linguistics*. 2nd edition New York.

Arge, S. V. (1991) The Landndrn in the Faroes. *Arctic Anthropology*, 28:2, 101-120.

Arge, S.V. (1997). Í Uppistovubeitinum: Site and settlement. F*róðskaparrit* 45, 27–44.

Arge, S.V. (2005). Cultural Landscapes and Cultural Environmental issues in the Faroes, Edited by Andras Mortensen and Símun V. Arge, *Viking and Norse in the North Atlantic: select Papers from the Proceedings of the Fourteenth Viking Congress*, Tórshavn, 19-30 July 2001, 22-38.

Arge, S.V. (2006). Uttangarð: Relics in the Faeroe outfield. in Holm, I. Innselset, S. and Øye, I. (eds), *'Utmark'. The Outfield as Industry and Ideology in the Iron Age and the Middle Ages*. UBAS – International 1. University of Bergen Archaeological Series, Bergen, 67-82.

Arge, S.V. (2014). Viking Faroes: Settlement, Paleoeconomy, and Chronology. *Journal of the North Atlantic*, 7, 1-17.

Arge, S.V. and Hartmann, N. (1992). The bural site of við Kirkjugarð in the village of Sandur, Sandoy. *Fróðskaparrit*, 38–39:5–21.

Armit, I. (1990a). Broch Building in Northern Scotland: The Context of Innovation. *World Archaeology*, 21, No. 3, Architectural Innovation, 435-445.

Armit, I. (1990b). Epilogue. In I. Armit, *Beyond the Brochs: Changing perspectives on the Later Iron Age in Atlantic Scotland*. Edinburgh University Press, Edinburgh, 194-210.

Armit, I. (1996). *The Archaeology of Skye and the Western Isles*. Edinburgh University Press, Edinburgh.

Armit, I. (1998). Human responses to marginality. In Mills, C.M. and Coles, G. (eds), *Life on the Edge: Human Settlement and Marginality*. Symposia of the Association for Environmental Archaeology No.13. Oxbow, Oxford, 31-38.

Armstrong, A. M., Mawer, A., Stenton, F. M., and Dickins, B. (1950-52). *The Place-Names of Cumberland*, EPNS, Vols 20-22, Cambridge.

Armstrong Oma, K. (2016). Long Time-Long House. In Iversen, F. and Petersson, H. (eds), *The Agrarian Life of the North 2000 BC –AD 1000*. Studies in rural settlement and farming in Norway. Portal Academic, 11-26.

Atkinson, J.C. (1882). *A Handbook for Ancient Whitby and Its Abbey*. Kent, London.

Atkinson, R.R. (1989). The Evolution of Ethnicity among the Acholi of Uganda: The Precolonial Phase. *Ethnohistory*, Vol. 36, No. 1, Ethnohistory and Africa, 19-43.

Austad, I. (1988). Tree Pollarding in Western Norway. In Birks, H.H., Birks, H. J.B., Kaland, P.E., and Moe, D. (eds), *The Cultural Landscape- Past, Present and Future*. Cambridge, Cambridge University Press, 11-30.

Austad. I. and Hauge, L., M. (2008). The “Fjordscape” of Inner sogn, Western Norway. In Jones, M. and Olwig, K.R. (eds), *Nordic landscapes: Region and Belonging on the Northern Edge of Europe*. University of Minnesota press, Minneapolis, 372-400.

Austad, I. Hauge, L., Helle, T., Skogen, A. and Timberlid, A. (1991). Human influenced vegetation types and landscape elements in the cultural landscapes of inner Sogn, Western Norway, *Norsk Geografisk Tidsskrift - Norwegian Journal of Geography*, 45:1, 35-58.

Badía, D., Martí, C., Aznar, J.M., and León, J. (2013). Influence of slope and parent rock on soil genesis and classification in semiarid mountainous environments, *Geoderma*, 193–194, 13–21.

Bagley, J.J. (1971). *Historical Interpretation: Vol 2: Sources of English History, 1540 to Present*. London, Penguin.

Bakka E. and Kaland P.E. (1971). Early farming in Hordaland, Western Norway. Problems and approaches in archaeology and pollen analysis. *Norwegian Archaeological Review*, 4, 1-35.

Bakka, E and Kaland, P.E. (2010). Further aspects and problems of the cultural situation at the time of early farming in Hordaland, *Norwegian Archaeological Review*, 30-32.

Bakker, J.P., de Leeuw, J. and van Wieren, S.E. (1984). Micropatterns in grassland vegetation created and sustained by sheep-grazing. *Vegetatio*, 55: 153-161.

Baldwin, J.R. (1983). Structure in a Community: The Outfield, Its Use and Its Organisation in the Settlement of Gásadalur, Faroe Islands. *Northern Studies*, 20, 4-37.

Ballin Smith, B. (2007). Norwick: Shetland's first Viking settlement? In B. Ballin Smith, S. Taylor, and G. Williams (eds). *West over Sea. Studies in Scandinavian*

*Sea-Borne Expansion and Settlement Before 1300. A Festschrift in Honour of Dr Barbara Crawford*. Leiden Koninklijke Brill NV, 287–297.

Ballinger, C. (2008). *Initial Conditions as Exogenous Factors in Spatial Explanation*. PhD thesis, Department of Geography, University Cambridge.

Bangor-Jones, M. (1986). Land Assessments and Settlement History in Sutherland and Easter Ross. In Baldwin, J. (ed), *Firthlands of Ross and Sutherland*. Scottish Society for Northern Studies, 153-166.

Bangor-Jones, M. (1995). Norse settlement in south-east Sutherland In Crawford, B.E. (ed), *Scandinavian Settlement in Northern Britain: Thirteen Studies of Place-Names in Their Historical Context*. London, Leicester University Press, 80-91.

Bannerman, J.W.M. (1974). *Studies in the History of Dalriada*. Scottish Academic Press.

Barber, J. (2003). *Bronze Age farms and Iron Age farm mounds of the Outer Hebrides*, Scottish Archaeological Internet Reports 3. Society of Antiquaries of Scotland. Edinburgh.

Bårdseth, G. (2009). The Roman Age Hall and the Warrior-Aristocracy: Reflections upon the Hall at Missingen, South-East Norway. *Norwegian Archaeological Review*, 42:2, 146-158.

Barker, G. (1999). Cattle-keeping in ancient Europe: to live together or apart? In Fabech, C. and Ringtved, J., (eds), *Settlement and Landscape: Proceedings of a conference in Århus*, Denmark, May 4-7, 1998, 273-280.

Barnes, M.P. (1991). Reflections on the structure and the demise of Orkney and Shetland Norn In Ureland, P.S. and Broderick, G. (eds), *Language Contact in the British Isles: Proceedings of the Eighth International Symposium on Language Contact in Europe*, Douglas, Isle of Man 1988, Tübingen, 429-460.

Barnes, M.P. (1997). How ‘Common’ was Common Scandinavian. *NOWELE*, 31/32, 29-42.

Barnes, M.P. (1999). A *New Introduction to Old Norse Grammar*. Viking Society, London.

Barrett J.H. (2003). Culture Contact in Viking Age’ Scotland. In Barrett, J.H. (ed), *Contact. Continuity and collapse: the Norse colonization of the North Atlantic*. Brepols Publishers, Turnhout, Belgium, 73-111.

Barrett, J.H. (2005). Economic Intensification in Viking Age and Medieval Orkney, Scotland: Excavations at Quoygrew. In Mortensen, A. and Arge, S.V. (eds), *Viking and Norse in the North Atlantic: select Papers from the Proceedings of the Fourteenth Viking Congress*, Tórshavn, 19-30 July 2001, 264-283.

Barrett, J.H. (2007). Beyond War or peace; the study of cultural contact in Viking Age Scotland In Hines, J., Lane, A., and Redknapp, M. (eds) *Land, Sea and Home: Settlement in the Viking Period*. Society for Medieval Monograph 20. Leeds, Maney, 207-218.

Barrett, J.H., Beukens, R., Simpson, I., Ashmore, P., Poaps, S. and Huntley, J., (2000). What was the Viking Age and when did it happen? A view from Orkney'. *Norwegian Archaeological Review*, 33, 1-39.

Barrett, J.H., Hall, A., Johnstone, C., Kenward, H., O'Connor, T., and Ashby, S. (2004). *Plant and animal remains from Viking Age deposits at Kaupang*, Norway. Reports from the Centre for Human Palaeoecology, University of York.

Barrow, G.W.S. (1998). The Uses of Place-names and Scottish History-pointers and pitfalls in Taylor, S. (ed), *The Uses of Place Names*. Edinburgh, 55-74.

Batey, C. (1987). *Freswick Links, Caithness: A re-appraisal of the late Norse site in its context*. BAR British series. Oxford: B.A.R.

Behre, K-E. (1998). Landwirtschaftliche Entwicklungslinien und die Veränderung der Kulturlandschaft in der Bronzezeit Europas. In Hänsel, B. (ed.), *Mensch und Umwelt in der Bronzezeit Europas*. Kiel, 91-109.

Beito, O. (1949). *Norske Sæternamn*. Oslo.

Bekker, C.J. (1981). Viking Age village and manors. In Bekker-Nielsen, H Foote, p. and Olsen, O., (eds), *Proceedings of the Eighth Viking Congress*, Århus 24-31 August 1977, (eds), Odense Uni Press, Viborg, 25-36.

Bele, B., Johansen, L., and Norderhaug, A. (2015). Resource use by old and modern dairy cattle breeds on semi-natural mountain pastures, Central Norway. *Acta Agriculturae Scandinavica*, Section A — *Animal Science*, 65 (2), 1-12.

Bennett, K.D. (1993). Holocene vegetation history at Murraster, west Mainland, Shetland. In Birnie, J., Gordon, J., Bennett, K., and Hall, A. (eds), *The Quaternary of Shetland: Field Guide*, 119-120.

Bennett, K.D., Boreham, S., Sharp, M. J. and Switsur, V. R. (1992). Holocene History of Environment, Vegetation and Human Settlement on Catta Ness, Lunnasting, Shetland. *Journal of Ecology*, 80, No. 2, 241-273

Bergsvik, K.A. (2001). Sedentary and Mobile Hunterfishers in Stone Age Western Norway. Source: *Arctic Anthropology*, 38, No. 1, 2-26.

Bergsåker, J. (1978). The Keeping and Milking of Sheep in the Old Subsistence Economy of Scandinavia, Iceland and Northern Europe. In Baldwin, J. (ed), *Scandinavian Shetland: An Ongoing Tradition?* 85-96.

Berry, N.R., Jewell, P.L., Sutter, F.R., Edwards. P.J., and Kreuzer, M. (2002). Selection, intake and excretion of nutrients by Scottish Highland suckler beef cows and calves, and Brown Swiss dairy cows in contrasting Alpine grazing systems. *Journal of Agricultural Science*, 139, 437–453.

Bertelsen, R. (1979) Farm mounds in North Norway, a review of recent research, *Norwegian Archaeological Review*, 12:1, 48-56

Bigelow, G. (1985). Sandwick, Unst and the Late Norse Shetland Economy. In Smith, B. (ed), *Shetland Archaeology*. The Shetland Times Ltd., Lerwick, 95-127.

Bigelow, G.F. (1992). Issues and prospects in Shetland Norse archaeology. In Morris, C. D. and Rackham, D. J. (eds), *Norse and Later Settlement and Subsistence in the North Atlantic*. University of Glasgow, Department of Archaeology, Glasgow, 9–32.

Bil, A. (1990). *The shieling 1600 – 1840: The Case of the Central Scottish Highlands*. John Donald publishers, Edinburgh.

Birks, H.J.B. and Madsen, B.J. (1979) Flandrian vegetational history of Little Loch Roag, Isle of Lewis, Scotland. *Journal of Ecology*, 67, 825-842.

Birnie, J. (1993). The Present Environment. In Birnie, J., Gordon, J., Bennett, K., and Hall, A. (eds), *The Quarternary of Shetland: Field Guide*, 1-5.

Bjerck, H.B. (2007). Mesolithic coastal settlements and shell middens in Norway. In Milner, N., O. E. Craig, and G. N. Bailey, (eds), *Shell Middens in Atlantic Europe*, Oxford: Oxbow, 5-31.

Bjerck, H.B. (2009). Colonizing seascapes: comparative perspectives on the development of maritime relations in Scandinavia and Patagonia. *Arctic Anthropology*, 46 (1–2), 118–131.

Bjordal, E. (2016). Late Iron Age Settlement Evidence from Rogaland. In Iversen, F. and Petersson, H. (eds), Th*e Agrarian Life of the North 2000 BC –AD 1000. Studies in rural settlement and farming in Norway*. Portal Academic, 241-274.

Bjørgo, T. (1986). Mountain archaeology. Preliminary results from Nyset-Steggje. *Norwegian Archaeological Review*, 19:2, 122-127.

Bjørgo, T. (2005). *Iron Age House remains from mountain areas in Inner Sogn, Western Norway*. UBAS Nordisk 1 (Bergsvik, K. A og A. Engevik red.), 209–228. Universitetet i Bergen

Bjørkan Bukkemoen, G. (2016). Cooking and Feasting: Changes in food practices in the Iron Age. In Iversen, F. and Petersson, H. (eds), *The Agrarian Life of the*

*North 2000 BC –AD 1000. Studies in rural settlement and farming in Norway*. Portal Academic, 117-.131

*Board of Agriculture for Scotland. Agricultural statistics* (1912). Vol. I. Part I. Acreage and livestock returns of Scotland with a summary for the United Kingdom, 52-57.

Bogucki, P. (1993). Animal traction and household economies in Neolithic Europe. *Antiquity*, 67, 256, 492-503.

Bohncke, S.J.P. (1990). Vegetation and habitation history of the Callanish area, Isle of Lewis, Scotland, In Birks, H.H., Birks, H. J.B., Kaland, P.E., and Moe, D. (eds), *The Cultural Landscape- Past, Present and Future*. Cambridge, Cambridge University Press, 445-462.

Bojsen Christensen. K.M. (1991) Land use and resource exploitation in the Norse western settlement in Greenland, Acta Borealia: *A Nordic Journal of Circumpolar Societies*, 8:1, 29-39.

Bond, J., Cartledge, J., Clarke, A., Colledge, S., Dennis, I., Gale, R., Hamilton, M., Ingrem, C., Lane, A., Light, J., Macdonald, P., Marshall, P., Milek, K., Mulville, J., Smith, A., Smith, H., and Young, T. (2005). Resource Exploitation. In Sharples, N. (ed), *A Norse Farmstead in the Outer Hebrides: Excavations at Mound 3, Bornais, South Uist*. Oxbow Books, Oxford, 2005, 157–170.

Bond, J.M., Guttman, E. and Simpson, I.A. (2004). Bringing in the sheaves; farming intensification in the post-broch Iron Age. In Housely, R. and Coles, G. (ed), *Atlantic Connections and Adaptations; economies, environments and subsistence in lands bordering the North Atlantic*: AEA/NABO Monograph. Oxford, Oxbow, 138-145.

Bond, J.M. and Hunter, J.R. (1987). Flax-growing in Orkney from the Norse period to the 18th century', *Proceedings of the Society of Antiquaries of Scotland*, 117, 175–81.

Bonde, N. (1998). Found in Denmark, but Where Do They Come from? *Archaeology Ireland*, 12, No. 3, 24-29

Bonde, N. and Christensen, A.E. (1993). Dendrochronological dating of the Viking Age ship burials at Oseberg, Gokstad and Tune, Norway. *Antiquity*, 67, 575-583.

Borchgrevink, A. (1977). The 'Seter': Areas of Rural Norway – A Traditional Multipurpose Resource. *Northern Studies*, 9, 2-24.

Boserup, E. (1965). *The Conditions of Agricultural Growth*. London: Allen and Unwin.

Boserup, E. (1981). *Population and Technological Change*. Chicago, University of Chicago Press.

Bosset, J.O., Berger, T., Buhler-Moor, U., Utikofer, B., Collomb, M., Dafflon, O., Gauch, R., Jeangros, B., Lavanchy, P., Mariaca, R., Scehovic, J., Sieber, R., and Troxler, J. (1997). Comparison of some highland and lowland gruyere-type cheese of Switzerland: A study of their potential PDO/AOC/AOP characteristics. *Proceedings of Euro Food Chemistry*, IX, 2, 395–400.

Bovolenta, S., Ventura, W., Piasentier, E., and Malossini, F. (1998). Supplementation of dairy cows grazing an alpine pasture: Effect of concentrate level on milk production, body condition and rennet coagulation properties. *Annales de Zootechnie*, 47:3, 169–178

Boyd, J.M. and Boyd, I.L. (1990). *The Hebrides: A Natural History*. London, Collins.

Boyd, R., Richerson, P. J. and Henrich, J. (2011). The cultural niche: why social learning is essential for human adaptation. *Proceedings of the National Academy of Sciences,* 108, 10918-10925.

Bradbury, F. (1920). *Flax Culture and Preparation*, London, Pitman.

Bradley, J. (1988). “The interpretation of Scandinavian settlement in Ireland” in *Settlement and society in medieval Ireland*: studies presented to F.X. Martin. Kilkenny 49-78.

Brandt, J. (1996a). The traditional Faeroese village. In Guttesen, R. (ed), *The Faroe Islands Topographic Atlas, Det Kongelige danske Geografiske Selskab and Kort and Matrikelstyrelse*, Copenhagen, 80-81.

Brandt, J. (1996b). Sheep-breeding on eastern Sandoy. In Guttesen, R. (ed), *The Faroe Islands Topographic Atlas, Det Kongelige danske Geografiske Selskab and Kort and Matrikelstyrelse*, Copenhagen, 82–85.

Branigan, K. (2004). *From Clan to Clearance: History and Archaeology on the Isle of Barra.* Sheffield environmental and archaeological research campaign in Hebrides, vol 6, 5-50.

Branigan, K. (2012). *Barra: Episodes from an Island's History*. Stroud: Amberley.

Branigan, K. and Foster, P. (2002). *From Barra to Berneray: archaeological survey and excavation in the Southern Isles of the Outer Hebrides*. Sheffield: Sheffield Academic Press.

Brayshay, B.A. (1992). *Pollen analysis and the vegetational history of Barra and South Uist in the Outer Hebrides, Scotland*. PhD thesis, University of Sheffield.

Brink, S. (1987). Til frågan om ortnamnselementet -setr, dess ursprung og betydelse. *Namn og nemne*, 79–84.

Brink, S. (1996). The onomasticon and the role of analogy in name formation, *Namn och Bygd*, 84, 61-84.

Brink, S. (1999). Social order in the early Scandinavian landscape. In C. Fabech, Charlotte and J. Ringtved, *Settlement and Landscape: Proceedings of a conference in Århus*, Denmark, May 4-7, 1998, 423-439.

Brink, S. (2008a). Law and society: polities and legal customs in Viking Scandinavia. In Brink S, and Price, N. (eds), *The Viking World*, Routledge, 23-31.

Brink, S. (2008b) Naming the land. In Brink S, and Price, N. (eds), *The Viking World*, Routledge, 57-66.

Brink, S. (2012). Law and Legal Customs in Viking Age Scandinavia. In Jesch, J. (ed), *The Scandinavians from the Vendel Period to the Tenth Century: An Ethnographic Perspective*. Boydell Press, Wodbridge, 87-117.

Brink, S. (2013). The creation of a Scandinavian provincial law: How was it done? *Historical Research*, 86(233), 432-442

Brøgger, A. (1929). *Ancient emigrants: A history of the Norse settlements of Scotland* (Rhind lectures; 1928). Oxford: The Clarendon press.

Broun, D. (2004). Creating and Maintaining a Year by Year Chronicle: the evidence iof the Chronicle of Melrose. In Kooper, E. (ed), *Medieval Chronicle* III Erik Amsterdam, 141-152.

Brown, T., Crane, S., O'Sullivan, D., Walsh, K. and Young, R. (1998). Marginality. Multiple estates and environmental change: the case of Lindisfarne. In Mills, C.M. and Coles, G. (eds), *Life on the Edge: Human Settlement and Marginality*. Symposia of the Association for Environmental Archaeology No.13. Oxbow, Oxford, 139-148.

Brubaker, R. (2005). The 'diaspora' diaspora. *Ethnic and Racial Studies*, 28:1, 1-19.

Brunhes, J. (1920). *Human Geography*. Chicago, Rand McNally.

Buckland, P. C., Edwards, K. J., Sadler, J. P. and Dinnin, M. H. (1998) Late Holocene insect faunas from Mykines, Faroe Islands, with observations on associated pollen and early settlement records. *Fróðskaparrit*, 46, 287-296.

Bugaud, C., Buchin, S., Coulon, J. B., and Hauwuy, A. (2001a). Relationships between flavour and chemical composition of Abondance cheese derived from different types of pastures. *Le Lait*, 81(5), 593–607

Bugaud, C., Buchin, S., Coulon, J. B., Hauwuy, A., and Dupont, D. (2001b). Influence of the nature of alpine pastures on plasmin activity, fatty acid and volatile compound composition of milk. *Le Lait*, 81(3), 401–414.

Butlin, R.A. (1982). Developments in historical geography in Britain in the 1970's?5. In A.R.H. Baker and M. Billinge (eds), Pe*riod and Place: Research Methods in Historical Geography*, Cambridge, 10-16.

Byock, J. (2001). *Viking Age Iceland*. London, Penguin.

Caldwell, D. (2008). *Islay the Land of the Lordship*. Edinburgh.

Cameron Gillies, H (1906). *The Place-names of Argyll*, London.

Cerón-Carrasco, R.N. (2002). *'Of Fish and Men' = 'De Iasg Agus Dhaoine': A Study of the Utilization of Marine Resources as Recovered from Selected Hebridean Archaeological Sites*. PhD thesis, University of Edinburgh.

Challinor, C. (2004). Butter as an economic resource in the Northern Isles. In Housley, R.A. and Coles, G. (eds), *Atlantic Connections and Adaptations: Economies, environments and subsistence in lands bordering the North Atlantic*. Oxford, Oxbow Books, 163-174.

Chapman, J. and Hamerow, H. (1997). Art the Move Again: Migrations and Invasions in Archaeological Explanation. In Chapman, J. and Hamerow, H. (eds.), *Migrations and Invasions in Archaeological Explanation*. BAR International Series 664. Oxford, 1-10.

Cherrie, M.P.C., Wheeler, B.W., White, M.P., Sarran, C.E., and Osborne, N.J. (2015). Coastal climate is associated with elevated solar irradiance and higher 25 (OH)D level. *Environment International*, 77, 76-84.

Christaller, W. (1933). *Die zentralen Orte in Süddeutschland*. Jena, Fischer.

Christiansen, S. (1991). Nordatlantisk landbrugskultur i komparativ økologisk belysning. Pp 46-50 in Joensen, J.P., Johansen, R., and Kløvstad, J. (eds), *Nordatlantiske foredrag. Norðurlandshúsið í Føroyum og rithøvundarnir. Tórshavn.*

Church, M.J. (2000). Carbonised plant macrofossils and charcoal. In Harding, D W and Dixon (eds), *Dun Bharabhat, Cnip an Iron Age settlement in west Lewis*. 1 Structures and material culture. Edinburgh: University of Edinburgh, 120-130.

Church, M.J. (2002). *Plants and people in the later prehistoric and Norse periods of the Western Isles of Scotland*. Unpublished Ph.D. Dissertation. University of Edinburgh.

Church, M.J., Arge, S.V., Brewington, S., McGovern, T.H., Woollett, J., Perdikaris, S., Lawson, I.T., Cook, G.T., Amundsen, C., Harrison, R., Krivogorskaya, K., and

Dunbar, E. (2005). Puffins, Pigs, Cod, and Barley: Palaeoeconomy at Undir Junkarinsfløtti, Sandoy, Faroe Islands. *Environmental Archaeology* 10:2, 179-197.

Church, M.J., Arge, S.V., Edwards, K.J., Ascough, P.L., Bond, J.M., Cook, G.T., Dockrill, S.J., Dugmore, A.J., McGovern, T.H., Nesbitt, C. and Simpson, I.A. (2013). The Vikings were not the first colonizers of the Faroe Islands. *Quaternary Science Reviews* 77, 228-232.

Clancy, T.C. (2008). The Gall Ghàidheil and Galloway. *The Journal of the Scottish Name Society*, 2, 19-50.

Clark, P.U., Dyke, A.S., Shakun, J.D., Carlson, A.E., Clark, J., Wohlfarth, B., Mitrovica, J.X., Hostetler, S.W., and McCabe, A.M. (2009). The last glacial maximum. *Science*, 325, 710–714.

Clunes Ross, M. (2002). Realism and the fantastic in the Old Icelandic sagas. (Critical Essay). *Scandinavian Studies*, 74:4, 443-454.

Coenders-Gerrits, A.M.J., Hopp, L., Savenije, H.H.G., and Pfister, L. (2012). The effect of spatial throughfall patterns on soil moisture patterns at the hillslope scale. *Hydrology & Earth System Sciences Discussions*, 9, 8625–8663.

Coggins, D., Fairless, K.J. and Batey, C.E. (1983). Simy Folds: an early medieval settlement site in Upper Teesdale, Co Durham. *Medieval Archaeology*, 27, 1-26.

Cohen, R. (1997) *Global Diasporas: An Introduction*. Seattle, WA. University of Washington Press.

Coles, G. and Mills, C.M. (1998). Clinging on for grim life: an introduction to marginality as an archaeological issue. In C. M. Mills and G. Coles, *Life on the Edge: Human Settlement and Marginality*, Symposia of the Association for Environmental Archaeology No.13. Oxbow, Oxford, i-xii.

Colley March, H. (1890). The place-names Twistle, Skip, and Arg. *Transactions of the Lancashire and Cheshire Antiquarian Society*, 8, 72-96.

Collomb, M., Bütikofer, U., Sieber, R., Jeangros, B., and Bosset, J-O. (2002). Composition of fatty acids in cow's milk fat produced in the lowlands, mountains and highlands of Switzerland using high-resolution gas chromatography. *International Dairy Journal*, 12(8), 649-659.

Comey, M.G. (2003-4). Stave-Built Wooden Vessels from Medieval Ireland. *The Journal of Irish Archaeology*, Vol. 12/13, 33-77.

Cosgrove, D.E. (1982). Problems of interpreting the symbolism of past landscapes. In A.R.H. Baker and M. Billinge (eds), *Period and Place: Research Methods in Historical Geography*, Cambridge, 220-232.

Cormack, M. (2007). Fact and Fiction in the Icelandic Sagas. *History Compass*, 5:1, 201-217.

Cox, R.A.V. (1988-89a). Notes on the question of the development of Old Norse bólstaðr in the Hebridean nomenclature. *Nomina*, 12, 13-26.

Cox, R.A.V. (1988-89b). Questioning the value and validity of the term 'hybrid' in Hebridean place-name study. *Nomina*, 12, 1-10.

Cox, R.A.V. (1990). The origin and relative chronology of shader-names in the Hebrides. *Scottish Gaelic Studies*, 16, 95–113.

Cox, R.A.V. (1991): Norse-Gaelic Contact in the West of Lewis: The Place-Name Evidence. In Ureland, P.S. and Broderick, G. (eds). *Language Contact in the British Isle. Eighth International Symposium on Language Contact in Europe*, Douglas, Isle of Man, 1988. Tübingen, 479-493.

Cox, R.A.V. (1992). The Norse element in Scottish Gaelic. Proceedings of the 9th International Congress of Celtic Studies, Paris 1991, in *Études Celtiques*, 29, 137-45.

Cox, R.A.V. (1994). Descendants of Norse Bólstaðr? A Re-Examination of the Lineage of Bost & Co. In J.R. Baldwin (ed), *Peoples & Settlement in North-West Ross*. Edinburgh, The Scottish Society for Northern Studies, 43-67.

Cox, R.A.V. (2002). Th*e Gaelic Place-names of Carloway, Isle of Lewis: their structure and significance*. Dublin.

Craig, O.E., Taylor, G., Mulville, J., Collins, M.J., Parker Pearson, M. (2005). The identification of prehistoric dairying activities in the Western Isles of Scotland: an integrated biomolecular approach. *Journal of Archaeological Science*, 32:1, 91-103.

Crawford, B.E. (1985a). Introduction. In J.R. Baldwin and I.D. Whyte (eds) *The Scandinavians in Cumbria*. Edinburgh, The Scottish Society for Northern Studies, 1-6.

Crawford, B. E. (1985b). The Biggins, Papa Stour -a multi-disciplinary investigation. In Smith, B. (ed), *Shetland Archaeology*. The Shetland Times Ltd., Lerwick, 128–158.

Crawford, B.E. (1987). *Scandinavian Scotland: Scotland in the Early Middle Age* 2: Leicester University Press, Leicester.

Crawford, B.E. (1995). Introduction – The study of place-names. In Crawford, B.E. (ed), *Scandinavian Settlement in Northern Britain: Thirteen Studies of Place-Names in Their Historical Context*. London, Leicester University Press, 1-15.

Crawford, B.E. (2006). ‘Houseby, Harray and Knarston in the West Mainland of Orkney. Toponymic indicators of Administrative Authority?’ In Gammeltoft, P. and Jørgensen, B (eds), *Names Through the Looking-Glass*. Festschrift in Honour of Gillian Fellows-Jensen. Copenhagen, C. A. Reitzel, 21-44.

Crawford, B.E. and Taylor, S. (2003). The Southern Frontier of Norse Settlement in North Scotland: Place-Names and History', *Northern Scotland*, 23, 1-76.

Crawford, I. (1981). War or peace: Viking colonisation in the Northern and Western Isles of Scotland. In Bekker-Nielsen, H., Foote, P. and Olsen, O. (eds), *Proceedings of the Eighth Viking Congress*, Århus 24-31 August 1977, Odense, 259-270.

Crawford, I. and Switsur, R. (1977). Sandscaping and C14: the Udal, N. Uist. *Antiquity*, 124-36.

Critchley, C.N.R., Adamson, H.F., McLean B.M.L., Davies O.D. (2008). Vegetation dynamics and livestock performance in system-scale studies of sheep and cattle grazing on degraded upland wet heath. *Agriculture, Ecosystems and Environment*, 128, 59–67.

Cronin, T., Downey, L., Synnott, C., McSweeney, P., Kelly, E.P., Cahill, M., Ross, R.P., Stanton, C (2007). Composition of ancient Irish bog butter. *International Dairy Journal*, 17, 1011–1020.

Crumley, C.L. (1994a). Historical Ecology: A Multidimensional Ecological Orientation. In Crumley, C.L. (ed), *Historical Ecology: cultural knowledge and changing landscapes*. Santa Fe, New Mexico, 1-16.

Crumley, C.L. (1994b). The Ecology of Conquest: Contrasting Agropastoral and Agricultural Societies Adaptation to Climatic Change’. In Crumley, C.L. (ed), *Historical Ecology: cultural knowledge and changing landscapes.* Santa Fe, New Mexico, 183-201.

Crumley, C.L. (1995). Heterarchy and the analysis of complex societies. In Ehrenreich, R.M. Crumley, C.L. and Levy, J.E. (eds), H*eterarchy and the analysis of complex societies.* Archaeological Papers of the American Anthropological Association no. 6. Washington DC: American Anthropological Association, 1-5.

Crumley, C.L. (2007). Historical ecology: Integrated thinking at multiple temporal and spatial scales. In Hornborg, A. and Crumley, C. (eds), *The world system and the earth system: Global socio-environmental change and sustainability since the Neolithic*. Walnut Creek, CA: Left Coast Press, 15–28.

Curle, A.O. (1939). The Viking Settlement at Freswick, Caithness. Report on excavations carried out in 1937 and 1938. *Proceedings of the Society of Antiquaries of Scotland*, 83, 71-110.

Curle, C. (1982). *Pictish and Norse finds from the Brough of Birsay ,1934-74*. Monograph series Society of Antiquaries of Scotland; no. 1). Edinburgh: Society of Antiquaries of Scotland.

CV-Cleasby, R. and Vigfusson, G. (1874) *An Icelandic-English Dictionary*. Initiated by Richard Cleasby, subsequently revised, enlarged and completed by Gudbrand Vigfusson (2nd edn 1957, repr. 1962, with a supplement by Sir William Craigie Oxford: Clarendon Press); online at <http://lexicon.ff.cuni.cz/texts/oi_cleasbyvigfusson_about.html>.

Dahl, S. (1970). Um ærgistaðir og ærgitoftir. *Fróðskaparrit,* 18: 361-368.

Dahl, S. (1971). The Norse Settlement of the Faroe Islands. *Medieval Archaeology, 14*, 60-73.

Dahle, K. (2007). Støl, sel og seterstøl Seterdrift i Romsdal gjennom 2000 år. *Heimen*, 44, 343–358.

Davies, E. (1984). Hafod and Lluest: The Summering of Cattle and Upland Settlement in Wales. *Folk Life*, 23(1), 76-96.

Davis, S. (1987). *The archaeology of animals*. London: Batsford.

Dehls, J.F., Olesen, O., Olsen, L., and Blikra, L.H. (2000). Neotectonic faulting in northern Norway; the Stuoragurra and Nordmannvikdalen postglacial faults. Q*uaternary Science Reviews*, 19, 1447-1460.

Devine, T.M. (2006). *Clearance and Improvement: Land, Power and People in Scotland, 1700-1900*. John Donald. Edinburgh.

Dickinson, S. (1985). Bryant's Gill Kentmere: Another 'Viking-Period' Ribblehead? in J.R. Baldwin and I.D. Whyte (eds). *The Scandinavians in Cumbria*. Edinburgh, The Scottish Society for Northern Studies, 83-88.

Diinhoff, S. (2010). Chiefly Manors and the Establishment of a Socially Hierarchical Settlement Pattern in Western Norway during the Late Roman Iron Age and Early Migration Period. *Arkæologi i Slesvig*, Sonderband Det 61. Internationale Sachsensymposion Haderslev, Danmark, 211-222.

Dineen, P. (1970). *Irish English Dictionary*. Accessed online 4/12/14. https://celt.ucc.ie/Dinneen1sted.html

Dockrill S.J. and Batt, C.M. (2004). Power Over Time: an overview of the Old Scatness Broch excavations. In Housely, R. and Coles, G. (ed), *Atlantic Connections and Adaptations; economies, environments and subsistence in lands bordering the North Atlantic*: AEA/NABO Monograph. Oxford, Oxbow, 128-137.

Dockrill, S.J., Bond, J.M., Turner, V.E., Brown, L.D., Bashford, D.J., Cussans, J.E. and Nicholson R. A. (2009). *Excavations at Old Scatness, Shetland Volume 1*: The Pictish Village and Viking Settlement. Lerwick: Shetland Heritage Publications.

Dodgshon, R.A. (1988). The ecological basis of Highland peasant farming - 1500-1800 A.D. In H.H. Birks, H.J.B. Birks, P.E. Kaland, and D. Moe (eds). *The Cultural Landscape: Past, Present and Future.* Cambridge, Cambridge University Press, 139-152.

Dodgson, R.A. (1993a). West Highland and Hebridean Landscapes: Have they History Without Runrig? *Journal of Historical Geography*, 19, 383-398.

Dodgson, R.A. (1993b). Strategies of Farming in the Western Highlands and Islands of Scotland Prior to Crofting and the Clearances. *The Economic History Review*, New Series, 46, No. 4, 679-701.

Downes, J. and Lamb, R. (2000). *Prehistoric Houses at Sumburgh in Shetland*. Oxbow, Oxford.

Downham, C. (2000). An imaginary Viking-raid on Skye in 795? *Scottish Gaelic Studies*, 20, 192–6.

Downham, C. (2004). The good, the bad, and the ugly: portrayals of Vikings in The Fragmentary Annals of Ireland. *The Medieval Chronicle*, 4, 27–39.

Downham, C. (2007a). Living on the Edge: Scandinavian Dublin in the Twelfth Century'. In Ballin-Smith, B. (ed), *West over Sea: Studies in Scandinavian Sea-Borne Expansion and Settlement before 1300*. Leiden: Brill, 33-52.

Downham, C. (2007b). *Viking Kings of Britain and Ireland: The Dynasty of Ívarr to A.D. 1014*. Edinburgh, Dunedin Academic Press.

Downham, C. (2009). 'Hiberno-Norwegians' and 'Anglo-Danes': anachronistic ethnicities and Viking-Age England. *Mediaeval Scandinavia,* 19, 139–69.

Downham, C. (2012). Viking Ethnicities: A Historiographic Overview. *History Compass*, 10/1, 1–12.

Downham, C. (2015). Coastal Communities and Diaspora Identities in Viking Age Ireland. In Barratt, J. and Gibbon, S.J. (eds), *Maritime Societies of the Viking and Medieval World*. Leeds: Maney, 369-383.

Dry, F.T. and Robertson, J.S. (1982). O*rkney & Shetland. Soil and Land Capability for Agriculture*. Aberdeen: Macaulay Institute for Soil Research.

Dugmore, A.J., Church, M.J., Buckland, P.C., Edwards, K.J., Lawson, I., McGovern, T.H., Panagiotakopulu, E., Simpson, I.A., Skidmore, P., and Sveinbjarnardóttir, G.

(2005). The Norse landnám on the North Atlantic islands: an environmental impact assessment. *Polar Record* 41 (216), 21–37.

Dumville, D.N. (1996). A millennium of Gaelic Chronicles. In Kooper, E. (ed), *Medieval Chronicle*. Amsterdam, 103-115.

Dumville, D.N. (2008). Vikings in Insular chronicling. In Brink, S. and Price, N. (eds). *The Viking World*. Abingdon, 350-367.

Dunwell, A.J., Neighbour, T., and Cowie, T.G. (1995). A cist burial adjacent to the Bronze Age cairn at Cnip, Uig, Isle of Lewis. *Proceedings of the Society of Antiquaries of Scotland*, 125, 279.

Durrenberger, E.P. (1991). The Icelandic Family Sagas as Totemic Artefacts. Samson, R. (ed), in *Social approaches to Viking Studies*. Glasgow, Cruithne Press, 11-17.

Dwelly, E. (1973). *The illustrated Gaelic dictionary:* Containing every Gaelic word and meaning given in all its predecessors, and a great number never in print before, with 675 illustrations, to which is prefixed a concise Gaelic grammar. Fleet, Hants.

Dyer, C., Outram, J. and Turner, V.E. (2013). Gazetteer of Longhouses in Unst. In Turner, V.E., Bond, J.M. and Larsen, A-C. (eds). *Viking Unst*. Lerwick, 109-121.

Earle, T. (1997). *How Chiefs Come to Power: The Political Economy in Prehistory*. Stanford University Press, Stanford

Earwood, C. (1997). Bog Butter: A Two Thousand Year History*. The Journal of Irish Archaeology*, 8, 25-42.

Easson, A.R. (1987). Ouncelands and Pennylands in the West Highlands of Scotland. In Macgregor, L.J. and Crawford, B.E. (eds). *Ouncelands and Pennylands*: The Proceedings of a Day Conference held in the Centre for Advanced Historical Studies on 23 February 1985 ST. Andrews, 1-12.

Edwards, K.J., Borthwick, D., Cook, G., Dugmore, A.J., Mairs, K-A., Church, M.J., Simpson, I.A. and Adderley, W.P. (2005). A hypothesis-based approach to landscape change in Suðuroy, Faroe Islands. *Human Ecology,* 33:5, 621-650.

Edwards. K.J. and Schofield, J.E. (2013). Palynological studies at Belmont, Unst, Shetland Islands. In Turner, V.E., Bond, J.M. and Larsen, A-C. (eds). *Viking Unst*. Lerwick, 83-90.

Edwards. K.J., Schofield, J.E. and Swindles, G.T. (2013). A multi-proxy palaeoenvironmental investigation of peat deposits from Underhoull. Unst, Shetland Islands. In Turner, V.E., Bond, J.M. and Larsen, A-C. (eds). *Viking Unst*. Lerwick, 75-83.

Edwards, K.J. and Whittington, G. (1998). Disturbance and regeneration phases in pollen diagrams and their relevance to concepts of marginality. In Mills, C.M. and Coles, G. (eds), *Life on the Edge: Human Settlement and Marginality*. Symposia of the Association for Environmental Archaeology No.13. Oxbow, Oxford, 61-66.

Egerbladh, I. (1982). The significance of time for rural settlement patterns. In A.R.H. Baker and M. Billinge (eds), *Period and Place: Research Methods in Historical Geography*, Cambridge, 164-179.

Ehlers, J. (1996). *Quaternary and Glacial Geology*. Translated by P. L. Gibbard. John Wiley, Chichester.

Ellis, T. (1926). *Welsh tribal law and custom in the Middle Ages*. Oxford: The Clarendon press.

Elmevik, L. (1997). Svenska ortnamn med förleden 'Frö-'. In: *Ortnamn i språk och samhälle. Hyllningsskrift till Lars Hellberg*. S. 107–115.

Emanuelsson, U. (1990). A Model for Describing the Development of the Cultural Landscape, In Birks, H.H., Birks, H. J.B., Kaland, P.E., and Moe, D. (eds*), The Cultural Landscape- Past, Present and Future.* Cambridge, Cambridge University Press, 111-121.

Emanuelsson, M and Segerström, U. (1998). Forest grazing and Outland exploitation during the Middle Ages in Dalarna, Central-Sweden: A study based on pollen analysis. In Andersson. H., Ersgard, L., and Svensson, E. (eds), *Outland use in preindustrial Europe*. Lund studies in medieval archaeology, 20, 80-94.

Engel, F. (1877). *Der Viehstall: Bau Und Einrichtung Der Ställe Fur Rindvieh, Schafe Und Schweine*. Thaer-Bibliothek 33, Berlin.

Eriksson, O. (2014). Human Niche Construction and the Rural Environment. *Rural Landscapes: Society, Environment, History*, 1(1): 2, pp. 1-4.

Etchingham, C. (2013). Vita Findani: a Hiberno-German Window on the Early Viking Age. In R Simek and A. Ivanova, *Between the Islands and Continent*. Vienna, 55-82.

Evans, N. (2010). *The Present and the Past in Medieval Irish Chronicles*. Woodbridge, Studies in Celtic History.

Fabech, C. (1999). Centrality in sites and the landscape, in Fabech, C. and Ringtved, J. (eds.). *Settlement and Landscape*: *Proceedings of a conference in Århus, Denmark*, May 4-7, 1998, 455-473

Febvre, L. (1925), *A Geographical Introduction to History*. Trans. E.G. Mountford and J.H. Paxton (1996). Routledge, Abingdon.

Fellows-Jensen, G. (1977-78). A Gaelic-Scandinavian Loan-Word in English Place-Names'. *JEPNS*, 10 ,18-25.

Fellows Jensen, G. (1978). *Scandinavian settlement names in the East Midlands* (Navnestudier; nr. 16). Copenhagen: I kommission hos Akademisk forlag.

Fellow-Jensen. G. (1980). Common Gaelic Aírge, Old Scandinavian Ærgi or Erg. *Nomina* 4, 67-74.

Fellows-Jensen, G. (1981). Scandinavian Settlement in the Danelaw in light of the place-names of Denmark, in Bekker-Nielsen, H, Foote, P, and Olsen (eds) *Proceedings of the Eighth Viking Congress*, Århus 24-31August 1977, (Odense University Press, Viborg), 133-145.

Fellow-Jensen, G. (1983). Scandinavian Settlement in the Isle of Man and the North-West of England: the place-name evidence, in Fell, C., Foote, P., Graham-Campbell, J., and Thomson, R. (eds), in *The Viking Age in the Isle of Man: select papers from the Ninth Viking Congress*, Isle of Man, 4-14th July 1981 (Gloucester), p37-52.

Fellows-Jenson, G. (1984). Viking Settlement in the Northern and Western Isles: The Place-Name Evidence as seen from Denmark and the Danelaw, in A. Fenton and H. Palsson (eds) *The Northern and Western Isles in the Viking World: Survival, Continuity and Change*. John Donald, Edinburgh, 148-168.

Fellows Jensen, G. (1985a). *Scandinavian settlement names in the North-West* (Navnestudier; nr. 25). Copenhagen: Reitzels.

Fellows-Jenson, G. (1985b) Scandinavian Settlement in Cumbria and Dumfrieshire: The Place-Name evidence. In J.R. Baldwin and I.D. Whyte (eds) *The Scandinavians in Cumbria*, Edinburgh, The Scottish Society for Northern Studies, 65-82.

Fellow-Jensen, G. (1987). To divide the Danes from the Norwegians: on Scandinavian settlement in the British Isles. *Nomina*, 11, 35–60

Fellows-Jenson, G. (2000). Vikings in the British Isles: The Place-Name Evidence. *Acta Archaeologica,* 71, 135–146.

Fellows-Jensen, G. (2002). Old Faroese *ærgi* yet again. In:Johansen, A. (ed). *Eivindarmál. Heiðursrit til Eivind Weyhe á seksti ára hansara 25. apríl 2002*. Annales Societatis Scientiarum Færoensis Supplementum XXXII, 89-96.

Fellows-Jensen, G. (2005). Some new thoughts on personal names in the Viking colonies. In Mortensen, A. and Arge, S.V. (eds), *Viking and Norse in the North Atlantic: select Papers from the Proceedings of the Fourteenth Viking Congress*, Tórshavn, 19-30 July 2001, 152-159.

Finlay, J. (1984). *Faunal evidence for prehistoric economy and settlement in the Outer Hebrides to c. 400 AD*. Unpublished PhD thesis, University of Edinburgh.

Fitzpatrick, E.A. (1964). The Soils of Scotland. In J.H. Burnett (ed). *The Vegetation of Scotland*. London, 36-63.

Fleet, C. (not dated). *Blaeu Atlas of Scotland, 1654. The history behind the publication of the Blaeu Atlas of Scotland*. Accessed online 20/1/15 at http://maps.nls.uk/atlas/blaeu/history_behind_publication.html.

Fojut, N. (1982). Towards a Geography of Shetland Brochs. *Glasgow Archaeological Journal*, 1982, Vol.9(9), 38-59.

Fokkens, H. (1998). From the collective to the individual. Some thoughts about social and economic change around 3000 BC. In Edmonds, M., and Richards, C. (1998). *Understanding the Neolithic of north-western Europe*. Glasgow: Cruithne Press, 481-91.

Fokkens, H. (1999). Cattle and martiality: changing relations between man and the landscape in the Late Neolithic and the Brone Age, in Fabech, C. and Ringtved, J. (eds), *Settlement and Landscape: Proceedings of a conference in Århus*, Denmark, May 4-7, 1998, 35-43.

Foote, P. and Wilson, D. (1970). *The Viking achievement: The society and culture of early medieval Scandinavia* (Great civilizations series). London, Sidgwick & Jackson.

Forbes, A.R. (1923). *Place-names of Skye and adjacent Islands*. Paisley.

Forsström, P-L., Greve, R. (2004). Simulation of the Eurasian ice sheet dynamics during the last glaciation. *Global Planet. Change*, 42 (1–4), 59–81.

Forster, A.K. and Bond, J.M. (2004). North Atlantic Networks: Preliminary research into the trade of steatite in the Viking and Norse periods. In Housely, R. and Coles, G. (ed), *Atlantic Connections and Adaptations; economies, environments and subsistence in lands bordering the North Atlantic*: AEA/NABO Monograph. Oxford, Oxbow, 218-229.

Fosaa, A.M.  (2004). Biodiversity patterns of vascular plant species in mountain vegetation in the Faroe Islands. *Diversity and Distributions*, (Diversity Distrib.) 10, 217–223.

Fosaa, A.M. (2010). The vertical distribution of the vegetation in the Faroe Islands past present, south and north. In Bengtson S-A, Buckland P., Enckell, P.H. and Fosaa, A.M. (eds), *Dorete –her book*, Annales Societatis Scientiarum Færoensis Supplementum 52.

Fossitt, J. A. (1996). Late Quaternary vegetation history of the Western Isles of Scotland. *New Phytologist*, 132, 181–96.

Foster, R., (2012). *Are Thwaite-names an Example of an Early Medieval Viking Landnam in the Lake Distric*t? Unpublished MA thesis, North West Regional Studies Centre, Lancaster University.

Foster, R. (2017). The use of the Scandinavian Place-Name Elements -*sætr* and -*ærgi* in Skye and the Outer Hebrides: a site and situation study. In Cooijmans, C. (ed), *Traversing the Inner Seas: Contacts and Continuity around Western Scotland, the Hebrides and Northern Ireland*. Edinburgh: Scottish Society for Northern Studies, 107-139.

Foster, S. (1996). *Picts, Gaels and Scots.* Historic Scotland. London.

Fox, A.D., Gitay, H., Myrfyn, O., Salmon, D.G., and Ogilvie, M.A. (1987). Population Dynamics of Icelandic-Nesting Geese, 1960-1987. *Ornis Scandinavica*, 20, 4, 289-297.

Foyn, S.Ø. (2008). *Rønset i Hyllestad. Arkeologisk undersøkelse av innmarkutmark på Rønset i Hyllestad, Sogn og Fjordane*. Unpublished MA thesis, University of Bergen.

Fraser, I.A. (1974). The Place names of Lewis – The Norse Evidence. *Northern Studies*, 4, Edinburgh, 11-21.

Fraser, I.A. (1978). Norse and Gaelic Coastal Terminology in the Western Isles. *Northern Studies*, 11, 3-16.

Fraser, I.A. (1979). The Norse element in Sutherland Place Name. *Scottish Literary. Journal*. 1979. Supplement No. IX.

Fraser, I.A. (1984). Some further thoughts on Scandinavian place-names in Lewis. *Northern Studies*, 21, Edinburgh, 34-41.

Fraser, I.A. (1986). Norse and Celtic Place-Names around the Dornoch Firth. In Baldwin, J.R. (ed), *Firthlands of Ross and Cromerty*, Edinburgh, 23-32.

Fraser, I.A. (1990-92). The place-names of Argyll. In Omand, D. (ed), *The Argyll Book. Edinburgh, 243-54*.

Fraser, I.A. (1994). What is a Vik? An Investigation into an Old Norse Coastal Toponym. J.R. Baldwin (ed), *Peoples & Settlement in North-West Ross*, 68-78.

Fraser, I.A. (1995a). Norse Settlement on the North-West Seaboard. In Crawford, B.E. (ed), *Scandinavian Settlement in Northern Britain: Thirteen Studies of Place-Names in Their Historical Context*. London, Leicester University Press, 92-105.

Fraser, I.A. (1995b). The Agricultural Element in Gaelic Place-Names–Part II. *Transactions of the Gaelic Society of Inverness*, vol. 58, 223-46.

Fraser, I.A. (1999). *The place-names of Arran*. Glasgow, Arran Society of Glasgow.

Fraser, I.A. (2004). The Place-names of Argyll. In Donald Omand (ed), *The Argyll Book*, Edinburgh, Birlinn, 243–54.

Fraser, J.E. (2009). *From Caledonia to Pictland, Scotland to 795*. Edinburgh, Edinburgh University Press.

Fraser, M.D., Theobald, V.J., Davies, D.R., Moorby, J.M. (2009a). Impact of diet selected by cattle and sheep grazing heathland communities on nutrient supply and faecal micro-flora activity. *Agriculture, Ecosystems and Environment*, 129, 367–377.

Fraser, M.D., Theobald, V.J., Griffiths, J.B., Morris, S.M., Moorby J.M. (2009b). Comparative diet selection by cattle and sheep grazing two contrasting heathland communities. *Agriculture, Ecosystems and Environment,* 129 (2009) 182–192.

Friðriksson, A. and Vésteinsson, O. (2003). Creating a Past. A Historiography of the Settlement of Iceland. In Barrett, H. (ed), *Contact, Continuity and Collapse: The Norse Colonization of the North Atlantic*. Turnhout, Brepols, 139-161

Frödin, J. (1929). *Om fäbodbebyggelsens utbredning och olika typer i Europa*. Uppsala.

Gaimster, M. (1991). Money and Media in Viking Age Scandinavia. In Samson, R. (ed), *Social approaches to Viking Studies*. Glasgow, Cruithne Press, 113-122.

Gammeltoft, P. (1995). *Scandinavian Shetland. The chronology of habitative agricultural place-name generics on grounds of geographical, topographical and onomastic differences*. MA thesis, Institute of English Philology, University of Aarhus.

Gammeltoft, P. (2001). *The Place-name Element Bólstaðr in the North Atlantic Area*. Reitzels Forlag.

Gammeltoft, P. (2004a). Scandinavian-Gaelic Contacts Can Place-Names and Place-Name Elements be used as a Source for Contact-Linguistic Research? *NOWELE*, v44, 51-90.

Gammeltoft, P. (2004b). Among Dímons and Papeys: What Kind of Contact Do the Names Really Point To? *Northern Studies*, 38, 31-50.

Gammeltoft, P. (2006). Scandinavian influence on Hebridean island names. In Gammeltoft, P. and Jørgensen, B (eds), *Names Through the Looking-Glass*. Festschrift in Honour of Gillian Fellows-Jensen. Copenhagen, C. A. Reitzel, 53-84.

Gammeltoft, P. (2007). Scandinavian naming-systems in the Hebrides—A way of understanding how the Scandinavians were in contact with Gaels and Picts. In Ballin Smith, B and Taylor, S. (eds), *West over the Sea: Studies in Scandinavian Sea-Borne Expansion and Settlement Before 130*0, 479-495.

Ganev, R. (2007). Milkmaids, Ploughmen, and Sex in Eighteenth-Century Britain. *Journal of the History of Sexuality*, 16:1, 40-67.

Garmo T. (1986). Chemical composition and in vitro digestibility of indigenous pasture plants in different plant groups (preliminary report). *Rangifer*. 6:14–22.

Garnes, K. (1973). Till studies in the Gudbrandsdal area, eastern central Norway. *Bulletin of the Geological Institutions of the University of Uppsala,* 5: 81-92.

Geddes, G. and Watterson, A. (2013). 'A Prodigious Number of Little Cells' – Cleitean and the St Kilda World Heritage Site. *Architectural Heritage* XXIV (2013): 103–118.

Gelling, M. (1984). *Place-Names in the Landscape: The Geographical Roots of Britain's Place-names*. London: J.M. Dent & Son.

Gelling, M. (1991). The place-names of the Isle of Man, in Ureland, P.S and Broderick, G (eds), *Language Contact in the British Isles:* Proceedings of the Eighth International Symposium on Language Contact in Europe, Douglas, Isle of Man 1988, Tübingen, 141-155.

Gelling, M. (1998). Place-names and Landscape. in, (ed) Taylor, S., *The uses of Place Names*. Edinburgh, 75-100.

Gelling, M. and Cole, A. (2000). *The Landscape of Place-Names*. Stamford.

Gelling, P.S. (1962-3). 'Medieval shielings in the Isle of Man', *Medieval Archaeology*, Vol 6, 1. 156-72.

Gigashvili, K. and Gotsiridze, G. (2014). Culture Shift in the Context of Language Shift. Research Inventy: *International Journal of Engineering and Science*,.4, Issue 8, 24-28.

Gilbertson, D., Grattan, J., and Schwenninger, J. (1996) A Stratigraphic survey of the Holocene coastal dune and machair sequences. In D. Gilbertson, M. Kent, and J. Grattan (eds). The *Outer Hebrides The Last 14, OOO Years*. Sheffield Environmental and Archaeological Research Campaign in the Hebrides Volume 2, 72-101.

Gloyne, R.W. (1968). The structure of wind and its relevance to forestry*. Forestry Supplement,* 41, 7-19.

Gold, J.R. (1980). *An Introduction to Behavioural Geography*. Oxford.

Golledge, N.R., Finlayson, A., Bradwell, T., and Everest, J.D. (2008). The Last Glaciation of Shetland, North Atlantic. *Geografiska Annaler*. Series A, Physical Geography, Vol. 90, No. 1, 37-53.

Goodacre, S., Helgason, A. Nicholson, J. Southam, L. Ferguson, L. Hickey, E. Vega, E. Stefánsson, K. Ward, R., and Sykes, B. (2005). Genetic evidence for a family-based Scandinavian settlement of Shetland and Orkney during the Viking periods. *Heredity*, 2005; 95: 129–135.

Gordon, I. J. and Illius, A. W. (1989). Resource Partitioning by Ungulates on the Isle of Rhum. *Oecologia*, 79:3, 383-389.

Gordon, I.J. (1989a). Vegetation community selection by ungulates on the Isle of Rhum. I. Food supply. *Journal of Applied Ecology*, 26, 35-51.

Gordon, I.J. (1989b). Vegetation community selection by ungulates on the Isle of Rhum. II. Vegetation community selection. *Journal of Applied Ecology*, 26, 53–64.

Gordon, I.J. (1989c). Vegetation community selection by ungulates on the Isle of Rhum. III. Determinants of vegetation community selection. *Journal of Applied Ecology*, 26, 65–79.

Gordon, J.E. (1993). North-west coast of Lewis. In J.E. Gordon and D.G. Sutherland (eds). *Quaternary of Scotland*. London, 414-411.

Gordon, J.E., Hall, A.M. and Ross, H.M. (1993). Introduction to the Quaternary of Shetland. In Birnie, J., Gordon, J., Bennett, K., and Hall, A. (eds), *The Quaternary of Shetland*: Field Guide, 6-8.

Gorham, E. (1953). The Development of the Humus Layer in Some Woodlands of the English Lake District, *Journal of Ecology*, Vol. 41, No. 1, 123-152.

Grabowski, K. and Dumville, D. (1984). Chronicles and annals of mediaeval Ireland and Wales: the Clonmacnoise-group texts. *Studies in Celtic History* 4, Woodbridge: Boydell Press.

Graham, J. (1984). The *Shetland dictionary (*Revised ed). Lerwick: Shetland Pub.

Graham-Campbell, J. (1976). The Viking-Age silver hoards of Ireland. In Almqvist, B. and Greene, D. (eds), *Proc. Seventh Viking Congress.* Royal Irish Academy, Dublin.

Graham-Campbell, J. (1995). *The Viking-Age Gold and Silver of Scotland. National Museums of Scotland*, Edinburgh.

Graham-Campbell, J. (2006). Some reflections on the distribution and significance of Norse place-names in northern Scotland. In Gammeltoft, P. and Jørgensen, B (eds), *Names Through the Looking-Glass*. Festschrift in Honour of Gillian Fellows-Jensen. Copenhagen, C. A. Reitzel, 94-118.

Graham-Campbell, J., and Batey, C. (1998). *Vikings in Scotland: An archaeological survey.* Edinburgh: Edinburgh University Press.

Grampp, W. (1948). 'Adam Smith and the Economic Man.' *Journal of Political Economy*. 56:4, 315–36.

Grant, A. (2002). A new approach to the invasion compounds of north-west England. *Nomina,* 25, 65-90.

Grant, A. (2003) *Scandinavian place-names in northern Britain as evidence for language contact and interaction.* PhD thesis, Department of English Language, University of Glasgow.

Grant, S. A., Suckling, D. E., Smith, H. K., Torvell, L., Forbes, T. D. A., and Hodgson, J. (1985). Comparative Studies of Diet Selection by Sheep and Cattle: The Hill Grasslands, *Journal of Ecology*, Vol. 73, No. 3, 987-1004.

Grant, S.A., Torvell, L., Sim, E.M., Small, J.L. and Armstrong, R.H. (1996). Controlled grazing studies on Nardus grassland: effects of between-tussock sward height and species of grazer on Nardus utilization and floristic composition in two fields in Scotland. *Journal of Applied Ecology*, 33, 1053-1064.

Griffiths, D. (2010). *Vikings of the Irish Sea, Conflict and Assimilation AD 790-1050*. Stroud.

Griffiths, D. (2014). A brief history and archaeology of Viking activity in the North-West of England. In Harding, S, Griffiths, D, Royles, E. (eds), in *Search of Vikings, Interdisciplinary approaches to the Scandinavian Heritage of North-West England*. London.

Griffiths, D. and Harrison, J. (2011). Interpreting power and Status in the Landscape of Viking- Age Orkney, in Svavar Sigmundsson (ed). *Viking Settlements and Viking Society:* Papers from the Proceedings of the Sixteenth Viking Congress, Reykjavik and Reykholt, 16-23 August 2009, 132-146.

Grønnesby, G. (2016). Hot Rocks! Beer brewing on Viking and Medieval Age farms in Trøndelag. In Iversen, F. and Petersson, H. (eds), *The Agrarian Life of the North 2000 BC –AD 1000*. Studies in rural settlement and farming in Norway. Portal Academic, 133-150.

Guelke, L. (1982a). Historical geography and Collingwood’s theory of historical knowing. In A.R.H. Baker and M. Billinge (eds), *Period and Place: Research Methods in Historical Geography*, Cambridge, 189-196.

Guelke, L. (1982b). *Historical understanding in geography: an idealist approach*. Cambridge.

Hall, A.M., (1995). Was all of Lewis glaciated in the Late Devensian? *Quaternary Newsletter*, 76, 1–7.

Hadley, D.M. (2006). *The Vikings in England*: *Settlement, Society and Culture.* Manchester University Press, Manchester.

Halsall, G. (2007). *Barbarian Migrations and the Roman West 376–568.* Cambridge University Press, Cambridge.

Hamerow, H. (2002). *Early medieval settlements the archaeology of rural communities in North-West Europe, 400-900* (Medieval history and archaeology).

Hamilton, J. R. (1956). *Excavations at Jarlshof,* Shetland. Ministry of Works Archaeological Reports 1, HMSO, Edinburgh.

Hanley, T.A. and Hanley, K.A. (1982). Food Resource Partitioning by Sympatric Ungulates on Great Basin Rangeland. *Journal of Range Management*, 35, 152-158.

Hannon, G. E., Wastegård, S., Bradshaw, E., and Bradshaw, R. H. W. (2001). Human Impact and Landscape Degradation on the Faroe Islands. *Biology and Environment: Proceedings of the Royal Irish Academy* 101B (1–2): 129–139.

Hansen K. and Johansen J. (1982) Flora and vegetation of the Faeroe Islands. In: Rutherford G.K. (eds) *The Physical Environment of the Faeroe Islands*. Monographiae Biologicae, vol 46. Springer, Dordrecht, 35-52.

Hansen, H., Bøe, U., and Okkenhaug, H. (2009). Herbage production and live weight gain in dairy heifers grazing forest habitats in Norway. *Acta Agriculturae Scandinavica*, Section A – Animal Science, 59(3), 161-166.

Harding, D.W. (1990). Changing Perspectives in the Atlantic Iron Age. In Armit, I. *Beyond the Brochs: Changing perspectives on the Later Iron Age in Atlantic Scotland*. Edinburgh University Press, Edinburgh, pp5-16.

Harman, M. (1993). *History and Culture of the St Kildans to 1930*. PhD thesis, University of Edinburgh.

Harris, O.J.T., Cobb, H., Batey, C.E., Montgomery, J., Beaumont, J., Gray, H., Murtagh, P. and Richardson. P. (2017). Assembling places and persons: a tenth-century Viking boat burial from Swordle Bay on the Ardnamurchan peninsula, western Scotland. *Antiquity*, 91(355), 191–206.

Harrison, S.H. (2008) *Furnished insular Scandinavian burial artefacts & landscape in the early Viking Age*. PhD thesis, Trinity College Dublin.

Harsema, O.H. (1993). *Het nieuwe Drentse bouwbesluit van 1400 v.Chr*., Westerheem 43, 101-109.

Haswell-Smith, H. (2004). *The Scottish islands: a comprehensive guide to every Scottish island*, Edinburgh: Canongate.

Haugen, E. (1950). The Analysis of Linguistic Borrowing. *Language,* Vol.26, p.210-231.

Haugen, E. (1974). *Norwegian English Dictionary*: *A pronouncing and translating dictionary of modern Norwegian [Bokm l and Nynorsk] with a historical and grammatical introduction*. Madison: Universitetsforlaget University of Wisconsin Press.

Haugen, E. (1976). The *Scandinavian Languages: An Introduction to their History*. London. Faber.

Heather, P. (2009). *Empires and Barbarians*. London, Pan Books.

Hedeager, L. (1992). *Iron-Age Societies: From Tribe to State in Northern Europe 500 BC to AD 700.* Blackwell, Oxford.

Hedeager, L. (1994). Warrior economy and trading economy in Viking-Age Scandinavia. *Journal* of *European Archaeology* 2:1, 130-147.

Heggstad, L. and Torp, A.(1909). *Gamelnorsk Ordbok, med Nynorsk tyding*. Oslo.

Helgason, A., Hickey, E., Goodacre, S., Bosnes, V., Stefánsson, K., Ward, R., and Sykes, B. (2001). mtDNA and the Islands of the North Atlantic: Estimating the Proportions of Norse and Gaelic Ancestry. *American Journal of Human Genetics*. 68, 723-737.

Helleland, B. (1989). Til diskusjonen om –sete som gards– og stølsnamn. I*: Namn og Nemne*, 6, 59–74.

Helleland. B. (1998). Place-names, A source Used in the Study of Religious Activity in pre-Christian Society: Some Methodological Aspects. *Scope, Perspectives and Methods of Onomastics.* Proceedings of the XIXth International Congress of Onomastic Sciences. Aberdeen, August 4-11, 1996. Ed. W. F. H. Nicolaisen. 3 vols. Aberdeen 1998, Vol. 2, 169-177.

Henderson, G. (1910). *The Norse Influence on Celtic Scotland.* Glasgow, J. MacLeboso and Sons.

Hencken, H. O'N. (1942). Ballinderry Crannog No. 2. *Proceedings of the Royal Irish Academy*, 47C, 1-76.

Hermanson, L. (2011). Vertical Bonds and Social power: Ideals of Lordship in Twelfth-Century Scandinavia. Poulsen, B. and Sindbæk, S.M. (eds), in *Settlement and Lordship in Viking and Early Medieval Scandinavia.* Brepols, Turnhout, pp.63-77.

Hessle, A., Dahlström, F., Bele, B., Norderhaug, A., and Söderström, M. (2014). Effects of breed on foraging sites and diet in dairy cows on mountain pasture. International Journal of Biodiversity Science, *Ecosystem Services & Management*, 10:4, 334–342.

Higham, M.C. (1977-78). The 'erg' place-names of Northern England. *Journal of the English Place-Name Society.* Vol 10, 7-17.

Higham, M.C. (1987). Scandinavian settlement in the north-west England, with a special study of Ireby names, in Crawford, B.E (ed), *Scandinavian Settlement in Northern Britain: Thirteen Studies of Place-Names in Their Historical Context*. London, Leicester University Press, 195-205.

Higham, M.C. (1996). -ærgi names as indicators of transhumance: problems of the evidence. In Fox, H.S.A. (ed) *Seasonal Settlement*. Vaughan Paper 39, University of Leocester, 55-60.

Higham, N. (1985). The Scandinavians in North Cumbria: Raids and Settlement in the Later Ninth to mid Tenth Century, in J.R. Baldwin and I.D. Whyte (eds) *The Scandinavians in Cumbria*. Edinburgh (The Scottish Society for Northern Studies, 37-52.

Hindle, P. (1998). *Maps for Historians*. Chichester, Phillimore.

Hindle, P. (2001). ‘The first large-scale maps of Cumberland and Westmorland in the 1770s’, *Cumberland and Westmoreland Antiquarian and Archaeological Society Transactions,* series 3, vol 1.

Hirons, K.R. and Edwards, K.J. 1990: Pollen and related studies at Kinloch, Isle of Rhum, Scotland, with particular reference to possible early human impacts on vegetation. *New Phytologist* 116, 715-27.

Hishi, T., Urakawa, R., Tashiro, N., Maeda, Y. and Shibata, H. (2014). Seasonality of factors controlling N mineralization rates among slope positions and aspects in cool-temperate deciduous natural forests and larch plantations. *Biology and Fertility of Soils*, 50, 343–356.

Hitzler, E. (1979). *Sel, Untersuchungen zur Geschichte des isl ndischen Sennwesens seit der Landnahmzeit*. Oslo.

Hjelle, K.L. (2008). *Pollen analysis of four samples from Rønset, in Foyn, S. Ø,. Rønset i Hyllestad. Arkeologisk undersøkelse av innmarkutmark på Rønset i Hyllestad, Sogn og Fjordane*. MA thesis, University of Bergen.

Hjelle, K.L., Halvorsen, L.S., Overland, A. (2010). Heathland development and relationship between humans and environment along the coast of western Norway through time. *Quaternary International,* 220, 133-146.

Hjelle, K.L., Hufthammer, A.K. and Bergsvik, K, A. (2006). Hesitant hunters: a review of the introduction of agriculture in western Norway. *Environmental Archaeology* 11:2, 147-170.

Hjelle, K.L., Prosch-Danielsen, L. and Soltvedt, E-C. (2016). Potential and recommendations: agrarian botanical data from Western Norway. In Iversen, F. and Petersson, H. (eds) *The agrarian life of the north 2000 BC –AD 1000. Studies in rural settlement and farming in Norway*. Portal Academic, 293-242.

Hodgson, R. (1982). *Dark Age Economies: The Origins of towns and trade AD 600-1000*. London.

Hofstetter, P., Steiger Burgos, M., Petermann, R., Münger, A., Blum, J. W., Thomet, P., Menzi, H., Kohler, S., and Kunz, P. (2011). Does body size of dairy cows, at constant ratio of maintenance to production requirements, affect productivity in a pasture-based production system? *Journal of Animal Physiology and Animal Nutrition*, Vol.95 (6), 717-729.

Holm, I. (2002). A Cultural Landscape beyond the Infield/Outfield Categories: An Example from Eastern Norway. *Norwegian Archaeological Review*, Vol. 35, No. 2, 67-80.

Hope, B. (2015*). Stølsdrift i indre Sogn: Framvekst og utvikling frå eldre jarnalder til seinmellomalder*. Masteroppgåve i arkeologi Institutt for arkeologi, historie, kultur- og religionsvitskap Universitetet i Bergen.

Hougen, B. (1947). *Fra seter til gård, studier i norsk bosetningshistorie. Norsk arkeologisk selskap*, Oslo.

Høeg, H. (1982) Vegetational development from about 12,000 to 6,000 years B.P. in the counties of Agder and Telemark, South Norway, *Norsk Geografisk Tidsskrift - Norwegian Journal of Geography*, 36:4, 210-224.

Höglind, M., Hanslin, H.M., and Mortensen, L.M. (2011). Photosynthesis of Lolium perenne L. at low temperatures under low irradiances, *Environmental and Experimental Botany,* vol 70, 297–304.

Hudson, G., Towers, W., Bibby, J.S. and Henderson, D.J. (1982). *Soil and Land Capability for Agriculture: Outer Hebrides.* Aberdeen: Macaulay Land Use Research Institute.

Hufthammer, A. K. 1992. De osteologiske undersøkelsene frå Kotedalen (The osteological investigations from Kotedalen). In Hjelle, K. L., Hufthammer, A. K., Kaland, P. E., Olsen, A. B. and Soltvedt, E. C. (eds), *Kotedalen-en Boplass gjennom 5000 år. Bind 2. Naturvitenskapelige Undersøkelser (Kotedalen — a Settlement site through 5000 years. Volume 2. Scientific Investigations*). Bergen: University of Bergen, 13–64.

Hufthammer A.K., Bratbak O.F. and Indrelid, S. (2011). A study of bone remains and butchery patterns from medieval mass-hunting of reindeer in the South Norwegian mountain districts. *Quaternary International*, 238, 55-62.

Hughes, J. and Huntely, B. (1988). Upland Hay meadows in Britain. In H.H. Birks, H.J.B. Birks, P.E. Kaland, and D. Moe (eds). The *Cultural Landscape: Past, Present and Future.* Cambridge, Cambridge University Press, 91-110.

Hughes, T.J. (1981). Numerical reconstructions of palaeo-ice sheets. Denton, G.H. and Hughes, T.J. (eds) *The Last Great Ice Sheets*, 222-274. Wiley, New York.

Hulme, P.D. and Shirriffs, J. (1994). Late-glacial and Holocene vegetation of the Lang Lochs Mire aream Gulberwick, Shetland: a pollen and macrofossil investigation. *New phytologist*, 128:4, pp.793–806.

Humlum, O. (1996). The Main Landforms –Funningur and Slættaratindur. *The Færoe Islands topographical atlas*, 24–7. København. Danmark. C.A. Reitzels Forlag for Det Kongelige Danske Geografiske Selskab and Kort & Matrikelstyrelsen.

Hunter, J.R. (1986). Rescue excavations on the Brough of Birsay 1974–82. *Society of Antiquaries of Scotland*, Monographs 4, Edinburgh.

Hunter, J.R., Bond, J.M. and Smith, A.N. (1993). Some aspects of Early Viking settlement in Orkney. In Batey et al. (eds), The *Viking Age in Caithness, Orkney and the North Atlantic*. Edinburgh University Press, Edinburgh, 272–284.

Hunter, J.R., Bond J. and Smith, A.N. (2007). Investigations on Sanday, Orkney Vol 1. Pool. *Excavations at Pool, Sanday: a multi-period settlement from Neolithic to late Norse times,* Kirkwall: Orcadian in association with Historic Scotland, 242-262.

Huntington, E. (1924). *Civilization and climate*. New Haven, CT: Yale University Press.

Hvass, S. (1983). Vorbasse: The Development of a Settlement through the First Millennium A.D. *Journal of Danish Archaeology*, 2, 127-36.

Ihse, M. and Skånes, H. (2008). The Swedish Agropastoral Hagmark Landscape: An Approach to Integrated Landscape Analysis. In Jones, M. and Olwig, K.R. (eds), *Nordic landscapes: Region and Belonging on the Northern Edge of Europe.* University of Minnesota press, Minneapolis, 251-280.

Indrelid, S. and Moe, D. (1982). Februk pa Hardangervidda i yngre steinalder. *Viking,* 46, 36-71.

Indrelid, S. (1988). The farming system and its history in the Flåm valley. In Birks, H.H., Birks, H.J.B., Kaland, P.E. and Moe, D. (eds) The *Cultural Landscape: Past, Present and Future*. Cambridge, Cambridge University Press, 47-52.

Iosad, P. (2015). 'An echoing tone: Pitch accent parallels in Scandinavia and Scotland' Paper presented at Nordic Research Network 2015, Edinburgh, United Kingdom, 18/02/15 - 19/02/15.

Isard, W. (1956). *Location and Space-economy; a General Theory Relating to Industrial Location, Market Areas, Land Use, Trade, and Urban Structure*. MIT Cambridge.

Iversen, F. (2005). Royal manors and estates in Western Norway in the late Iron Age and the Middle Ages. In Tore Iversen, T. and Myking, J.R. (eds.), *Land, Lords and Peasants: Peasants' right to control land in the Middle Ages and the Early Modern Period*: Norway, Scandinavia and the Alpine Region: report from a seminar in Trondheim, November 2004. Trondheim: Department of History and Classical Studies, Norwegian University of Science and Technology, 133-144

Iversen, F. (2016). Estate Division: Social cohesion in the aftermath of AD 536–7. In Iversen F. and Petersson, H. (eds), *The Agrarian Life of the North 2000 BC –AD 1000. Studies in rural settlement and farming in Norway*. Portal Academic, 41-75.

Iversen, J. (1949). The influence of prehistoric man on vegetation. *Danmarks geol. Unders.* IV R. 3:6.

Iversen, T. (2011). Thralls Manumission. Land Clearing, and State Building in Medieval Norway. (eds) Poulsen, B. and Sindbæk, S.M., in *Settlement and Lordship in Viking and Early Medieval Scandinavia.* Brepols, Turnhout, 263-276.

Jackson, K. (1951). *Common Gaelic: The evolution of the Geodelic languages* (Sir John Rh s memorial lecture1951).

Jakobsson, Á. (2007). 'Masculinity and Politics in Njal's Saga'. *Viator*, 38:1, 191-215.

Jakobsen, J. (1928). An *Etynological Dictionary of the Norn Language in Shetland*, voll III. Copenhagen.

Jakobsen, J. (1936). *The Place-Names Shetland.* London.

Jakobsson, M. (1992). *Krigarideologi och vikingatida svärdstypologi*. Stockholm Studies in Archaeology, Stockholm.

James, H.F. (2009) *Medieval rural settlement: a study of Mid-Argyll, Scotland*. PhD thesis, Department of Archaeology, University of Glasgow.

Jarman, P. (1974). The social organisation of antelope in relation to their ecology. *Behaviour*, 48(3), 215-267.

Jennings, A. (1996): 'Historic and linguistic evidence for Gall-Gaidheil and Norse in Western Scotland', in Sture Ureland and I. Clarkson *Language Contact across the North Atlantic,* Max Niemeyer, Tübingen, 61-73.

Jennings, A. (1998). 'Iona and the Vikings: Survival and Continuity', *Northern Studies,* 33, 37–54.

Jennings, A. and Kruse, A. (2005). 'An Ethnic Enigma – Norse, Pict and Gael in the Western Isles'. In Mortensen, A. and Arge, S.V. (eds), *Viking and Norse North Atlantic*, Select Papers from the Proceedings of the Fourteenth Viking Congress, Tórshavn, 19-30 July 2001. Tórshavn.

Jennings, A. and Kruse, A. (2009a). One coast - three peoples: names and ethnicity in the Scottish west during the early Viking period, in *Scandinavian Scotland - 20 Years On*, (ed) A. Woolf.

Jennings, A. and Kruse, A. (2009b). From Dál Riata to the Gall-Ghàidheil. *Medieval Scandinavi*a, 5, 123-149.

Jensen, N.M. (1995). *Udgravningsberetning for amatørarkæologisk undersøgelse á Sondum, Sandoy,* SNR:6194, 1995. Føroya Fornminnissavn (Unpublished report), Tórshavn, Faroe Islands.

Jesch, J. (1992). Narrating Orkneyinga Saga. *Scandinavian Studies*, 64, 336–355.

Jesch, J. (2010). Orkneyinga saga: a work in progress? In Lethbridge, E. and Quinn, J. (eds), *Creating the medieval saga: versions, variability and editorial interpretations of Old Norse saga literature.* University Press of Southern Denmark, 153-173.

Jesch, J. (2015). *The Viking diaspora* (The medieval world). London, Routledge.

Jockens, J. (1995). *Women in Old Norse Society*, London, Cornell University Press.

Johansen, A. (1973). Iron production as a factor in the settlement history of the mountain valleys surrounding Hardangervidda. *Norwegian Archaeological Review*, 6:1, 84-101

Jóhansen, J. (1985). *Studies in the Vegetational History of the Faroe and Shetland Islands*, Annales Societatis Scientiarum Faeroensis Supplementum XI, Tórshavn.

Johnston, A. R. (1991). *Norse settlement in the Inner Hebrides ca. 800-1300; with special reference to the islands of Mull, Coll and Tiree*: University of St Andrews. PhD thesis.

Johnston, A. (1995). Norse Settlement Patterns in Coll and Tiree. In Crawford, B.E. (ed), *Scandinavian Settlement in Northern Britain: Thirteen Studies of Place-Names in Their Historical Context*. London, Leicester University Press,108-126.

Jones, M. (2008). The “Two Landscapes” of North Norway and the “Cultural Landscape” of the South. In Jones, M. and Olwig, K.R. (eds), *Nordic landscapes: Region and Belonging on the Northern Edge of Europe*. University of Minnesota press, Minneapolis, 283-299.

Jubb, K.V.F. and Kennedy, P.C. (1963). *Pathology of Domestic Animals*, vol. 1, London Academic Press.

Kaland, P.E. (1971). Pollen-analytical investigations of the earliest farming in Hordaland. *Norwegian Archaeological Review*. 4:2, 8-29.

Kaland, P.E. (1984). Holocene shore displacement and shorelines in Hordaland, western Norway. *Boreas*, 13:2, 203-242.

Kaland, P.E., (1986). The origin and management of Norwegian coastal heaths as reflected by pollen analysis. In: Behre, K.E. (ed), *Anthropogenic Indicators in Pollen Diagrams*. A.A. Balkema, Rotterdam, 19-36.

Karlenby, L. (1994). The Bronze Age house in central Sweden. An evaluation of two recent excavations. *TOR*, 26, 5-33,

Karlsson, H., Emanuelsson, M., Segerström, U. (2010). The history of a farm–shieling system in the central Swedish forest region. *Veget Hist Archaeobot*, 19, 103–119.

Kelly, F. (1995). *A guide to early Irish law (*Early Irish law series; 3). Dublin. Dublin Institute for Advanced Studies.

Kelly, F. (1997). *Early Irish farming*: A study based mainly on the law-texts of the 7th and 8th centuries AD (Early Irish law series; 4). Dublin. School of Celtic Studies, Dublin Institute for Advanced Studies.

Kennedy, S. (2015). *Identifying constraints to increasing yield potential of spring barley.* PhD Thesis, University of Edinburgh.

Kent, M., Weaver, R., Gilbertson, D., Wathern, P., and Brayshay, B. (1996). The present-day machair vegetation of the southern Outer Hebrides. In D. Gilbertson, M. Kent, and J. Grattan (eds). *The Outer Hebrides The Last 14, OOO Years*. Sheffield Environmental and Archaeological Research Campaign in the Hebrides Volume 2, 133-145.

Kerr, T.R., Swindles, G.T., and Plunkett, G. (2009). Making hay while the sun shines? Socio-economic change, cereal production and climatic deterioration in Early Medieval Ireland. *Journal of Archaeological Science*, 36, 2868–2874.

King, A. (1978). Gauber high pasture, Ribblehead - an interim report, in Hall, R. A. (ed.), *Viking Age York and the North*, C.B.A. Res.Rep. 27,21-25.

Kirk, W. (1947 [1963]). Problems of Geography. *Geography*, Vol. 48, 4, 357-371.

Kleman, J. and Hättestrand, C. (1999). Frozen-bed Fennoscandian and Laurentide ice sheets during the Last Glacial Maximum. *Nature*, 1999, Vol.402 (6757), p.63.

Klemsdal, T. (1982). Coastal classification and the coast of Norway, Norsk Geografisk Tidsskrift - *Norwegian Journal of Geography*, 36:3, 129-152.

Knight, F.H. (1963). *On the History and Methods of Economics*. Chicago, University of Chicago Press.

Knooihuizen, R. (2006). 'The Norn to Scots language shift: another look at the evidence'. *Northern Studies*, 39, 5-16.

Körner, C. (1999). *Alpine Plant Life, functional plant ecology of high mountain ecosystems* (Springer-Verlag, Berlin).

Kruse, A. (2004). Norse Topographical Settlement Names on the Western Littoral of Scotland. In: Adams, J. and Holman, K. (eds), *Scandinavia and Europe 800-1350*: Contact, Conflict and Coexistence. Turnhout, 97-107.

Kruse, A. (2005). Explorers, Raiders, and Settlers. The Norse Impact upon Hebridean Place-Names, in *Cultural Contacts in the North Atlantic Region: The Evidence of Names*, ed. Peder Gammeltoft, Carole Hough and Doreen Waugh. Shetland, 141–56.

Kruse, A. (2007). Fashion, Limitation and Nostalgia: Scandinavian Place-Names Abroad, in *Images and Imaginations: Perspectives on Britain and Scandinavia*, ed. A. Kruse and P. Graves, Edinburgh, 3–33.

Kupiec, P. (2016). *Transhumance in the North Atlantic: An Interdisciplinary Approach to the Identification and Interpretation of Viking-age and Medieval Shieling Sites*, PhD thesis, University of Aberdeen.

Kvamme, M. (1988). Pollen analytical study of mountain summer-farming in western Norway. in Birks, H.H., Birks, H.J.B., Kaland, P.E. and Moe, D. (eds) *The Cultural Landscape: Past, Present and Future.* Cambridge, Cambridge University Press, 349-368.

Kvamme, M., Berge, J., and Kaland, P.E. (1992). Vegetasjonsmessige undersøkelser i Nyset-Steggjevassdragene. *Arkeologiske rapporter* 17. Historisk museum, Bergen.

Flaws M. and Lamb, G. (1996). The Orkney Dictionary, Orkney Language and Culture Group. Kirkwall.

Laland, K.N. and G.R. Brown, G.R. (2006). Niche Construction, Human Behavior, and the Adaptive-Lag Hypothesis. *Evolutionary Anthropology*, 15, 95–104.

Laland, K.N. and O'Brien, M.J. (2010). Niche Construction Theory and Archaeology. *Journal of Archaeological Method and Theory*, 17, 303–322.

Laland, K.N., Odling-Smee, J. and Turner, S. (2014). The role of internal and external constructive processes in evolution. *Journal of Physiology*, 592 (Pt 11). 2413–2422.

Lambeck, K. (2006). Hyperbolic tangents are no substitute for simple classical physics. *Geologiska Föreningen i Stockholms* Förhandlingar, 128, 349-351.

Lambeck, K., Smither, C. and Johnston, P. (1998). Sea-level change, glacial rebound and mantle viscosity for northern Europe. *Geophysical Journal International,* 134, 102-144.

Lamb, H. H. (1965). The early medieval warm epoch and its sequel. *Palaeogeography, Palaeoclimatology, Palaeoecology,* 1, 13–37.

Lane, A. (1983). *Dark Age and Viking Age pottery in the Hebrides, with special reference to the Udal, North Uist*. PhD thesis, University College London.

Lane, A. (1990). Hebridean pottery: Problems of Definition. Chronology and Absence. In I. Armit, Beyond the Brochs: *Changing perspectives on the Later Iron Age in Atlantic Scotland*. Edinburgh University Press, Edinburgh, 108-130.

Lane, A. (2005). Viking Age pottery in the Hebrides. *The Viking Age: Ireland and the West*. Papers from the Proceedings of the Fifteenth Viking Congress, Cork, 18-27 August, Publisher: Four Courts Press, 204-16.

Larcher, W., Kainmüller, C. and Wagner, J. (2010). Survival types of high mountain plants under extreme temperatures. *Flora*, 205, 3–18.

Larsen, A.C. and Stummann Hansen, S. (2001). Viking Ireland and the Scandinavian Communitites in the North Atlantic. In Larsen, A.C. (ed), *The Vikings in Ireland*, 115– 126. The Viking Ship Museum, Roskilde.

Larsen, A.C. (2013). The excavation at Belmont, Wadbister, Unst, Shetland. In Turner, V., Bond, J.M. and Larsen, A-C. (eds). *Viking Unst*. Lerwick, 181-216.

Larson, L.M. (1935). *The earliest Norwegian Laws, being the Gulathing Law and the Frostathing Law,* translated by Larson, L.M., Columbia University Press, Menasha.

Lawson, I.T., Church, M.J., Edwards, K., Cook, G., and Dugmore, A. (2007). Peat initiation in the Faroe Islands: climate change, pedogenesis or human impact? *Earth and Environmental Science Transactions of the Royal Society of Edinburgh*, 98:1, 15–28.

Lawson, I.T., Church, M.J., McGovern, T.M., Arge, S.V., Woollet, J., Edwards, K.J., Gathorne-Hardy, F.J., Dugmore, A.J., Cook, G. Mairs, K-A, Thomson, A.M., and Guðrún Sveinbjarnardóttir. (2005). Historical Ecology on Sandoy, Faroe Islands: Palaeoenvironmental and Archaeological Perspectives. *Human Ecology*, 33, No. 5, 651-684.

Ledger, P.M., Edwards, K.J., and Schofield, J.E. (2013). Shieling activity in the Norse Eastern Settlement: Palaeoenvironment of the 'Mountain Farm', Vatnahverfi, Greenland, *The Holocene,* 23(6) 810–822

Lee, E.S. (1966). A Theory of Migration. *Demography*, 3, No.1, 47-57.

Legge. A.J. (1981). The agricultural economy', in R. Mercer, *Grimes Graves, Norfolk 1971-2,* 1, Department of the Environment Report 11, 79-103.

Legge, T. (2005). Milk use in prehistory: the osteological evidence. In J. Mulville and A. K. Outram (eds), *The Zooarchaeology of Fats, Oils, Milk and Dairying*, 8–13. Oxford, Oxbow Books.

Leonard, S. (2011). Relative linguistic homogeneity in a new society: The case of Iceland. *Language in Society*, 40 (2), 169-186.

Lie, R. (1992). Osteologisk materiale. I: Bjørgo, T., Kristiffersen, S. and Prescott, C. (ed.) *Arkeologiske undersøkelser i Nyset-Steggjevassdragene*. Arkeologiske rapporter 16, p. 320-327. Bergen.

Lillehammer, A. (1999). Farm and village, the problem of nucleation and dispersal of settlement-seen from a Norwegian perspective, in Fabech, C. and Ringtved, J, (eds), *Settlement and Landscape: Proceedings of a conference in Århus*, Denmark, May 4-7, 1998, 131-137.

Líndal, Sigurður (1969). Sendiför Úlfljóts. *Skírnir*, 143, 5-26.

Lindkvist, H. (1912). *Middle English place-names of Scandinavian Origin*, Part 1 (Upsala University Press).

Lockwood, W.B. (1978). Chr. Matras' studies on the Gaelic element in Faroese: Conclusions and Results. *Scottish Gaelic Studies*, 13:1, 112–26.

Lohne, Ø.S., Mangerud, J. and Svendsen, J.I. (2012). Timing of the Younger Dryas glacial maximum in Western Norway. Journal of Quaternary Science, 27(1) 81–88.

Løken, T. (2001). Oppkomsten av den germanske hallen. Hall og sal i elder jernalder i Rogaland. *Viking*, 64, 49–86.

Løken, T. (1998). Hustyper og sosialstruktur gjennom bronsealder på Forsandmoen, Rogaland, sørvest-Norge. In Løken, T., *Bronsealder I Norden* – Regioner og interaksjon. Ams-Varia 33. Archeologisk Museum i Stavanger, 107-122.

Lönnroth, L. (1991). Sponsors. Writers. And Readers of Early Norse Literature. Samson, R. (ed), in *Social approaches to Viking Studies*. Glasgow, Cruithne Press, 3-10.

Lösch, A. (1954). *The economics of location*. Translated by W.H. Woglom. Yale University Press, New Haven

Lowe, J. and Walker, M. (1984). *Reconstructing quaternary environments*. London: Longman.

Lucas, A.T. (1989). *Cattle in Ancient Ireland*. Kilkenny, Boethius Press.

Lucas, G. (2008). Palstoftir: A Viking Age Shieling in Iceland. *Norwegian Archaeological Review*, 41, No. 1, 85-99.

Lundberg, A. (2008). Changes in the Land and the Regional Identity of Western Norway: the case of Sandhåland, Karmøy. In Jones, M. and Olwig, K.R. (eds.), *Nordic landscapes: Region and Belonging on the Northern Edge of Europe*. University of Minnesota press, Minneapolis, pp. 344- 371.

Lundmark, H. (1984). The Identification of Tribal Hierarchies. In Kristiansen, K. (ed), *Settlement and Economy in Later Scandinavian Prehistory*. BAR International Series 211, Oxford, 43-62.

Lynam, E. (1950). English Maps and Map-Makers of the Sixteenth Century, *The Geographical Journal*, 116, No. 1/3.

Lynnerup, N. (1998). The Greenland Norse a biological-anthropological study. *Meddelelser om Grønland,* 24: 1–149.

MacAulay, D. (1971-72). Studying the Place-Names of Bernera. *Transactions of the Gaelic Society of Inverness*, XLVII, 313-337.

MacAulay, K. (1764). *The History of St Kilda.* Becket and de Hondt, London.

MacBain, A. (1894). The Norse Element in the Topography of the Highlands and Isles, *Transactions of the Gaelic Society of Inverness*, 19, 217–45.

MacBain, A. (1911). *An etymological dictionary of the Gaelic Language*. Glasgow.

MacBain, A. (1922). *Place-Names of the Highlands and Islands of Scotland*. Stirling.

McCarthy, D.P. (2001). `The Chronology of the Irish Annals', *Early Medieval Europe*, 10 (3) 323-341.

McCormick, F. (1992). Early faunal evidence for dairying. *Oxford Journal of Archaeology*, 11: 2, 201-209.

McCormick, F. (2006). Animal bone. In Armit, I (ed) *Anatomy of an Iron Age Round House. The Cnip Wheelhouse Excavation, Lewis*. Society of Antiquaries of Scotland: Edinburgh, 161-172.

McCormick, F. (2008). The decline of the cow: agricultural and settlement change in early medieval Ireland. *Peritia*, 20, 209–224.

McCormick, F. (2014). Agriculture, settlement and society in Early Medieval Ireland. *Quaternary International*, 346, 119-130.

Maceacharna, D. (1976). *The lands of the lordship: The romance of Islay's names*. Port Charlotte: Argyll Reproductions.

Macgregor, L.J. (1986). Norse naming elements in Shetland and Faroe: A comparative study. *Northern Studies*, 23, 84-101.

Macgregor, L.J. (1987). *The Norse settlement of Shetland and Faroe, c.800-c.1500: a comparative study*, PhD thesis, University of St Andrews.

MacLaren, A. (1956). South Uist. Viking House at Drimore. *Discovery and Excavation*. 38-39

MacLaren, A. (1974). A Norse house on Drimore Machair, South Uist, *Glasgow Archaeological* Journal 3, 9-18.

Macleod Rivet, R. (2013). The 1997 Survey of Southwest Unst: Gallow Hiil to Heogland: The Viking/Norse and Post Medieval landscapes. In Turner, V., Bond, J.M. and Larsen, A-C. (eds). *Viking Unst*. Lerwick, 21-38.

McNeill, P.G.B. and MacQueen, H.L. (2000). *An Atlas of Scottish History to 1707*. Glasgow.

Macniven, A. (2006). *The Norse in Islay: A Settlement Historical Case-study for Medieval Scandinavian Activity in Western Maritime Scotland*, PhD thesis, University of Edinburgh.

Macniven, A. (2013). Modelling Viking Migration to the Inner Hebrides. Across the Sólundarhaf: Connections between Scotland and the Nordic World Selected Papers from the Inaugural St. Magnus Conference 2011. *Journal of the North Atlantic*, Special Volume 4:3–18.

Macniven, A. (2015). *The Vikings in Islay: The place of names in Hebridean settlement history.* John Donald, Edinburgh.

Magnus, B.J. (1986) Iron age exploitation of high mountain resources in Sogn, *Norwegian Archaeological Review*, 19 (1), 44-50.

Mahler, D.L.D. (1991). Argisbrekka: New Evidence of Shielings in the Faroe Islands. *Acta Archaeologica* 61: 60-72.

Mahler, D.L.D. (1993) Shielings and their role in the Viking-Age Economy, in Batey, C.E., Jesch, J. and Morris, C.D. (eds), *The Viking Age in Caithness, Orkney and the North Atlantic*, Edinburgh, 487-505.

Mahler, D.L.D. (1998). The Stratigraphical Cultural Landscape. In Andersson, H., Ersgård, L., and Svensson, E. (eds), *Outland use in preindustrial Europe.* Lund Studies in Medieval Archaeology, Lund, 51-62.

Mahler, D.L.D. (2007). *Seteren ved Argisbrekka: økonomiske forandringer på Færøerne I vikingetid og tidlig middelalder*: economic development during the, Viking Age and Early Middle Ages on the Faroe Islands. Annales Societatis Scientiarum Færoensis Supplermenrum 47, Faroe Universiry Press, Tórshavn.

Mahler, D.L.D. and Joutttjärvi, A. (2005). Experiments with peat charcoal and iron production in the Faeroe Islands. in Mortensen, A. and Arge, S.V. (eds). *Viking and Norse in the North Atlantic:* select Papers from the Proceedings of the Fourteenth Viking Congress, Tórshavn, 19-30 July 2001, 92-98.

Malmros, C. (1990). Viking age wood resources at Argisbrekka, Faroe Islands, *Norwegian Archaeological Review*, 23:1-2, 86-92.

Malthus, T. (1798). *An Essay on the Principle of Population, as it affects the future improvement of society with remarks on the speculations of Mr. Godwin*, M. Condorcet, and other writers. Anonymously published.

Mangerud, J. (2004). Ice sheet limits on Norway and the Norwegian continental shelf. In: Ehlers, J., Gibbard, P.L. (eds), *Quaternary Glaciations— Extent and Chronology*, 1. Elsevier, Europe, Amsterdam, 271–294.

Mangerud, J., Gyllencreutz, R., Lohne, Ø.S., Svendsen, J-I. (2011). Glacial History of Norway. Ehlers, Jürgen; Gibbard, Philip L.; Hughes, Philip D. 2011. *Quaternary Glaciations - Extent and Chronology, A Closer Look*. Elsevier, pages 279-298.

Meharg, A.A., Deacon, C., Edwards, K.J., Donaldson, M., Davidson, D.A., Spring, C., Scrimgeour, C.M., Feldmann, J., and Rabb, A. (2006). Ancient manuring practices pollute arable soils at the St Kilda World Heritage Site, Scottish North Atlantic. *Chemosphere* 64, 1818–1828.

Márkus, G. (2012a) From GoiIl to Ghàidheil: Place-names and Scandinavian settlement in Bute. Anna Ritchie (ed), *Historic Bute: Land and People*. Edinburgh, Scottish Society for Northern Studies, 1-16.

Márkus, G. (2012b). *The place-names of Bute*. Donington, Shaun Tyas.

Martens, I. (1988). Jernvinna på Møsstrond i Telemark. En studie i teknikk, bosetning og økonomi. *Norske Oldfunn* XIII. Oslo.

Martens, I. (1998). Some cultural aspects of marginal settlement and resource utilization in South Norway. In Andersson, H., Ersgård, L., and Svensson, E. (ed): *Outland Use in Preindustrial Europe*, 30-39.

Martens, I. (1982). Recent investigations of iron production in Viking Age Norway. *Norwegian Archaeological Review*. 15, 29-44.

Marttila, J. (2016). Resources, Production, and Trade in the Norse Shetland. *Journal of the North Atlantic*, 29, 1-20.

Marwick, H. (1923). *Celtic place-names in Orkney* (Reprinted from the Proceedings of the Society of Antiquaries of Scotland. Edinburgh.

Marwick, H. (1952). *Orkney Farm-Names*. Kirkwall.

Marwick, H. (1970). *The place-names of Birsay*, Aberdeen: Aberdeen University Press.

Matras, A.K., Stummann Hansen, S. and Andreasen, H. (2004). A Viking Age shieling in Skarðsvík, Fugloy, Faroe Islands. *Fróðskaparrit* 51, 200-211.

Matras, C. (1933). *Stednavne paa de færøske Norðuroyar*. Kjøbenhavn: H.H. Thieles bogtrykkeri.

Matras, C. (1956). Gammelfærosk ærgi, n., og dermed beslaegtede ord. *Namn och Bygd*, 14, 51-67.

Mayr, E. (1982). *The growth of biological thought: diversity, evolution, and inheritance*. Cambridge, Belknap Press.

Megaw, E. (1978). The Manx 'Eary' and its significance. In Davey, (ed), *Man and Environment in the Isle of Man*. BAR, no.54, 2, 327-346.

Mehl, I.K., Overland, A., Berge, J., and Hjelle, K.L. (2015). Cultural landscape development on a west-east gradient in western Norway - potential of the Landscape Reconstruction Algorithm (LRA). *Journal of Archaeological Science,* 61, 1-16.

Meling, T. (2016). Farm-Manor-Estate: Agricultural Lanscapes and Settlement at Hundvåg. Southwest Norway. Frode Iversen and Håkan Petersson (eds), *The Agrarian Life of the North 2000 BC –AD 1000*. Studies in rural settlement and farming in Norway. Portal Academic, 151-171.

Menard, C., Duncan, P., Fleurance, G., Georges, J.Y., and Lila, M. (2002). Comparative foraging and nutrition of horses and cattle in European wetlands. *Journal of Applied Ecology*, 39, 120–133.

Miðalberg, M. (1996). Staðarnøvn í Fugloy. *The Færoe Islands topographical atlas*, 24–7. København. Danmark. C.A. Reitzels Forlag for Det Kongelige Danske Geografiske Selskab and Kort & Matrikelstyrelsen.

Mills, C.M. and Coles, G. (1998). Introduction. *Life on the Edge: Human Settlement and Marginality*. Symposia of the Association for Environmental Archaeology No.13. Oxbow, Oxford

Moe, D. (1991). Hustad, Arstad and Naurstad. A vegetational study of three farms in Salten, North Norway, *Norsk Geografisk Tidsskrift - Norwegian Journal of Geography*, 45:1, 11-24

Moe, D. (1996). The utilisation of un-cultivated rural land in southern Norway during the last 2500 years - from the coastal areas to the arcticalpine zone: a pollen analytical survey. In: *L'homme et la nature au Moyen Âge. Paléoenvironnement des sociétés occidentales*. Actes du Ve Congrès international d'Archéologie Médiévale (Grenoble, 6-9 octobre 1993) Caen: Société d'Archéologie Médiévale, 122-128. (Actes des congrès de la Société d'archéologie médiévale, 5).

Moe, D., Indrelid, S., and Fasteland, A. (1988). The Halne area. Hardangarvidda. Use of a high mountain area during 5000 years- an interdisciplinary case study. In Birks, H.H., Birks, H.J.B., Kaland, P.E. and Moe, D. (eds) *The Cultural Landscape: Past, Present and Future*. Cambridge, Cambridge University Press, 429-444.

Moos, R.H. (1976). *The Human context*. London, Shiley.

Morris, C.D. (1984). Aspects of Scandinavian Settlement in Northern England: A Review. *Northern History*, 20:1, 1-22.

Morris, C.D. (1996). *The Birsay Bay project*. Vol. 2, Sites in Birsay village and on the Brough of Birsay, Orkney; Christopher D. Morris; contributions by Beverley Ballin Smith. (Monograph series (University of Durham. Department of Archaeology); no.2. Durham: Department of Archaeology, University of Durham.

Morris, C.D., Batey, C., Rackham, D. (1995). *Freswick Links, Caithness: Excavation and survey of a Norse settlement* (North Atlantic Biocultural Organisation monograph; no.1). Inverness: Highland Libraries in association with the North Atlantic Biocultural Organisation.

Müller-Wille, M. (1999). Settlement and non-agrarian production from the high mountain region to the shoreline, in Fabech, Charlotte. and Ringtved, Jytte, *Settlement and Landscape: Proceedings of a conference in Århus*, Denmark, May 4-7, 1998, 205-211.

Mulville, J. (1999). Mammal Bones. In Parker Pearson, M. and Sharples, N.M., 1999. *Between land and sea: excavations at Dun Vulan, South Uist*, Sheffield: Sheffield Academic Press, 234-274.

Mulville, J. (2005). The Machair, 2. Mammals. In Sharples, N. M. (ed). *A Norse farmstead in the Outer Hebrides: excavations at Mound 3, Bornais, South Uist*. Oxford: Oxbow Books, 165-169.

Mulville, J. and Madgwick, R. (2012). The animal bones from Frobost. In: Parker Pearson, M. (ed.) *From Machair to Mountains: Archaeological Survey and Excavation in South Uist*. Sheffield Environmental and Archaeological Research Campaign in the Hebrides. Oxford. Oxbow Books.

Mulville, J., Powell, A., Williams, J., Ingrams, C., and Jones, J.R. (2018). The faunal remains – mammals. In Parker Pearson, M., Brennand, M., Mulville, J., and Smith, H. (eds), *Cille Pheadair: A Norse Farmstead and Pictish Burial Cairn in South Uist*. Sheffield Environmental and Archaeological Research Campaign in the Hebrides. Volume: 7. Oxford, Oxbow,

Münster Strom, K. (1948). The Geomorphology of Norway. *The Geographical Journal*, 112, No. 1/3, 19-23.

Myers-Scotton, C. (2002). *Contact linguistics: Bilingual encounter and Grammatical Outcomes*. Oxford.

Myhre, B. (1973). The Iron Age farm in Southwest Norway, *Norwegian Archaeological Review*, 6:1, 14-29.

Myhre, B. (1974). Iron age farms in Southwest Norway the development of the agrarian landscape on Jæren, *Norwegian Archaeological Review*, 7:1, 39-40.

Myhre, B. (1999). Together or apart- the probem of nucleation and dispersal of settlemement, in Fabech, C. and Ringtved, J. (ed), *Settlement and Landscape: Proceedings of a conference in Århus*, Denmark, May 4-7, 1998, 125-129.

Myhre, B. (2000). The Early Viking Age in Norway. *Acta Archaeologica*, 71, 35-47.

Myhre, B (2004). Agriculture, landscape and society ca. 4000 BC-AD 800, in R. Almås (ed), *Norwegian Agricultural History*, 79–140.

Myrdal, J. (1988). The plunge churn from Ireland to Tibet. In Fenton, A., and Myrdal, J. (eds.), *Food and drink and travelling accessories*: Essays in honour of G  sta Berg. Edinburgh: John Donald in association with the National Museums of Scotland, Skansen and Nordiska Museet. (Edinburgh), 111–37.

Myrdal, J. (2008). Women and cows-ownership and work in medieval Sweden. *Ethologia Scandinavica*, 38, 61-80.

Myrdal, J.  (2011). Milking and Grinding, Digging and Herding: Slaves and Farmwork 1000–1300. *Settlement and Lordship in Viking and Early Medieval Scandinavia*. Turnout, Brepols Publishers, 293-308.

Nadal-Romero, E., Petrlic, K., Verachtert, E., Bochet, E. and Poesen, J. (2014). Effects of slope angle and aspect on plant cover and species richness in a humid Mediterranean badland. *Earth Surf. Process. Landforms*, 39, 1705–1716.

Nagy, L. and Grabherr, G. (2009). *The Biology of Alpine Habitats*. Oxford University Press, Oxford)

Narmo, L.E. (1996). Jernvinna i Valdres og Gausdal—et fragment av middelalderens økonomi. *Varia* 38. Oslo.

Neighbour, T. and Burgess, C. (1997). Traigh Bostadh, (Uig Parish), *Discovery and Excavation in Scotland* 1996, 113-14.

Nesje, A. and Whillans I.M. (1994). Erosion of Sognefjord, Norway. *Geomorphology*, 9, 33-45.

Nesje, A., Dahl, S.O., Valen, V. and Øvstedal, J. (1992). Quaternary erosion in the Sognefjord drainage basin, western Norway. *Geomorphology*, 5, 511-520.

Neville, J. (2002). Making their own sweet time: The scribes of Anglo-Saxon Chronicle A. In Kooper, E. (ed), *Medieval Chronicle II*, Amsterdam, 166-177.

Newell, A. and Simon, H.A. (1972). *Human Problem Solving*. London, Prentice Hall.

NG: *Norske Gaardsnavne* (Vols.1-19). Rygh, O. (1897-1936). Kristiana and Oslo.

Nicolaisen, W.F.H. (1961). Notes on Scottish Place-names: 16. The Interpretation of Name-changes, *Scottish Studies*, 5, 85-96.

Nicolaisen, W.F.H. (1965). Slew- and sliabh. *Scottish Studies,* 9, 91-106.

Nicolaisen, W.F.H. (1969). Norse Settlement in the Northern and Western Isles: Some. Place-Name Evidence. *Scottish Historical Review*, 48, 6-17.

Nicolaisen, W.F.H. (1975). Place-names in bilingual communities, *Names*. 23, 167-174.

Nicolaisen, W. F. H. (1976a). Scandinavian Place Names in Scotland as a Source of Knowledge. *Northern Studies*, 7/8, 14-24.

Nicolaisen, W.F.H. (1976b). *Scottish Place-names* (John Donald, Edinburgh).

Nicolaisen, W.F.H. (1977). Early Scandinavian naming in the Western and Northern Isles. *Northern Scotland*, 3:1, 105-121.

Nicolaisen, W.F.H. (1979-80). Early Scandinavian naming in the western and Northern Isles, *Northern Studies*, 3:2, 105-122.

Nicolaisen, W.F.H. (1982). Scandinavians and Celts in Caithness: the place-name evidence. In Baldwin, J.R. (ed.), *Caithness: A Cultural Crossroads*. Edinburgh, Scottish Society for Northern Studies, 75-85.

Nicolaisen, W.F.H. (1989). Place-name maps how reliable are they? In Peterson, L. and Strandberg, S (eds), *Studia Onomastica- Festskrift til Thorsten Anderson*, 23 February 1989, Lund, 261-268.

Nicolaisen, W.F.H. (1991). Place-Name Maps-How reliable are they? *Namn och Bygd*, 79, 43-50.

Nilssen, E. (1988). Development of the cultural landscape in the Lofoten area, north Norway. in Birks, H.H., Birks, H.J.B., Kaland, P.E. and Moe, D. (eds), *The Cultural Landscape: Past, Present and Future.* Cambridge, Cambridge University Press, 369-380.

Noe-Nygaard, A. (1962). The Geology of the Faroes. Sixteenth William Smith Lecture delivered 11 October 1961. *Quarterly Journal of the Geological Society,* 118, 375-383.

Nordal, Sigurður (1940). Hrafnkatla, *Studia Islandica* 7. Bókaútgáfa menningarsjóðs, Reykjavík.

Norderhaug, A. (2008). The Agropastoral Mountain Landscape in Southern Norway: Museum or Living Landscape? The “Two Landscapes” of North Norway and the “Cultural Landscape” of the South. In Jones, M. and Olwig, K.R. (eds), *Nordic landscapes: Region and Belonging on the Northern Edge of Europe*. University of Minnesota press, Minneapolis, 401-420.

Norton, W. (1982). Historical geography as the evolution of spatial form. In A.R.H. Baker and M. Billinge (eds), *Period and Place: Research Methods in Historical Geography*, Cambridge, 251-260.

NSL: *Norsk Stadnamnleksikon* (1990), Sandnes, J. and Stemshaug, O. (eds). Oslo (third edition).

Nunn, P.D. (2009). Geographical Influences on Settlement-Location Choices by Initial Colonizers: A Case Study of the Fiji Islands. *Geographical Research*, 47(3), 306–319.

O’Brien, J. (1932). *Focaloir Gaoidhilge-Sags-Bhearla* (Irish-English Dictionary).

Ó Cíobháin, B. (1978). *Toponomia Hiberniae I*. Baile Átha Cliath.

Ó Corráin, D. (1972). *Ireland before the Normans*. Dublin, Gill and Macmillan.

Ó Corráin, D. (1998). The Vikings in Scotland and Ireland in the ninth century. *Peritia* 12, 296–339.

Ò Cuív, B. (1998). 'Personal Names as an Indicator of Relations Between Native Irish and Settlers in the Viking Period', in Bradley, J. (ed), *Settlement and Society in Medieval Ireland*, Kilkenny, 79-88.

Ó Maolalaigh, R. (1998). Place-names as a Resource for the Historical Linguist, In Taylor, S. (ed), *The Uses of Place-Names*, Edinburgh, 12-53.

O'Sullivan, A. and Nicholl, T. (2011). Early medieval settlement enclosures in Ireland: Dwellings, daily life and social identity. *Proceedings of the Royal Irish Academy*. Section C, Archaeology, Celtic Studies, History, Linguistics, Literature, 111, 59-90.

O’Sullivan, A. and Quin, E.G. (1964). *Contributions to a Dictionary of the Irish Language A-D*. Dublin, Royal Irish Academy.

Odlin, T. (1989). *Language Transfer: Cross-Linguistic Influence in Language Learning*. Cambridge University Press, Cambridge.

Odling-Smee, J., Erwin, D. H., Palkovacs, E. P., Feldman, M. W. and Laland, K. N. (2013). Niche construction theory: a practical guide for ecologists. *Quarterly Review of Biology*, 88, 3–28.

Odling-Smee, J., Laland, K.N., Feldman, M.W. (2003). Niche construction: the neglected process in evolution. In: *Monographs in population biology*, vol 37. Princeton University Press, Princeton.

Odner, K. (1972). Ethno-historic and ecological settings for economic and social models of an Iron Age socety: Valldalen, Norway. In Clarke, D.L. (ed), *Models in Archaeology*. London, Methuen, 623-652.

Oftedal, M. (1953). The Village Names of Lewis in the Outer Hebrides. *Norsk Tidsskrift for Sprogvidenskap*, Oslo, XVII, 363-409, 1954.

Oftedal, M. (1962). Norse place-names in Celtic Scotland, in *Proceedings of the International Congress of Celtic Studies*. Dublin, 6-10th July 1959. 43-50.

Oftedal, M. (1980). Scandinavian Place Names in Celtic Territory - an attempt at linguistic classification. In Anderson, T. Brylla E., and Rostvik, A. (eds), *Ortnamn och språkkontakt*, NORNA-rapporter 17, Uppsala, 163-191.

Oftedal, M. (1981). Names of lakes on the Isle of Lewis in the Outer Hebrides, in Bekker-Nielsen, H., Foote, P., and Olsen, O. (eds), *Proceedings of the Eighth Viking Congress*, Århus 24-31 August 1977, Odense, 183-188.

Oftadal, M. (1994). Gaelic: Norse influence. In D.S. Thomson, *The companion to Gaelic Scotland.* Glasgow, 98-99.

Ogilvie, A. E. J., Barlow, L. K. and Jennings, A. E. (2000). North Atlantic climate c. AD 1000: Millennia reflections on the Viking discoveries of Iceland, Greenland and North America. *Weather*, Vol. 55, 34-45.

Ohnstad, A. 1980. Glimtf ra fylket si sogc. In Schei, N. (ed), *Bygd og By i Norge, Sogn og Fjordane*. Gyldendal Norsk forl, 166-198.

Olausson, M. (1999). Herding and stalling in Bronze Age Sweden, in Fabech, C. and Ringtved, J, *Settlement and Landscape: Proceedings of a conference in Århus*, Denmark, May 4-7 1998, 319-328.

Olsen, H. (1976). *Skipshelleren. Osteologisk material. ZooLogisk Museum,* Universitetet i Bergen, Bergen.

Olsen, L. (1998). Pleistocene paleosols in Norway: implications for past climate and glacial erosion. *Catena*, 34, 75–103.

Olsen, M. (1928). *Farms and fanes of ancient Norway:* The place-names of a country discussed in their bearings on social and religious history (Instituttet f r sammenlignende kulturforskning. Serie A ; Forelesninger 9). Oslo : Cambridge, Mass.: H. Aschehoug Harvard Univ. Press, Oslo.

Olson, D. (1983). *Norse Settlement in the Hebrides, an Interdisciplinary Study*, Cand.Philol. thesis, University of Oslo, Norway.

Oram, R.D. (1987). Davachs and Pennylands in South-West Scotland: A Review of the Evidence. In L. J. Macgregor and B. E. Crawford (eds). *Ouncelands and Pennylands*: The Proceedings of a Day Conference held in the Centre for Advanced Historical Studies on 23 February 1985 ST. Andrews, 46-59.

Oram, R.D. (1995). Scandinavian settlement in south-west Scotland with a special study of Bysbie. In Crawford, B.E. (ed). *Scandinavian Settlement in Northern Britain: Thirteen Studies of Place-Names in Their Historical Context*. London, Leicester University Press, 127-140.

Oram, R.D. (2000). *The Lordship of Galloway*. John Donald Edinburgh.

Oram, R. and Adderley, WP. (2011). Innse Gall: Culture and Environment on a Norse Frontier in the Scottish Western Isles. In: Imsen Steinar (ed). *The Norwegian Domination and the Norse World c.1100-c.1400*. 'Norgesveldet', Occasional papers, No 1, Trondheim, Norway: Tapir Academic Press, 125-148.

Outram, Z. and Legg, R. (2013). Geoarchaeological investigations at Hamar: a summary, In Turner, V.E., Bond, J.M. and Larsen, A-C. (eds). *Viking Unst*. Lerwick, 153-156

Overland, A. and Hjelle, K.L. (2009). From forest to open pastures and fields: cultural landscape development in western Norway inferred from two pollen records representing different spatial scales of vegetation. *Veget Hist Archaeobotany*, 18: 459–476.

Owen., N., Kent, M. and Dale, P. (1996). The machair vegetation of the Outer Hebrides: A review. (1996). *The Outer Hebrides The Last 14, OOO Years*. David Gilbertson, D., Kent, M., and Grattan, J. Sheffield Environmental and Archaeological Research Campaign in the Hebrides Volume 2, 123-131.

Owen, O.A. (1993). Tuquoy, Westray, Orkney: a challenge for the future? In Batey, C E, Jesch, J and Morris, C D, *The Viking age in Caithness, Orkney and the North Atlantic*. Edinburgh, 318-39.

Ødegaard, M. (2013). State Formation, Administrative Areas, and *Thing* Sites in the Borgarthing Law Province, Southeast Norway. *Journal of the North Atlantic*, 42-63.

Øye, I. (2002). *Vestlandsgården – fire arkeologiske undersøkelser. Havrå – Grinde – Lee – Ormelid.* Julshamn, L., Bade, R., Valvik, L., Kjel,l A. and Larsen, J. Arkeologiske Avhandlinger og rapporter fra Universitetet i Bergen; 8. Bergen

Øye I. (2003). Outfields as part of the medieval farm – four archaeological case studies fromWestern Norway. In Bergstøl J (ed). *Scandinavian archaeological practice in theory*. Oslo Archaeological Series 1, 400−411

Øye I. (2004). Agricultural conditions and ruralsocieties c. 800–1350. In Almås R (ed). *Norwegian Agricultural History*. Trondheim: Tapir Academic Press, 79−140

Øye, I. (2005). Farming and farming systems in Norse societies of the North Atlantic. In A. Mortensen, S. Arge (eds). *Viking and Norse in the North Atlantic*. Select Papers from Proceedings of the Fourteenth Viking Congress, Tórshavn, 19−30 July 2001, Annales Societascientiarium Færoensis Supplementum XLIV.Tórshavn: The Faroese academy of sciences, 359−370.

Øye, I.  (2006). Introduction, in In Holm, I., Innselset, S. and Øye, I. (eds),*'Utmark'. The Outfield as Industry and Ideology in the Iron Age and the Middle Ages*. UBAS – International 1. University of Bergen Archaeological Series, Bergen, 9-20.

Øye I. (2009a). On the margins of the medieval farm – Norwegian cases. In Klápšte J. and Sommer P. (eds). Medieval rural settlement in marginal landscapes*; Ruralia VII*. Turnhout: Brepols publisher, 99−107.

Øye, I. (2009b). Settlement patterns and field systems in medieval Norway. *Landscape history*, 30, 2, 37-54.

Øye, I. (2011). Settlements and Agrarian Landscapes. Chronological Issues and Archaeological Challenges. Sigmundsson, Svavar (ed), Vi*king Settlements and Viking Society*: Papers from the Proceedings of the Sixteenth Viking Congress, Reykjavík and Reykholt, 16-23 August 2009. University of Iceland Press, 494-506.

Øye, I. (2013). Technology, land use and transformations in Scandinavian landscapes, c. 800-1300 AD. In: T. Kerig and A. Zimmermann (eds): *Economic archaeology. From structure to performance in European archaeology*. Verlag Dr. Rudolf Habelt GMBH, Bonn, 295-309.

Page, R.I. (1986). *A Most Vile People": Early English Historians on the Vikings*. The Dorothea Coke Memorial Lecture in Northern Studies delivered at University College London, 19 March 1986).

Pankhurst, R.J. and Mullin, J.M. (eds). (1991). *The Flora of the Outer Hebrides*. London: Natural History Museum Publications.

Parker Pearson, M. and Sharples, N.M. (1999). *Between land and sea: excavations at Dun Vulan, South Uist*, Sheffield: Sheffield Academic Press.

Parker Pearson, M. (2012). The machair survey, in Parker Pearson, M. (ed) *From Machair to Mountains: archaeological survey and excavation in South Uist*.

Sheffield environmental and archaeological research campaign in the Hebrides; v. 4, 12-73.

Parker Pearson, M. and Smith, H. (2012) Introduction. In Parker Pearson, M. (ed), *From machair to mountains: archaeological survey and excavation in South Uist*. Sheffield environmental and archaeological research campaign in the Hebrides; v. 4, 1-11.

Parker Pearson, M., Smith, H., Mulville, J. and Brennand, M., (2004). Cille Pheadair: the life and times of a Norse-period farmstead c1000-1300. In Hines, J., Lane, A., and Redknapp, M. (eds) *Land, Sea and Home: Settlement in the Viking Period*. Society for Medieval Monograph 20. Leeds, Maney, 235-54.

Parsons, D.N. (2011). On the Origin of 'Hiberno-Norse Inversion-compounds'. *The Journal of Scottish Name Studies,* 5, 115-152.

Payne, S. (1973). *Kill-off Patterns in Sheep and Goats: The Mandibles from Aşvan Kale*. Aşvan 1968-1972: An Interim Report. British Institute at Ankara, Anatolian Studies, 23, 281-303.

Peacock, J.D. (1984). *Quaternary geology of the Outer Hebrides*. Report of the British Geological Survey 16: 1-6.

Pearsall, W. H. (1961). Place-names as clues to the pursuit of ecological history. *Namn och Bygd*, 49, 72-89.

Pedersen, A. (2011). Military Organization and Offices: The Evidence of Grave Finds, (eds) Poulsen, B. and Sindbæk, S.M., in *Settlement and Lordship in Viking and Early Medieval Scandinavia.* Brepols, Turnhout, 45-61.

Pedersen, E.A. (1999). Transformations to sedentary farming in eastern Norway: AD100 or 1000 BC In Fabech, C. and Ringtved, J. *Settlement and Landscape: Proceedings of a conference in Århus*, Denmark, May 4-7, 1998, 45-52.

Petersen, J. (1936). Gamle gacrdsanlegg i Rogaland, Utsira, Lyngaland Hacvodl, Birkelandstølen, Hanaland. *Instituttet for sammenlignende kulturforskning*. Serie B, Skrifter, No. 31, Oslo.

Pettersson, S. (2006). settlement, shieling and landscape, in Holm, I., Innselset, S., and Øye, I. (eds), *'Utmark'. The Outfield as Industry and Ideology in the Iron Age and the Middle Ages*. UBAS – International 1. University of Bergen Archaeological Series, Bergen, 42-52.

Plymale, A.X., Boemer, R.E.J. and Logan, T.J. (1987). Relative nitrogen mineralization and rimcation in soils of two contrasting hardwood forests: effects of site microclimate and initial soil chemistry. *Forest Ecology and Management*, 21, 21-36.

Poulsen, B. and Sindbæk, S.M. (2011). Settlement and Lordship in Viking and Early Medieval Scandinavia. In Poulsen, B. and Sindbæk, S.M. (eds), *Settlement and Lordship in Viking and Early Medieval Scandinavia*. Brepols, Turnhout, 1-28.

Prescott, C. (1995). Aspects of Early Pastoralism in Sogn, Norway. *Acta Archaeologica*, 66, 163–189

Prescott, C. (1999). Long-term patterns of non-agrarian exploitation in southern Norwegian highlands, in Fabech, C. and Ringtved, J. (ed), *Settlement and Landscape: Proceedings of a conference in Århus*, Denmark, May 4-7, 1998, 213-223.

Prescott, C. (2005). Settlement and Economy in the Late Neolithic and Bronze Age of Southern Norway: Some Points and Premises. *AmS-Varia*, 43, 127-136.

Price, N. (2014). Ship-Men and Slaughter-Wolves: Pirate Polities in the Viking Age. In Amirell and Müller, L. (eds), *Persistent piracy: historical perspectives on maritime violence and state formation*. Basingstoke: Palgrave Macmillan, 51-68.

Prøsch-Danielsen, L. (1996). Vegetation history and human impact during the last 11 500 years at Lista, the southernmost part of Norway. Based primarily on Professor Ulf Hafsten's material and diary from 1955–1957, *Norsk Geografisk Tidsskrift - Norwegian Journal of Geography*, 50:2, 85-99.

Prøsch-Danielsen, L. and Simonsen, A., (2000). Palaeoecological investigations towards the reconstruction of the history of forest clearances and coastal heathlands in south-western Norway. *Veg. Hist. Archaeobot*. 9, 189-204.

Quine, G. (1990) *A reconsideration of the evidence of the shieling in the Kingdom of Man and the Isles, with particular reference to Man*. PhD thesis, Durham University. Accessed online 11/3/14 at Durham E-Theses Online http://etheses.dur.ac.uk/1504/.

Radner, J.N. (1999). Writing history: Early Irish historiography and the significance of form. *Celtica*, 23, 312-325.

Raffield, B. (2013). *Landscapes of Conflict and Control: Creating an Archaeological Atlas of Scandinavian- Occupied England, AD 878– 954*, PhD thesis, Aberdeen: Department of Archaeology, University of Aberdeen.

Raffield, B. (2016). Bands of brothers: A re-appraisal of the Viking Great Army and its implications for the Scandinavian colonization of England. *Early Medieval Europe*, 24(3), 308-337.

Rafn, C.C. (1833). *Faereyinga Saga eller Faerpboernes Historie i den islandiske Grundtext med faerpisk og dansk Oversaettelse*. Copenhagen, Walova.

Rappaport, R.A. (1971). Nature, Culture and Ecological Anthropology. In H.L. Shapiro (ed), *Man, culture, and society*. Oxford, Oxford University Press, 237-267.

Rasmussen, J. (1982). The Faeroe Islands: Geology. In: Rutherford G.K. (eds) *The Physical Environment of the Faeroe Islands*. Monographiae Biologicae, v 46. Springer, Dordrecht, 15-34

Rasmussen, J. (1996). The geology of the Faeroe Islands. In R. Guttesen (ed), Atlas of Denmark Series II, Volume 5. *The Færoe Islands topographical atlas*, 34–7. København. Danmark. C.A. Reitzels Forlag for Det Kongelige Danske Geografiske Selskab and Kort & Matrikelstyrelsen.

Rasmussen, M. (1999). Livestock without bones. The long-house as contributor to the interpretation of livestock management in the Southern Scandinavian Early Bronze Age. In Fabech, C. and Ringtved, J. (eds), *Settlement and Landscape: Proceedings of a conference in Århus*, Denmark, May 4-7, 1998, 281-290

Ratzel, F. (1909). *Anthropogeographie. Verlag Von J. Engelhorn*. Stuttgart.

Raven, J. (2012). Duns, brochs and crannogs. In Parker Pearson, M. (ed), *From machair to mountains: archaeological survey and excavation in South Uist*. Sheffield environmental and archaeological research campaign in the Hebrides; 4, 134- 159.

Raven, J.A. (2005). *Medieval Landscapes and Lordship in South Uist*. PhD thesis, Department of Archaeology, University of Glasgow.

Reinton, L. (1955). *Sæterbruket i Noreg I-III. Institutt for sammenlignende* Oslo.

Reinton, L. (1957). *Sæterbruket i Noreg I-III. Institutt for sammenlignende* Oslo.

Reinton, L. (1961). *Sæterbruket i Noreg I-III. Institutt for sammenlignende* Oslo.

Reinton. L. (1969). *Til seters: norsk seterbruk og seterstell*. Oslo.

Ritchie, A. (1973). Empty Islands or Integration? An Archaeological Estimate of the Norse Impact on the Northern Isles. *Northern Studies*, 1, 23-25

Roberts, B.K. (1978). Site and Situation: a discussion, *Nomina*, 2, 34-37.

Roberts, B.K. (1982). *Rural settlement: an historical perspective*. Historical Geography Research Series, no.9.

Robertson, C.M. (1906). Scottish Gaelic Dialects. *The Celtic Review*, 3, No. 10, 97-113.

Rodriguez, J.F.G. (2007). *Old Norse Drinking Culture*. PhD thesis. Centre for Medieval Studies. University of York.

Roesdahl, E. (1980). The Vikings at Home. In D.M. Wilson (ed), *The Northern World: The History and Heritage of Northern Europe AD 400–1100*. London, 145-153.

Roesdahl, E. (1998). *The Vikings*, 2nd addition, London.

Ross, J.M. and Zutter, C. (2007). Comparing Norse Animal Husbandry Practices: Paleoethnobotanical Analyses from Iceland and Greenland. *Arctic Anthropology*, 44:1, 62-86.

Ross, A. (1884). A Visit to the Island of St Kilda. *Inverness Scientific Society and Field Club*, 3, 72-91

Roymans, N. (1996). The sword or the plough: regional dynamics in the romanisation of Belgic Gaul and the Rhineland area, in N. Roymans (ed), *From the Sword to the Plough*. Amsterdam: Amsterdam University Press, 9-126.

Rutherford, G.K. (1982). *The physical environment of the Faeroe Islands*. Monographiae Biologicae, vol 46. Springer, Dordrecht.

Rutherford. G.K. and Taylor, C.E.B. (1982). Soils of the Faeroe Islands. In Rutherford, G.K. (ed). *The physical environment of the Faeroe Islands*. Monographiae Biologicae, vol 46. Springer, Dordrecht, 111-124.

Rutkowska, J., Adamska, A., and Bialek, M. (2012). Fatty acid profile of the milk of cows reared in the mountain region of Poland. *Journal of Dairy Research*, 79:4, 469-476.

Rutter, S.M., Orr, R.J., Yarrow, N.H., and Champion, R.A. (2004a). Dietary preference of dairy heifers grazing ryegrass and white clover, with and without an anti-bloat treatment. *Applied Animal Behaviour Science*, 85, 1–10.

Rutter, S.M., Orr, R.J., Yarrow, N.H., and Champion, R.A. (2004b). Dietary preference of dairy cows grazing ryegrass and white clover. *Journal of Dairy Science*, 87(5), 1317-1324.

Rygh, O. (1898). *Norske Gaardnavne. Forord og Indledning*. Kristiania, Oslo.

Rygh, O. (1897-1936). *Norske Gaardsnavne*. (Vols.1-19). Kristiana and Oslo.

Rygh, O, (1897-1936). *Norske Stedsnavne* (Kristiania: W.C. Fabricius); online database http://www.dokpro.uio.no/rygh_ng/rygh_felt.html

Særheim, I. (2001) Settlement names of two millenniums. The dating of the land-names and the semantics of the ending –land. *Northern Studies*, 36, 91-108.

Sæther, N.H., Bøe, K., and Vangen, O. (2006a). Differences in grazing behaviour between a high and a moderate yielding Norwegian dairy cattle breed grazing seminatural mountain grasslands. *Acta Agriculturae Scandinavica*, Section A - Animal Sciences. 56: 91–98.

Sæther, N.H., Sickel, H., Norderhaug, A., Sickel, M. and Vangen, O. (2006b). Plant and vegetation preferences for a high and moderate yielding Norwegian dairy cattle breed grazing seminatural mountain pastures. *Animal Research*, 55, 367–387.

Safran, W. (2005). The Jewish diaspora in a comparative and theoretical perspective. *Israel Studies* 10,1, 36-60.

Sahlins, M. (1987). *Islands of History*. Chicago: University of Chicago Press.

Salvesen, H., Sandnes, J., Farbregd, O., and Halvorsen, A.M. (1977). The Hoset project: An interdisciplinary study of a marginal settlement. *Norwegian Archaeological Review*, 10, 107–154.

Samson, R. (1991a). Economic Anthropology and Vikings. Samson, R. (ed). *In Social approaches to Viking Studies*. Glasgow, Cruithne Press, 87-96.

Samson, R. (1991b). Fighting with Silver: Rethinking Trading, Raiding. And Hoarding. Samson, R. (ed), in *Social approaches to Viking Studies*. Samson, R. (1991). Glasgow, Cruithne Press., 123-133.

Samuels, M.L. (1972). *Linguistic Evolution*: With Special Reference to English Cambridge.

Sandnes, B. (2005). What is Norse, what is Scots? A re-evaluation of Orkney Place-Names. *Cultural Contacts in the North Atlantic Region: The Evidence of Names*. Shetland Times LTD, Lerwick.

Sandnes, B. (2006). Toponyms as settlement names-of no relevance in settlement history? In Gammeltoft, P. and Jørgensen, B (eds), In Gammeltoft, P. and Jørgensen, B (eds), *Names Through the Looking-Glass*. Festschrift in Honour of Gillian Fellows-Jensen. Copenhagen, C. A. Reitzel, 230-253.

Sandnes, B. (2010). Linguistic patterns in the place-names of Norway and the Northern Isles. In Millar, Robert McColl (ed) 2010. *Northern Lights, Northern Words*. Selected Papers from the FRLSU Conference, Kirkwall 2009. Aberdeen: Forum for Research on the Languages of Scotland and Ireland, 3-14.

Sandnes, J. (1956). Gardsnavn pa -staðir og -setr. *Litt om navne klasscnes absolutte og relative kronologi, spesielt i Trondela*g.

Sandnes, J. (1979). Ødegårdsprosjektet og tallet på gårdsbruk i Norge i høgmellomalderen, *Historisk Tidsskrift*.

Sandnes, J. (1981). Settlement Developments in the Late Middle Ages (appro". 1300-1540), in Desertion and Land Colonizatton in the Nordic Countries 1300-1600

Cornpurutaue Report from *The Scandinavian Research Project on deserted Farms and Villages*. Eds Svend Gissel Eino Jutikkala Eva Österberg Jørn Sandnes Björn Teitsson. Stockholm, 78-114.

Sandnes, J. (1991). Utmarksdrift og resursutnyttelse i Norge i eldre tid [Outland use and resource utilization in the old times in Norway]. In: Ilsø H, Jørgensen B (eds) *Plov og plen*, *Festskrift til Svend Gissel* 4. januar 1991. Copenhagen, 213–221.

Sandred, K.I. (1991). The study of Scandinavian in England: A survey of Swedish contribution including ongoing research in East Anglia, in Ureland, P.S and Broderick, G (eds), *Language Contact in the British Isles*: Proceedings of the Eighth International Symposium on Language Contact in Europe, Douglas, Isle of Man 1988, Tübingen, 317-336.

Sauer, S. (1925). The Morphology of Landscape. In J. Leighly (ed), *Land and Life: A Selection from the Writings of Carl Ortwin Sauer*. (1963). University of California Press, London.

Sauer, C. (1941). Foreword to Historical Geography. *Annals of the Association of American Geographers*, Vol. 31, No. 1, 1-24

Sauvage, R. and Mokkelbost, M. (2016). Rural buildings from the Viking and Early Medieval Period in Central Norway. In Iversen, F. and Petersson, H. (eds), *The Agrarian Life of the North 2000 BC –AD 1000*. Studies in rural settlement and farming in Norway. Portal Academic, 275-293.

Sawyer, P. (1958). The Density of the Danish Settlement in England, *University of Birmingham Historical Journal*, vol vi, pp.1-17.

Sawyer, P.H. (1971). *The Age of the Vikings*. London.

Schmidt, T. (2002). The settlement of a Norwegian mountain valley through the evidence of place-names, in *Proceedings of the 21st International Congress of Onomastic Sciences*, Uppsala 19-24th August.

Schulte-Thulin, B. (1996). Old Norse in Ireland. In P. Sture Ureland and I. Clarkson (eds), *Language contact across the North Atlantic*. Proceedings of the Working Groups held at University College, Galway, (Ireland), August 29 – September 3, 1992. And the University of Goteborg (Sweden), August 16-21, 1993. - Tübingen, 83-113.

Schulze-Thulin, B. (2001). Notes on the Old and Middle Irish Loanwords in old Norse. *NOWELE*, 39(1), 53-84.

Schuyler J. (2005). Transhumance Re-Examined. *The Journal of the Royal Anthropological Institute*, 11:2, 357-359

Sedgefield, W.J. (1924). Methods of Place-name studies, in Mawer, A and Stenton, F.M. (eds) (1924). *Introduction to the survey of English Place-Names* (Part 1), (Cambridge University Press), 1-14.

Segertröm, U. and Emanuelsson, M. (2002). Extensive forest grazing and hay-making on mires, vegetation changes in south-central Sweden due to land use since medieval times. *Vegetation History and Archaeobotany*, v. 11, no. 3, p. 181-190.

Selsing, L. (2012) The Early Settlement of South Norway after the Last Deglaciation: A Diasporic Perspective. *Norwegian Archaeological Review*, 45, (2), 177-205.

Semple, E.C. (1911). *Influences of geographic environment, on the basis of Ratzel's system of anthropo-geography*. New York, Holt.

Serjeantson, D. (2013). *Farming and Fishing in the Outer Hebrides AD 600 to 1700: The Udal, North Uist* Southampton Monographs in Archaeology, New Series No.2, Southampton.

Serjeantson, D. and Bond, J. (2007). Cattle and sheep husbandry In, Dockrill, S. J., Bond, J.M. and Nicholson, R. A. (eds), *Tofts Ness, Sanday: An Island Landscape through 3000 Years of Prehistory*. Orkney Islands, GB, The Orcadian Ltd (Investigations in Sanday, Orkney, 2), 202-206.

Sharples, N.M. (2005). A *Norse farmstead in the Outer Hebrides: excavations at Mound 3, Bornais, South Uist*. Oxford: Oxbow Books

Sharples, N.M. (2012). *A late Iron Age farmstead in the Outer Hebrides: Excavations at mound 1, Bornais, South Uist*. Cardiff Studies in Archaeology. Oxford: Oxbow Books.

Sharples, N. and Parker Pearson, M. (1999). Norse Settlement in the Outer Hebrides. *Norwegian Archaeological Review*, 32:1, 41-62.

Sharples, N. and Smith, R. (2009). Norse settlement in the Western Isles, In Woolf, A. (ed), *Scandinavian Scotland - Twenty Years After*, St John's House Papers, vol. 12. St Andrews: The Committee for Dark Age Studies, University of St Andrews, 103-130.

Sheehan, J. (2013). Viking raiding, gift-exchange and Irish metalwork in Norway. In: *Early Medieval Art and Archaeology in the Northern World: Studies in honour of James Graham-Campbell*. Leiden: Brepols, 809-823.

Sherratt, A.G. (1981). Plough and pastoralism: aspects of the secondary products revolution. In Hodder, G. Isaac and N. Hammond (ed), *Pattern of the past*: studies in honour of David Clarke. Cambridge, Cambridge University Press, 261-305.

Sherratt, A.G. (1983). The secondary exploitation of animals in the Old World, *World Archaeology*, 15, 90-104.

Siegert, M.J. and Dowdeswell, J.A. (2004). Numerical reconstructions of the Eurasian Ice Sheet and climate during the Late Weichselian. *Quaternary Science Review*, 23 (11–13), 1273–1283.

Sigmundsson, Svavar. (1996). Iceland and Scottish Place-names. In W.F.H. Nicolaisen (ed), *Proceedings of the 19th ICOS*, Aberdeen, August 4-11th, 330-342.

Sigmundsson, Svavar. (2005). Icelandic place-names in North Atlantic light. *Viking and Norse in the North Atlantic.* Select Papers from the Proceedings of the Fourteenth Viking Congress, Tórshavn, 19–30 July 2001. In Mortensen A. and Arge, S.V. (eds.). Annales Societatis Scientiarum Færoensis. Supplementum XLIV. Tórshavn. 229–233.

Sigua, G.C. Coleman, S.W., Albano, J., and Williams, M. (2011). Spatial distribution of soil phosphorus and herbage mass in beef cattle pastures: effects of slope aspect and slope position. *Nutrient Cycling in Agroecosystems*, 89, 59–70.

Sigurðsson, Gísli (2000). *Gaelic Influence in Gaelic influence in Iceland: historical and literary contacts: a survey of research*. Second Edition with a new introduction. University of Iceland Press Reykjavík

Sigurðsson, Jón Viðar (2011). Kings, Earls and Chieftains. Rulers in Norway, Orkney and Iceland c. 900-1300. in Steinsland, G., Jón Viðar Sigurðsson, Rekdal, J.E. and Beuermann, I. (eds.), *Ideology and Power in the Viking and Middle Ages. Scandinavia, Iceland, Ireland, Orkney and the Faeroes. The Northern World. North Europe and the Baltic c. 400-1700 AD*. Peoples, Economies and Cultures 52, Leiden, 69-108.

Simon, H.A. (1976). *Administrative Behaviour: A study of decision-making processes in administrative organization*. New York, Free Press.

Simon, J. (1990). *Population Matters: People, Resources, Environment and Immigration*. New Brunswick, New Jersey: Transaction Publishers.

Simpson, I.A. (1993) The chronology of anthropogenic soils formation in Orkney, Scottish *Geographical Magazine*, 109, 4-11

Simpson, I.A. (1997). Relict properties of anthropogenic deep top soils as indicators of infield management in Marwick, West Mainland, Orkney. *Journal of Archaeological Science*. 24, 365-380.

Simpson, I.A., Dockrill, S.J., Bull, I.D. and Evershed, R.P. (1987). Early anthropogenic Soil Formation at Tofts Ness, Sanday, Orkney, *Journal of Archaeological Science*, 25, 729–746.

Sindbaek, S.M. (2007). Networks and nodal points: The emergence of towns in early Viking Age Scandinavia. *Antiquity*, 81, 119-132.

Sindbæk, S.M. (2011). Social power and Outland Use in Viking Age Settlement, (eds) Poulsen, B. and Sindbæk, S.M., in *Settlement and Lordship in Viking and Early Medieval Scandinavia*. Brepols, Turnhout, 97-118.

Skre, D. (1999). Aristocratic domination and landownership in Norway 200-1100AD. in Fabech, C. and Ringtved, J. (eds), *Settlement and Landscape: Proceedings of a conference in Århus*, Denmark, May 4-7, 1998, 415-422.

Skre, D. (2001) The Social Context of Settlement in Norway in the First Millennium AD, *Norwegian Archaeological Review*, 34:1, 1-12.

Skre, D. (2011). Centrality, Landholding, and Trade in Scandinavia c, AD 700-900. In B. Poulsen and S.M. Sindbæk (eds), *Settlement and Lordship in Viking and Early Medieval Scandinavia*. Brepols, Turnhout, 197-212.

Skrede, M.A. (2005). Shielings and landscape in western Norway – Research traditions and recent traditions. In Holm, I., Innselset, S. and Øye, I. (eds), *Utmark: the outfield as industry and ideology in the Iron Age and the Middle Ages*. Bergen: University of Bergen, 31-43.

Small, A. (1968). The Historical Geography of the Norse Viking Colonization of the Scottish Highlands, *Norsk Geografisk Tidsskrift - Norwegian Journal of Geography*, 22:1, 1-16.

Small, A. (1969a), The distribution of settlement in Shetland and Faroe in Viking times. *Sagabook of the Viking Society* 1967-1968, 145-155.

Small, A. (1969b). Shetland-location the key to historical geography. *Scottish Geographical Magazine,* 85:3, 155-161.

Smith, A.H. (1956). *English Place-Name Elements*, 2 Volumes. Cambridge: Cambridge University Press; EPSN, 25–26.

Smith, B. (1995). Scandinavian place-names in Shetland with a study of the district of Whiteness. In Crawford, B. E. (ed), *Scandinavian Settlement in Northern Britain: Thirteen Studies of Place-Names in Their Historical Context*. London, Leicester University Press, 26-41.

Smith, B. (2001). The Picts and the Martyrs Northern Studies. *Northern Studies*, 7-32.

Smith, B. (2007). Stobister, Sinnabist and Starrapund: three wilderness settlements in Shetland. In Ballin Smith B., Taylor, S. and Williams, G. (eds). *West over Sea:*

*Studies in Scandinavian Sea-Borne Expansion and Settlement Before 1300*. A Festscrift in honour of Dr Barbara E. Crawford. Brill, Lieden. 419-430.

Søgaard, H. (1996). Climate and Weather. In R. Guttesen (ed), Atlas of Denmark Series II, Volume 5. *The Færoe Islands topographical atlas, 24–7. København. Danmark. C.A. Reitzels Forlag for Det Kongelige Danske Geografiske Selskab and Kort & Matrikelstyrelsen*.

Solberg, B. (1984). Settlement and Exploitation of Natural Resources in Southern Sunnmore AD 200-1050. In Kristiansen, K. (ed), *Settlement and Economy in Later Scandinavian Prehistory*. BAR International Series 211, Oxford, 155-180.

Soltvedt, E. (2000). Carbonised Cereal from Three Late Neolithic and Two Early Bronze Age Sites in Western Norway. *Environmental Archaeology*, 5(1), 49-62.

Sommerfelt, A. (1958). On the Norse Form of the Name of the Picts and the Date of the First Norse Raids on Scotland. *Lochlann*, 1, 218-222.

Sommerfelt, A. (1983). The Norse Influence on Irish and Scottish Gaelic. In ed. B. Ò Cuìv, *The Impact of the Scandinavian Invasions on the Celtic-Speaking Peoples* c. 800-1100 AD. Dublin, 73-77.

Spence, D. (1979). *Shetland's Living Landscape: a study in island plant ecology.* Sandwick, Shetland.

Sporrong, U. (2003). The Scandinavian Landscape and its Resources, in Helle, K. (ed) *The Cambridge History of Scandinavia*. Cambridge: Cambridge University Press (The Cambridge History of Scandinavia), 13–42.

Stahl, A-B. (1999). *Place-Names of Barra in the Outer Hebrides*. Ph.D. thesis, University of Edinburgh. Edinburgh.

Stahl, A-B. (2000). Norse in the Place-Names of Barra. *Northern Studies*, 35, 95-112.

Stenton, F.M. (1971). *Anglo Saxon England*. Oxford University Press, Oxford.

Stewart, G.R. (1975). *Names on a Globe*, New York.

Stewart, J. (1987). *Shetland place-names*. Hillhead, Lerwick: Shetland Library and Museum.

Steyaert, S.M. J.G., Støen, O-G., Elfström, M., Karlsson, J., Van Lammeren, R., Bokdam, J., Zedrosser, A., Brunberg, S., and Swenson, J.E. (2001). Resource selection by sympatric free-ranging dairy cattle and brown bears Ursus arctos. *Wildlife Biology*, 17:4, 389-403.

Stjernquist, B. (1984). The Gårdlösa Research project. The Archaeological Framework. In Kristiansen, K. (ed), *Settlement and Economy in Later Scandinavian Prehistory*. BAR International Series 211, Oxford, 27-42.

Ströms, H. (1762). *Physisk og Oeconomisk Beskrivelse over Fogderiet Søndmør, beliggende i Bergens Stift i Norge*: oplyst med Landkort og Kobberstykker.

Stummann Hansen, S. (1988). The Norse Landnam in the Faroe Islands in the Light of Recent Excavations at Toftanes, Leirvík, *Northern Studies*, 25, 58-84.

Stummann Hansen, S. (1991). Toftanes: A Faroese Viking Age Farmstead from the 9–10th Centuries AD. In Bigelow, G. F. (ed), The Norse of the North Atlantic. *Acta Archaeologica*, 61, Copenhagen, 44–53.

Stummann Hansen, S. (2003). The Early Settlement of the Faroe Islands. In Barrett, J.H. (ed), *Contact. Continuity and collapse: the Norse colonization of the North Atlantic*. Brepols Publishers, Turnhout, Belgium, 33-71.

Stylegar, F-A. (2004). Central Places' in Viking-Age Orkney. *Northern Studies*, 38, 5-30.

Summers, J. (2013). Archaeobotanlcal remains from Hamar, Unst. In Turner, V., Bond, J.M. and Larsen, A-C. (eds). *Viking Unst*. Lerwick, 140-148.

Sveinbjarnadottir, Guðrún (1991). Shielings in Iceland, an archaeological and historical survey. *Acta Archaelogica*, 61, issue1, 73-96.

Sveinbjarnardóttir, Guðrún (1992). *Farm abandonment in medieval and post-medieval Iceland.* Oxbow monograph; 17. Oxford: Oxbow.

Sveinbjarnardóttir, Guðrún, Dahle, K, Erlendsson, E., Gísladóttir, G., and Vickers, K. (2011). The Reykholt Shieling: Some Preliminary Results, in Svavar Sigmundsson (ed). Viking *Settlements and Viking Society*: Papers from the Proceedings of the Sixteenth Viking Congress, Reykjavik and Reykholt, 16-23 August 2009, 162-175.

Svensson, E. (1962). *The Medieval Household: Daily life in Castles and Farmsteads: Scandinavian examples in their European context* (The Medieval Countryside 2) Brepols, Turnhout.

Svensson, E. (forthcoming). The Scandinavian shieling – in between innovation and tradition. In Costello, E. and Svensson, E. (eds), *Historical Archaeologies of Transhumance across Europe Themes in Contemporary Archaeology*. London: Routledge (In press).

Tamm, D. (2011). How Nordic are the Old Nordic laws? in *How Nordic are the Nordic laws*? Proceedings from the first Carlsberg conference on medieval legal history, second edition, 5-22.

Taylor, S. (2002). The Element sliabh and the Rhinns of Galloway, or Place-names and History: a Case Study. *History Scotland* (Nov./Dec. 2002): 49-52.

Taylor, S. (2007) Sliabh in Scottish place-names: its meaning and chronology. Journal of *Scottish Name Studies*, 1, 99-136.

Taylor, S. (2014). Charting a Course Through the Scottish Namescape. In Hough, C. and Izdebska, D. (eds), *Names and Their Environment*, Proceedings of the 25th International Congress of Onomastic Sciences, Glasgow, 25-29 August 2014. (http://www.icos2014.com/congress-proceedings/ accessed on 3/11/16).

Thomas, J., I. Simpson, I., Davidson, D. (2007). Mapping of anthropogenic soils in Scotland: investigating the location and vulnerability of Scottish plaggen-type soils, *Atti della Societa Toscana di Scienze Naturali - Memorie serie* A, 112, 85-90.

Thomason, S.G. (2001). *Language Contact: An introduction*. Edinburgh.

Thomason, S.G. and Kaufman T. (1991). *Language Contact Creolization and Genetic Linguistics*. University of California Press, Berkeley.

Thoms, J.E. (2003). *Aspects of economy and environment of north-west Lewis in the first millennium AD: the non-marine faunal evidence from Bostadh and Beirgh considered within the framework of north Atlantic Scotland*. PhD thesis, University of Edinburgh.

Thomson, R.L. (1991). Foreign elements in the Manx vocabulary, in Ureland, P.S and Broderick, G (eds), *Language Contact in the British Isles*: Proceedings of the Eighth International Symposium on Language Contact in Europe, Douglas, Isle of Man 1988, Tübingen, 127-140.

Thomson, W.P.L. (1987). Ouncelands and Pennvlands in Orkney and Shetland. In Macgregor, L.J. and Crawford, B.E. (eds). *Ouncelands and Pennylands*. The Proceedings of a Day Conference held in the Centre for Advanced Historical Studies on 23 February 1985 ST. Andrews.

Thomson, W.P.L. (1993). Orkney Farm-names: a reassessment of their chronology. In Crawford, B.E. (ed), *Scandinavian Settlement in Northern Britain: Thirteen Studies of Place-Names in Their Historical Context*. London, Leicester University Press, 47-63.

Þorláksson, Helgi (2011). A Seat of a Settler? – A Centre of a Magnate: Breiðabólstaðr and Reykholt. Svavar Sigmundsson (ed). *Viking Settlements and*

*Viking Society: Papers from the Proceedings of the Sixteenth Viking Congress*, Reykjavik and Reykholt, 16-23 August 2009, 209-224.

Thorsteinsson, A. (2005). “There is another set of small islands”. in Mortensen, A. and Arge, S.V. (eds), *Viking and Norse in the North Atlantic: select Papers from the Proceedings of the Fourteenth Viking Congress*, Tórshavn, 19-30 July 2001, 39-42.

Thorsteinsson, A. (2008). Land Division, Land Rights, and Land Ownership in the Faroe Islands. In Jones, M. and Olwig, K.R. (eds), *Nordic landscapes: Region and Belonging on the Northern Edge of Europe*. University of Minnesota press, Minneapolis, 77-105.

Thurston, T. (2001). *Landscapes of power, landscapes of conflict: State formation in the south Scandinavian Iron Age, Fundamental issues in archaeology*. New York: Kluwer Academic/Plenum.

Tolkamp, B.J., Dewhurst, R.J., Friggens, N.C., Kyriazakis, I., Veerkamp, R.F., Oldham, J.D. (1998). Diet choice by dairy cows. 1. Selection of feed protein content during the first half of lactation. *Journal of Dairy Science*. 81, 2657–2669.

Townend, M. (2000). Viking Age England as a Bilingual Society. In Hadley, D.M and Richards, J.D. (eds), *Cultures in conflict: Scandinavian settlement in England in the Ninth and Tenth Centuries*. Studies in the Early Middle Ages (Brepol, Turnhout), 89-105.

Townend, M.O. (2002). *Language and History in Viking Age England: Linguistic Relations between Speakers of Norse and English*. Studies in the Early Middle Ages; vol. 6. Turnhout: Brepols.

Trafford, S. (2000). Ethnicity, Migration Theory, and the historiography of the Scandinavian Settlement, in Hadley, D.M and Richards, J.D. (eds) *Cultures in conflict: Scandinavian settlement in England in the Ninth and Tenth Centuries*. Studies in the Early Middle Ages. (Brepol, Turnhout), 17-39.

Turner, V. (1993). Introduction to the archaeological record. In Birnie, J., Gordon, J., Bennett, K., and Hall, A. (eds), *The Quaternary of Shetland: Field Guide*, 23-26.

Turner, V., Bond, J., Larsen, A., Owen, O., Outram, J., and Dyer, C. (2013). *Viking Unst*: Excavation and survey in Northern Shetland 2006-2010.

Turner, V.E., Chrystall, F., Simpson, I.A., and Guttmann, E. (2004). Form and function in Shetland prehistoric field systems. In Housely, R. and Coles, G. (ed), *Atlantic Connections and Adaptations; economies, environments and subsistence in lands bordering the North Atlantic*: AEA/NABO Monograph. Oxford, Oxbow, 120-127.

Turner, V.E., Dockrill, S.J. and Bond, J.M. (2005). Viking settlement in an Iron Age Village; Old Scatness, Shetland. In A. Mortensen and S. V. Arge (ed) *Viking and Norse in the North Atlantic*. Tórshavn: Føroya Fródskaparfelag, 245-249.

Turner, V.E., Guttmann-Bond, E.B.A., Burbidge, I., and Simpson, I.A. (2010). Old Scatness the Viking and Norse anthrosols. In Dockrill (ed), *Excavations at Old Scatness, Shetland, Vol 1: The Pictish Village and Viking Settlement*. Shetland Heritage Publications, Lerwick, 197-202.

Udén, P. and Van Soest, P.J. (1982). Comparative digestion of timothy (Phleum pratense) fibre by ruminants, equines and rabbits. *British Journal of Nutrition*, 47, 267-272.

Undås, I. (1959/60). Den garnle jernvinna i Ustedal. N. *Norsk Geografisk Tidsskrift - Norwegian Journal of Geography*. 17, 278-289.

Utaaker, K. (1980). Local climates and growth climates of the Sognefjord region. *International Journal of Biometeorology*, 24 (1), 13-22.

Van der Veen, M. (1987). *Crop Husbandry Regimes: An Archaebotanical Study of Farming in Northern England*. J.R. Collins, Sheffield.

Vandvik, V. and Birks, H.J.B. (2004). Mountain Summer Farms in Røldal, Western Norway: Vegetation Classification and Patternsin Species Turnover and Richness. *Plant Ecology*, 170, No. 2, 203-222.

Varenius, B. (1992). *Det nordiska skeppet. Teknologi och salnhallsstrategi i vikingatid och medeltid*. Stockholm.

Vendryes, J., Bachellery, E. and Lambert, P-Y. (1959). *Lexique étymologique de lirlandais ancien*, Dublin: Dublin Institute for Advanced Studies.

Vésteinsson, Orri (1998). Patterns of Settlement in Iceland: A Study in Prehistory. *Saga-Book*, 25, 1-29.

Vésteinsson, Orri (2005). Ethnicity and class in settlement-period Iceland. in Sheehan, J. and Ò Corràin, D., *The Viking Age: Ireland and the West*. Papers from the Proceedings of the Fifteenth Viking Congress, Cork, 18-27 August, Publisher: Four Courts Press, 494-510

Vésteinsson, Orri and Church, M. J. and Dugmore, A. J. and McGovern, T. H. and Newton, A. J. (2014) Expensive errors or rational choices: the pioneer fringe in Late Viking Age Iceland., *European Journal of Post-Classical Archaeologies*, 4. 39-68.

Vestergaard, T.A. (1991). Marriage Exchange and Social Structure in Old Norse Mythology. Samson, R. (ed), in *Social approaches to Viking Studies*. Glasgow, Cruithne Press, 21-34.

Vickers, K., Bending, J., Buckland, P.C., Edwards, K.J., Hansen, S.S., Cook, G.T., (2005). Toftanes: The paleoecology of a Norse Landnám farm. *Human Ecology*. 33, 685-710.

Vickers, K., Saleem ul Haq and Hamshaw-Thomas, J. (2014). The faunal remains. In Parker-Pearson, M. and Zvelebil, M. (eds), *Excavations at Cill Donnain: A Bronze Age Settlement and Iron Age Wheelhouse in South Uist* (Sheffield Environmental and Archaeological Research Campaign in the Hebrides). Oxford. Oxbow Books.

Vidal de La Blache, (1926). *Principles of human geography*. Martonne, P., (ed and trans.). Bingham, M. London. Constable.

Vildomec, V. (1963). *Multilingualism*. Leyden.

Von Thünan, J.H. (1826). *Der isolierte Staat in Beziehung auf Landwirtschaft und Nationalökonomi*e (Hamburg).

Vorren, K.D. (1979). Anthropogenic influence on the natural vegetation in coastal North Norway during the Holocene. Development of farming and pastures*,* *Norwegian Archaeological Review*, 12:1, 1-21.

Vorren, K-D. (2005). Farm development at the Arctic cereal limit in northern Norway—continuity and discontinuities. *Vegetation History and Archaeobotany*, 14, 161–170.

Vorren, K-D. (2009). Farm Development in the Malangen Area, Northern Norway _ A Pollen- Analytical Case Study, *Acta Borealia*, 26:2, 156-174.

Vorren, K-D., Nilssen, E. and Mørkved, B. (1990) Age and agricultural history of the '-staðir' farms of North and Central Norway, *Norsk Geografisk Tidsskrift - Norwegian Journal of Geography*, 44:2, 79-102.

Vorren, T.O. and Mangerud, J. (2008). Glaciation come and go: Quaternary to Holocene (Pleistocene); 2.6 Ma-11,500 years ago. In Ramberg, I.B., Beyhni, I., Nøttvedt, A., and Rangnes, K. *The Making of a land: Geology of Norway*. Trondheim, The Norsk Geologisk Forening, 480-533.

Wainwright, F.T. (1948). Ingimund's Invasion. *English Historical Review*. 247, 145-169.

Wainwright, F.T. (1962a). *The Northern Isles*, Edinburgh: Nelson.

Wainwright, F. T. (1962b). *Archaeology and Place Names and History*. Routledge and Kegan Paul, London.

Walker, J. and McKay, M. (1980). *The Rev. Dr. John Walker's report on the Hebrides of 1764 and 1771*. Edinburgh: Donald.

Warmers, E. (1983). Some ecclesiastical and secular Insular metalwork found in Norwegian Viking graves. *Peritia*, 2, 277-306

Warren, J.E. (1994). *Coastal Sedentism During the Atlantic Period in Nordhordland, Western Norway? The Middle and Late Mesolithic Components at Kotedalen*. MA thesis, Memorial University of Newfoundland.

Watson, W.J. (1905). Some Sutherland Names of Places. *Celtic Review*, 2, 360.

Watson, W.J. (1926). *The History of the Celtic Place-Names of Scotland*. Edinburgh.

Waugh, D. (1985). *The place-names of six parishes in Caithness, Scotland*. PhD thesis, University of Edinburgh.

Waugh, D. (1987). The Scandinavian Element *staðir* in Caithness, Orkney and Shetland, *Nomina* 11, p61-74.

Waugh, D. (1989-90). Shetland Place-Names. *Nomina* 13, p61-72.

Waugh, D (1993). Caithness and Onomastic Frontier Zone. In Batey, C. Jesch, J. and Morris, C.D. (eds), Caithness: An Onomastic Frontier Zone. *The Viking Age in Caithness, Orkney and the North Atlantic*. Edinburgh University Press, Edinburgh, 120-128.

Waugh, D. (1995). Settlement names in Caithness with particular reference to Reay parish. In Crawford, B.E. (ed), *Scandinavian Settlement in Northern Britain*, ed. Barbara E. Crawford (Leicester), 64-79.

Waugh, D. (2013). Recording and researching Unst place-names. Excavation and survey in Northern Shetland 2006 – 2010. In Turner, V., Bond, J.M. and Larsen, A-C. (eds). *Viking Unst*. Lerwick, 9-13, 123).

Weaver, R., Kent, M., Gilbertson, D., Wathem, P. and Brayshay, B. (1996). The acidic and upland vegetation of the southern Outer Hebrides. In D. Gilbertson, M. Kent, and J. Grattan (eds). *The Outer Hebrides The Last 14,000 Years*. Sheffield Environmental and Archaeological Research Campaign in the Hebrides Volume 2, 147-162.

Weinreich, U. (1968). *Languages in Contact. Findings and Problems*. London, Mouton.

Welander, R.D.E., Batey, C.E. and Cowie, T.G. (1987). A Viking burial from Kneep, Uig, Isle of Lewis. *Proceedings of the Society of Antiquaries of Scotland*, 117: 149–74.

Welinder, S. (1984). A Systematic Approach to Understanding Long-term Changes in Culture Landscape. In Kristiansen, K. (ed), *Settlement and Economy in Later Scandinavian Prehistory*. BAR International Series 211, Oxford, 1-26.

Whitney, W. (1881). On Mixture in Language. *Transactions of the American Philological Association*, 12, p.5-26.

Whittle, J. (2013). Rural Economies. In Bennett, J. Karras, R. (eds), *The Oxford Handbook of Women and Gender in Medieval Europe*.

Whyte, A. (2017). *Settlement-names and society: analysis of the medieval districts of Forsa and Moloros in the parish of Torosay, Mull*. PhD thesis University of Glasgow.

Whyte, I.D. (1985). Shielings and the Upland Pastoral Economy of the Lake District in Medieval and Early Modern Times. In J.R. Baldwin and I.D. Whyte (eds), *The Scandinavians in Cumbria.* Edinburgh, The Scottish Society for Northern Studies), 103-118.

Whyte, I.D. and Whyte, K. (1991). *The Changing Scottish Landscape: 1800-1800*. Routledge, London.

Wickham, C. (2005). *Framing the Early Middle Ages: Europe and the Mediterranean, 400-800.* OUP Oxford.

Widgren, M. (1984). The settlement and farming system in Östergötland Sweden 0 to 500 AD. In Kristiansen, K. (ed), *Settlement and economy in later Scandinavian Prehistory*. British Archaeological Reports. International series 211, 111-127.

Williams, G. (2003). The Dabhach Reconsidered: Pre-Norse or Post-Norse? *Northern Studies*, 37, 17-32.

Winchester, A.J.L. (1985). The Multiple Estate: A Framework for the Evolution of Settlement in Anglo-Saxon and Scandinavian Cumbria, in J.R. Baldwin and I.D. Whyte (eds) *The Scandinavians in Cumbria*. Edinburgh. The Scottish Society for Northern Studies, 89-102.

Windelhed, B. (1984). “Celtic fields” and prehistoric Agrarian Landscapes. In Kristiansen, K. (ed), *Settlement and Economy in Later Scandinavian Prehistory*. BAR International Series 211, Oxford, 85-110.

Winter, W. (1973). Areal Linguistics: Some General Considerations. In T. A. Sedebok (ed), *Current Trends in Linguistics*. *Volume 11: Diachronic, Areal and Typological Linguistics*. Paris, 135-48.

Wood, J.J. (1978). Optimal Location in Settlement Space: A Model for Describing Location Strategies. *American Antiquity*, 43, No. 2, Contributions to Archaeological Method and Theory, 258-270.

Woolacott, D. (1907). Origin and Influence of the Chief Physical Features of Northumberland and Durham: *The Geographical Journal*, 30, No. 1, 55-62.

Woolf, A. (2004). The Age of Sea-Kings: 900–1300. In D. Omand (ed), *The Argyll Book.* Edinburgh, 94–109.

Woolf, A. (2007). *From Pictland to Alba, 789-1070*. Edinburgh.

Worsaae J.J.A. (1852). *An Account of the Danes and Norwegians in England, Scotland and Ireland*. London

Wright, J.K. (1947). Terrae Incognitae: The Place of Imagination in Geography. Annals of the Association of American Geographers. In *Human Nature in Geography: Fourteen papers, 1925-1965*. Cambridge, Harvard University Press (1966), 68-88.

Wyatt, I. (2004). The Landscape of the Icelandic Sagas: Text, Place and National Identity. *Landscapes*, 5:1, 55-73.

Young, G. and Clewer, C. (1985). *Føroysk-ensk orðabók = Faroese-English dictionary*: With Faroese folk-lore and proverbs and a section by ... W.B. Lockwood on Faroese pronunciation. Peel, Isle of Man: Mansk-Svenska Pub.

Zedler, J.H. (1741). *Pferch. In Grosses vollst ndiges Universal-Lexicon aller Wissenschafften und K nste*, Vol.27 Leipzig and Halle, 1374-75.

Zimmermann, W.H. (1999). Why was cattle-stalling introduced in prehistory? The significance of byre and stable and of outwintering, in Fabech, C. and Ringtved, J. (eds), *Settlement and Landscape: Proceedings of a conference in Århus*, Denmark, May 4-7, 1998, 301-318.

Zutter, C. M. (1992). Icelandic plant and land-use patterns: Archaeobotanical analysis of the Svalbard midden (6706-60), northeastern Iceland. In Morris, C., and Rackham, D. J. (eds), *Norse and Later Settlement and Subsistence in the North Atlantic*. Archetype Publications, University of Glasgow, Department of Archaeology, 139-148.

## Websites

British Geological Society http://mapapps2.bgs.ac.uk/geoindex/home.html (accessed online 15/4/17).

British Meterological Office https://www.metoffice.gov.uk/public/weather/climate-historic/#?tab=climateHistoric, (accessed online 14/4/17).

CANMORE https://canmore.org.uk/search/ (accessed online 15/5/18).

eDIL Dictionary of the Irish Language based mainly on Old and Middle Irish examples (Dublin: Royal Irish Academy, 1976); electronic version (eDIL) online at http://edil.qub.ac.uk/dictionary/search.php, (accessed online 4/11/14).

Heradsregisteret: http://www.edd.uio.no/perl/search/search.cgi?appid=93&tabid=1383, (accessed online 8/3/16).

Kartverket: https://www.norgeskart.no/#!/?zoom=2&lon=1404098.00&lat=6660326.00&project=seeiendom&layers=1002,1015,1014&sok=P%C3%A1ls, (accessed online 25/10/14).

Kortal http://www.kortal.fo/ Online searchable map of the Faroese (accessed online 25/8/16)

National Library of Scotland: Map Images http://maps.nls.uk/index.html, (accessed on 20/6/14).

*Norske Gaardnavne*, at the Dokumentasjonsprosjektet. Universitetet i Oslo http://www.dokpro.uio.no/rygh_ng/rygh_felt.html (accessed online 8/3/16).

Norges Geologiske Unndersøkelse http://www.ngu.no/emne/kartinnsyn, (accessed online 25/7/14).

Ordnance Survey. Digimap http://digimap.edina.ac.uk/roam, (accessed online accessed online 5/11/14).

Ordnance Survey. Six-inch to one-mile maps, first edition (1843-1882) and second edition (1892-1960), at http://maps.nls.uk/index.html, (accessed online 2/2/15)

Scotlands soils http://soils.environment.gov.scot/maps/scanned-soil-maps/#1250000ScannedMaps, (accessed online 25/10/14).

Seternavnregistret at the Dokumentasjonsprosjektet. Universitetet i Oslo http://www.dokpro.uio.no/, (accessed online 8/3/16).

Statistics Norway Statistisk sentalbyrå http://www.ssb.no/, (accessed 10/1/17).

Stedsnavnarkivet at the Dokumentasjonsprosjektet. Universitetet i Oslo. http://www.edd.uio.no/perl/search/search.cgi?appid=93&tabid=1383, (accessed online 25/10/14).