

# The Sands of Breckon, Yell, Shetland: archaeological survey and excavation in an area of eroding windblown sand

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## SUMMARY

*The Sands of Breckon on the north coast of Yell, in Shetland, has been the site of archaeological discoveries since the 1860s. In 1982, in response to continuing erosion of the sands, an archaeological survey was commissioned by (SDD) Historic Buildings and Monuments, now Historic Scotland. This provided the first comprehensive account of the archaeology of the area and prompted a series of small-scale excavations in the following year, also funded by SDD-HBM. The survey and excavation demonstrated that the Sands of Breckon has seen human activity since prehistoric times, including Iron Age burial; and that medieval and later activity is concentrated on higher ground to the south-east. The paper concludes with a discussion of the difficulties of interpreting stratigraphic evidence in an area of sand deposits subject to cycles of accumulation and deflation.*

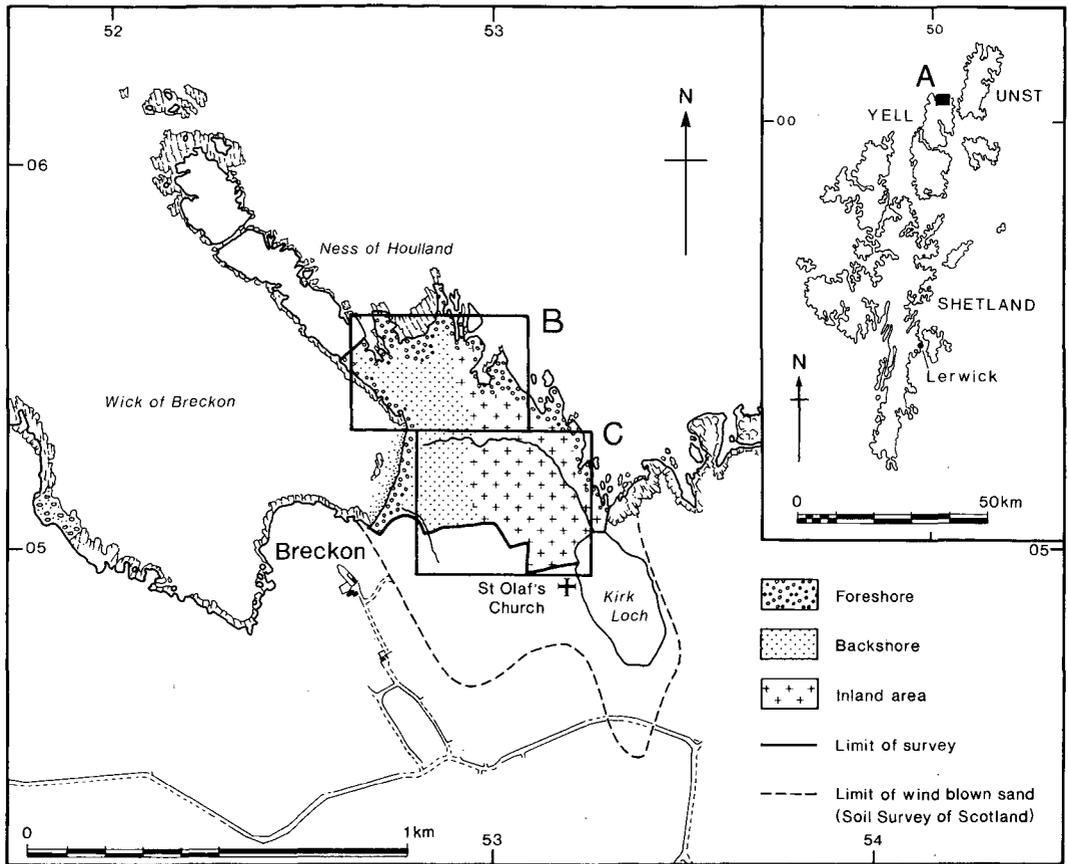
## INTRODUCTION

The Sands of Breckon is a complex area of stable and eroding shell sand, roughly 20 ha in extent, that forms part of a more extensive area of windblown sand on the north coast of Yell, in Shetland (illus 1). It has long been known for its wealth of archaeological monuments and finds and the history of these discoveries is summarized below. In September 1982, one of the authors (DF) was commissioned by the SDD-HBM Ancient Monuments Branch to conduct an archaeological survey of the Sands of Breckon. This work was prompted by the perceived damage to archaeological monuments resulting from continuing erosion of sand. The survey report (Fraser 1983) contained a series of recommendations, including the need for immediate salvage recording of certain archaeological sites. As a result, personnel from the Scottish Central Excavation Unit undertook a short season of excavations on these sites in April 1983. The excavations were directed by John Barber and supervised by Anne Crone. Excavation, post-excavation analysis and publication were funded by SDD-HBM and latterly by its successor body, Historic Scotland.

In this report, a summary of the findings of the survey is presented, followed by a brief account of the excavations and results of post-excavation analysis. The discussion focuses on two aspects of the Sands of Breckon: the chronology and nature of the archaeological sites, and problems of strati-

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ILLUS 1 General location maps. For area B see illus 2; for area C see illus 3 (Based on the Ordnance Survey map © Crown Copyright)

graphic interpretation in an area of repeated sand-blow. Complete records of the survey and excavations have been deposited in the National Monuments Record of Scotland.

#### PREVIOUS INVESTIGATIONS

Archaeological sites and finds have progressively come to light on the Sands of Breckon as sand accumulations, stable within the recent past, have been eroded. The extent and timing of sand erosion, as recorded in published maps, can be correlated with three periods of archaeological discoveries within the last 130 years.

According to J T Irvine, who published an account of the earliest known archaeological investigations, the present phase of sand erosion and re-deposition was initiated in 1820 (Irvine 1898, 173). In 1878 the area was mapped by the Ordnance Survey (6 in. survey, published in 1882), by which time bare sand covered roughly 6 ha adjacent to the sandy beach in the Wick of Breckon (extending eastwards to the west end of Wall 21, illus 3). This eroded area contained a group of prehistoric burial cairns (Site 59 of the present survey) which were investigated by Irvine in 1862 and subsequently by

Tate in 1865 (Irvine 1898); the cairns were still visible in 1897 but have not been reported since then. The Ordnance Survey revision of the 6 in. map in 1900 showed that, although there had been no significant expansion of the eroded area around Irvine's cairns, further north, roughly 2 ha of land between the Wick of Breckon and the Silver Geo was now eroding. This newly exposed area was the scene of a second series of poorly recorded discoveries, documented by the Royal Commission in 1931 (RCAHMS 1946, iii, 164–5) and the Ordnance Survey in 1969 (NMRS HP 50 NW 1 & 6). These records refer to cists and human bones investigated in 1923, none of which can be securely related to particular sites in the present survey. Human bone from the Sands of Breckon in the collections of the Anthropological Museum, Marischal College, Aberdeen (Accession no ABDUA 14764), may derive from these investigations. Site 31 of the present survey may also have been noted at this time and another burial (Site 56 of the present survey) was apparently also discovered in the 1920s, farther to the south. A third period of archaeological records begins in 1956 and relates to discoveries on the ridge of higher ground on the east side of the sands (in the vicinity of Sites 20 to 27, *illus* 3). This area was still experiencing rapid erosion at the time the present fieldwork was undertaken. Stewart (1954) identified a Norse house (see Site 60 of the present survey for a reinterpretation of this record); Laing (1968) identified the spread of post-medieval finds (Site 20); and Beveridge (1971) reported the stone settings listed below as Site 22.

This summary of the archaeology of the Sands of Breckon is by no means exhaustive as there are, for example, numerous collections of finds, both in museums and in private hands, only partially listed in the National Monuments Record of Scotland. Most of this material, although strictly uncontexted, can probably be traced back to the spread of medieval and later finds (Site 20) or the nearby concentration of prehistoric material (Site 22) and therefore does not add significantly to our understanding of the area. One exceptional find is a trough quern, said to be from the Sands of Breckon (Close-Brooks 1983), which is perhaps the best available evidence for an early prehistoric presence.

## SURVEY

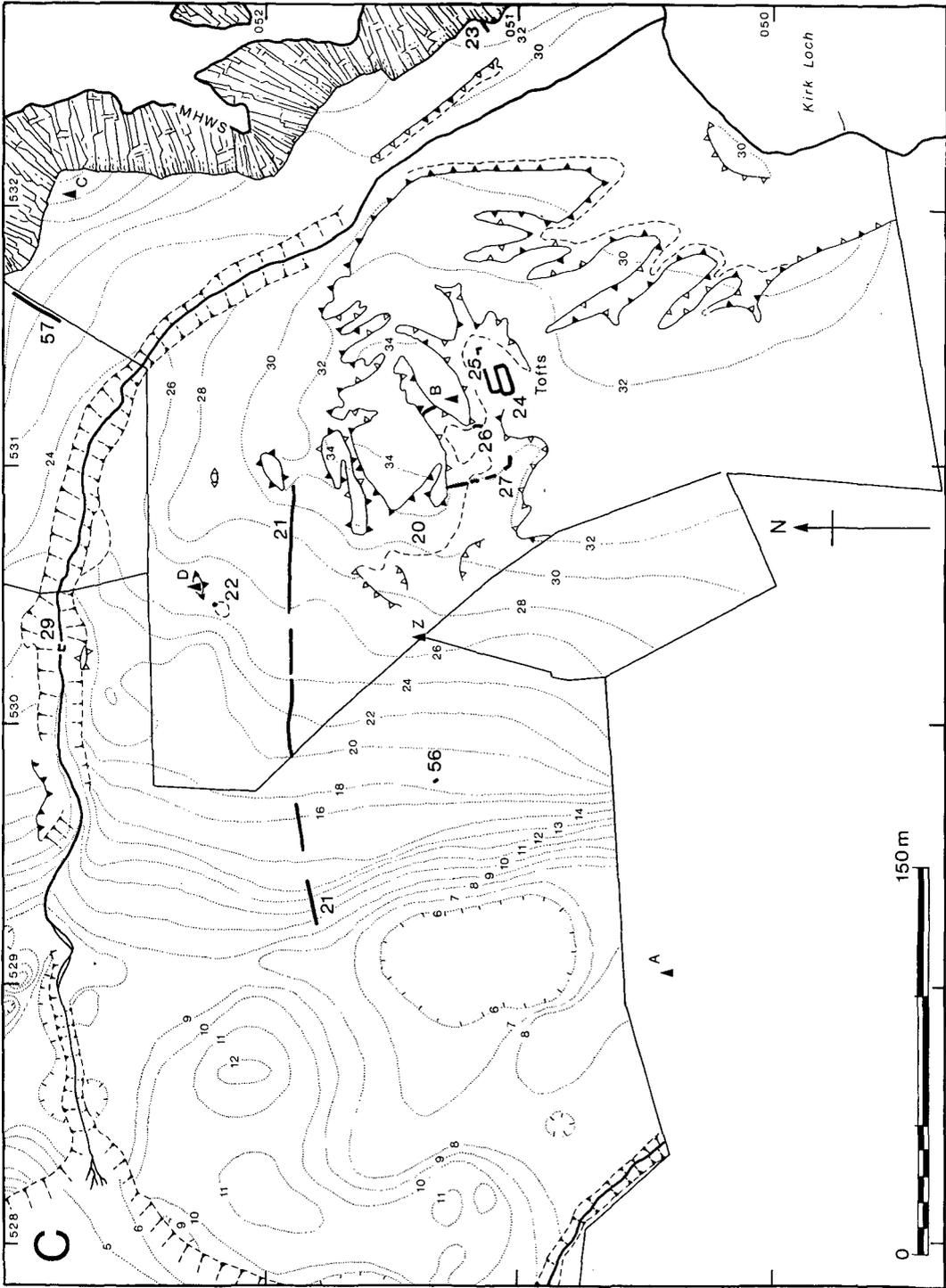
The survey was carried out between 2 and 13 September 1982 by a team of four. Its purpose was to record the nature, location and condition of all sites of archaeological interest and to place these in the context of the current erosion to the sand dune system. Therefore, in addition to the plotting of archaeological features, a detailed contour survey was undertaken and sand erosion edges were measured and plotted. Points were located and levelled using an electronic distance measurer sited on one of seven temporary survey stations. The locations of all recorded sites are shown in *illus* 2 and 3. The levels in *illus* 2 and 3 are shown relative to an arbitrary datum that lies within 1 m of Ordnance Datum. Detailed individual site plans of selected sites were drawn by plane table survey or by offset measurements from a base line.

An analysis of the geomorphology of the area is followed by a summary account of the archaeological sites.

## THE PHYSICAL LANDSCAPE OF THE SANDS OF BRECKON

The beach system at Sands of Breckon is a highly complex one and constitutes one of the most diverse beach habitats in Shetland (Mather & Smith 1974). As a whole, the system is an example of Mather & Smith's Type 2 of Shetland beach – a dune and machair system. It contains a foreshore with sandy beach and rock cliffs; a backshore with yellow dune and grass heath, freshwater slacks and surface drainage; and an inland area with fully developed hill machair, an impounded loch, and a deflated rock ridge (*illus* 1). Each of these areas will be considered in turn.





ILLUS 3 Location of archaeological sites in south-east part of the survey area

*Foreshore*

The foreshore area may be divided into three units. The sandy beach of the Sands of Breckon proper is about 300 m long and over 50 m wide; it ends in a steep scarp of yellow dune, cut by the outflows of two streams. Proceeding clockwise around the shore, the second unit is a low rocky coastal edge extending from the north end of the sandy beach around the Ness of Houlland, returning to Boadi Geo and Silver Geo (the latter geos being separated by the low headland of Longa Tonga) and ending where the land surface rises to the east towards Birrier Stack. A low cliff, up to 5 m in height, marks the inland edge of this unit. The two major geos are directly exposed to the north and have accumulated small unstable beaches of rounded cobbles. The third unit of this area is the high cliff extending from Birrier Stack in a south-easterly direction to the boundary of the survey zone. The cliff reaches heights in excess of 30 m and, with few exceptions, is inaccessible on foot.

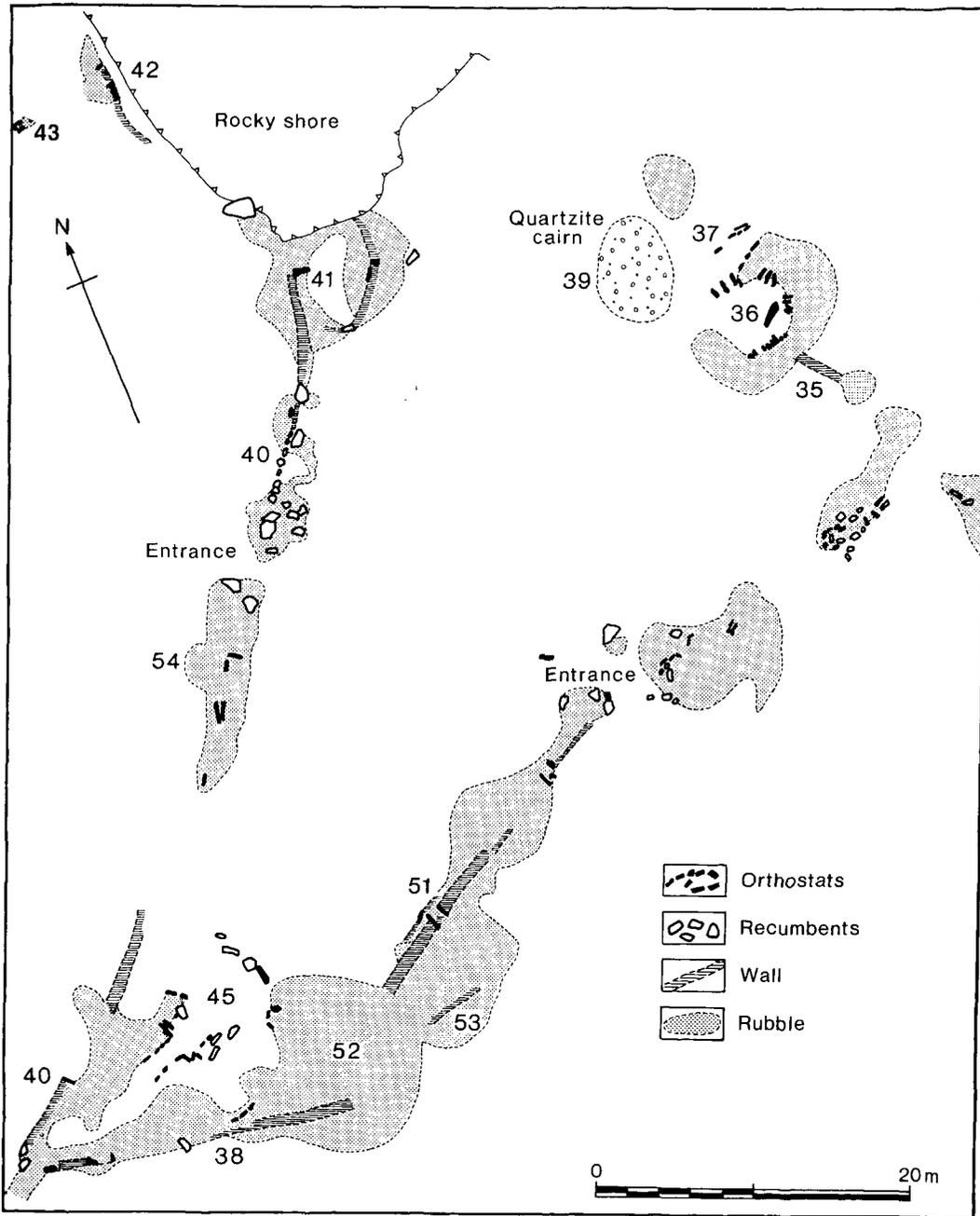
From the viewpoint of archaeological conservation, it is important to assess the stability of each of the three units of foreshore. On first appearances, the sandy beach unit is relatively stable, with deposition of sea-borne sand being dominant over aeolian and marine erosion. On closer examination, there is wide variation in the wave conditions in the Wick of Breckon and it is highly probable that infrequent events occur which are destructive to the beach configuration. Occasional storms are also clearly responsible for alteration in the configuration of the north-facing geos of low rock; a breach in the low cliff immediately to the west of Site 30 for example is of recent formation. The high eastern cliff is also subject to episodic erosion: the destruction of Site 28 in historic times and the general unvegetated aspect of the cliffs suggest that marine erosion has been continuing for many centuries.

*Backshore*

For the purposes of this description, the backshore is defined as the land below the 12 m contour lying inland of the foreshore area; there are three identifiable units. In the north-east of the study area and extending upslope to the high cliff coastal edge, is a denuded inclined plain with a thin regolith supporting a sparse heathland vegetation. Erosion began in this area shortly before 1900 (OS 6 in. map, rev edn, 1900) and remains active to the present day. Outcrops of bedrock are common, as are the traces of stone-built structures. The second unit is the crescentic arc of yellow dune immediately east of the sandy beach. This yellow dune consists of unstable mounds of sand thinly covered with vegetation such that bare patches of sand are visible between the roots of the vegetation. The topography is uneven with many hollows and summits in the land surface. The most recent period of erosion began in this area around 1820 (Irvine 1898) and was complete by the 1860s; accumulation of the yellow dunes was well advanced by 1900. Two stream courses cut the unit, flowing from east to west and debouching onto the sandy beach. Between the two stream courses and inland of the yellow dune system is the third landscape unit, a depression whose flat bottom is of the same relative altitude as the head of the sandy beach. This depression at times becomes a freshwater marsh, with water impounded by dunes to the west and the hillslope to the east.

*Inland area*

The basic structure of the inland area of the Sands of Breckon is a rock ridge orientated north/south. The ridge was at one time capped with a deep mantle of sand stabilized with grass and short herbs – a hill machair system. The machair is in the process of being eroded: bare sand scarps are back-wasting towards the east and south, leaving isolated talards (some up to 3 m in height) which will



ILLUS 4 Detailed plan of the cluster of sites in north-west part of the survey area; see illus 2 for location of these sites

also erode away in time. The process of deflation appears to have begun after 1900 on the west-facing slope between the backshore area and the ridge crest, and to have progressed upslope leaving behind a stony spread of sand and pebbles from the underlying glacial till. This stony spread has become thinly vegetated on the slope but remains bare of vegetation at the north end of the ridge. The remaining area of machair extends to the south and south-east outwith the area of study, but it is worth noting that deflation of bare sand scarps in the enclosed field on the southern limit of the farm of Breckon has been halted by simple conservation measures. These measures include fencing-off bare sand areas and covering them with turf and organic debris. The landscape units of machair and deflated surface are bordered on the north and east by the stream which drains Kirk Loch. The loch and stream are impounded in a depression between the north/south rock ridge and a slope to the east which ends abruptly in the eastern cliffs. This slope is covered by a thin regolith and a vegetation of short grasses and herbs but may have had a deeper mantle of sand at one time, to judge by a few isolated machair talards.

#### SUMMARY CATALOGUE OF ARCHAEOLOGICAL SITES

(see illus 2 & 3 for site locations; site numbers follow Fraser [1983])

**20 Occupation surface** (HP 5308 0513) A layer of dark sand containing bone, iron, post-medieval pottery and worked steatite; stratified between sterile sand layers. An area of several hundred square metres is exposed. This site was recorded by Laing (1968).

**21 Wall** (HP 5293 0517–5309 0518) Investigated in 1983 (see below).

**22 Stone settings** (HP 5304 0541) Investigated in 1983 (see below). This has previously been recorded as NMRS Site HP 50 NW 11 (Beveridge 1971).

**23 Wall** (HP 5326 0511)

**24 House, Tofts** (HP 5313 0510) The roofless shell of the house of Tofts, measuring about 12 m by 5 m, abandoned between OS surveys of 1878 and 1900.

**25 Byre** (HP 5313 0511) A less well-preserved building, measuring about 20 m by 2.5 m, immediately to the north of Site 24 (see previous entry). Probably a byre, abandoned with the adjacent house.

**26 Wall** (HP 5311 0511) A short section of dry-stone wall apparently consisting of two phases of construction. An enclosure, shown attached to Tofts on the OS map of 1878 (see Site 24/25), corresponds with this wall. Wall 26 lies within Enclosure 27 (see next entry).

**27 Enclosure** (HP 5311 0512) A subrectangular enclosure, about 35 m by 25 m, that overlies the occupation surface (Site 20, above). The enclosure is apparently attached to the byre (Site 25, above).

**28 Stone spread** (HP 5312 0530) An area of loose rubble on the cliff edge, up to 20 m across, with no coherent plan. This site has been identified by the Ordnance Survey and RCAHMS as a broch, largely destroyed by erosion of the cliff (NMRS Site HP 50 NW 3). There is no evidence at present to support this interpretation.

**29 Mill** (HP 5303 0528) The poorly preserved remains of a horizontal water mill listed as NMRS Site HP 50 NW 12. This building was recorded by the Ordnance Survey in 1878 as 'Old Mill'.

**30 Mound** (HP 5286 0547) Investigated in 1983 (see below).

**31 Stone setting** (HP 5287 0540) (illus 5) A double oval setting of stones, about 14 x 8 m, situated in the north-west corner of Enclosure 32 (see next entry). This site has been identified by the RCAHMS as a Neolithic/Bronze Age house (part of Site HP 50 NW 1).

**32 Enclosure** (HP 5290 0539) (illus 5) A subrectangular enclosure with maximum dimensions 60 m by 50 m, divided into two approximately equal parts. The basal course of the inner face and of the dividing wall consists of large orthostats.

**33 Wall** (HP 5289 0545)

**34 Wall** (HP 5286 0545–5293 0547)

**35 Wall** (HP 5281 0545–5286 0536) Investigated in 1983 (see below).

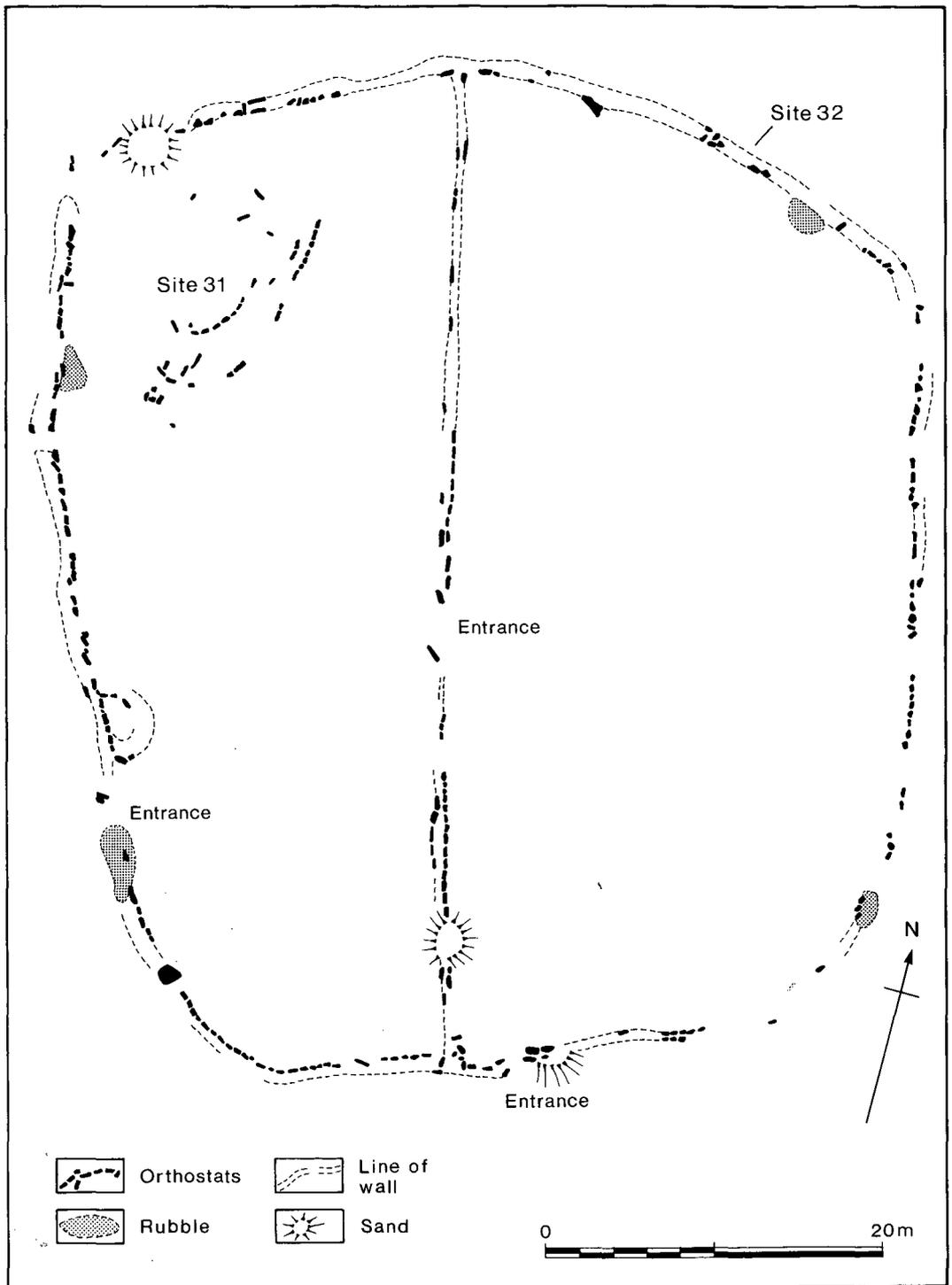
**36 Mound** (HP 5280 0545) (illus 4) Investigated in 1983 (see below).

- 37 Stone setting** (HP 5280 0546) (illus 4) Two rows of large orthostats immediately to the north of mound 36.
- 38 Wall** (HP 5275 0540–5277 0541) (illus 4)
- 39 Mound** (HP 5280 0546) (illus 4) A low oval mound, 6.5 x 4.8 m, of quartzite pebbles with a few recumbent slabs.
- 40 Wall** (HP 5275 0540–5277 0546) (illus 4) Investigated in 1983 (see below).
- 41 Enclosure** (HP 5278 0546) (illus 4) Investigated in 1983 (see below).
- 42 Wall** (HP 5276 0547) (illus 4)
- 43 Wall** (HP 5276 0547)
- 44 Wall** (HP 5274 0547)[not illustrated]
- 45 Stone setting** (HP 5276 0541) (illus 4) A distinctive setting of stones identified by the RCAHMS as the remains of a Neolithic/Bronze Age house (part of Site HP 50 NW 1).
- 46 Stone platform** (HP 5277 0539) An area of flat beach stones, possibly a recent fish-drying platform.
- 47 Mound** (HP 5281 0541) A low oval cairn of stones, 5.0 × 3.5 m.
- 48 Mound** (HP 5286 0536) A large grass covered sand mound, 22.0 m by 17.5 m and up to 3.0 m high.
- 49 Wall** (HP 5290 0532–5293 0535)
- 50 Wall** (HP 5284 0531–5289 0530)
- 51 Wall** (HP 5277 0541–5280 0543) (illus 4)
- 52 Mound** (HP 5277 0541) (illus 4) A featureless low mound of sand and stone.
- 53 Wall** (HP 5278 0541) (illus 4)
- 54 Mound** (HP 5276 0543) (illus 4) A low mound of sand, 3 m in diameter, with some small rounded boulders.
- 55 Banks and ditch** (HP 5266 0547 & 5271 0544) Two low banks and a ditch cut off the Ness of Houlland to the north-west. The inner bank is up to 0.4 m high and the maximum height of the outer bank above the ditch is 0.7 m.
- 56 Stone** (HP 5297 0513) A single large boulder (1.2 m by 0.5 m by 0.5 m) said by a local informant to have been the capstone of a burial. It corresponds in position to the site of a 'cist' grave containing a huge skeleton recorded as NMRS Site HP 50 NW 5.
- 57 Wall** (HP 5315 0527–5316 0529) A recent wall with a mortared base, mapped by OS in 1878.
- 58 Wall** (HP 5264 0545–5269 0548) A modern wall cutting off the Ness of Houlland and situated between the two banks of Site 55 (see above), mapped by OS in 1878.
- 59 Cairns** (not located) These sites, excavated and reported on by Irvine (1898), are not now visible. Their supposed location (HP 5285 0505, NMRS Site HP 50 NW 4) is now an area of high mobile sand dunes.
- 60 Norse house** (not located) Stewart (1954) recorded a Norse house at HP 529 052. Nothing is now visible in this 100 m grid square that could be described as such; the area is severely eroded at present so burial by sand since 1954 seems unlikely. If the 1954 grid reference is inaccurate, this site may in fact be Site 25 of the present survey as it most closely resembles the structure described by Stewart. However, Site 25 is considered to have been constructed later than the Norse period.
- 61 Cists** (not located) This site is recorded as NMRS Site HP 50 NW 6 (HP 5286 0556). It was excavated in about 1923 but nothing is now visible at this location.

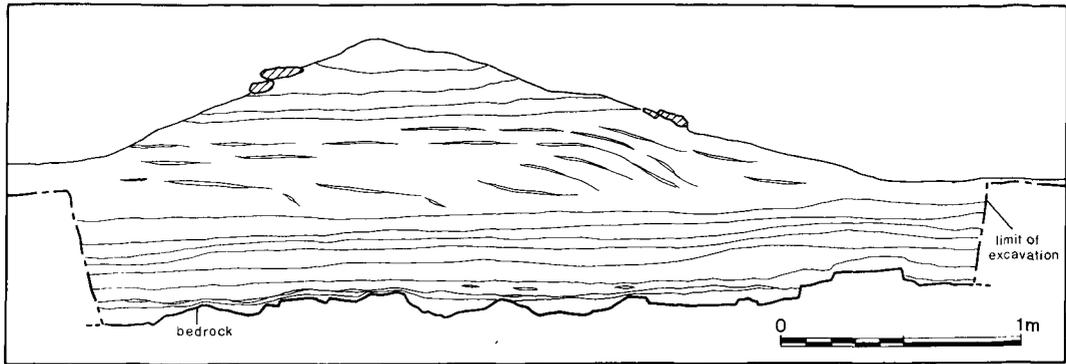
## EXCAVATION

The survey of the Sands of Breckon identified 42 sites of archaeological interest, many of which were threatened either by wind erosion of sand or marine erosion of the coastline. Certain sites were particularly at risk in the short term (Fraser 1983, 40) and these were recommended for immediate excavation or further recording. As a result of these recommendations, in April 1983 the Scottish Central Excavation Unit conducted excavations on the following sites:

21	Wall	36	Mound
22	Stone settings	40	Wall
30	Mound	41	Enclosure
35	Wall		



ILLUS 5 Detailed plan of survey Sites 31 & 32; see illus 2 for location of these sites



ILLUS 6 Site 21: excavated cross-section of the wall

#### SITE 21: WALL (ILLUS 6 & 7)

This site was described in the survey as at least 170 m of dry-stone wall running east/west up a slope that had experienced considerable erosion of sand over the last two centuries. In 1983 it was sectioned in one place approximately south of Site 22.

Excavation showed that the apparent collapsed wall line contained very little stone. Instead there was a core of horizontally layered yellow/yellow-brown sand with a superficial capping of stone. This rose 0.5 m above the general surface and overlay a further 0.5 m of layered sand. This sand was separated from the underlying bedrock by 0.1 m of very dark brown humose sand.

The core of the wall and the underlying sand are part of the same accumulation of sand with no evidence for a buried ground surface separating them. The sand 'core' to the wall is interpreted as an artefact of erosion created by the presence of the tumbled wall stones protecting it from wind erosion. This process is described in more detail in the final discussion.

#### SITE 22: STONE SETTINGS (ILLUS 8 & 9)

This site was described in 1982 as four stone settings on a surface covered with occupation debris. The area had recently lost at least 4 m depth of sand, evidenced by a small fragment of this accumulation which survived in 1983 immediately to the north-east of Site 22.

#### *Excavation*

Of the four stone settings, only 22B was excavated. It consisted of seven slabs in a single line, 2.0 m long and 0.5 m wide; these appear to have been the base of the feature because there were no additional stones beneath, nor any evidence of a cut. The other three settings were not excavated; 22D is very similar to 22B and 22A and 22C appear to have been greatly disturbed.

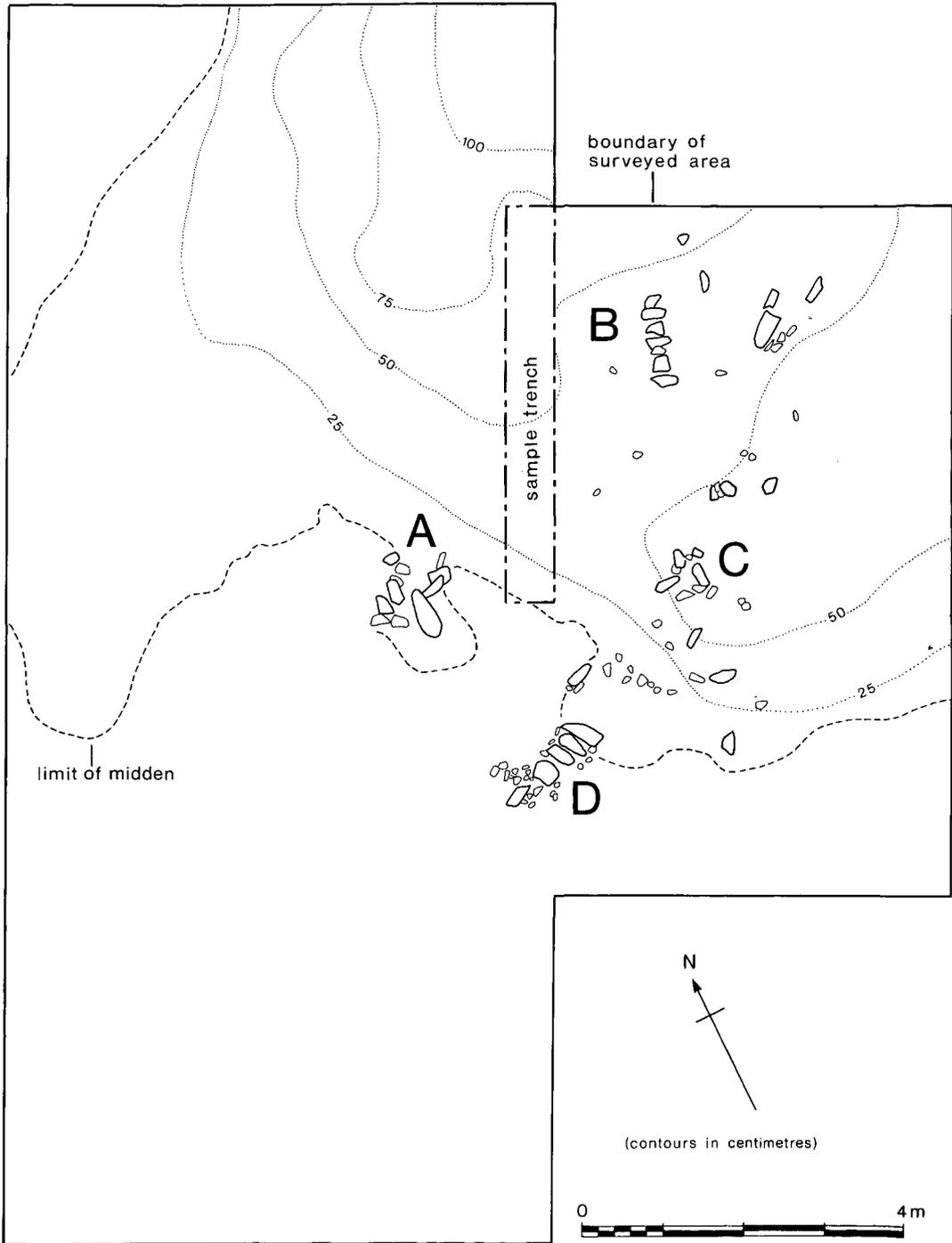
The surface scatter of occupation debris noted in 1982 was seen to overlay undisturbed sandy sediments rich in pottery, bone, shell, and carbonized peat. A 25 m by 25 m grid was laid out over the area of the stone settings and numbered 0–25 south/north and A–Z west/east. The surface scatter was sampled from alternate grid squares and



ILLUS 7 Site 21: the excavated section looking east along the wall

sieved on site through a 10 mm mesh to collect the finds. The remainder was then removed to reveal the extent of the underlying midden deposits. These were found to be much more extensive than had been expected and only part of the surface could be revealed in the time available. An auger survey identified the western edge and part of the southern edge of the deposits. The eastern limit was not reached and the northern edge was identified in one place only. These results give minimum horizontal dimensions for the midden deposits of 35 m east/west and 20 m north/south.

A 1.0 m wide trench, dug on grid row K, showed that the midden consisted of numerous thin layers deposited on a surface of windblown sand which dipped northwards. As the modern surface was more or less



ILLUS 8 Site 22: plan showing the revealed extent of midden-rich sediments and the four stone settings (A-D)



ILLUS 9 Site 22: the site viewed from the north-east after cleaning, and removal of the surface finds

horizontal, the surviving depth of the midden increased northwards up to 1.25 m. This sample trench was excavated in three horizontal spits and all sediment was sieved through a 10 mm mesh to recover finds.

The assemblages of bone, pottery and other artefacts were studied in detail and summaries of the specialist reports are presented below. Full reports may be consulted in the site archive. Shell was collected but not subsequently studied; carbonized plant remains were examined but only amorphous fragments were noted (carbonized peat) and these were not further identified (Boardman, pers comm).

### *Animal bone*

#### Eoin Halpin

Two assemblages of animal bone were collected from Site 22: the first was a sample of the extensive surface scatter and the second was a sample of the underlying midden rich sediments. Both assemblages were recovered by dry sieving through a 10 mm mesh. Bones were identified, where possible, to species and the results of this analysis are summarised in Table 1.

**Surface assemblage** The bones are in an extremely fragmented condition and only 14.5 % could be identified. The assemblage is dominated by tooth fragments which are resistant to both physical and chemical

TABLE 1

Sands of Breckon, Site 22, animal bones

*Numbers of fragments from the surface scatter and excavated sample of intact midden. Numbers of identified tooth fragments are given in parentheses after totals.*

	Surface scatter (235 sq m)	Midden sample (3.6 cu m)
Cattle	78(55)	92(35)
Sheep/Goat	60(36)	50(20)
Pig	11(9)	2(2)
Horse	4(2)	0
Rabbit	7	0
Bird	2	0
Fish	8	0
Unidentified	1006	539
TOTAL	1176	683
% identified	14.5%	21.1%

destruction, indicating the poor state of preservation of the material. In contrast to this, the few rabbit bones are well preserved and are clearly recent. Most of the identified bone fragments were from cattle and sheep with very few pig, horse, fish and bird bones also present.

**Midden assemblage** The bones from this sample are highly fragmented but, compared to the surface assemblage, a higher percentage could be identified (21.1 %) and the proportion of tooth fragments is smaller. As in the surface assemblage, cattle and sheep dominate the identified bone fragments but the number of taxa identified is fewer.

**Discussion** Both assemblages are small and in a highly fragmented condition. The differences between them reflect the origins of the samples: the surface assemblage was collected from a 25 m by 25 m area and formed as a lag deposit, mixing all bone from up to 4 m of eroded overlying deposits. It is therefore more diverse but less well preserved than the midden sample which derives from a 1 m by 8 m area of intact sediments. Given the degree of fragmentation and poor preservation, it is not possible to make any detailed comment on the economy or environment indicated by these bones. The dominance of cattle bone may simply reflect its resistance to fragmentation and destruction. The rarity or absence of fish and bird bone could similarly be the result of non-preservation. The 10 mm mesh used to retrieve the bone would have been too coarse to collect most fish bones but few were observed during the excavation and it is not thought that significant numbers were missed.

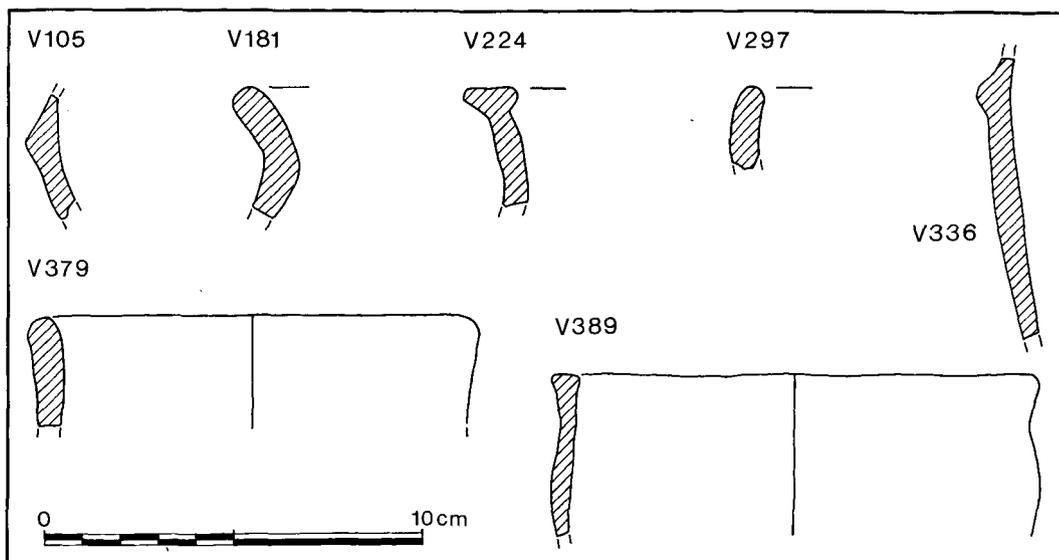
### *The pottery*

Ann MacSween & Andrewina Ross

with comments on the thin-section petrography by Dianne Dixon

An assemblage of around 540 sherds was recovered from the surface scatter and the sample excavation trench. Most of the sherds are abraded, indeed almost half of them have lost either one, or both, surfaces. Because of the extent of abrasion, and the variations in thickness and firing over a vessel, it is difficult to attribute sherds to vessels. The estimated number of vessels represented in the assemblage is 389, but for the reasons already stated, this must be regarded as a maximum estimate.

**Morphology** The majority of sherds in the assemblage are undiagnostic body sherds. Of the 28 rims in the



ILLUS 10 Site 22: pottery from the surface finds scatter and sample excavation trench; all sherds are from the surface scatter unless noted otherwise

assemblage, there are 12 splayed (eg V224 & V389, illus 10); 11 flat (eg V379, illus 10); four plain (eg V297, illus 10); and one everted (V181, illus 10). Seven basal sherds were noted: four are from a flat-based vessel with angled walls; one is from a flat-based vessel, possibly with straight walls; and the remaining two are from the flat part of the base. Due to the level of abrasion in the assemblage, it is not possible to reconstruct any of the vessel profiles completely, but, on the basis of what can be determined from the larger sherds, the vessels were necked and shouldered or carinated (eg V105, illus 10). In some cases a pinched cordon formed the carination (eg V336, illus 10).

Where manufacture can be determined, the vessels are coil-constructed with diagonal junctions. From the colour of the sherds, firing had taken place in both oxidizing and reducing conditions. In general, the pottery has no surface finish, although a few vessels are smoothed or lightly burnished. Only two sherds exhibit possible decoration. One of these (V233) has an incision which could be a later cut-mark. The other (V150) has impressions which could result from manufacture rather than being deliberate decoration.

**Fabric and geology** In all but three cases (in which untempered clay was used), the fabric comprises either a fine or a sandy clay tempered with fragments of talc, with organics (grass) occasionally being added. The microscopic identification was confirmed in the petrological analysis of 12 sherds in thin section. There are no outcrops of talc-bearing rocks on Yell, but the nearby islands of Unst and Fetlar have considerable deposits of pure talc (Mykura 1976) and an extensive variety of metamorphosed ultramafic rocks which could be the source rocks for the clays used in the sherds from the Sands of Breckon.

**Distribution** From a consideration of the horizontal and vertical distribution of the sherds, it appears that only one assemblage is represented. The firing, fabric and morphology is similar in the surface scatter and the midden sample trench. In the sample trench all three spits were found to have flat and splayed rims, although only the lowest produced an everted rim sherd. Carinated sherds were recovered from all spits. The only significant difference between the pottery from the surface scatter and the sample trench is in the degree of abrasion. Heavily abraded sherds (with at least one surface missing) constitute 54% of the surface scatter but only 11% of the sample trench sherds. Conversely, 73% of sherds from the sample trench are fresh compared with only

23% in the surface scatter. These differences must reflect the degree of damage to the pottery during the current phase of erosion.

**Comparative material** In fabric and morphology, the assemblage from Sands of Breckon bears closest resemblance to pottery from three Shetland sites – Jarlshof, Clickhimin and Mavis Grind, all on Mainland. The pottery from the ‘Early Iron Age Farmstead’ at Clickhimin includes vessels with plain or flattened rims, and necked and shouldered vessels (Hamilton 1968, 42 fig 19.1–5). These vessels were made of non-steatitic fabrics. The pottery from the ‘late Bronze Age Village’ at Jarlshof (Hamilton 1956, 37 figs 18, 19 & 38) has more pronounced shoulders and includes some examples of splayed rims as well as flat and plain rims. The assemblage from the late Bronze Age/early Iron Age settlement site of Mavis Grind includes all elements recognized in the Sands of Breckon assemblage. The pottery from Mavis Grind was all talc-tempered (Cracknell & Smith 1983, 29). Similar pottery has also been found on sites in Orkney, including the settlement at Howe, where carinated forms are common in the Early Iron Age phases of the site (Ross 1994), and in the final, early Iron Age, phase at Tofts Ness on Sanday (MacSween, forthcoming).

V105 Find 94

Body sherd with carination. Grey with red margins. Fabric – sandy clay tempered with talc fragments. Hard-fired.

V181 Find 203

Everted rim. Brown. Fabric – fine clay tempered with talc fragments. Hard-fired

V224 Find 107

Splayed T-shaped rim from necked vessel. Grey. Fabric – sandy clay tempered with talc fragments. Hard-fired. Exterior and interior sooted.

V297 Find 267

Plain rim. Red. Fabric – fine clay tempered with talc fragments. Hard-fired. Exterior and interior sooted.

V336 Find 6

Body sherd with pinched carination. Grey. Fabric – sandy clay tempered with talc fragments. Hard-fired. Exterior and interior sooted.

V379 Find 58

Flat rim, necked vessel. Red. Fabric – fine clay tempered with talc fragments. Hard-fired.

V389 Find 222

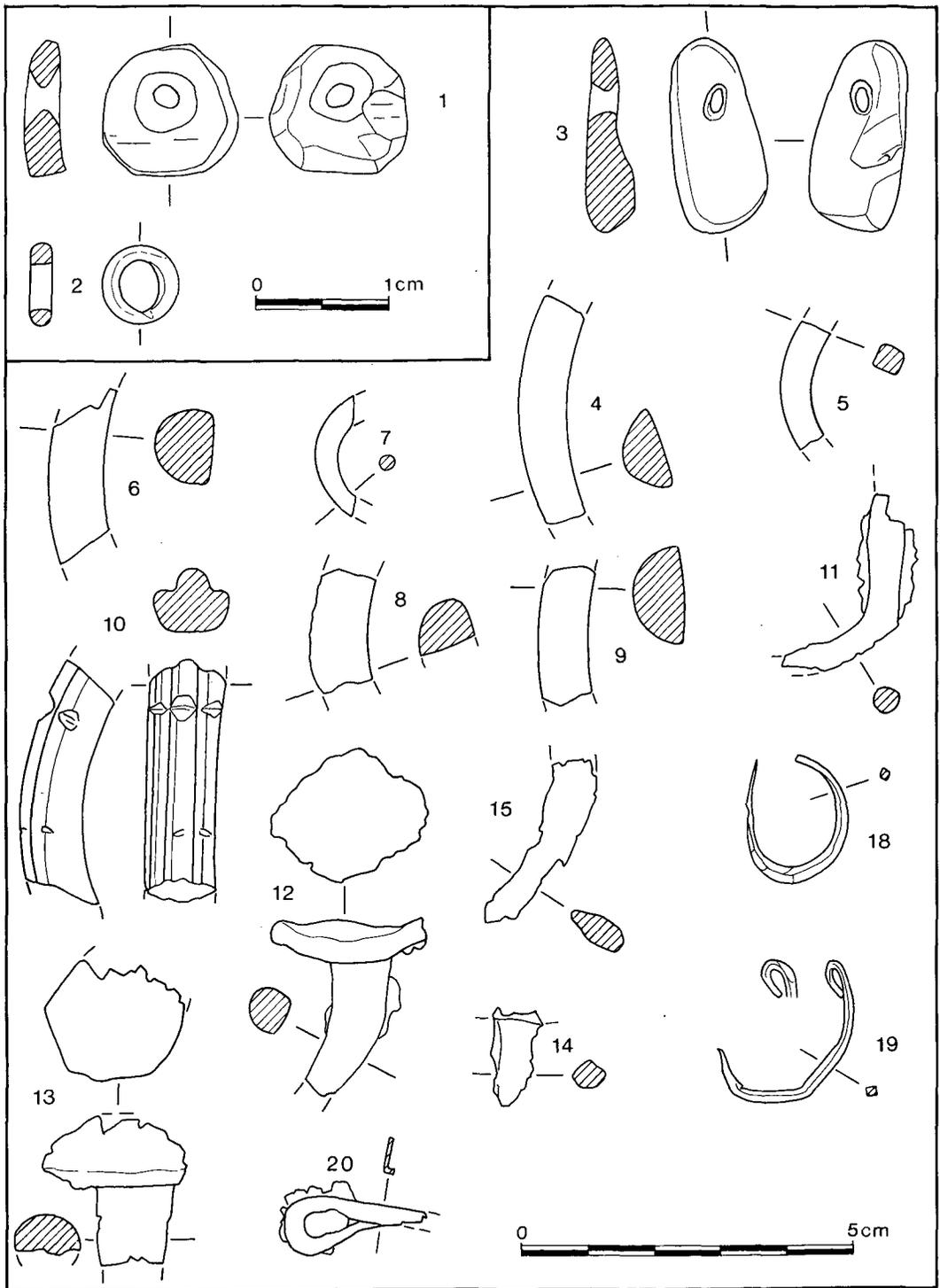
Splayed rim, necked vessel. Grey. Fabric – sandy clay tempered with talc fragments. Hard-fired. Exterior and interior sooted.

### *Finds other than pottery*

Andrea Smith

Twenty artefacts of stone and metal were recovered from the gridded surface collection along with larger assemblages of slag and pumice. None of this material was found in the sample excavation trench. The metal and stone artefacts are described and illustrated individually in illus 11, with two exceptions: an iron strip of recent origin (16) and a copper coin (17) which is discussed below. The assemblages of pumice and slag are discussed below and details of these assemblages are contained in the site archive.

**Metal and stone artefacts** This is a highly mixed, unstratified group, as can be seen from the inclusion of an early 18th-century coin, modern iron, and stone bracelet fragments. The coin is a schilling of Schleswig-Holstein of 1712 (identification by Dr D H Caldwell, National Museums of Scotland). Dr Caldwell comments, ‘Many 16th- to 18th-century small continental copper coins turn up in Scottish contexts and many were no doubt used as money.’ It is known that ‘. . . in late medieval times the Site was inhabited by a prosperous fishing community with German, Dutch, and other continental traders’ (RCAHMS 1946, iii, 165). Many of the other metal finds,



ILLUS II Site 22: artefacts from the surface finds scatter

such as the fish-hooks (18 & 19), the pin-loop (20), and the nails (12, 13 & 14) could be of any date, from early medieval to early 20th century.

The presence of seven stone ring and bracelet fragments is of some interest, particularly as two have been re-worked after breakage (9 & 10). This raises a number of possibilities as to why they are present on the site; broken and weathered fragments may have been eroded out of graves if there had been a long-cist cemetery near the site. The re-working of two of the fragments, and the bead which seems to have been made from a ring fragment (1) may indicate something more, possibly a domestic settlement where such working was taking place, or even the re-working of material which was eroding out of graves in antiquity.

The source of the raw material for the rings and bracelets is probably local (Dianne Dixon, pers comm); the island of Yell is composed entirely of gneisses and schists, as is also the adjacent west side of Unst. The soft, chloritised schists used for these objects could well have come from Yell itself, or perhaps more likely, Unst, where the area of chlorite and chloritoid schists occurs between the talc exposures and the coast. Tremolite and serpentine occur locally in the blocks of metamorphosed ultramafic rocks which contain the talc, but also in isolated localities in areas of ancient rock such as Yell.

These stone rings and bracelets appear to be a rendition in local materials of a widespread tradition in Scotland, which covers a lengthy period from the Bronze Age to the Norse period. The fragments found at the Sands of Breckon come in a variety of shapes and sizes, with estimated diameters from 20 mm to 85 mm, indicating a range of possible uses as hair or finger rings, and bracelets for both children and adults. The sections range from squared to D-shaped to triangular, with one highly decorated example (10), and one example which retains working marks on its inner face; a possible indication that it had hardly been worn. As one might expect, the closest parallels for these particular objects are from Shetland sites, such as the fragments (identified as steatite) from the early Iron Age roundhouse at Jarlshof (Hamilton 1956, 36), and the nine armet fragments of fine-grained metamorphic rock from the late Bronze Age/early Iron Age site at Mavis Grind (Cracknell & Smith 1983, 27).

- 1 Small fragment of chloritized hornblende schist, flattened, irregular sub-rounded shape with offset splayed perforation. One surface is convex and polished, possibly re-worked from larger object such as ring or bracelet (same material as 6).
- 2 Tiny ring-shaped bead, probably tremolite.
- 3 Small water-worn pebble, very smooth and shiny, yellow, probably serpentine. Elongated oval perforation at narrower end.
- 4 Bracelet fragment of chlorite schist, triangular section. Inner face flat, with numerous transverse striations, presumably from working. Outside smoothed and polished. Estimated diameter 75–80 mm.
- 5 Weathered ring fragment, of chlorite schist, squared section. Estimated diameter 20–25 mm.
- 6 Bracelet fragment, of chloritised hornblende schist, D-shaped section. Estimated diameter 75–80 mm.
- 7 Highly polished or weathered ring fragment, probably tremolite schist, of roughly circular section and irregular thickness. Estimated diameter 15–20 mm.
- 8 Badly weathered ring fragment, of micaceous chloritoid schist. Inner face damaged, but section probably D-shaped originally. Diameter unobtainable.
- 9 Bracelet fragment of chloritoid schist, D-shaped section. One end has been cut at an angle. Estimated diameter 75–85 mm
- 10 Bracelet fragment of chlorite schist. Decorated by cutting two concentric grooves around outer face, thus creating central ridge. Inner face rounded and convex, giving mushroom-shaped section. Very high gloss polish overall apart from in grooves. One end has been cut, and 6 mm in from this edge are traces of attempted cutting. There are further, slighter, traces of cutting some 6 mm in from the other, broken, end. Estimated diameter 55–60 mm.
- 11 Hook or ring fragment, very poor condition.
- 12 Nail, large oval offset head, shank short, possibly broken.
- 13 Nail, large oval offset head, shank broken. High polish from sand scouring.
- 14 Nail fragment, point.
- 15 Small iron fragment, slight curvature, irregular width and thickness. Heavily sand-abraded.
- 18 Bent metal fragment of quadrilateral section, tapering to a sharp point at one end. The other end is blunt

- with no traces of breakage. It is constructed of folded metal, and apparent traces of gilding on parts of the surface were found to be mica deposits. Probably a fish hook.
- 19 Mis-shapen hook, of quadrilateral section, tapering to a sharp point at one end. The other, blunt end is folded over to form a loop. It is constructed of folded metal, virtually identical to 18. Probably a fish hook.
  - 20 Highly corroded loop of copper alloy, part of it iron-rich. Flattened, strap-like section, possibly loop from pin of large buckle or brooch.

**Pumice** Seventy-five pieces of pumice were recovered from the gridded surface collection, weighing a total of 331.6 g. Some fragments show traces of very severe sand scouring and erosion, and the bulk of the pumice fragments are very small, with only ten pieces weighing more than 10 g. No definite traces of wear can be seen on any of the pieces, which may be due to the degree of erosion, but apparently unworked pumice pieces have been recovered in relatively large numbers from other archaeological sites in the Northern and Western Isles (Smith forthcoming a & b). This possibly indicates a deliberate policy of collecting pumice as and when it was seen on the beach, and bringing it back to the settlement for future use. Pumice is found on most archaeological sites in the Northern and Western Isles from the Neolithic to the Norse periods.

**Slag** Two types of slag were recovered from the surface collection: a mid- to light grey vesicular slag, and what has been termed 'hearth-lining', a material very similar to the grey slag, but which has one pinkish-red flattened surface resembling fired clay. A total of 596.8 g of the grey vesicular slag was recovered, spread over almost all the grid squares. Most of the pieces were small (ie less than 10 g) and in the form of fairly viscous runs and droplets. One larger irregular bubbly mass weighed 99.7 g, but this was exceptional. Fifteen pieces of 'hearth-lining' were recovered, weighing a total of 90.3 g. These finds are also relatively small, with the largest piece weighing only 18 g. The slag and hearth-lining recovered are not necessarily to be associated with metal-working, in the absence of finds of metal-rich slag, hearth-bottom, or other indications of smithing or smelting operations. The grey vesicular fuel ash slag and the semi-vitrified 'hearth-lining' could have been produced by use of a kiln or in any high-temperature fire.

#### SITE 22: DISCUSSION

Partial excavation of Site 22 has identified three main archaeological elements: a surface scatter of artefacts and other human refuse, four stone settings and an extensive area of midden-rich sediments.

The midden-rich sediments are the oldest element of Site 22. No material suitable for radiocarbon dating was found but analysis of the pottery indicates an early Iron Age date for the original discard of the refuse. This may not equate to the date of deposition of the excavated sediment because various lines of evidence suggest that it has been redeposited. The stratification of the sediment, with numerous thin layers and lenses parallel to the underlying slope, indicates deposition by wind or water. The bone assemblage is highly fragmented with an over-representation of tooth fragments. Given that bone preservation should be good in these shell sand sediments, this assemblage cannot represent primary deposition of refuse. Further evidence of transport and re-deposition is provided by the pottery where 27% of sherds are abraded or heavily abraded. Overall, this evidence suggests that the midden-rich sediment has been re-deposited from an unknown upslope source. The homogeneity of the pottery assemblage suggests that this occurred relatively soon after initial deposition, before other artefacts could be mixed into the sediment.

The presence of the midden-rich sediments presumably reflects the existence of an early Iron Age settlement nearby. None of the sites recorded in the survey are likely candidate for this settlement but it could be hidden by the deep sand deposits that remain upslope of Site 22 closer to Tofts.

The four stone settings (22A–D) clearly post-date the early Iron Age but otherwise remain undated. Excavation of 22A demonstrated that the visible stones are the only surviving parts of these

settings, ie they are the bases rather than the tops of features. In the absence of other evidence it is tentatively proposed that the settings are the remains of long cists. This interpretation requires that the cists were inserted from a land surface only slightly higher than that currently existing. The former existence of a land surface at this level is supported by the quantity of bone and pottery in the surface finds scatter. If it is assumed that this material is derived from the underlying midden, the quantities collected could have accumulated after the erosion of less than 0.1 m of midden-rich sediment. This demonstrates that little erosion of the midden has occurred and that the recent dramatic loss of sand has effectively exhumed a former land surface.

The third element of Site 22, the surface finds scatter, has much in common with the finds from the midden-rich sediments and it is concluded that the pottery and most of the bone is derived from the erosion of this source. However, none of the stone and metal artefact types collected from the surface scatter occurred in the excavated sample of the underlying sediment, nor did any pumice or slag. There are two possible explanations for this absence: only 3.6 cu m of sediment was excavated and artefacts, although present, may simply be too rare to occur in this limited sample. Alternatively, the artefacts may derive from later, overlying sediments which were subsequently eroded. This latter explanation clearly applies to the post-medieval material which was actually recorded *in situ* by Fraser (1983, fig 10) in a standing sand section at HP 5309 0517. Post-medieval artefacts occurred 0.65 m above the level of the prehistoric finds, separated by windblown sand. The slag, pumice, stone bracelets, rings and beads would not be out of place in an early Iron Age or medieval assemblage and their origin therefore remains uncertain.

#### SITE 30: MOUND (ILLUS 12 & 15)

This site was described in 1982 as consisting of two separate features only 9 m apart: firstly a low sub-circular cairn composed of slabs, boulders and quartzite pebbles and secondly a small scatter of quartzite pebbles and three small set slabs that could be the remains of another cairn. Only the more complete cairn was excavated in 1983.

The cairn was drawn and the south-east quadrant excavated. The slabs and quartzite pebbles proved to be a superficial capping only one layer deep to a mound of horizontally bedded windblown sand. This was exposed in a test pit down to solid rock confirming that, as was seen at Site 21, the mound is an artefact of erosion.

#### SITE 35/36: WALL AND MOUND (ILLUS 13, 14 & 15)

These two features were excavated at the point where they intersect to determine their relationship which was unclear in the 1982 survey. Wall 35 was described as at least a 105 m length of dry stone wall with Mound 36 at its north-west end. Mound 36 consisted of large slabs with a kerb of radially set stones.

#### *Excavation*

Excavation was limited to the south-east quadrant of the mound where Wall 35 approaches it. Removal of the modern topsoil and loose stone revealed a well-defined cairn c 6 m in diameter with a kerb of radially set stones. The centre of the cairn had been extensively disturbed in the recent past and this had particularly affected a central human burial. What appears to have been a slab-built cist contained the disarticulated bones of one individual placed in a pile against one of the side slabs.

The cairn had been constructed on a layer of humic brown sand which is interpreted as a buried soil A



ILLUS 12 Site 30: the excavated Quadrant from the south

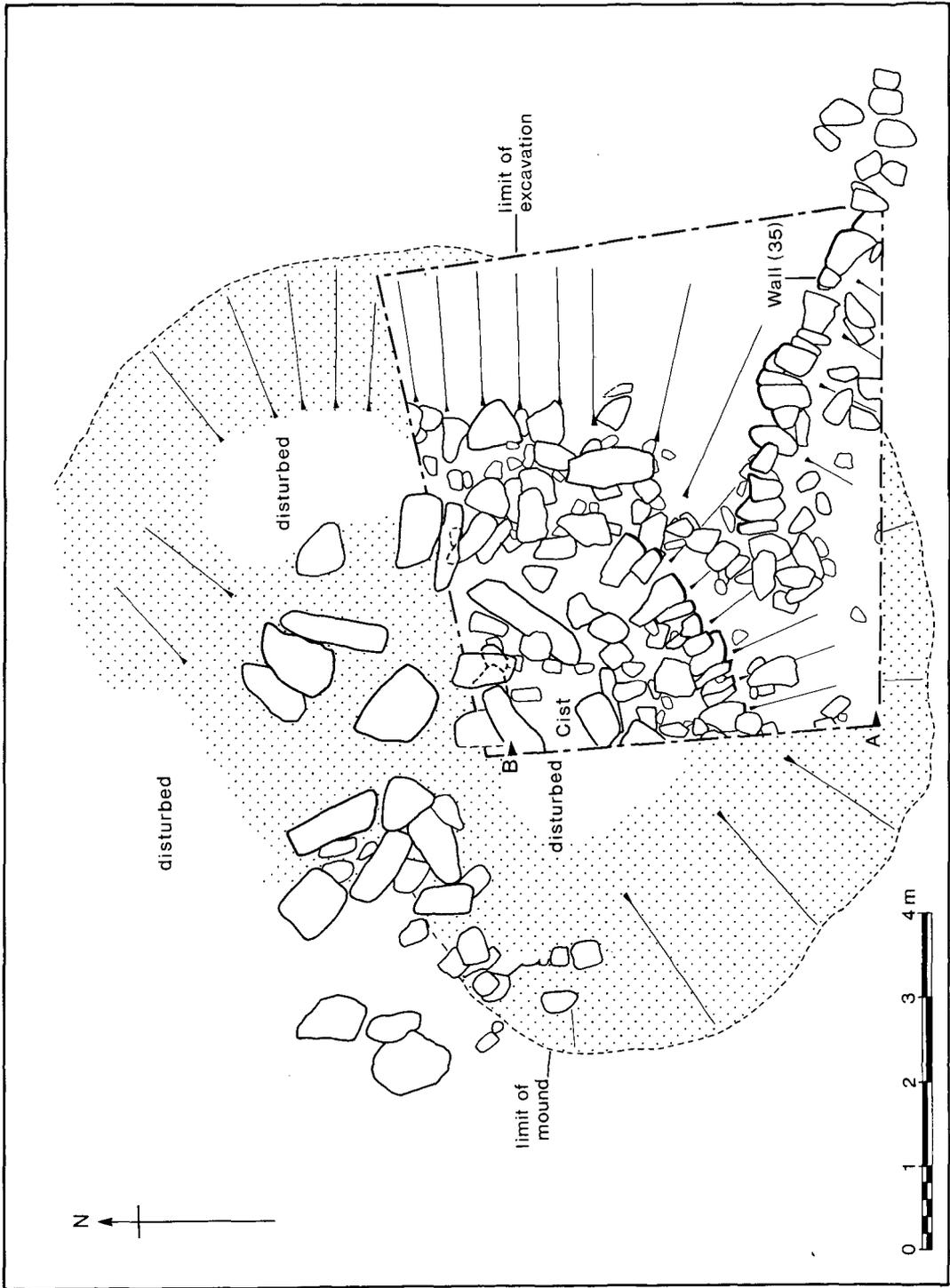
horizon. This overlay yellow sand which completely obscured the remains of Wall 35; this wall ran under the cairn but it was probably invisible at the time the cairn was built. The wall survived at least 1 m high but was only one stone thick giving it the appearance of a single-faced revetment wall.

### *Human bone*

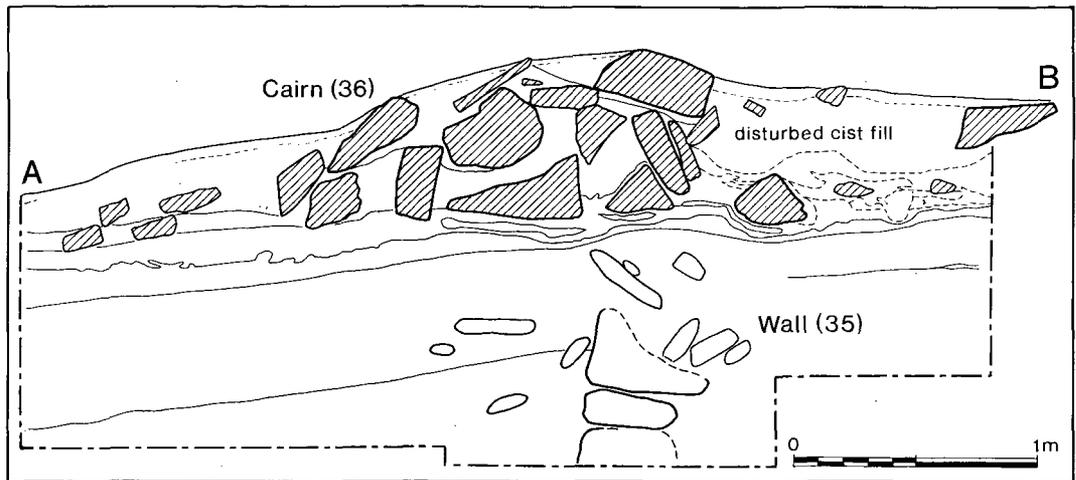
Frances Lee

The bones consist of the incomplete skeleton of one individual and are in a fair state of preservation. The skull, humeri and femora are absent, but this did not appear to be the result of differential preservation. The individual was male with a height of  $177.6 \text{ cm} \pm 4.66$  (after Trotter & Gleser 1952). In the absence of the skull, age was estimated from the pubic symphysis (McKern & Stewart 1957) and found to be more than 36 years.

The skeleton exhibits features typical of Early Forestier's Ankylosing Hyperostosis of the spine, now more precisely referred to as Diffuse Idiopathic Skeletal Hyperostosis (DISH). DISH is characterized by bony proliferation in the form of anterior osseous bridges between vertebrae and extra bone produced at the sites of tendon and ligament attachment in both spinal and extraspinous



ILLUS 13 Sites 35 & 36: plan showing the extent of the site and the excavated area



ILLUS 14 Sites 35 & 36: Section along west side of the excavated area

locations. This condition is rarely found in individuals under the age of 60 and 80% of cases are in men. In palaeopathological samples DISH is identified positively only when three or more consecutive vertebrae are ankylosed together: this is not the case in the individual from Breckon. However, there is a strong case for this being an early example of the condition. The individual falls below the expected age group but there is good evidence for the development of bony bridges, predominantly on the right lateral aspect of the vertebral column. Moreover, the lack of involvement of the apophyseal joints, the retention of normal disc space and the evidence for bony proliferation on the sternum, ribs, radius, ulna, tibia and talus all argue convincingly that this is an early example of DISH (J Rogers, pers comm).

The clinical features of DISH are minimal. There is some degree of spinal stiffness but this is often only slight, the result of the apophyseal joints remaining unaffected (Forestier & Lagier 1971). This condition would have been of little importance to the individual and easily tolerated.

### *Radiocarbon date*

The human bone recovered during the excavation came from an inhumation burial that had clearly been disturbed by some earlier investigation of the site. The bones were found in a pile against the side of the central cist which itself had been partially destroyed. The bones came from a single adult male of which the skull, mandible, humeri and femora were absent (see human bone report, above). There seems little doubt that the remaining bones were reburied *in situ* after the original excavation of the site. The right tibia was therefore selected for radiocarbon dating. This date provides an estimate of the age of the burial in the mound and a *terminus ante quem* for the underlying wall. The wall extends for at least 105 m and may have stratigraphic links with other as yet unexcavated sites.

The result of the radiocarbon determination is as follows (the calibrated age ranges are determined from the University of Washington, Quaternary Isotope Laboratory, Radiocarbon Dating Program, 1987):

Lab No.	Radiocarbon determination	Calibrated age	
		1 sigma	2 sigma
AA-11691	1731±73 BP	AD 224–400	AD 120–440

### *Discussion*

Although stratigraphically distinct, the relationship of wall to cairn has become obscured by recent erosion which has removed the sand that covered Wall 35 and has exaggerated the height of Cairn 36. The relationship has been further confused by stone weathering out and falling downslope from the cairn and the effects of recent disturbance. This recent disturbance appears to have been an archaeological investigation: the excavators located the skeleton, removed the skull, humeri and femora, and then carefully reburied the remaining bones. The selection of bones suggests a late 19th- or early 20th-century date for the excavation. There are a number of reports of the excavation of human bones in the Sands of Breckon but none can be linked conclusively to Site 36. Irvine's account of various burials discovered in the second half of the 19th century (Irvine 1898) appears to refer to sites farther to the south-west, now reburied by sand. Cists excavated in 1923 (NMRS Site HP 50 NW 6; present survey Site 61) cannot now be located although their presumed site is some 100 m to the north-east of Site 36. No details have been recorded as to the presence or fate of any human bone in these cists, although the bones in the Anthropological Museum, Marischal College, Aberdeen, could be from here. References to the discovery of a horned human skull, apparently in the early decades of the 20th century (see NMRS Site HP 50 NW 1), indicate a find spot only 20 m to the north-west of Site 36 and also mention a circular building. The whereabouts of this intriguing find are unknown.

In the wider context, Site 36 provides a rare date for a Shetland prehistoric funerary monument. Only two others have radiometric dates: a Neolithic multiple cist burial at Sumburgh (Hedges & Parry 1980) and a late Iron Age kerbed cairn covering a single long-cist inhumation burial at Sandwick, Unst (Bigelow 1985). Therefore, their chronology is poorly understood and our present understanding is based largely on typologies of structure and rare finds (Henshall 1963, 1972). There are no close parallels in Shetland, or elsewhere in Scotland, to the radial structure of the Site 36 cairn; however, it is dated to a period in northern Scotland with few identified burials, and no clear funerary tradition.

#### SITE 40/41: WALL AND ENCLOSURE (ILLUS 15)

Wall 40 was described in the 1982 survey as a 64 m length of extremely ruinous dry stone wall running north/south. Enclosure 41 was a 6.0 m by 4.8 m enclosure at the north end of Wall 40 where it reaches the coast. The relationship of these two features was not clear. Both the wall and enclosure were suffering active marine erosion.

In 1983 the southern half of Enclosure 41 was excavated, including its possible junction with Wall 40. Excavation of the modern topsoil and any superficial stone removed all stones which formed Enclosure 41 but left a single row of slabs on the line of Wall 40. The stones of Enclosure 41 rested on clean yellow sand which appeared to butt up against Wall 40. This relationship was not clear in section; both the enclosure and the wall are so badly preserved that it is possible to see the enclosure either abutting the wall or overlying the wall. These optional interpretations both imply that the wall is earlier.

No finds were recovered, nor was there any material suitable for radiocarbon dating.



ILLUS 15 General view of the northern part of the sands from the east with three excavated sites: Site 30 in the foreground; Site 35/36 in the middle distance; and Site 40/41 behind

## DISCUSSION

### THE ARCHAEOLOGY OF THE SANDS OF BRECKON

The survey of 1982 produced the first comprehensive plan of the archaeological remains in the Sands of Breckon and our understanding of some of these sites has been enhanced by limited excavation. This is, therefore, a useful point to attempt to summarize the prehistory and history of the area.

Only five sites are, without doubt, prehistoric in date. These include two 'lost' sites (Cairns

59 & Cists 61), the Iron Age burial cairn (Site 36) and the wall (35) that underlies it, and the early Iron Age midden (part of Site 22). A prehistoric date may be proposed for other sites on less certain typological grounds. The four stone settings that overlay the midden at Site 22 may be the remains of long cist burials of the first millennium AD. The low cairns of quartzite pebbles (Sites 30 & 39) may be compared with the square, kerbed quartzite burial cairn at Sandwick, Unst (Bigelow 1985). This example is radiocarbon dated to the mid-first millennium AD and is of a late Iron Age type widely recognized in northern Scotland. The banks and ditch (Site 55) that cut off the Ness of Houlland appear to belong to a group of small defended coastal promontory sites, studied in the Northern Isles by Lamb (1980). None of these sites has been the subject of recent excavation but an Iron Age date is preferred by Lamb. Two distinctive settings of orthostats, Sites 31 and 45, have been identified by earlier workers as prehistoric houses; the present fieldwork gathered no new information with which to support or refute these speculations. Finally, in this summary of prehistoric sites, there are those sites that could be of any period including the prehistoric. Most of the walls and indeterminate mounds fall into this category, and in view of the confirmed prehistoric date for Wall 35, some of these other examples are probably also prehistoric.

A number of observations may be made concerning the evidence for prehistoric activity in the Sands of Breckon: the evidence is dominated by confirmed or suspected burial monuments; prehistoric artefacts have only been discovered in one area, emphasizing the lack of evidence for settlements; available dating evidence is predominantly Iron Age; and dated Iron Age sites overlie significant accumulations of windblown sand.

The paucity of settlement evidence is probably a reflection of the unsuitability of the sands for permanent occupation throughout prehistory. No dates are available for the initiation of sand accumulation at Breckon and this issue is linked closely to the relative rise in sea level. Data from other sites in the Northern Isles demonstrate that sand was already onshore by the Neolithic period and was progressively moved inland in response to rising sea levels (Hamilton 1956; Ritchie 1983). A similar history may well apply at Breckon.

Sites that positively date to the medieval or later periods at the Sands of Breckon are limited to the south-east part of the area. The occupation surface (Site 20) contains many artefacts from late-medieval and post-medieval times; the few post-medieval finds from Site 22 represent the periphery of this artefact scatter which appears to be centred upslope closer to the house of Tofts. The existing building at Tofts (Site 24) was occupied as recently as 1878 and the associated byre (Site 25) and enclosure (Sites 26/27) are contemporary structures. The mill (Site 29) may also be a part of this early modern settlement: it was standing but possibly redundant in 1878. It is known that '... in late medieval times the site was inhabited by a prosperous fishing community with German, Dutch, and other continental traders' (RCAHMS 1946: iii, 165). More historical research would certainly add to our knowledge of this community and its early medieval antecedents. As was the case with the prehistoric period, many of the other walls and mounds could date to this period but conclusive evidence is lacking.

#### EXCAVATION AND ARCHAEOLOGICAL STRATIGRAPHY IN WINDBLOWN SAND

This fieldwork project has demonstrated some of the difficulties in interpreting archaeological evidence in a high-energy dynamic windblown sand environment. It is clear that stratigraphical relationships observed today may not relate to original deposition relationships. To understand the formation processes that may lead to the existing relationships, it is helpful to consider three situations observed in the course of this fieldwork.

*Stones from a wall with no surviving stratigraphic context: Site 21*

At Site 21, sand has been removed from beneath the stones of the wall, progressively lowering them *in situ*. The excavated section (illus 6 & 7) shows that some accumulated sand still remains below the existing level of the wall and that the stones have protected some sand from erosion. This now forms a sand core to the wall and it is largely responsible for the wall's intact appearance. There is in fact very little stone in this 'wall', as illus 7 makes clear.

As a result of this history, the wall has lost its original stratigraphic relationships and is now difficult to date with any degree of certainty, unless it can be shown to form part of a coherent, dateable pattern of land division. During survey, this wall had the appearance of a feature revealed by the erosion of overlying sand. It therefore could have been of considerable antiquity and might originally have formed part of a system of land divisions with associated land surfaces and possibly structures.

As it is unlikely that this supposition can now be proved or disproved, the example shows how archaeological evidence may be destroyed while superficially appearing to be intact.

*A stone cairn isolated by deflation: Site 36*

At Site 36, excavation showed that erosion of sand has left the cairn forming a capping to an isolated sand mound (illus 13). Stratigraphic links have been retained with deposits that directly underlie the cairn, including the earlier Wall 35 (illus 14), but wider, horizontal links via the ground surface that the cairn rests on, have been lost.

The survival of an undisturbed mound of sediments beneath Site 35 contrasts with the situation at Site 21 (above). This difference is explained as the result of the greater area covered by the stones of the cairn and perhaps a shallower depth of sand eroded at Site 36. Sand, covered by a layer of stones, is protected from wind erosion; however, if a considerable depth of sand is removed from adjacent to the stones, they will be undermined and will slip down. Clearly, the greater the depth of sand, the more potential there is for undermining of the stones. At Site 21, the relatively narrow wall (probably less than 1 m wide when intact) was totally undermined; at Site 36, the cairn has lost some stones at its margins but was sufficiently extensive to survive largely intact.

The appearance and apparent stratigraphic relationships of the cairn have been significantly altered by this process of partial undermining. In an unexcavated state, the cairn appeared to be roughly 10 m in diameter and 1.5 m high, with Wall 35 abutting it on the south-east side. Excavation showed that much of the apparent height and area of the cairn was created by the eroding sand face that surrounded the cairn, littered with slipped stones. The actual intact cairn was only 6 m in diameter and 0.7 m high, and clearly overlay Wall 35.

This example demonstrates how archaeological evidence may be altered, sometimes in a misleading fashion, by the natural formation processes of wind erosion. Stratigraphy may survive but cannot be determined from surface survey alone.

*Features revealed by deflation: Site 22*

The situation at Site 22 is more complicated than that encountered at Sites 21 and 36. If the post-excavation interpretation of the features, presented above, is correct, then the following history may be proposed. In the early Iron Age, erosion of a pre-existing midden led to the deposition of midden-rich sandy sediments within an accumulation of windblown sand. At least four long-cist burials (perhaps of first or early second millennium AD date) were then dug into these sediments from a

ground surface that had formed a short distance above. Further sand accumulation buried this surface before the deposition of artefacts on the periphery of a post-medieval settlement. Recent erosion (after 1900) has removed most of the accumulated sand from this area; post-medieval artefacts have been deposited on the truncated surface of the early Iron Age midden-derived sediments at the same level as the *in situ* bases of the long cists. The survival of the early Iron Age midden sediments in the current phase of erosion may only be a temporary situation and further losses may yet occur. However, the accumulation of coarser material – finds and stones – on the surface in this area will retard and may even stop further erosion.

This example demonstrates how complex deposits may be created by the joint action of human activity and subsequent windblow, and further demonstrates the ephemeral nature of these created sediments.

## CONCLUSIONS

From the beginning of the historical record, the Sands of Breckon has experienced considerable instability. Erosion of the accumulated sand, initially on the west side, transferred a large volume of sand onto the higher eastern part of the site. The focus of erosion has gradually shifted eastwards and is currently affecting the eastern ridge where the recently deposited sand is now being removed along with much older accumulations. This sand is being deposited in the Kirk Loch or the sea to the east of the site. Meanwhile, sand accumulation has resumed on the west side of the site, suggesting a cyclical pattern of accumulation and erosion.

Within the sand accumulations there are numerous man-made stone structures. These have been investigated in a piecemeal fashion over the years, as they have become exposed, creating a cumulative record of settlement, burial and agricultural features, with numerous stray finds. This apparent wealth of archaeological material is deceptive because these sites are essentially unstratified. During periods of sand accumulation, man-made structures and sediments have been buried to form part of a stratified sequence. However, during periods of erosion, the sand sediments have been removed both from above and below the structures leaving only those items too heavy to be moved: the stones and finds. The effect of this process on deep stratified sequences is to leave structures of widely different date, physically juxtaposed. True temporal relationships are then only obtainable if structures are actually superimposed; all other stratigraphic links will have been destroyed and the context of potentially datable artefacts will have been lost. If erosion is so damaging to these sites, it might be argued that proactive excavation of sites, prior to erosion, is justified. There is no evidence from the excavation of areas of stable sand at Breckon with which to judge this proposition. However, it may be assumed that, unless the events of the past two centuries are unprecedented, previous cycles of erosion and accumulation have already damaged areas that are apparently intact at present.

Are there any lessons to be gained from this analysis to help in the positive archaeological management of the Sands of Breckon? There are two issues: research potential and conservation management.

In so far as archaeological research potential is concerned, individual sites clearly have potential to provide useful data. Examples of this include the pottery assemblage from Site 22 and the dated burial cairn at Site 36. However, these are no more than isolated fragments of information; there is no exhumed ancient landscape at Breckon worthy of detailed investigation. There is considerable scope for the collection of stray finds from the eroded sand surfaces, but although artefacts will retain their intrinsic value as objects, the loss of context greatly reduces the information available from them. Therefore, as long as the current phase of instability continues at Breckon, the area will

require repeated monitoring. No doubt, further interesting discoveries will be made and small-scale field investigations will be justified to record exhumed archaeological structures.

There are also positive, if unwelcome, conclusions to be drawn concerning the physical management of the Sands of Breckon for archaeological conservation purposes. The sheer force and scale of the landscape changes affecting the superficial geomorphology of the area are such that they will not be stopped by human intervention (unless wholly unrealistic resources are applied to massive engineering works). It must therefore be accepted that degradation of the surviving archaeological deposits will continue. It may be slowed down by localized, labour-intensive conservation measures such as fencing to control grazing, and the spreading of organic debris to prevent sand deflation and encourage regeneration of vegetation, but even with these measures, the face of the Sands of Breckon will continue to change.

## ACKNOWLEDGEMENTS

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