

Small-Scale Evaluation of a Post-Medieval Blackhouse at Bereiro, Lewis, Western Isles of Scotland

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Abstract - This paper presents the results of the excavation of two dry-stone structures in the abandoned blackhouse village of Bereiro, near to the township of Crowlista, Isle of Lewis. The research was undertaken as part of a wider landscape project investigating human occupation on the Uig peninsula from prehistory to the post-medieval period (the Uig Landscape Project). The excavation aimed to collect dating evidence from the site to determine the date of construction and abandonment of one of the earliest structures in the village, in an attempt to establish the longevity of the blackhouse form in the vernacular architecture of medieval Atlantic Scotland. The results of the dating program are considered alongside historical documents, which record the social history of the village within the context of the long-standing research questions regarding blackhouse villages. These questions include the development of the agricultural field systems and continuity or change in the Hebridean landscape from later-prehistory to medieval times.

Introduction

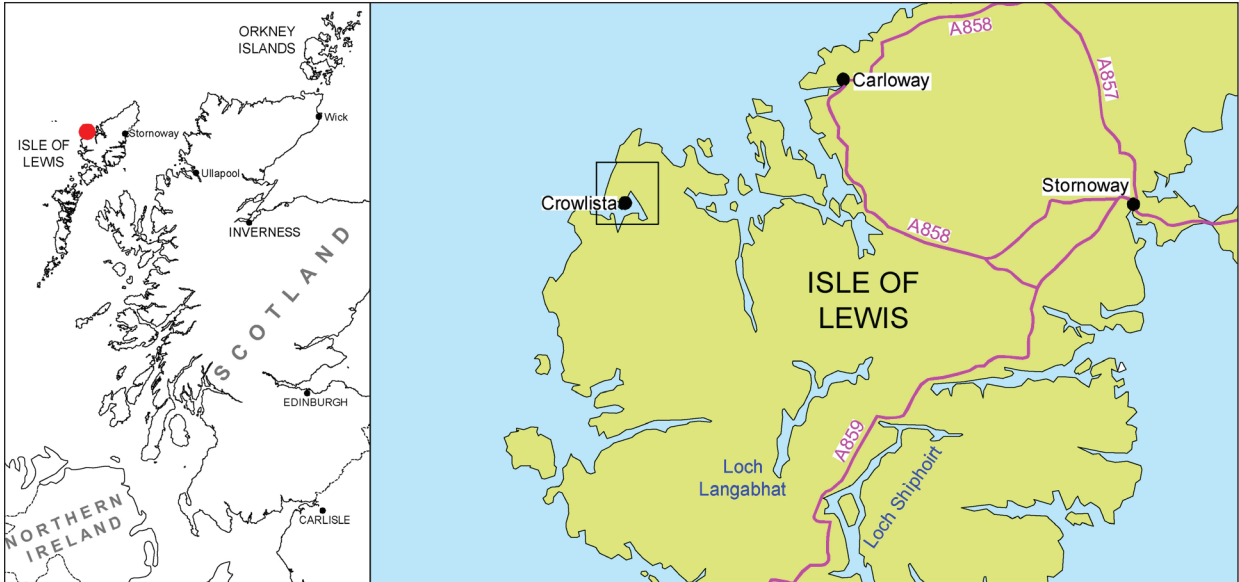
Bereiro is a post-medieval abandoned blackhouse village that sits above the east shore of Tràigh nan Srùban, north of the Camas Uig (NGR: NB 0455 3454; Fig. 1). The site was included as part of the Uig Landscape Survey undertaken in 1995 (Burgess and Church 1996). Bereiro was one of four sites chosen for excavation including a Middle Iron Age islet site at An Dunan, a Late Bronze Age/Early Iron Age promontory enclosure at Gob Eirer, and a multi-period relict landscape of Late Bronze Age to post-medieval date at Guinnerso (see Nesbitt et al. 2011). The buaile (small village) of Bereiro is located on a low spur that runs north–south and is easily visible in the landscape, as it is surrounded by the remains of an agricultural field system in the form of runrig (Fig. 2). Local historic documentation places abandonment of the village at around 1830 (Comann Eachdraidh Uig 2011). A number of recurrent research objectives have underpinned the study of blackhouse villages including discovering: whether it is possible to see the blackhouse village as a continuation of prehistoric settlement patterns or as a break from the past (Campbell 2009, Dodgshon 1993); how the use of certain building materials in particular ways suggests an environmental determinism in vernacular architecture (Geddes 2010); the form and extent of the remains of the villages (Fenton 1995, Kissling 1943, Walker and MacGregor 1996); how the settlements develop in terms of the in-field/out-field system of agricultural land use (Dodgshon 1973, 1977; Whittington 1975); and the threats to the extant remains of these particular types of settlement (Parker Pearson et al. 2011). The research aim of the Uig Landscape Project survey and excavation at Bereiro was simply to

collect dating evidence for the earliest use of the site and to examine the structural remains to understand the architectural form of the blackhouse building. Therefore, the excavations in 1996 targeted two adjacent drystone structures that were the least well-preserved in the village and appeared to show multi-phase activity compared with the other more straightforward and apparently single-phase final blackhouse structures in the village (see Fig. 4). This evidence led the excavators to believe that the more ephemeral structures represented the earliest blackhouse in the village.

The Archaeology of Blackhouses

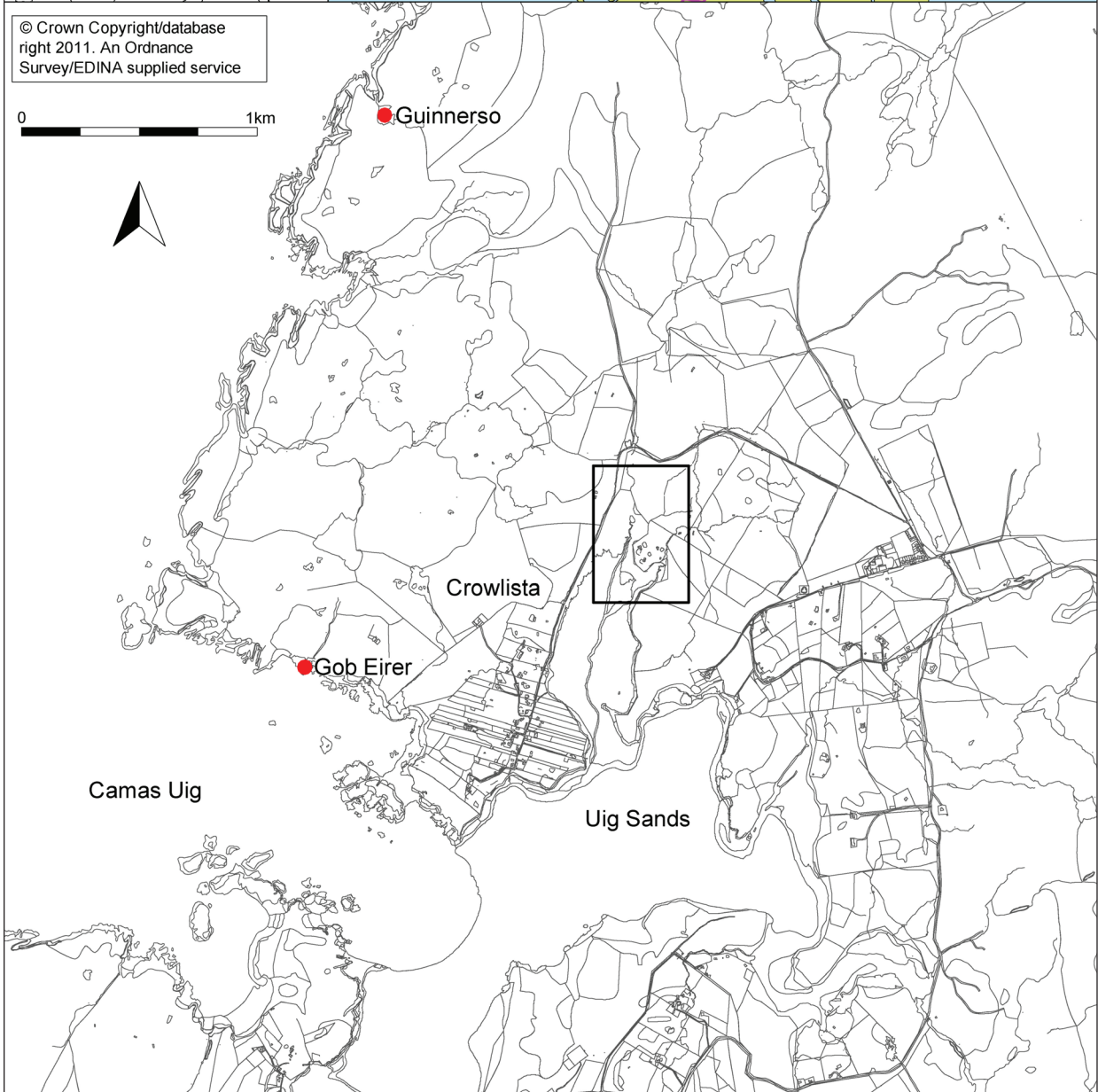
Blackhouse is a term given to a distinctive form of architecture used for dwelling houses in post-medieval Atlantic Scotland. The architectural form of the blackhouse follows a broad pattern, namely a long and narrow house with annexes to the front and rear. Often the main body of the house was separated into a byre area at one end, which housed animals, and a dwelling space at the other end for the human occupants. The annex to the rear was routinely used as a barn while, the front annex, the *fosglans*, served as an entrance to the structure. Blackhouses are also characterized by their thatched roofs, built on A-frame trusses that rest on the inner skins of the walls, and the absence of a chimney. The walls are thick and stone lined, usually with an earthen core (Holden et al. 2001:17). Within a given region, the forms of the blackhouse tend not to vary significantly from one another; however, the characteristics do vary from region to region. For example, the blackhouses of Barra and South Uist are smaller than those in Lewis, and it seems likely that they may

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not have housed animals within the dwelling in the way that Lewisian blackhouse dwellings clearly did (Branigan and Merrony 2000:1).

The architectural form of the blackhouse was one which suited the climate and availability of materials in the North Atlantic in the latter half of the second millennium AD. Geddes has argued that the roof was designed to be easily accessible for the necessarily frequent repair of weather damage and to minimize the amount of timber required in an area where that commodity was at a premium (Geddes 2010: 20). While there is some evidence that woodland may have been managed in the Iron Age of Atlantic Scotland (Church 2002a), oral testimony from Arnol suggests that at the time of construction of the houses there, all the timber used for blackhouse building was salvaged from shipwrecks or collected as driftwood (Geddes 2010:22). Geddes (2010:15) stated succinctly: “blackhouses are distinctly vernacular buildings in which design materials limitations and pretensions are all allied to a particular cultural and natural context”.

It is clear that examples of dwellings closely matching blackhouse architecture exist across the North Atlantic region from earlier archaeological

periods. For example, the Underhoull longhouse on Shetland dating from the Early Norse period (ca. 800–1000 cal AD; Small 1964:264) shares several similarities with Hebridean blackhouses, including the plan of the structure, the construction materials, the paved floor, and the central hearth. Similar structures also exist from the Norse period across the wider North Atlantic, in the Faroes (Arge 1991, Church et al. 2005), Iceland (Smith 1995, Vésteinsson 2004), and Greenland (Høegsberg 2010). Examples of similar Norse-period structures in the Western Isles can be seen at Bornais, South Uist, where mound 2 was excavated to reveal a rectangular Norse building, which post-dated an 11th-century bow-walled hall (Sharples 2012). At Bostadh in Great Bernera, a Late Iron Age and Norse multiphase settlement was excavated and revealed a stone-walled rectilinear building and associated midden deposits of 9th–11th century date (Neighbour and Burgess 1996:113–114). However, very few rectilinear domestic structures have been excavated in the Western Isles that date from the 13th to 17th centuries AD, after the Norse period but before the post-Medieval appearance of classic blackhouse form. Holden et al. (2001:17) suggest that it is likely that turf was used in the construction of these earlier

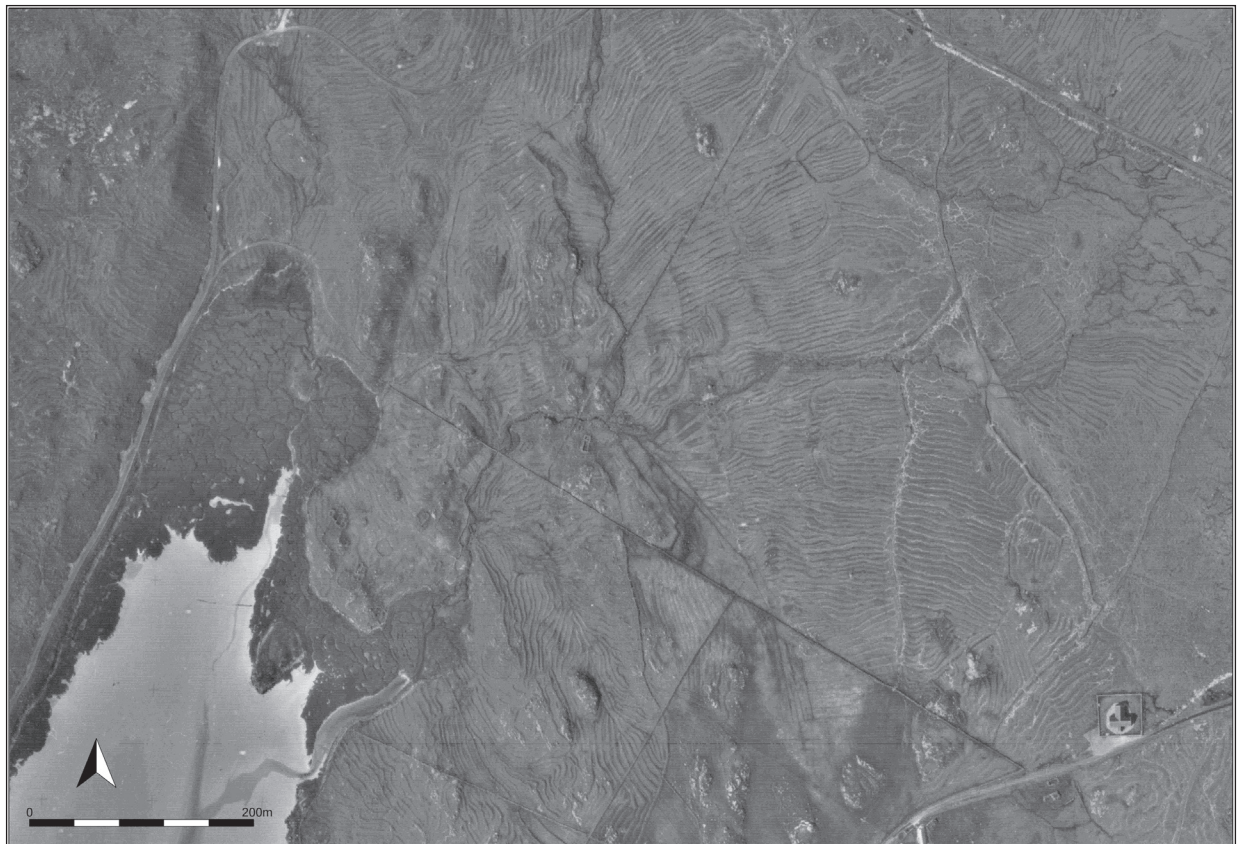


Figure 2. Extent of rigging associated with Bereiro. Reproduced from the 1967 Ordnance Survey[®] Aerial Photograph OS_67_174_837 with the permission of Ordnance Survey on behalf of The Controller of Her Majesty's Stationery Office, © Crown copyright.

Figure 1 (opposite page). Location map of Bereiro.

domestic structures and accounts for the lack of visibility of more examples of early blackhouse forms because they simply have not survived as obvious up-standing monuments. Therefore, the primary research aim of the excavations at Bereiro was to try to locate and date any earlier blackhouse forms in the village.

Methods

Survey

Survey of the area was undertaken using a Total Station linked to PenMap for Windows. A dense topographical survey was conducted which located the site in relation to the salt marsh and the nearby site of An Dunan. The upstanding remains of the settlement were also recorded, and trench locations were mapped.

Excavation

The excavations at Bereiro were undertaken in 1996 (Burgess et al. 1996) and consisted of two exploratory trenches (Figs. 3, 4). Trench 1a/b flanked the inner face of the only surviving wall at the south end of an extremely ephemeral structure. The cross-shaped Trench 2 lay northeast of trench 1a/b and bisected the interior of the neighboring ephemeral structure. The trenches were placed to understand the structural remains of these now heavily dismantled buildings and to obtain dating evidence, which would allow firm dating of both the initial and the final phase of the buildings. Excavation followed standard single-context recording, with a full range of photographs taken and illustrations of phase plans and sections drawn at 1:20 (full project records are to be accessioned to the National Monuments Record held by the Royal Commission on the Ancient and Historical Monuments of Scotland). The contexts are identified by trench number and then context number in brackets: e.g., Context 001 in trench 1 = (1-001). Seven bulk samples were taken from each of the in situ occupation materials identified in the trenches (total sampling; Jones 1991). A sub-sample for sedimentary analysis of approximately 0.25 liters was removed from the bulk samples prior to wet-sieving.

Bulk-sample processing

The bulk samples were very peaty in nature, and so a 1-liter subsample was wet-sieved in the laboratory (following Kenward et al. 1980) to assess which samples contained archaeobotanical remains. Four samples were subsequently processed using a flotation tank (Kenward et al. 1980) following this initial assessment, with the residue held by a 1.0-mm net, and the flot caught by 1.0- and 0.3-mm sieves, respectively. All the flots and residues were dried and then sorted using a low-powered stereo/

binocular microscope at 15x–80x magnification. All macrofossil identifications were checked against botanical literature and modern reference material from collections in the Department of Archaeology, University of Edinburgh. Charcoal identifications were carried out on transverse cross-sections on fragments measuring from 4 mm. Anatomical keys listed in Schweingruber (1990), in-house reference charcoal, and slide-mounted micro-sections were used to aid identification. Asymmetry and morphological characteristics were also recorded. Nomenclature follows Stace (2010), with ecological information taken from Clapham et al. (1987), Stace (2010), and Pankhurst and Mullin (1994).

Sedimentary analysis

Each sub-sample was subjected to the following analyses: basic soil description (texture and color), organic content, pH, and mineral magnetic analysis. The methods employed for each test are described below.

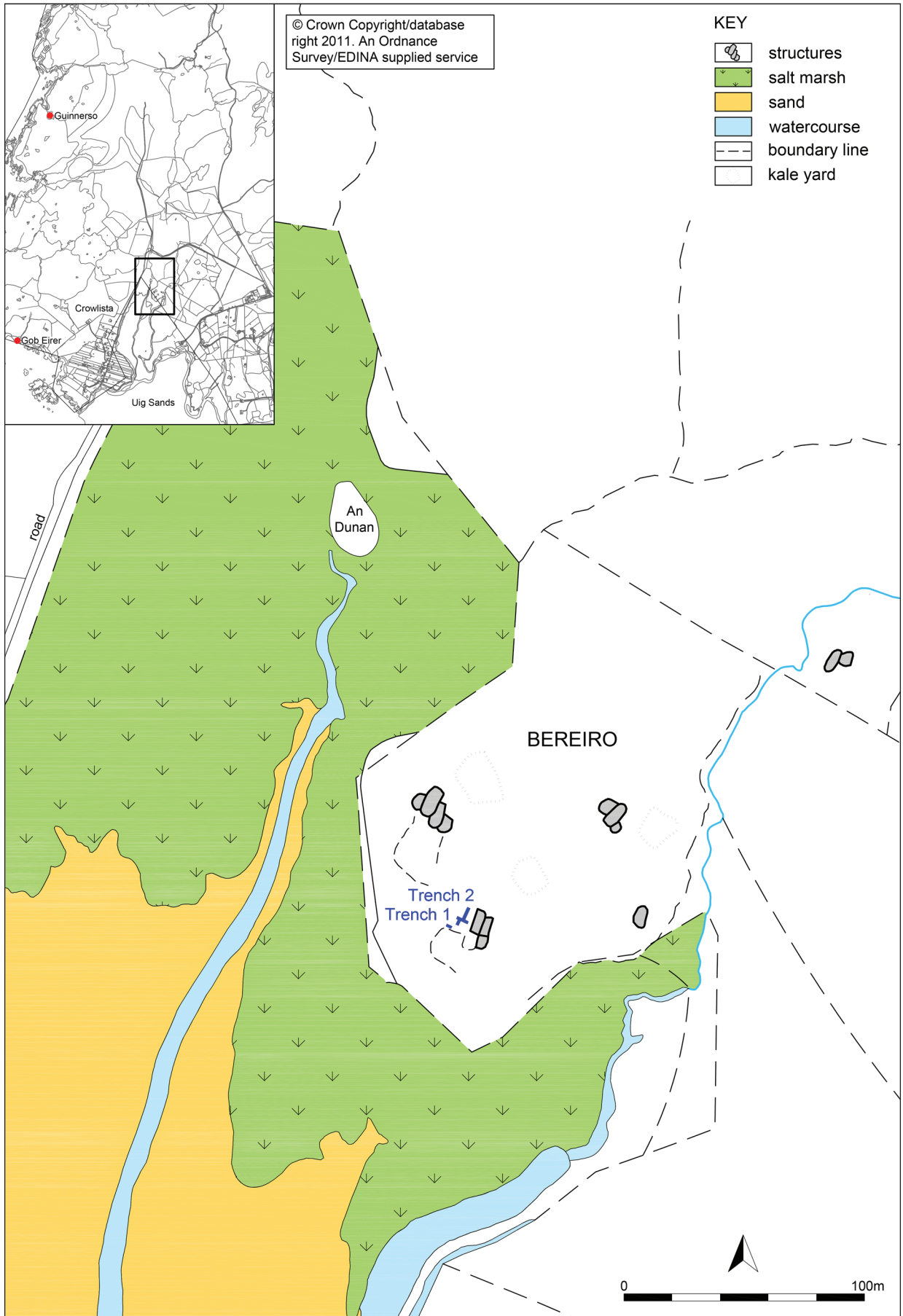
Basic soil description. The basic physical characteristics of the “wet” soil were described through texture and color. The texture was estimated following Hodgson (1976), while the color was estimated using a Munsell Color Charts (1994).

Organic content (following Hodgson 1976). Approximately 20 g of “wet” soil was dried at 40 °C for 24 hours, before being dry-sieved through a 2-mm gauge to remove stones and larger particles. The sieved material was then placed in a weighed crucible and placed in an oven at 100 °C for five minutes to drive off any latent moisture within the soil. The crucible and soil were then weighed, before being placed in a furnace for four hours at a temperature of 550 °C to incinerate the organic component. The crucible and material were then weighed and the percentage organic content (by weight) calculated.

pH (following Hodgson 1976). The pH of the soil was measured using a Pye Unicam PW 9410 digital pH meter, calibrated to 7 and 4 pH buffer solutions. Approximately 20 g of “wet” soil was added to 50 ml of distilled water. The solution was left for 20 minutes and periodically stirred. Then the probe of the meter was immersed in the solution until reading stabilization.

Magnetic susceptibility. The samples were dried at 40 °C and dry-sieved through a 2-mm gauge to remove stones and larger particles. Volumetric high- and low-frequency magnetic susceptibilities were measured with a Bartington MS2 meter and MS2b laboratory coil. Mass-specific magnetic susceptibility (χ) and percentage frequency-dependent ($\kappa_{fd}\%$) were then calculated following Dearing (1994).

Figure 3 (opposite page). Detailed survey of Bereiro, with trench locations.



Survey Results

The settlement area of the village covers an area of just over 3 ha, with the outlying field systems stretching around 250 m to the north and south, and around 600 m to the east, an area overall of just under 6 ha (Figs. 2, 3, 5, 6). The site is bounded to the west by the salt marsh of Tràigh nan Srùban (Fig. 5). The village consists of six blackhouses and five

kaleyard enclosures. The structures in the settlement are not arranged in any discernible pattern, though each dwelling seems to have a kaleyard close by. The six extant dwellings in the settlement survive mainly as earthworks with upstanding walls, up to 1.5 m in height (Fig. 7). The survey identified two more ephemeral structures that had low earth banks (Figs. 3, 8), with one of the structures seemingly overlain by a later phase of classic blackhouse architecture

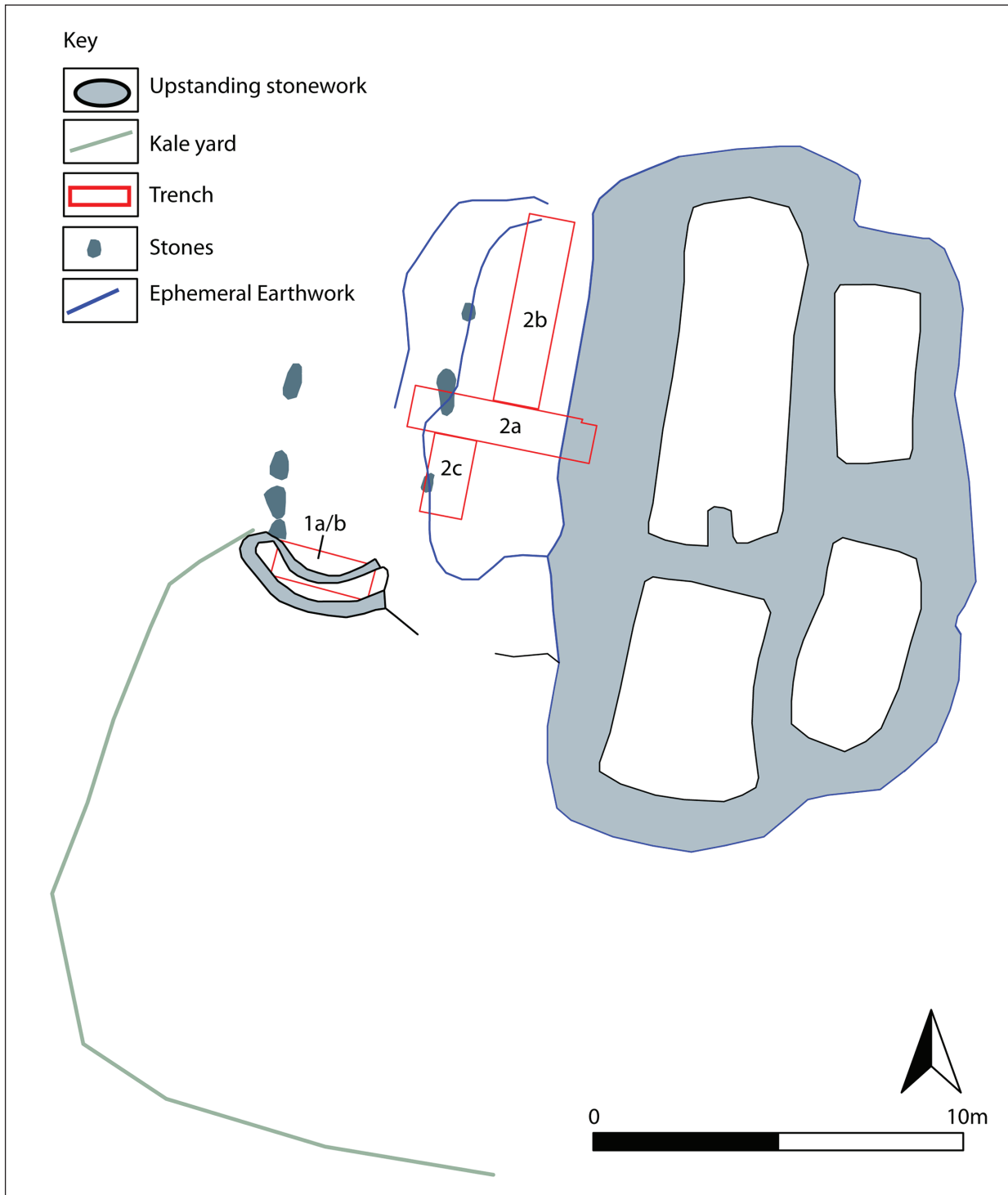


Figure 4. Detailed trench location plan.



Figure 5. Landscape position of Bereiro, looking south towards Uig sands (Photograph © Simon Gilmour).



Figure 6. Landscape position of Bereiro, looking east towards extensive outfield of runrig (Photograph © Mike Church).

(Figs. 4, 7). Therefore, these two structures were targeted for excavation to retrieve the earliest possible dating evidence.

Excavation Results

Trench 1a/b

Trench 1a/b is an amalgam of two separate 1-m x 1-m trenches opened side by side and initially sep-



Figure 7. Blackhouse complex adjacent to trenches 1 and 2 (Photograph © Mike Church).



Figure 8. Structure in which trench 1 was placed (Photograph © Peter Rowley-Conwy).

arated by a baulk of 0.3 m before this was removed, forming a single 2.3-m x 1-m trench. The trench was opened in the south end of a north–south aligned structure across the north face of the extant southern wall. This wall was chosen as the only extant wall in this structure with a clearly defined wall face of interesting composition. The trench was placed in this way to establish the relationship between the base of the wall and any floor surfaces that may have survived (Fig. 9).

The wall (1-001) was constructed of small rounded pebbles, ranging from around 10 cm to 30 cm in diameter. The stones were loosely bonded as a single-skin dry stone wall, which survived to a height of 0.5 m. The wall was supported on the south side by a turf bank (1-000), which stood to the same height. Ex-

cavations revealed a limited area of tumble (1-002), which had fallen to the north of the wall inside the structure, consisting of stone similar in form to those in the surviving wall face. Beneath the tumble lay a surface consisting of green gritty clay (1-003 and 1-005), which in turn overlay a layer of cobbles (1-004). The cobbled surface (1-004) and wall (1-001) appeared to be contemporary, and this arrangement of clay on cobbles is paralleled in the dwelling or barn structures of other Hebridean blackhouses, such as those excavated at Garenin (Burgess 1995) and Arnol (Holden et al. 2001). No small finds were identified in any of the contexts in trench 1a/b.

Trench 2a

Trench 2a was a 4- x 1-m trench aligned east–west (Figs. 10, 11). The trench was placed to bisect a north–south aligned structure; it lay across what was believed to be its center (and thus the likely location of any hearth) and took in both its east and west walls. Below the topsoil (2a-000) at the west end of the trench, a large amount of irregular stones (2a-001 and 2a-004), thought to be tumble from the west wall, were discovered. This stonework appears to be the only surviving material from the west wall. A similar dearth of stonework was discovered at the east side of the trench; the only surviving stonework here appeared to be the footings of a stone-faced wall with an earth core (2a-002). The small quantity of extant stone suggests that the walls were almost completely dismantled sometime after the structure's abandonment.

Between the two walls was a deposit of mixed peat, green gritty clay, and re-deposited peat ash (2a-003); this appears to be a floor deposit and is consistent with comparanda from excavations of other Hebridean blackhouse sites such as Garenin (Burgess 1995) and Arnol (Holden et al. 2001), where similar deposits were excavated within byre structures. Two barley grains recovered from Sample 4 (2a-003) were submitted for radiocarbon dating (see below). There were no cobbles present beneath this possible floor level, which was consistent with trench 1. One fragment of burnt undiagnostic ceramic was recovered from the wall footing (2a-002; see pottery report below).

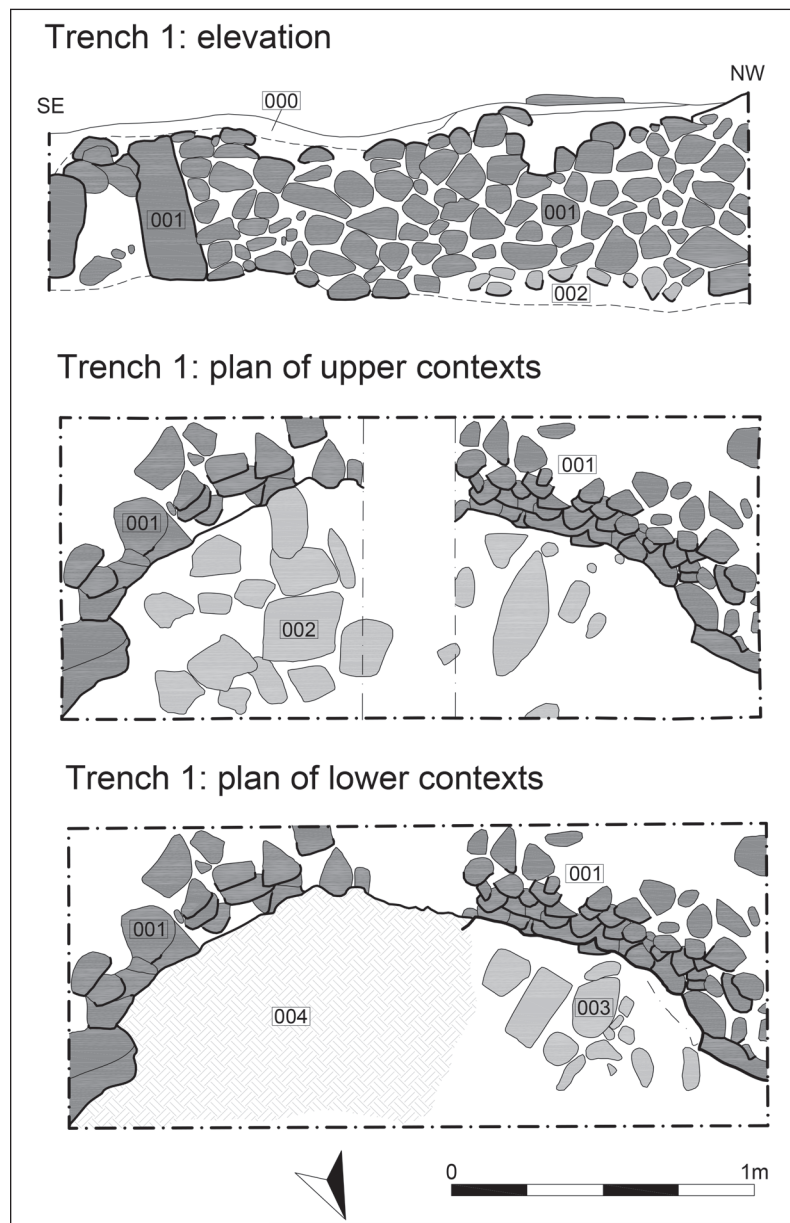


Figure 9. Trench 1 a/b plan and elevation at Bereiro.

Trench 2b

Trench 2b, which measured 1 x 5 m, began at the west end of trench 2a and ran north–south taking in the interior area of the structure (Figs. 11, 12). Beneath the turf and topsoil lay a deposit of mixed gritty brown peat, clay and ash (2b-001). This de-

posit appears to have been redeposited across the interior of the structure and may originally have been the wall fill of the structure. Beneath this redeposited material was a layer of gritty clay mixed with peat and peat ash (2b-002). This is believed to be a floor layer and is similar in formation and nature to con-

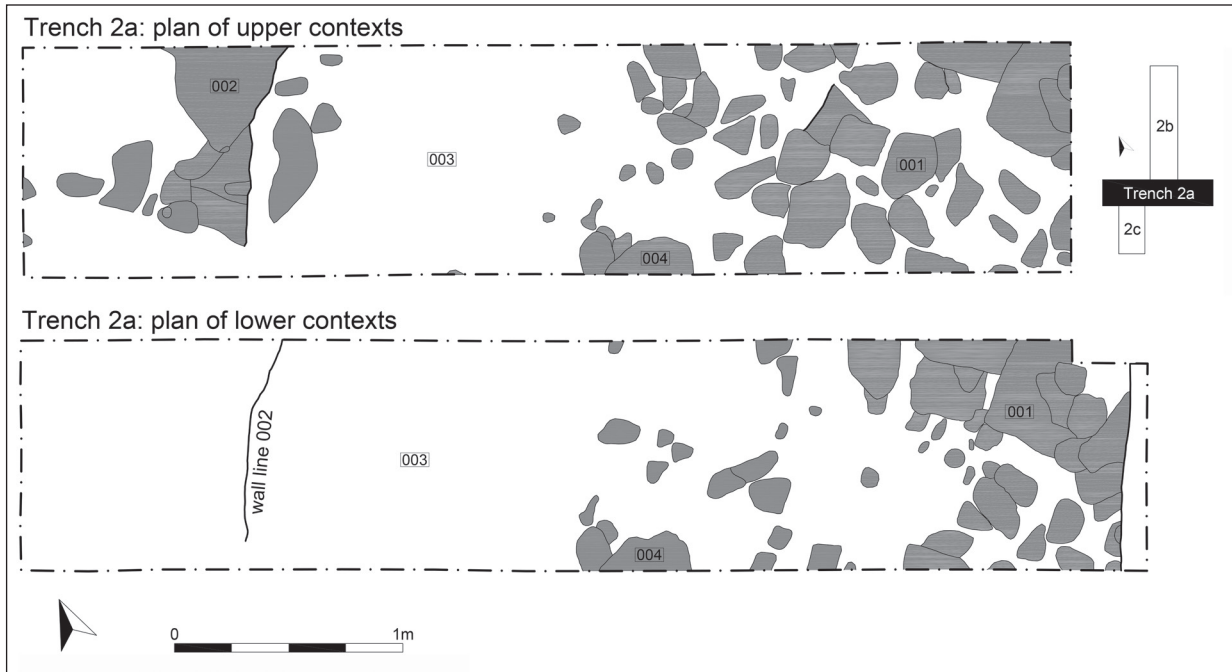


Figure 10. Trench 2a plan at Bereiro.



Figure 11. Intersection of trenches 2a and 2b marked by ranging rods, looking north (Photograph © Peter Rowley-Conwy).

text (2a-003) in trench 2a. One piece of ceramic was recovered from the topsoil (2b-001), and a shard of brown bottle glass was found in the uppermost level (2b-000; see glass report below).

Trench 2c

Trench 2c extended outward on the south side of trench 2a and measured 2 x 1 m (Fig. 13). The trench incorporated the east side of the remains of a wall face identified in the western end of trench 2a. Immediately beneath the topsoil (2c-000) of this trench, a mixed deposit of gritty brown/black soil was recorded (2c-001). This deposit was similar in nature to context (2b-001) in trench 2b, and is believed to be similar material—a collapsed or re-deposited wall fill. Beneath this context was a layer of grey clay mixed with peat and peat ash (2c-003) that overlay an area of stone cobbles (2c-004), forming a floor surface. This floor surface abutted the east-facing wall face (2a-002) located in the west of trench 2a. A second piece of brown bottle glass and one piece of partially burned wood were recovered from within the re-deposited layers and topsoil at the top of the sequence (2c-000 and 2c-001).

Material Culture

The small finds are archived in the Museum nan Eilean in Stornoway, Lewis.

Glass (Robin Murdoch)

Two fragments of glass survive from the Bereiro structures (Fig. 14). The first, SF003 recovered from trench 2b (2b-000), is a shard of kick (base indent), probably from a small wine or ale bottle in dark, slightly olive green and is in good condition. There appears to be slight “orange peel” effect in the kick and slight ridging towards the center, both may be evidence of mould-blowing. The second, SF004 from topsoil (2c-000), is a shard junction of neck and shoulder, also from a wine or ale bottle in dark, slightly olive green and surviving in good condition.

Slight striations and elongated seed (gas bubbles) are evident from the drawing of the neck.

From what survives, it is difficult to be precise about these shards. They could be from the same bottle, and the color is typical for a late 18th through to mid-19th century date. The condition indicates that they have probably lain in acidic or neutral deposits, i.e., there is no surface denaturing. One shard (SF004) has possible evidence of production by mould-blowing. The first practical commercial mould-blowing apparatus was patented in 1821, and the technology would have spread to most manufacturers by ca. 1840 (Van den Bossche 2001). Based on the shape, form, and color, it is unlikely that the bottle is earlier than late 18th century and if the kick does indicate mould-blowing, more likely mid-19th century.

Pottery (Ann MacSween)

Two sherds of pottery were recovered from the excavations (Fig. 15). The body sherd was recovered

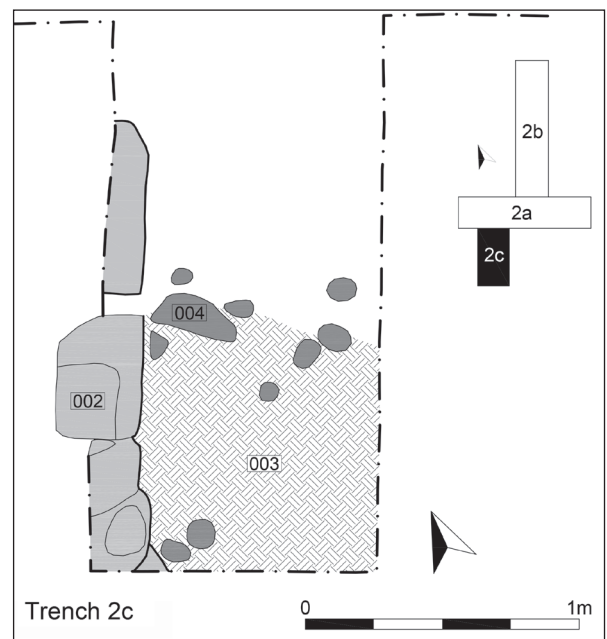


Figure 13. Trench 2c at Bereiro.

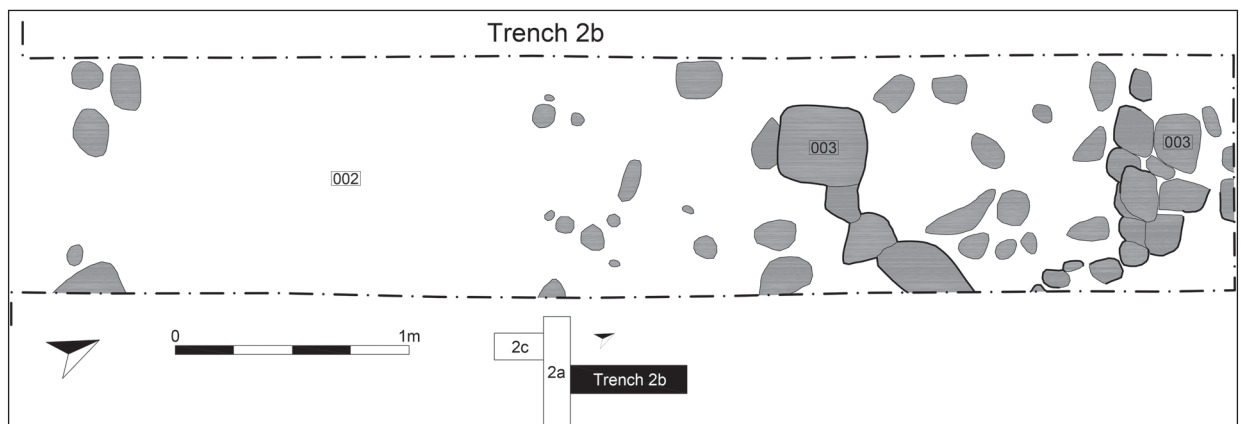


Figure 12. Trench 2b plan at Bereiro.



Figure 14. Glass fragments recovered from Bereiro excavations. SF004 (top) and SF003 (bottom).

from trench 2b (2b-001), and the smaller fragment from trench 2a (2a-002). The larger of the sherds is from a well-fired vessel made from sandy clay. There are deep striations over the exterior surface, and it may have been pared during manufacture to achieve the desired thickness. The exterior surface has a thick sooty coating from use over an open fire. It was not possible to determine the vessel shape.

Environmental Archaeology

Samples were taken from the in situ archaeological contexts to retrieve ecofacts for paleoenvironmental and paleoeconomic reconstruction, principally carbonized plant macrofossils. Routine sedimentary tests were undertaken to analyze ecofact preservation and taphonomy, and bulk samples were collected to retrieve ecofact remains (see Methods above). The samples were processed as part of doctoral research to produce a regional synthesis on the later prehistoric and historic use of plants in Lewis, from ten sites of Bronze Age to post-medieval date (Church 2002b). A number of recurrent research questions were formulated for the archaeobotanical remains from each of these sites including;

- Is it possible to propose a generic taphonomic model for the origin, preservation, and subsequent dispersal of the carbonized plant macrofossils on the site?
- What materials were used for fuel?



Figure 15. Pottery sherds recovered from Bereiro excavations.

- What wood and timber was used and how was it procured?
- Can aspects of arable agriculture be seen in the archaeobotanical record, from the crops grown to the crop-processing procedures employed?
- What other plants were gathered and for what purpose?

Results and discussion

Table 1 presents the sedimentary analyses, and Table 2 presents the archaeobotanical remains from the bulk samples. Figure 16 presents the preservation profiles for barley (*Hordeum* sp.) and oat (*Avena* sp.) grains recovered, following the preservation classes of Hubbard and al Azm (1990). The research questions identified above are addressed in turn below.

Table 1. Sedimentary analysis of bulk samples from Bereiro.

Sample	Trench	Context	Texture (Munsell color)	Organic content (%)	pH	χ (10^{-8} m ³ kg ⁻¹)	κfd%
1	2A	2a-002	Silt (very dark brown, 7.5YR 2.5/2)	15.1	4.7	0.06	0.00
2	1B	1b-003	Silt (very dark brown, 7.5YR 2.5/2)	9.4	4.7	0.62	8.04
3	1A	1a-003	Clayey silt (dark reddish brown, 5YR 3/2)	15.3	4.5	7.79	11.79
4	2A	2a-003	Clayey silt (dark reddish brown, 5YR 3/2)	19.3	4.3	0.13	7.69
5	2B	2b-001	Silt (very dark brown, 7.5YR 2.5/3)	10.8	4.6	0.30	7.41
6	2C	2c-001	Silt (very dark brown, 7.5YR 2.5/3)	11.2	4.4	4.27	6.90
7	2B	2b-003	Clayey silt (dark reddish brown, 5YR 3/2)	15.9	4.2	0.10	0.00

Table 2. Carbonized plant macrofossils from Bereiro.

	Sample			
	2	4	5	7
Context	1b-003	2a-003	2b-001	2b-003
Trench	1B	2A	2B	2B
Volume (liters)	5	5	5	5
Plant species	Common name			
Charcoal				
<i>Betula</i> sp. roundwood	Birch roundwood (not pith to bark)		1F(0.03)	
<i>Corylus avellana</i> L.	Hazel nutshell fragment		1F(0.01)	
Carbonized peat/turf	2.49 g	61.42 g	13.40 g	15.87 g
Grain				
<i>Hordeum</i> sp. hulled	Hulled barley grain		4	1
<i>Hordeum</i> sp. hulled symmetric	Hulled barley straight grain			2
<i>Avena</i> sp.	5	8	3	14
Cereal indeterminate	Indeterminate cereal grain			2
Chaff				
<i>Hordeum vulgare</i> L.	Six-row barley rachis internode		1	
Cereal/monocotyledon (>2 mm)	Cereal sized culm base		1	
Wild species				
<i>Stellaria media</i> (L.) Villars	Common chickweed seed		1	
<i>Spergula arvensis</i> L.	Corn-spurrey seed		1	
<i>Rumex</i> spp.	Dock seed		1	
<i>Viola</i> sp.	1	Violet seed		
<i>Brassica/Sinapis</i> spp.	Cabbage/Mustard seed		2	
<i>Euphorbia helioscopia</i> L.	5	1	Sun spurge seed	
<i>Chrysanthemum segetum</i> L.	Corn marigold achene		4	
Poaceae (small) undifferentiated	Grass grain		1	
Poaceae (medium) undifferentiated	Grass grain		1	
Monocotyledon (<2 mm)	Culm base		4	1
Indeterminate (>2 mm)	Rhizome			1
Indeterminate (<2 mm)	Rhizome		2	2
Indeterminate seed/fruit	Indeterminate seed/fruit		1	
Miscellaneous ecofacts				
Indeterminate burnt bone fragments	3F			
Total quantifiable components	14	25	12	24
Quantifiable component/liter	2.8	5.0	2.4	4.8
Grain (%)	36	48	33	79
Chaff (%)	0	0	17	4
Wild species (%)	64	52	50	17

Ecofact preservation and taphonomy. Only carbonized plant macrofossils and three fragments of indeterminate carbonized bone (from 2a-003) were recovered from the samples. Each of the samples came from in situ occupation layers that were very organic and acidic in nature, with the pH ranging from 4.2 to 4.7. This degree of acidity meant that no uncarbonized bone fragments or shell would have been preserved in the deposits. Peat/turf ash was present in most of the contexts, confirmed by the enhanced mineral magnetic signature in most of the samples. This ash had presumably spread from the central domestic hearth, either being deliberately laid down as part of a beaten floor level or trampled over time across the domestic space, a phenomenon noted in other blackhouse excavations (Smith 1996) and 19th/20th-century ethnography (Fenton 1978). The archaeobotanical remains would have been carbonized in the hearth, the principal taphonomic model for carbonized plant macrofossil preservation in North Atlantic archaeology (Church and Peters 2004; Church et al. 2005, 2007).

Fuel use and wood procurement. Peat/turf ash was identified in the field as patches of orangey brown clayey ash, a common color and texture associated with the burning of peat and turf in the Western Isles (Church et al. 2007). This identification was confirmed by the enhanced magnetic susceptibility (χ) in deposits with large proportions of ash, and the range of frequency dependent magnetic susceptibility ($\kappa_{fd}\%$) indicated a significant concentration of superparamagnetic grains (Dearing 1994), a feature of peat and turf ash (Church et al. 2007; Peters et al. 2000, 2004). Large numbers of burnt fragments of carbonized peat/turf were also recovered from the bulk samples. These were dominated by fragments of peat with no discernible structure, indicating well-humified peat was usually burnt, presumably taken from peat banks designated for the inhabitants of Bereiro in the blanket bog covering much of the Uig peninsula. The single fragment of birch roundwood (*Betula* sp. not pith to bark, 11 rings) and the fragment of hazel nutshell (*Corylus avellana* L.) could indicate the use of birch and hazel taken from areas separated from grazing sheep, such as cliffs or islands in lochs, but are more likely to be plant contaminants from the burning of peat (Church et al. 2007, Dickson 1998, McClaughlin 1980). The wood was clearly not used for fuel.

Arable agriculture. Forty cereal grains were recovered from the four

samples, comprising oat (*Avena* sp.) and hulled barley (*Hordeum* sp.). The presence of a broad-shouldered rachis internode indicated that six-row hulled barley (*Hordeum vulgare* L. var. *vulgare*) was present, the usual barley crop in Atlantic Scotland in the post-Medieval period (Fenton 1978, 1982). No oat spikelets were recovered, so the species of oat could not be determined. All of the wild seed species, including common chickweed (*Stellaria media* (L.) Vill.), corn-spurrey (*Spergula arvensis* L.), docks (*Rumex* spp.), violets (*Viola* spp.), cabbage/mustard seeds (*Brassica/Sinapis* spp.), sun spurge (*Euphorbia helioscopia* L.), corn marigold (*Chrysanthemum segetum* L.), and grass grains (Poaceae undiff.), could have been weed species with both the barley and the oat crop (Hinton 1991, Pankhurst and Mullin 1994). The ecological conditions associated with these species indicate relatively well-drained, nitrogen-rich soils. These conditions match those of the rigs that surround the blackhouse village (see Figs. 2, 6) and it is likely that both the barley and the oat would have been grown separately in strips on the amended soils of these rigs.

It is likely that the grains and seeds became carbonized in the domestic hearth through small-scale crop-processing occurring around the hearth. For example, the process known as graddening involves the heating or singeing of ears of hulled barley prior to coarse grinding of the grain to remove the hulled material fused to the grain (Fenton 1982). This process is likely to produce an archaeobotanical assemblage dominated by poorly preserved grains and weed seeds (Fig. 16), as the open peat fire will reach

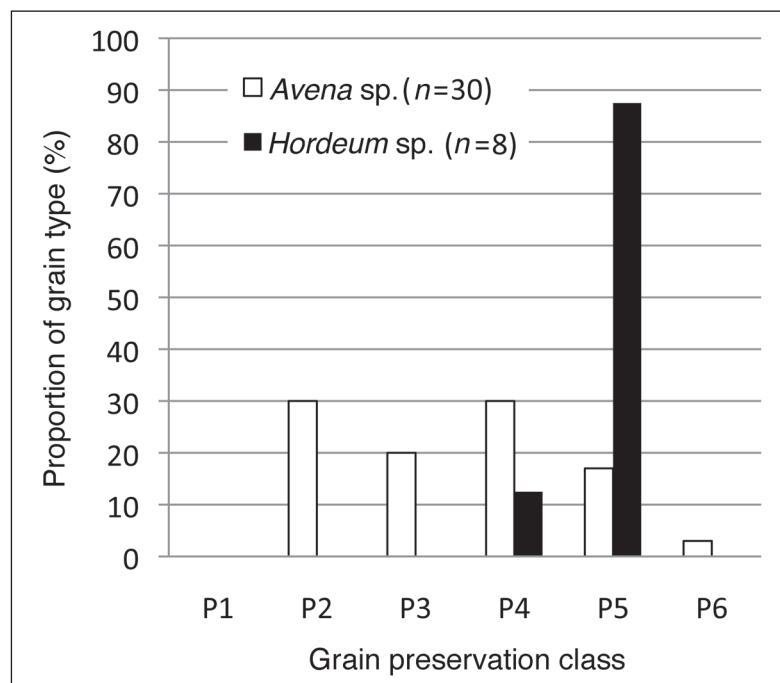


Figure 16. Preservation of barley and oat grain recovered from Bereiro, following preservation classes of Hubbard and al Azm (1990).

high temperatures in an oxygenated environment (Boardman and Jones 1990, Wilson 1984).

Wild plant gathering. The only possible evidence for wild-plant gathering would be the presence of the single fragment of carbonized hazel nutshell. This find could indicate the eating of hazelnuts, with the nutshell carbonized by discard into the domestic hearth or through roasting. Hazel nutshell is a common ecofact recovered from Mesolithic and Neolithic sites in Atlantic Scotland (Bishop et al. 2009) but is much rarer in later periods because there were very few hazel shrubs/trees left in the predominantly open environments of the region at this date (Pankhurst and Mullin 1994). Therefore, it is likely that the hazel nutshell was preserved in the peat that was burnt as fuel and does not represent any deliberate use or consumption at Bereiro.

Dating Evidence

Two barley grains (*Hordeum* sp.) were recovered from a floor layer in trench 2a (2a-003). Samples from this layer were chosen for dating because the context was thought to represent the earliest phase of the archaeological remains uncovered. The samples were sent to Oxford Radiocarbon Accelerator Unit for single-entity AMS radiocarbon dating (Table 3), following the protocol of Ashmore (1999). The dates were calibrated using OxCal 4.1.7 (Bronk Ramsey 2009) and atmospheric data from Reimer et al. (2009). These dates show that the structure belonged to the post-medieval period of the classic blackhouse form, with no evidence for earlier medieval occupation.

Social History

The social history of the Bereiro blackhouse village has been investigated by the Comann Eachdraidh Uig. The research suggests that the last inhabitant of Bereiro was one Donald Matheson, who was born ca. 1794. His father, also Donald Matheson, was born ca. 1740 and joined the army; he was in Canada during the Siege of Louisbourg in 1758 before returning to Crowlista to raise a family at Bereiro. Donald Matheson, Jr., joined the Hudson's Bay Company ca. 1815; his career with the company is outlined in his personal record in the Hudson's Bay Company archive. This record shows him working as a Middleman (the middle paddler in a canoe) and a laborer during his time in Hudson Bay. Despite being offered land in Manitoba, Donald returned to

Europe on the *Prince of Wales* in 1821 and settled in Bereiro, where he married Helen MacIver and had three children.

Donald Matheson returned to Lewis during a time of massive social upheaval in the Highlands and Islands. At this time, the population of these regions was increasing. It increased at a rate that outpaced the expected, but failed, growth in the Highland economy. Landlords raised rents in anticipation of an economic boom, which then failed to happen. Unsustainable population numbers, coupled with the increased rents, led to increasing levels of poverty which became an embarrassment to Britain in a time when otherwise the country was enjoying an industrial revolution and the age of "improvement" (Richards 1985:4). Responses to this problem varied. In the Western Highlands and the Hebrides, the system of joint tenancies and communal agriculture was terminated between 1760 and 1840. This system was replaced by individual crofts allocated to townships, which dramatically changed the population map of these regions, and from 1760, a significant number of disillusioned islanders emigrated, heading for America (Devine 1998:135). The second phase of clearances, from 1820–1850, were more draconian in their methods of removing the population (Devine 1998:140); it was during this second phase of clearances that Donald Matheson left Lewis again.

Around 1834, the entire family left Bereiro. At this time, Rev. Alexander Macleod was extending his glebe to include that area, and it is likely that the Matheson's removal precipitated their emigration to Cape Breton. They settled at Little Narrows and had nine more children. The area around the head of Triàgh nan Srùban remains the property of the kirk and has not been inhabited since, though it is used for sheep by a local crofter.

The quality of life in Canada and America may have been better than in the poverty of the islands in the early 19th century, but Matheson chose to return to Uig. A sense of place, which is inextricably linked with identity, anchors people in their landscape, "the people belong because they are rooted in the landscape by generations of quiet history and the round of daily activity" (Ryden 1993:263). Lowenthal (1997:180) argues that "the locus of memory lies more readily in place than in time." It is certainly possible to trace continuity of land use in the Western Isles with reoccupation of Iron Age sites (Armit 1996:167) and sites such as Bornais, with its evidence of occupation levels from the middle Iron

Table 3. Radiocarbon dates from Bereiro.

Measurement ID	Sample ID	Sample species	Age ¹⁴ C yr BP	δ ¹³ C	Calibrated date AD (2σ)
OxA-8481	BH222 S.4A C.3	Barley grain	200 ± 40	-26.0	1641–1955 cal AD
OxA-8578	BH222 S.4B C.3	Barley grain	90 ± 50	-28.4	1678–1940 cal AD

Age to the Norse period (Sharples and Hamilton 1996:108). Bostadh too can demonstrate habitation from the Late Iron Age to the Norse Period (Burgess and Church 1997, Neighbour and Burgess 1996). The voices of the original displaced people are no longer heard, but the ruins of villages stand as unintentional memorials, mnemonics for feelings of loss and destruction of community that persist in popular Scottish Diaspora consciousness (Basu 2007:153–154).

Discussion

The excavation has demonstrated quite clearly that the structure under investigation in trench 2 was most likely used as a barn, byre, or accommodation of some description for animals and/or storage. The mixed floor deposits and the dearth of cobbles support this, though the presence of cobbles in the southwest of the structure (trench 2c) suggests either a change in usage or multiple functions. The large deposit of mixed brown/black gritty soil which lay across a large area of trench 2 (above the floor deposits) could suggest that at some point the wall was dismantled and the core from the structure used to create a new flooring area. It is possible that this re-deposition was a deliberate attempt to level the interior of the structure. The structure was dated to the post-medieval period from the radiocarbon dates and the glass fragments.

The second structure, which lay in trench 1a/b lying immediately to the west of the building examined in trench 2, appears to have been either a dwelling or an ancillary structure such as a barn. The presence of a clearly defined green clay floor over cobbles is consistent with dwelling areas seen at Garenin (Burgess 1995) and Arnol (Holden et al. 2001), though similar deposits were also recorded in ancillary areas at both sites in what was thought to be later re-use of the structures. This second structure was difficult to define on the ground prior to excavation and was only clearly visible at its south end, which was targeted by the excavation. It abuts the structure examined by trench 2 and probably represents the remains of a house-barn-byre complex. This layout would be consistent with other blackhouse complexes in the region, such as those at Arnol and Garenin and again dates to the post-medieval period.

Only two substantial medieval (13th–17th century) settlements of domestic nature have been identified in Lewis and Harris. Dun Eistean is a fortified sea-stack near the Butt of Lewis in the north, containing a number of domestic structures of medieval date (Barrowman 2008). Also, up to thirty houses of presumed medieval date were discovered by geophysical survey and fieldwalking in a croft adjacent to the St. Clement's church in Rodel, Harris

(Hunter 2004). This pattern is not very different for the Western Isles more generally, with the notable evidence of medieval settlement being limited to Eilean Olabhat, where phase four of the excavated settlement is dated by ceramic evidence to the 14th–16th century (Armit et al. 2008), and nearby Druim nan Dearcag on the south shore of Loch Olabhat, where a structure closely paralleling that at Eilean Olabhat dates to the 15th–17th century (Armit 1997). However, considering the large number of blackhouse settlements across the Western Isles, it is clear that the medieval period has a very low visibility in the archaeological record of the region. There are a number of possible explanations for this. Firstly, the majority of the domestic structures may have been mostly built in turf, following on from the Norse tradition (Holden et al. 2001), which could mean that the structures would be much more easily eroded after abandonment than stone-built structures and would therefore not survive as readily as upstanding monuments. However, eroded turf structures in the wider North Atlantic region are likely to produce recognizable mounds (Vésteinsson 2010) that could be identified by systematic field survey. Alternatively, the domestic structures may have been built in a very similar way to blackhouses and have been mis-identified in extensive field survey projects as being of post-medieval date.

Secondly, the gap in the record could reflect a real demographic phenomenon, with fewer people creating less settlement evidence to be discovered. This population reduction could have been caused by migration, forced abandonment, or disease events, such as the Black Death in the 14th century. Also, population nucleation from the preceding Norse period would produce fewer instances of archaeological sites with the same approximate population levels, a process hinted at by the relatively large number of domestic structures at Dun Eistean and Rodel.

Thirdly, the medieval evidence may have been covered over or destroyed by the later post-medieval occupation. Blackhouses can actually be seen as relatively temporary structures, due to the willingness of their inhabitants to constantly change their structural configuration, a process that would actively destroy any underlying earlier medieval evidence. This active remodelling can also be extended from the infield to the outfield area, with the constant intensification and extensification of runrig systematically destroying any earlier archaeological evidence. Past settlement evidence would also be relatively rich in soil nutrients, which would be an attractive addition to the raised soil components of rig and lazybeds. These sites could have been deliberately dug up and added to the rig, destroying much of the evidence and only leaving a stratigraphical palimpsest to be discovered by archaeologists.

Finally, settlement patterns may have been much more widely dispersed in the medieval period, with nucleation in villages a much later post-medieval phenomenon (Dodgshon 1993). These nucleated settlements with extensive field systems may well have destroyed evidence for earlier scattered occupation, leaving only those in marginal areas intact (Armit et al. 2008:100). One such marginal medieval structure can be seen very close to the blackhouse village at Bereiro, at the site of An Dunan. This natural causewayed islet has a main period of use in the Iron Age (see Fig. 3), but includes a period of re-use in the medieval period (ca. 11th–15th centuries cal AD), featuring a structure that parallels the boat-shaped dwelling discovered at Druim nan Dearcag (Church et al., in review). There was little evidence to suggest a function for the structure, but it may have been used as a shelter or for storage.

Conclusions

The results of the excavations at Bereiro conform to a relatively standard pattern of blackhouse use and construction in the post-medieval period. While individual structures were remodelled throughout their lifetimes, the plans and sizes of the structures did not alter greatly. We appear to see in the Bereiro blackhouse the echoes of the centuries of use of this particularly style of architecture, perhaps determined by the availability of local materials that were well-suited to the small family unit and subsistence-farming lifestyle. The excavations reveal little change in the plan of the structure over time. The post-medieval dating evidence lends support to arguments for the emergence of the nucleated blackhouse village as a post-medieval phenomenon (Dodgshon 1993), with little to suggest longevity of use for the village from the excavation results. However, the excavations were too small to shed light on the structure of the wider village community, although even larger-scale excavation may not have helped in this respect since Campbell (2009:327) has argued that “post-medieval settlement on Lewis had no defining characteristic, it consisted of both dispersed and nucleated elements and could comprise both clear indicators of communal endeavours and markers of individual undertaking”.

While the Bereiro excavations did not reveal evidence for occupation earlier than the post-medieval period, it is suggested here that other blackhouse villages may conceal earlier occupation, evidence for which is largely absent in the archaeological record of the Western Isles. The nature of land use and continual structural reconfiguring of architecture in blackhouse villages renders recognition of earlier phases of use difficult. The archaeology of the post-medieval period benefits from the support of local

historical records, which offer an understanding of the role of the individual in the landscape and the impact of the landscape, both physically and emotionally, on the individual, lending an insight into perceptions of a sense of place and continuity of land use in an area that has seen human occupation for at least 3000 years.

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Literature Cited

- Arge, S.V. 1991. The Landnám in the Faroes. *Arctic Anthropology* 28:101–120.
- Armit, I. 1996. *The Archaeology of Skye and the Western Isles*. Edinburgh University Press, Edinburgh, UK. 264 pp.
- Armit, I. 1997. Excavation of a post-medieval settlement at Druim nan Dearcag, and related sites around Loch Olabhat, North Uist. *Proceedings of the Society of Antiquaries of Scotland* 127:899–919.
- Armit, I., E. Campbell, and A. Dunwell. 2008. Excavation of an Iron Age, Early Historic and medieval settlement and metalworking site at Eilean Olabhat, North Uist. *Proceedings of the Society of Antiquaries of Scotland* 138:27–104.
- Ashmore, P.J. 1999. Radiocarbon dating: Avoiding errors by avoiding mixed samples. *Antiquity* 73:124–130.
- Barrowman, R.C. 2008. Splendid isolation? Changing perceptions of Dùn Eistean, an island on the north coast of the Isle of Lewis. Pp. 95–111, *In* G. Noble, T. Poller, J. Raven, and L. Verrill (Eds.). *Scottish Odysseys. The Archaeology of Scottish Islands*. Tempus, Stroud, UK. 192 pp.
- Basu, P. 2007. *Highland Homecomings: Genealogy and Heritage Tourism in the Scottish Diaspora*. Routledge, Oxford, UK. 272 pp.
- Bishop, R.R., M.J. Church, and P.A. Rowley-Conwy. 2009. Cereals, fruits, and nuts in the Scottish Neolithic. *Proceedings of the Society of Antiquaries of Scotland* 139:47–103.
- Boardman, S.J., and G.E.M. Jones. 1990. Experiments on the effects of charring on cereal plant components. *Journal of Archaeological Science* 17:1–11.
- Branigan, K., and C. Merrony. 2000. The Hebridean Blackhouse on the Isle of Barra. *Scottish Archaeological Journal* 22:1–16.
- Bronk Ramsey, C. 2009. Bayesian analysis of radiocarbon dates. *Radiocarbon* 51:337–360.
- Burgess, C.P.G. 1995. Garenin landscape survey. Unpublished Interim Report to the Garenin Trust, University of Edinburgh, Edinburgh, Scotland, UK. 50 pp.
- Burgess, C.P.G., and M.J. Church. 1996. Uig Sands to Aird Uig, Isle of Lewis. *Discovery and Excavation in Scotland* (1996):111–112.
- Burgess, C.P.G., and M.J. Church. 1997. Coastal erosion assessment, Lewis: A report for Historic Scotland. Unpublished report, Edinburgh, Scotland, UK. 300 pp.
- Burgess, C.P.G., S.M. Gilmour, and A. Jackson. 1996. Bereiro (Uig Parish). *Discovery and Excavation in Scotland* (1996):110.
- Campbell, S.D. 2009. Post-medieval settlement in the Isle of Lewis: A study in adaptability or change? *Proceedings of the Society of Antiquaries of Scotland* 139:315–332.
- Church, M.J. 2002a. The archaeological and archaeobotanical implications of a destruction layer in Dun Bharabhat, Lewis. Pp. 67–75, *In* B. Ballin-Smith and I. Banks (Eds.). *In the Shadow of the Brochs: The Iron Age in Scotland*. Tempus, Stroud, UK. 256 pp.
- Church, M.J. 2002b. *Plants and people in the later prehistoric and Norse periods of the Western Isles of Scotland*. Unpublished Ph.D. Dissertation. University of Edinburgh, Edinburgh, Scotland, UK. 454 pp.
- Church, M.J., and C. Peters. 2004. Application of mineral magnetism in Atlantic Scotland archaeology 2: Archaeobotanical taphonomy in Atlantic Scotland. Pp. 99–112, *In* R. Housley and G.M. Coles (Eds.). *Atlantic Connections and Adaptations: Economies, Environments, and Subsistence in Lands Bordering the North Atlantic*. Oxbow, Oxford, UK. 304 pp.
- Church, M.J., S.V. Arge, S. Brewington, T.H. McGovern, J.H. Woollett, S. Perdikaris, I.T. Lawson, G.T. Cook, C. Amundsen, R. Harrison, Y. Krivogorskaya, and E. Dunbar. 2005. Puffins, pigs, cod, and barley: Palaeoeconomy at Undir Junkarinsflótti, Sandoy, Faroe Islands. *Environmental Archaeology* 10:179–197.
- Church, M.J., C. Peters, and C.M. Batt. 2007. Sourcing fire ash on archaeological sites in the Western and Northern Isles of Scotland, using mineral magnetism. *Geoarchaeology* 22:747–74.
- Church, M.J., C. Nesbitt, and S.M.D. Gilmour. In review. A special place in the saltings: Survey and excavation of an Iron Age islet at An Dunan, Lewis, Western Isles. Submitted to *Proceedings of the Society of Antiquaries of Scotland*.
- Clapham, A.R., T.G. Tutin, and D.M. Moore. 1987. *Flora of the British Isles*. 3rd Edition. Cambridge University Press, Cambridge, UK. 720 pp.
- Comann Eachdraidh Uig. 2011. Fresh notes and old stories from Uig Historical Society, Isle of Lewis. Available online at <http://www.ceuig.com/archives/2215>. Accessed 17 March 2011.
- Dearing, J. 1994. *Environmental Magnetic Susceptibility*. Chi Publishing, Kenilworth, UK. 111 pp.
- Devine, T.M. 1998. *Exploring the Scottish Past: Themes in the History of Scottish Society*. Tuckwell Press, East Linton, UK. 250 pp.
- Dickson, C. 1998. Past uses of turf in the Northern Isles. Pp. 105–109, *In* C. Milles and G.M. Coles (Eds.). *On the Edge: Settlement in Marginal Areas*. Oxbow, Oxford, UK. 188 pp.
- Dodgshon, R.A. 1973. The nature and development of infield-outfield in Scotland. *Transactions of the Institute of British Geographers* 59:1–23.
- Dodgshon, R.A. 1977. Changes in Scottish township organization during the Medieval and Early Modern periods. *Geografiska Annaler* 59:51–65.
- Dodgshon, R.A. 1993. West Highland and Hebridean settlement prior to crofting and the Clearances: A study in stability or change? *Proceedings of the Society of Antiquaries of Scotland* 123:419–438.
- Fenton, A. 1978. *The Northern Isles: Orkney and Shetland*. John Donald Publishers, Edinburgh, UK. 721 pp.
- Fenton, A. 1982. Net-drying, pot-drying and graddening: Small-scale grain drying and processing techniques. *Saga och sed (Yearbook of the Royal Gustav Adolfs Academy 1982):86–106*.
- Fenton, A. 1995. *The Island Blackhouse*. 2nd Edition. Historic Scotland, Edinburgh, UK. 54 pp.
- Geddes, G.F. 2010. Vernacular parallels: Brochs and blackhouses. *Vernacular Architecture* 41:15–27.
- Hinton, M.P. 1991. Weed associates of recently grown *Avena strigosa* Schreber from Shetland, Scotland. *Circaeae* 8:49–54.
- Hodgson, J.M. (Ed.). 1976. *Soil Survey Field Handbook, Soil Survey of England and Wales, Technical Monograph No. 5*, London, UK. 99 pp.

- Høegsberg, M.S. 2010. Continuity and change: The dwellings of the Greenland Norse. *Journal of the North Atlantic*, Special Volume 2:82–101.
- Holden, T., M. Dalland, C.P.G. Burgess, B. Walker, and S. Carter. 2001. No. 39 Arnol: The excavation of a Lewis blackhouse. *Scottish Archaeological Journal* 23:15–32.
- Hubbard, R.N.L.B., and A. al Azm. 1990. Quantifying preservation and distortion in carbonised seeds, and investigating the history of *friké* production. *Journal of Archaeological Science* 16:103–106.
- Hunter, J. 2004. Harris Survey Project, Harris parish. *Discovery and Excavation in Scotland* (2004):135.
- Jones, M. 1991. Sampling in palaeoethnobotany. Pp. 53–62, *In* W. van Zeist, K. Wasylikowa, and K-E. Behre (Eds.). *Progress in Old World Palaeoethnobotany*. Taylor and Francis, Rotterdam, The Netherlands. 352 pp.
- Kenward, H.K., A.R. Hall, and A.K.G. Jones. 1980. A tested set of techniques for the extraction of plant and animal macrofossils from waterlogged archaeological deposits. *Science and Archaeology* 22:3–15.
- Kissling, W. 1943. The character and purpose of the Hebridean Black House. *Journal of Royal Anthropological Institute of Great Britain and Ireland* 83:75–100.
- Lowenthal D. 1997. *The Past is a Foreign Country*. Cambridge University Press, Cambridge, UK. 489 pp.
- McLaughlin, K. 1980. Traditional fuels of the Outer Hebrides: The modern charred seed assemblages. Unpublished M.Sc. Thesis. University of Sheffield, Sheffield, UK. 60 pp.
- Munsell Soil Color Charts. 1994. Kollmorgan Instruments Corporation, New Windsor, NY, USA. 28 pp.
- Neighbour, T., and C. Burgess. 1996. Traigh Bostadh. *Discovery and Excavation in Scotland* (1996):113–114.
- Nesbitt, C., M.J. Church, and S.M.D. Gilmour. 2011. Domestic, industrial, (en)closed? Survey and excavation of a Late Bronze Age/Early Iron Age promontory enclosure at Gob Eirer, Lewis, Western Isles. *Proceedings of the Society of Antiquaries of Scotland* 141:31–74.
- Pankhurst, R.J., and J.M. Mullin. 1994. *Flora of the Outer Hebrides*. HMSO, London, UK. 185 pp.
- Parker Pearson, M., J. Mulville, N. Sharples, and H. Smith. 2011. Archaeological remains on Uist's machair: Threats and potential. *In* D. Griffiths and P. Ashmore (Eds.). *Aeolian Archaeology: The Archaeology of Sand Landscapes in Scotland*. *Scottish Archaeological Internet Reports* 48:55–86.
- Peters, C., M.J. Church, and G.M. Coles. 2000. Mineral magnetism and archaeology at Galson on the Isle of Lewis, Scotland. *Physics and Chemistry of the Earth* 25:455–460.
- Peters, C., M.J. Church, and C. Batt. 2004. Application of mineral magnetism in Atlantic Scotland archaeology 1: Techniques, magnetic enhancement, and the identification of fuel sources. Pp. 86–98, *In* R. Housley, and G.M. Coles (Eds.). *Atlantic Connections and Adaptations: Economies, Environments, and Subsistence in Lands Bordering the North Atlantic*. Oxbow, Oxford, UK. 304 pp.
- Reimer, P.J., M.G.L. Baillie, E. Bard, A. Bayliss, J.W. Beck, P.G. Blackwell, C. Bronk Ramsey, C.E. Buck, G.S. Burr, R.L. Edwards, M. Friedrich, P.M. Grootes, T.P. Guilderson, I. Hajdas, T. J. Heaton, A.G. Hogg, K.A. Hughen, K.F. Kaiser, B. Kromer, F.G. McCormac, S.W. Manning, R.W. Reimer, D.A. Richards, J.R. Southon, S. Talamo, C.S.M. Turney, J. van der Plicht, and C.E. Weyhenmeyer. 2009. IntCal09 and Marine09 radiocarbon age calibration curves, 0–50,000 years cal BP. *Radiocarbon* 51:1111–1150.
- Richards, E. 1985. *A History of the Highland Clearances: Emigration, Protest, Reasons*. Croom Helm, London, UK. 528 pp.
- Ryden, K.C. 1993. *Mapping the Invisible Landscape: Folklore, Writing, and the Sense of Place*. University of Iowa Press, Ames, IA, USA. 362 pp.
- Schweingruber, F.H. 1990. *Microscopic Wood Anatomy*. 3rd Edition. Swiss Federal Institute for Forest, Snow and Landscape Research, Birmensdorf, Switzerland. 224 pp.
- Sharples, N. 2012. *A Late Iron Age Farmstead in the Outer Hebrides. Excavations at Mound 1, Bornish, South Uist*. Oxbow Books, Oxford, UK. 280 pp.
- Sharples, N., and M. Hamilton. 1996. Bornish. *Discovery and Excavation in Scotland* 1996:108.
- Small, A. 1964. Excavations at Underhoull, Unst, Shetland. *Proceedings of the Society of Antiquaries* 98:224–248.
- Smith, H. 1996. An investigation of site-formation processes on a traditional Hebridean farmstead using environmental and geoarchaeological techniques. Pp. 195–206, *In* D. Gilbertson, M. Kent, and J. Grattan (Eds.). *The Outer Hebrides: The Last 14000 years*. SEARCH Volume 2, Sheffield Academic Press, Sheffield, UK. 275 pp.
- Smith, K.P. 1995. Landnám: The settlement of Iceland in archaeological and historical perspective. *World Archaeology* 26:319–347.
- Stace, C. 2010. *New Flora of the British Isles*. 3rd Edition, Cambridge University Press, Cambridge, UK. 1266 pp.
- Van den Bossche, W. 2001. *Antique Glass Bottles: Their History and Evolution (1500–1850)*. Antique Collectors Club, London, UK. 439 pp.
- Vésteinsson, O. 2004. Icelandic farmhouse excavations: Field methods and site choices. *Archaeologia Islandica* 3:71–100.
- Vésteinsson, O. 2010. On farm mounds. *Archaeologia Islandica* 8:13–39.
- Walker, B., and C. MacGregor. 1996. *The Hebridean Blackhouse: A Guide to Materials, Construction, and Maintenance*. Scottish Conservation Bureau, Edinburgh, UK. 34 pp.
- Whittington, G. 1975. Was there a Scottish agricultural revolution? *Area* 7:204–206.
- Wilson, G. 1984. Carbonisation of weed seeds and their representation in macrofossil assemblages. Pp. 200–206, *In* W. van Zeist and W.A. Casparie (Eds.). *Plants and ancient man*. A.A. Balkema, London, UK. 344 pp.