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Machair Bharabhais: A Landscape Through Time

Trevor Cowie1 and Mary MacLeod Rivett2,*

Abstract - This paper provides a preliminary analytical summary of the results of post-excavation work underway on a series of archaeological surveys and excavations on the western coast of the Isle of Lewis, on the machair of Barabhas township. During the excavations, which were carried out on and off between 1976 and 2001, we sampled settlements, ritual sites, and landscape features dating from between the Early Bronze Age and the Norse Period, including a Beaker settlement and a Viking Age or Norse settlement, within an area suffering from severe aeolian erosion. Analyses of the finds yield a picture of the development of the landscape, both ritual and subsistence, over a period of at least 2500 years.

Introduction

Machair Bharabhais is a sandy, shoreline plain west of the post-mediaeval crofting settlement of Barabhas, on the western coast of the Isle of Lewis in the Outer Hebrides, off the west coast of Scotland (Fig. 1). It lies to the east of an area of dune and shingle, in a broad embayment, and is exposed to the full and direct influence of the Atlantic (Ritchie and Mather 1970). As such, it is an exceptionally mobile and fragile landscape, vulnerable to both marine and aeolian erosion, and dependent upon careful agricultural management for its stability.

The landscape of the whole of the Western Isles has been affected in the last 10,000 years by a process of gradual sinking, resulting in a relative rise in sea level. The sands of the machair have been pushed inland ahead of the rising sea, gradually spreading over areas that in early prehistory were distant from the shore. As a result, sites that are now in a machair landscape may originally have been located in a very different environment (Ritchie 1979).

The machair is divided between the townships of Upper and Lower Barvas, and the former Church of Scotland glebe land, now in private ownership. For the most part, it is used as common grazing, and the

![Figure 1. Location map of study area highlighting Barabhas, Isle of Lewis.](image)

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areas of greatest archaeological interest are under permanent grass; from the point of view of conservation, this is the most desirable situation. However, aeolian erosion, exacerbated by severe rabbit infestations and previously high livestock levels, has caused huge areas of bare sand to be exposed. This fragile surface suffers acutely from deflation, runoff, and poaching by stock. It is a source of blown sand, which causes problems elsewhere in the machair as the vegetated surface becomes buried under wind-deposited sand.

During the first three quarters of the 20th century, the machair was both cultivated and grazed. The light, alkaline shell-sand–based soil was traditionally fertilized using dung and seaweed, adding organic material and peat to produce a more stable, neutral, cultivable soil. The most common crops were oats, potatoes, and brassicas, particularly swedes/turnips, and a season of cultivation was normally followed by a number of years of fallow, during which the land was grazed in winter.

Following the Second World War, a shift from the use of seaweed to chemical fertilizers led to a rapid increase in wind erosion (Margaret MacLeod, Barabhas, Isle of Lewis, UK, pers. comm.). This was exacerbated by a decline in the hunting of rabbits for food, following infection of the rabbit population by myxomatosis, which led, ironically, to periodic increases in the rabbit numbers, and damage to the turf cover. From this time onwards, as stray finds began to emerge, it became evident that the area had been a focus of prehistoric and mediaeval settlement (CnES 2010).

For the last two or three decades, the machair has been used almost exclusively for grazing. Depending upon the degree of control exercised over both the rabbits and the grazing, erosion has ebbed and flowed within the area. As the overlying turf is broken through, deflation removes loose sand until the more compact level of an underlying old ground surface is exposed. As a result, extensive areas of archaeological landscape have periodically been uncovered, revealing buildings, field walls, ritual monuments, and stray finds of every period from the Neolithic to the 16th century, only to gradually disappear as a result of either further erosion or stabilization.

The extent of active erosion was probably at its maximum in the late 1980s and early 1990s, when it threatened the local cemetery, which includes the site of the medieval church of the Virgin Mary (Cladh Mhuire, SMR no. 323; CNES 2010). From that time onwards, strenuous community efforts have been made to improve the situation through grazing management and rabbit control, and large areas of the exposed archaeological landscapes are now stabilized and accreting, with vegetation trapping blown sand during the winter storms and covering the exposed remains. It is in this context of community concern, active erosion, and management efforts that much of the archaeological work on the machair has taken place.

**Archaeological Projects**

From the 1970s onwards, a number of archaeological projects have taken place on this area of machair. These have included two major erosion surveys, and a mapping exercise, which together with aerial photographs of the area, allow tracking of the extent and area of erosion over the last five decades.

The first survey, funded by the Scottish Development Department, was carried out under the direction of T. Cowie in 1978 as part of a wider rapid survey of the coastline of Lewis and Harris carried out with the intention of locating, assessing, and as far as possible, dating archaeological sites in areas of known coastal erosion (Cowie 1979). The outcome was a gazetteer of grid-referenced site descriptions, dated where possible by surface collections of pottery sherds and other chance finds. This and similar surveys mark the beginning of the process of assessment of the problem of erosion of archaeological sites around the coastline of Scotland; a similar rapid assessment of sites in the Uists and Benbecula was carried out by the late Ian Shepherd (Shepherd and Shepherd 1978a, b).

As a result of this work, Cowie carried out sample excavations in 1979 on two sites on the machair which appeared to be at severe risk: site B1, which was dated by pottery to the Late Bronze Age/Early Iron Age, and B2, also pottery-dated, but to the Late Viking–Norse period (Cowie 1979, n.d.).

In 1986–1987, this work was followed up by excavation of a Beaker Period structure and midden deposits (Cowie 1987, Cowie et al. 1986), located following exposure by the wind of skeletal remains, which proved to be one of four crouched inhumations inserted into an earlier building.

During the following years, two further inhumations were exposed by coastal erosion at the edge of the area, excavated by Richard Langhorne, curator of Museum nan Eilean (unpubl. data), and Eland Stuart (1997) for GUARD. In the absence of any associated artifacts, these burials remain undated, but human skeletal analysis and radiocarbon dating are being undertaken as part of the overall publication project now in hand.
As part of a country-wide project, funded by Historic Scotland, and addressing the impact of coastal erosion on the archaeological resource, Machair Bharabhais was again surveyed in 1996, by Christopher Burgess and Michael Church (1997). This effort resulted in an additional gazetteer of sites and a small assemblage of surface finds. It highlighted the very severe state of erosion of the area at the time, and the large number of exposed sites of all periods. As a result of this survey, Historic Scotland funded a mapping survey of the area in 1999, carried out by Murray Cook (1999) for AOC Scotland. This survey defined two major archaeological landscapes, separated by the Handay River (Fig. 2). To the north, lies an area of field walls and structures, which has produced evidence of settlement ranging in date from the late Neolithic, to the Norse/Medieval period. To the south, on the Cnoc Mor is an agricultural landscape, focused around a rectangular building, which has consistently produced stray finds of Medieval and Early Modern date.

In 2000–2001, a team of local volunteers and professional archaeologists, directed by the then Regional Archaeologist, Mary MacLeod, carried out a series of small, targeted excavations to address the more immediate archaeological problems (Bannon et al. 2001, MacLeod 2001). These included an Iron Age, long-cist burial, stone settings, and two eroding structures, one certainly Iron Age, and the other probably Late Bronze Age in date.

All this work remains unpublished and is presently being brought together by the writers in a project funded by Historic Scotland. Although individually small-scale and undertaken in reaction to specific problems posed by the

Figure 2. Area map showing principal sites, based on survey by AOC (Cook 1999) Note that this map omits most of the features recorded during the erosion surveys (see Cook 1999 for gazetteer). Key to map:
4. Loch Mor Bharabhais - IA structures (Ponting and Ponting 1979; Cook 1999: survey no. 1).
6. Tol Mor - Norse/Medieval settlement (Cowie 1979: site B2).
7. Cnoc Mor - Late Medieval/Early Modern structures / field system (Cook 1999: survey nos. 28 and 36).
cycles of erosion on the machair, the various episodes of fieldwork combine to provide a wider picture of the development of this landscape through time.

**Settlement of the Machair**

The earliest excavated evidence comes from site B3 (Fig. 2: site 1), investigated in 1986–1987. This find comprised the truncated remains of an oval or sub-rectangular building, approximately 5 m x 4 m internally, which had been occupied and altered over a period of time (see Fig. 3). There appear to have been at least two major structural phases. In the secondary phase, an entrance passage and T-shaped porch were inserted at the eastern end of the structure. At this point, the external surface was significantly higher than the internal floors, and the passage sloped downwards towards the interior of the building. However, it is not clear whether the building was originally dug down into the machair sand, or whether the difference of levels was caused by the accumulation of blown sand around the walls of a free-standing structure.

Although excavation went no lower than this building, the lowest recorded deposits, including a hearth and an apparent floor level, clearly relate stratigraphically to an underlying structure, and not to this one, as they extend below the construction level of the walls of the building.

The main occupation of the site is currently dated to the later second millennium BC by the presence of domestic Beaker pottery. The deposits associated with the structures produced a sizeable assemblage of worked quartz, including several barbed and tanged arrowheads.

Following a period of abandonment, a secondary, much smaller building, measuring approximately 1.6 m x 2 m, was inserted into the oval building.
structure reused parts of the earlier walls, and was much less robustly constructed. Given its small size, and slight build, it is tempting to interpret this as a temporary or seasonally occupied shelter.

Inserted into the remains of these buildings and their associated spreads of midden, after a further period of disuse, were four crouched burials. All had been placed in shallow, oval scoops or pits. It is clear from their relationships with the remains of the buildings that the position of the various walls was still easily discernable at the time of the burials; in one case, an orthostat forming part of the northern wall of the structure had been removed to accommodate the burial. Two of the burials were covered by slabs of stone that may have been visible on the ground surface.

It was the chance discovery of eroding human remains in 1986 that initially prompted the investigation of this site. This first burial was excavated in 1986. It was extremely tightly flexed, in a position that could only have been held by the very tight binding of the corpse, or by the burial of the body at a point in time when it was sufficiently decomposed to hold this position. The other three burials were investigated in 1987, during the excavation of the structure. In the case of one of the other burials, the head appeared to have been removed and placed, unanatomically, resting on its mandible at the top of the neck (Fig. 4). This burial was also missing its lower right arm and hand, and a part of the left hand, apparently at the time of burial. A plain pottery vessel had been placed over the legs. The remaining two burials were loosely crouched, one of them under a cover slab.

The burial practices indicated by the hyperflexed and possibly reworked burials fit clearly into a context of diverse Hebridean Bronze Age burial practices as recorded at, for example, Cladh Hallan in South Uist (Parker Pearson et al. 2005) and Cnip in Uig, Lewis (Lelong 2009). Full analysis and radiocarbon dating of the human skeletal assemblage is underway as part of the overall post-excavation project.

Two sites of the Late Bronze Age to Early Iron Age were sampled. Both were located on mounds formed by the selective deflation of the surrounding ground surface; the more compact archaeological deposits had resisted erosion. The first of these was excavated in 1979 (site B1; Fig. 2: site 2) and was a structure of indeterminate original size and form, very badly damaged by rabbit burrowing. Patchily surviving floor deposits indicated that it measured at least 5 m by 4 m, while the one surviving arc of orthostats suggested that it was an oval structure, with turf and stone walling. However, the degree of rabbit disturbance frustrated the recovery of any meaningful
which proved also to date to the Iron Age. The most significant of these was a long cist capped by an eroded cairn of beach pebbles. The cist contained an extended, prone, female inhumation accompanied by an iron ring, probably a bracelet (Fig. 5). Although surface indications had strongly suggested the presence of graves, another four features proved not to contain burials. Instead, they proved to consist of narrow, parallel stone settings (Fig. 6), enclosing multiple, small, refilled scoops containing fragments of animal bone. The function of these enigmatic features is unknown.

Partial excavation in 2001 of an adjacent structure, a 5-m x 4-m oval building, showed it to have had multiple phases of use, the latest of which had no hearth and was therefore possibly non-domestic. Its association with the curious stone settings and picture of the internal furnishings. The building had been affected by erosion in antiquity prior to a second phase of occupation, but the material culture associated with it remained unchanged, and it seems likely that the occupation of the site was of relatively short duration. The finds included numerous sherds of plain bucket-shaped pottery vessels, a small quantity of worked bone and antler, worked quartz, and a range of worked stone (Cowie and MacLeod Rivett 2010a).

A further mounded site with apparently similar material culture was sampled during the summer of 2001 (Fig. 2: site 3). However, this site proved to be so damaged by aeolian erosion that only a central hearth with fragmentary floor levels along with loose finds survived from it. The finds included the sherds of a large cordoned vessel, whose stratigraphic position, however, was uncertain due to the damage to the site (Bannon et al. 2001).

The three large-scale surveys which covered the area, in 1978 (Cowie 1978, unpubl. data), in 1996 (Burgess and Church 1997), and in 1999 (Cook 1999) all located the remains of a site on the northern edge of Loch Mor Bharabhais (survey no. 01; Fig. 2: site 4), which was intermittently exposed at low water. Collection of surface finds over this site and excavation of small trial trenches by local amateur archaeologists (Ponting and Ponting 1979, Ponting et al. 1984) provided a broadly Iron Age date for the remains of an oval building, approximately 5 m x 4 m, with at least one associated hearth.

The level of Loch Mor Bharabhais is controlled by sluices at the seaward opening of the loch. Local informants (Kenny Matheson, Comunn Eachdraidh Bharabhais agus Bhr) suggest that the level of the loch was raised in the first half of the 19th century to enhance local fisheries. It is reasonable to assume that the shoreline of the loch was significantly lower in the Iron Age; at that time, its level may well have been partially determined by the then lower coastline to the west of the loch.

Surveys in 1996 and in 1999 had also highlighted an area (survey no. 16; Fig. 2: site 5) with large amounts of structural remains, including two oval buildings and a number of possible funerary features, and concentrations of scattered human remains, particularly teeth. Excavations in 2000 and 2001 (Bannon et al. 2001, MacLeod 2001) concentrated primarily on this area and the eroding funerary features.
with the long cist burial suggests that the building itself may have had a ritual function, perhaps forming the focus for the activity around it. Beneath, and immediately to the southeast of it, were the remains of an earlier building, oval or circular, of which only a small area was uncovered.

The survey placed this group of structures within what was probably a very extensive field system (survey no. 20; Fig. 2), marked by walls of large stones, themselves the focus of linear clearance cairns in some areas. At least one of these field walls extended westwards from the area of the late prehistoric ritual focus, beneath uneroded machair to the west, through which it was intermittently visible in deflation hollows, up to and seemingly respecting the earlier focus of activity at site B3, the Beaker Period building excavated in 1986–1987. Although the field walls are currently undated, these finds suggest a significant continuity of use of the agricultural landscape from the Bronze Age through to the Iron Age.

During the 1978 coastal erosion survey, diagnostically Viking Age/Norse sherds were recovered from an eroding mound of midden debris located within a deep deflation hollow set among the massive dunes which formerly lay west of the cemetery (and chapel site) at Cladh Mhuire. Trial excavations carried out in 1979 (Site B2: Fig. 2: site 6) revealed portions of two rectilinear buildings separated by an area of paving, set in the upper part of a mound of midden deposits that almost certainly concealed earlier structures. This site, which was higher than the other sampled sites, had been constructed and occupied prior to the development of blown-sand deposits in the area; the dunes which surrounded it were clearly post-Norse in date.

Mammal bones studied from the midden deposits between the two buildings revealed a mixed agricultural economy, with the slaughter of neonatal calves to allow intensive dairying contrasting with the longer life of sheep and lambs, clearly valued for a broader range of products including meat and wool (Mary Harman and Dale Serjeantson, in Cowie and MacLeod Rivett 2010b). Pig, horse, and red deer bones were present in small amounts. Fish bones constituted over half the weight of bone retrieved from the site, and of those which were identifiable as to species, over 98% were of the cod family, many of them very large fish, indicating offshore fishing. Other, smaller and less common species, for example, ballan wrasse, rockling, and smaller specimens of flat fish, may have been caught by shore fishing (Sarah Colley and Clive Denby, in Cowie and MacLeod Rivett 2010b), but these apparently formed only a small part of the catch.

Pending the results of radiocarbon dating, the dating of this site is dependent on the finds. A significant proportion (>10%) of the ceramics from this site (Alan Lane, in Cowie and MacLeod Rivett 2010b) consisted of the diagnostic platter ware first identified at the site of the Udal (Lane 2007:4–5). The precise dating of this distinctively Hebridean ceramic form remains uncertain, but in the light of excavations at a number of Norse period sites in the Western Isles, including Bornais and Cille Pheadair (Lane 2007:11–13), both in South Uist, the presence of unabraded
platter sherds in some quantity at site B2 provisionally suggests a date in the 11th to 12th century for occupation of the settlement at Bharabas.

Late Mediaeval to Early Modern settlement is represented by the remains of a building (survey no. 36; Fig. 2: site 7), probably a corn-drying kiln, surrounded by a system of linear fields, on the Cnoc Mor, to the south of the Handay River. Although the site is unexcavated, surface erosion in this area has consistently produced local ceramics probably dated to the late 15th or early 16th century. These finds are paralleled on the excavations at the fortifed site of Dun Eistean in Ness (Barrowman 2002, 2003).

In addition to the relatively closely dated excavations and survey information, rescue excavation also took place at Rudh a’ Bhiogair (survey no. 30; Fig. 2: site 8) in the 1990s, on two eroding burials. Both of these were disarticulated, and although the area of excavation in both cases focused tightly around the remains themselves, there was, nonetheless, no evidence of the graves having been marked in any way. The skeletons were not complete; in one case only 30% of the bones were present (Stuart 1997). Although the missing parts may have been a result of the erosion that exposed them, given the partially disarticulated state of the skeletons it is also possible that these finds might have been burials or reburials of decomposed and partial remains, for example washed up on the shoreline, analogous to those excavated at Aiginis, Isle of Lewis (McCullagh 1989, 1990).

Conclusion

Excavation over the years at Barabhas Machair has been piecemeal, and has taken place in response to specific problems posed by erosion events on the machair. Despite the lack of a unified and planned campaign of research, a picture of the development of the landscape has emerged over time that emphasizes the importance of this location, one of the largest areas of machair in Lewis.

A number of interesting themes emerge from the results of the survey and excavation of the area. Most obvious of these is the degree of continuity of use of the machair as a domestic, agricultural, and also ritual landscape. Underlying this is certainly an element of pragmatism; the relatively light, sand-based, alkaline soils are easily cultivated, either by spade or plough, and easily fertilized using local materials. However, in addition to this, the reuse of the Beaker Period domestic building (Fig. 2: site 1) for burial in a slightly later period, and the reuse of an Iron Age, likely domestic, building (Fig. 2: site 5) as the focus of a group of ritual structures and a burial, makes evident the degree to which sites continued to be an active part of the social memory and landscape use of the people living here. Clearly, the end of the occupation of a building did not mean the abandonment of a site.

Despite this wider continuity, the evidence suggests continual movement of settlement foci within the landscape, around stone boundary structures that were probably field walls (shown on Fig. 2). Settlement persisted at each site for long enough to build up a mound of archaeological remains interleaved with blown sand, but there were shifts between the Early and Late Bronze Age, and the Iron Age and Viking periods, with the earlier sites being at lower elevations, and nearer the present coastline. The suggestion of a move away from the coast and higher up may, at least partially, reflect the impact of the gradual rise in sea level and periods of machair erosion on the local environment, but it should be emphasized that the excavated evidence indicates that all of the sites, including the earliest, were built and occupied in a machair environment.

Much remains to be understood about the Barabhas Machair. There are numerous known unexcavated sites here, and more will undoubtedly emerge over time. The ongoing post-excavation project will go some way to establishing the archaeological significance of this area, and will provide a model for the wider understanding of the archaeological development of machair areas in the northern islands of the Western Isles.

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