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# I

## A Mesolithic Settlement Site at Howick, Northumberland: a Preliminary Report.

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### SUMMARY

**E**xcavations at a coastal site at Howick during 2000 and 2002 have revealed evidence for a substantial Mesolithic settlement and a Bronze Age cist cemetery. Twenty one radiocarbon determinations of the earlier eighth millennium BP (Cal.) indicate that the Mesolithic site is one of the earliest known in northern Britain. An 8m core of sediment was recovered from stream deposits adjacent to the archaeological site which provides information on local environmental conditions. Howick offers a unique opportunity to understand aspects of hunter-gatherer colonisation and settlement during a period of rapid palaeogeographical change around the margins of the North Sea basin, at a time when it was being progressively inundated by the final stages of the postglacial marine transgression. The cist cemetery will add to the picture of Bronze Age occupation of the coastal strip and again reveals a correlation between the location of Bronze Age and Mesolithic sites which has been observed elsewhere in the region.

### INTRODUCTION

The Howick site is located on the Northumberland coast at NU 2585 1660, 8km NE of Alnwick between Longhoughton and Craster (fig. 1). The coastline here consists of low, exposed cliffs of interbedded sandstone and limestone punctuated by small bays with sandy beaches. The site itself is situated on a low headland some 10m above the rocky foreshore

overlooking a small bay; a freshwater stream, known as the Howick Burn, discharges into the bay to the south. Mesolithic flints including microliths and blades were first discovered at the site by John Davies (1983, 18); additional flints were later recovered from an erosion scar in the cliff edge by another amateur archaeologist (Jim Hutchinson) during January 2000, which prompted the investigation reported below. The site has experienced erosion as a result of slippage down the cliff edge as well as from the action of moles. Further threats to the site were posed by sheep scars and tourist traffic, the latter resulting from walkers and cyclists using the Northumberland Coastal Path which crosses the site. This combination of threats gave added urgency to the need for systematic excavation and investigation. The first season of fieldwork took place over a three-week period during June and July 2000 and included excavation of an evaluation trench together with sediment sampling. On the basis of this preliminary work, and after a delay caused by the foot and mouth epidemic, a fieldwork programme was launched in 2002 to investigate and record all deposits. This work focused around a 12 week excavation that took place throughout June, July and August 2002.

### EXCAVATION

In 2000 a preliminary test pit had shown the presence below the ploughzone of intact archaeological features containing lithics and



Fig. 1 Howick Location Map.

charred material whilst magnetometer survey had recorded sub-surface anomalies in the vicinity of the erosion scar and to the north of this area. During the 2002 season an excavation trench was therefore opened next to the erosion scar along the edge of the cli and extended

northwards over the geophysical anomaly (fig. 2). This revealed a range of features (fig. 3) including a group of pits and scoops; a circular Mesolithic structure partly defined by stains of fallen timbers, post holes and sockets; and a cist cemetery.



*Fig. 2 Aerial view over the excavation trench with the Mesolithic hut site under excavation in the mid-left of the picture.*

### **Mesolithic Structure**

The main feature of the site was a substantial circular structure (fig. 4) averaging 6m in diameter, positioned half way along the edge of the trench next to the erosion scar. Its eastern side has been truncated as a result of erosion down the cliff edge. The structure was defined around some of its edges in its upper layer by fallen timbers, surviving only as biogenic stains in the sand, and by post holes. It was constructed with a sunken floor on which had accumulated deposits to a depth of up to 0.5m. A variety of features including post holes, stakeholes, linear slots, pits and a sequence of hearths were found cut into these occupation deposits. All of these contexts contained abundant material remains including flint, ochre and charred organic residues (fragments of bone, hazelnut and acorn shell). This

structure is interpreted as a settlement site and is thus one of the best preserved Mesolithic dwellings so far discovered in the British Isles. Analysis of the burnt bone from its hearths shows the presence of wild pig, fox, birds and either domestic dog or wolf. Given the substantial nature of this dwelling, and the evidence for three separate constructional phases, it appears that this settlement was occupied on a permanent or semi-permanent basis over a considerable period. As analysis of the data progresses, including the results of a C<sup>14</sup> dating sequence (see below), both the form of the structure and the duration of its occupation should become clearer.

### **Pits and Scoops**

Pit and scoop features were clustered in the west end of the trench; all these features were of

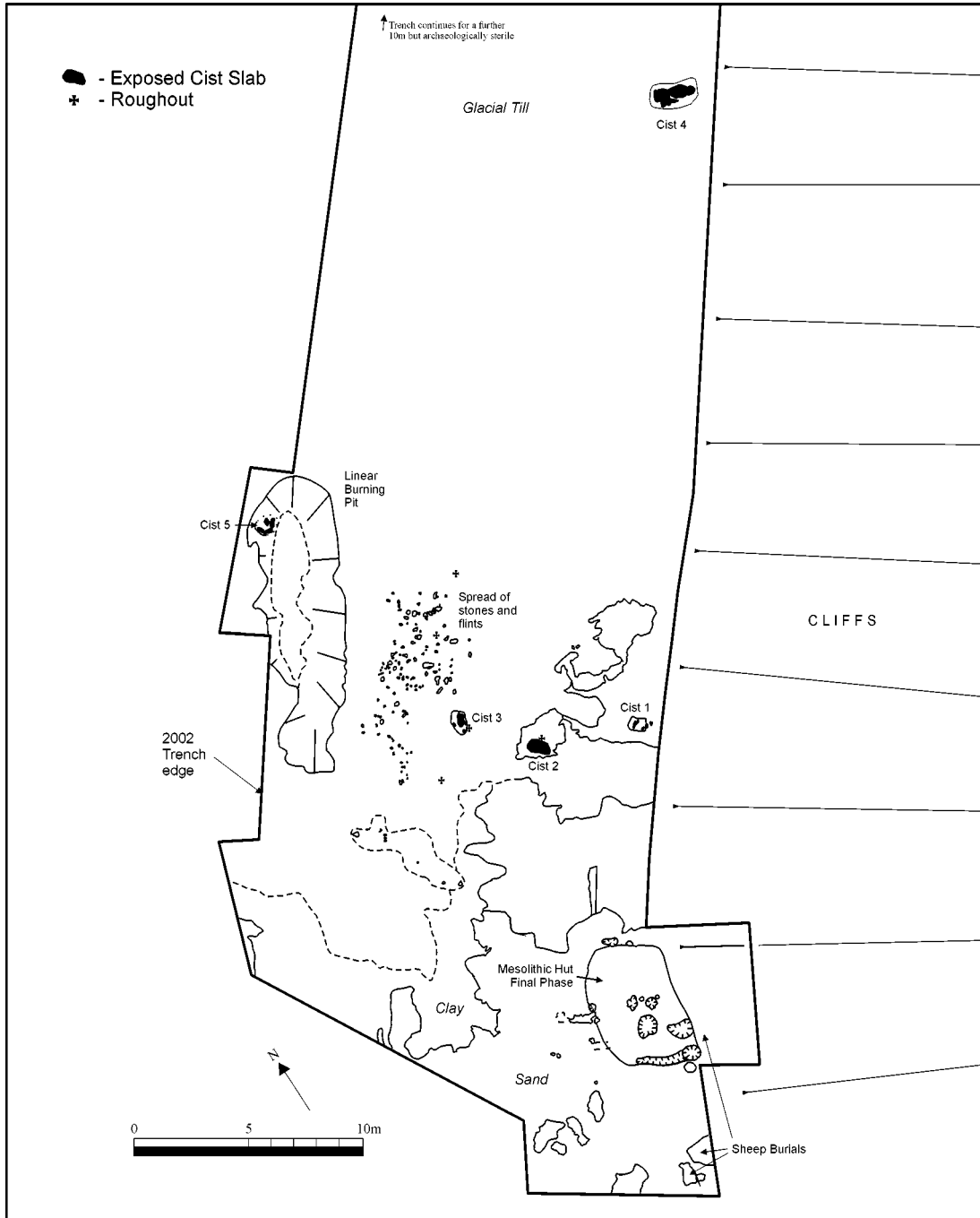


Fig. 3 Excavation Plan.



*Fig. 4 The Mesolithic structure during excavation looking east.*

similar form with generally irregular shapes and profiles. Their spatial proximity to the Mesolithic hut site and their position in a discrete cluster suggests some belong to the Mesolithic phase of activity on the site. Their function is unclear, but they contained occasional flints, charred hazelnuts, charcoal and marine shells suggestive of domestic activity. One of the pits, with a clay-lined base, was truncated around its edges by modern sheep burials; its function is not yet clear and no obvious parallels are known from other coastal Mesolithic sites but it was clearly associated with heating/fire-based activities and the clay may have been included to intensify temperatures.

#### **Cist Cemetery**

A group of five cists were discovered to the north-east of the Mesolithic structure (fig. 5).

All were constructed using the locally available sandstone, with the exception of cist 2 which incorporated some whinstone slabs. Apart from a few remains of what appear to be skull fragments of an infant in cist 2, none of the other cists contained any surviving bone or grave goods. However, some fragments of pottery were found in association with cist 5, though this was in disturbance caused by a later burning pit; one of the sherds was decorated in typical food vessel style. Limestone roughouts or cobbles, probably for axeheads or small battle axes, were found directly on top of, or next to, a number of the cists. Fist-sized lumps of yellow ochre were also found associated with some of the cists. The presence of the smoothed cobbles and ochre provide evidence for some unusual votive deposits associated with cists, at least in relation to the rest of Northumberland. The location of Bronze Age



Fig. 5 Cist 4 during excavation (scale: 2m).

and Mesolithic remains on the same site is not just evidenced at Howick: elsewhere in Northumberland the sites at Low Hauxley (SMR records), Goatscrag (Burgess 1972), Ross Links (Brewis 1928) and Birkside Fell (Tolan-Smith 1997) all had Bronze Age remains found in association with Mesolithic sites.

#### Radiocarbon Dates

Twenty one AMS radiocarbon dates have been obtained from stratified contexts within the Mesolithic structure and a further two from selected depths within one of the sediment cores (Table 1). Additional samples have been submitted, including more from the Mesolithic hut deposits and from the sediment core, and these results are awaited. The current dates indicate that the primary construction of the site dates to *c.* 7800 BC (Cal.) which makes it contemporary with the earliest radiocarbon-dated Mesolithic hunter-gatherer sites elsewhere in

northern Britain. The nearest comparable sites are East Barns at Dunbar (John Gooder pers. comm.), Morton (Coles 1971) and Fife Ness (Wickham-Jones and Dalland 1998) in Fife, Kinloch on Rhum (Wickham-Jones 1990) and the more proximal site at Cramond (Turner 2001). Dunbar, Fife Ness and Kinloch date to the centuries around 8000 BC (Cal.) while Cramond is marginally earlier. The nearby coastal site of Low Hauxley, 13km to the south of Howick, has produced flint artefacts and organic remains from a midden on a buried soil beneath coastal dunes, but appears to be somewhat later, with a reported date of about 6000 BC (Bonsall 1984).

#### FINDS

##### Flint

Around 18,000 flints were recovered from the site overall. The majority of the material is

Table 1 Howick radiocarbon dates. The results are conventional radiocarbon ages (Stuiver and Polach 1977), calibrated using OxCal v3.5 and are quoted in the form recommended by Mook (1986), with the end points rounded outwards to 10 years.

Laboratory Number	Context	Sample	$\delta^{13}\text{C}$ (‰)	Radiocarbon Age (BP)	Calibrated date range (95% confidence)
<b>Mesolithic structure</b>					
OxA-11801	355 hearth	hazelnut shell	-25.7	8734 $\pm$ 37	cal 7960–7600
OxA-11802	357 hearth	hazelnut shell	-25.1	8754 $\pm$ 38	cal 8160–7600
OxA-11803	291 hearth	hazelnut shell	-24.0	8763 $\pm$ 38	cal 8160–7610
OxA-11804	340 hearth	hazelnut shell	-23.8	8802 $\pm$ 38	cal 8200–7680
OxA-11805	47 burnt feature/possible hearth	hazelnut shell	-23.7	8324 $\pm$ 37	cal 7520–7190
AA-41788	47 burnt feature/possible hearth	hazelnut shell	-23.4	8555 $\pm$ 60	cal 7550–7140
OxA-11806	63 burnt feature/possible hearth	hazelnut shell	-23.4	8278 $\pm$ 35	cal 7520–7140
OxA-11807	63 burnt feature/possible hearth	hazelnut shell	-26.6	8233 $\pm$ 36	cal 7450–7080
OxA-11826	173 hearth	hazelnut shell	-23.4	8630 $\pm$ 40	cal 7750–7580
OxA-11827	173 hearth	hazelnut shell	-22.6	8700 $\pm$ 45	cal 7940–7590
OxA-11828	293 hearth	hazelnut shell	-22.8	8785 $\pm$ 45	cal 8200–7650
OxA-11829	293 hearth	hazelnut shell	-23.9	8890 $\pm$ 45	cal 8240–7830
OxA-11830	109 roasting pit	hazelnut shell	-25.2	8715 $\pm$ 50	cal 7960–7590
OxA-11831	109 roasting pit	hazelnut shell	-28.2	8715 $\pm$ 45	cal 7960–7590
OxA-11832	158 hearth/hazelnut pit	hazelnut shell	-25.0	8780 $\pm$ 45	cal 8200–7610
OxA-11853	158 hearth/hazelnut pit	hazelnut shell	-23.1	8790 $\pm$ 45	cal 8200–7650
OxA-11854	268 hearth	hazelnut shell	-23.1	8710 $\pm$ 45	cal 7950–7590
OxA-11855	268 hearth	hazelnut shell	-22.4	8650 $\pm$ 45	cal 7800–7580
OxA-11856	379 hearth	hazelnut shell	-26.5	8785 $\pm$ 45	cal 8200–7650
OxA-11857	379 hearth	hazelnut shell	-23.6	8750 $\pm$ 45	cal 8160–7600
Beta-153650	51 post hole fill	hazelnut shell	-26.1	8730 $\pm$ 40	cal 7960–7600
<b>Sediment sequence</b>					
AA-45401	HOW4–439 core at 4.39m depth	hazel or willow	-27.3	6595 $\pm$ 55	cal 5630–5470
AA-45402	HOW4–720 core at 7.20m depth	hazelnut shell	-26.3	6865 $\pm$ 55	cal 5850–5630



micro-debitage but also includes blanks, unmodified flakes, nodules and bashed lumps (test pieces) as well as a wide variety of cores and tools. This indicates that stone tool production was an important activity and that both primary and secondary working of flint took place on the site. The cores include diagnostic single platform blade cores, multi-platform cores and opposed platform cores. The flake scars indicate that production of narrow blades including microlithic forms was a primary end-product; these are characteristic of later Mesolithic industries elsewhere in the British Isles. Occasional bi-polar cores were also present together with some flakes produced by this method. A number of imported stones found on the site could, perhaps, have been used as anvils on which to produce the counter shocks for bi-polar flaking.

A wide range of tools is present in the assemblage including scrapers, awls, microliths, some blades with probable burin removals, and a variety of retouched and edge-trimmed flakes and blades. Many of the latter are broken and cannot therefore be more precisely categorised, although they probably include scrapers, knives and awls. The microliths are predominantly scalene triangles and backed blades although other types, including crescents, are present. The scrapers include classic 'tiny' scrapers as well as more substantial scrapers made on blades including end scrapers. The range of tool types suggests a wider variety of tasks than is thought to be the case at sites such as Fife Ness, where only one or two types of microlith were present (Wickham-Jones and Dalland 1998).

The raw material is dominated by flint with only occasional pieces of chipped quartz, chert and agate. Of the material that could be sourced, most was of locally-available beach pebble flint that can be picked up in quantity on the beach today. This reliance on locally available material to make the usual range of Mesolithic tool types indicates that acquisition of workable stone was ordered around a localised supply strategy without any need for importing exotic stone.

### **Marine Molluscs**

Most of the mollusc material came from the ploughzone above the structural remains and was in good condition. This raises the question of whether this material is in fact contemporary with the Mesolithic settlement or whether it had arrived on the site as a result of other, later, processes such as manuring the fields with seaweed. This question will be explored further as analysis continues.

Of all the molluscs in the assemblage dogwhelks are by far the most common species. Though it is generally thought that dogwhelks are not edible, tastes can change through time and they should not be completely ruled out as a food. If they were collected for this purpose, they were probably boiled, steamed or heated to facilitate extraction of the flesh. Alternatively, however, empty dogwhelk shells are sometimes inhabited by hermit crabs which could have been used as fish bait. Hermit crabs tend to be found in worn shells and the majority of the Howick dogwhelks recovered were worn; it is difficult however to be sure whether they were collected in this state or whether they were worn due to post-depositional factors. Dogwhelks can also be used to create purple dye but extremely large numbers are needed for this process; this explanation for their collection at the site can therefore be rejected. Limpets and the edible periwinkle are well known edible species, though both are poorly represented in the current assemblage. It is however interesting to note that the limpets found are small, and that their relatively flat morphology, suggests they have come from near the low tide limit; both features suggest careful selection of the more succulent shellfish since larger limpets are more tough and rubbery.

The other mollusc species (flat and rough periwinkle, topshell and cowrie) are all very small shellfish and are unlikely to have been collected for food consumption, especially such species as cowrie. It is possible that these small molluscs may have been collected for ornamentation: evidence for this function has come from several, slightly later, Mesolithic sites on

the west coast of Scotland, such as the shell middens on Oronsay (Simpson 1996).

Most of the shellfish are rocky shore species that can be found on the modern beach below the site, and this suggests that the mollusc habitats available on the Mesolithic shoreline were similar to the present day. The present day beach, however, is dominated by limpets and periwinkles, and it is not yet clear whether the dominance of dogwhelks in the archaeological assemblage reflects differences in past intertidal ecology, or selectivity on the part of the prehistoric shell gatherers (cf. Shackleton 1988).

## ENVIRONMENTAL ANALYSES

Preliminary examination of the site and its environs included sampling of the soils and the extraction of sediment cores from the valley floor of the Howick Burn for assessment of microscopic plant and animal remains and pollen.

### Palaeogeography

At the time when the site was occupied in the Mesolithic period, sea level would have been lower than present, and the shoreline would have been more distant with a narrow intervening coastal plain. The record of global ice volumes and eustatic sea-level variation indicates that sea level was still rising quite rapidly in response to the final stages of deglaciation between 10,000 and 6,000 BP (Pirazzoli 1996). Sea level was around 4.5m lower than today at the time of occupation, indicating a shoreline perhaps a few hundred metres distant from the site. However, translating sea-level data into local shoreline positions using bathymetric contours is enormously complicated by tectonic deformation of the earth's crust, more localised effects of glacio-isostatic and hydro-isostatic rebound, and accumulation or erosion of sea-bottom sediments, especially when we turn to the wider reconstruction of the North Sea basin.

The last 3000 years of sea level rise, though modest on the global scale, and relatively slight in their impact on the immediate landscape setting of Howick, dramatically transformed the North Sea Basin. Recent modelling of isostatic effects and dating of submerged peats has given greater precision to reconstructions of the North Sea basin (Lambeck 1995, Shennan *et al.* 2000a, 2000b) and make it possible to plot in broad outline the ancient coastline at 1000 year intervals (fig. 6). Much of the North Sea was still dry land when Howick was occupied, and the coastline, though relatively close to the present position in Northumberland, swung eastwards to create a vast lowland plain extending across the North Sea to Denmark. The successive stages in the transformation and inundation of this landscape are critical to our understanding of Howick and indeed the wider pattern of Mesolithic settlement in the British Isles.

A growing realisation that extensive and often highly productive areas of land have been drowned by the late glacial sea level rise has prompted renewed interest and optimism in the possibilities of identifying traces of now-submerged landscapes, palaeo-shorelines and archaeological settlements (Coles 1998; Fischer 1995). Buried peat deposits, representing an earlier land surface, have been reported beneath the sands in the bay below Howick, comparable to evidence reported at intervals on other parts of the Northumberland coastline (Bradley *et al.* 1997; Shennan *et al.* 2000b). These offer further opportunities for palaeoenvironmental reconstruction and a potential basis from which to probe further out into the subtidal zone and offshore for evidence of earlier land surfaces and shorelines.

### Howick Burn sediments

Preliminary coring in the incised river valley immediately to the south of the excavation has yielded 8m of fine-grained sedimentary deposits beneath the valley floor; these contain molluscan and plant microfossil remains as well as microfossil assemblages (including ostracods,

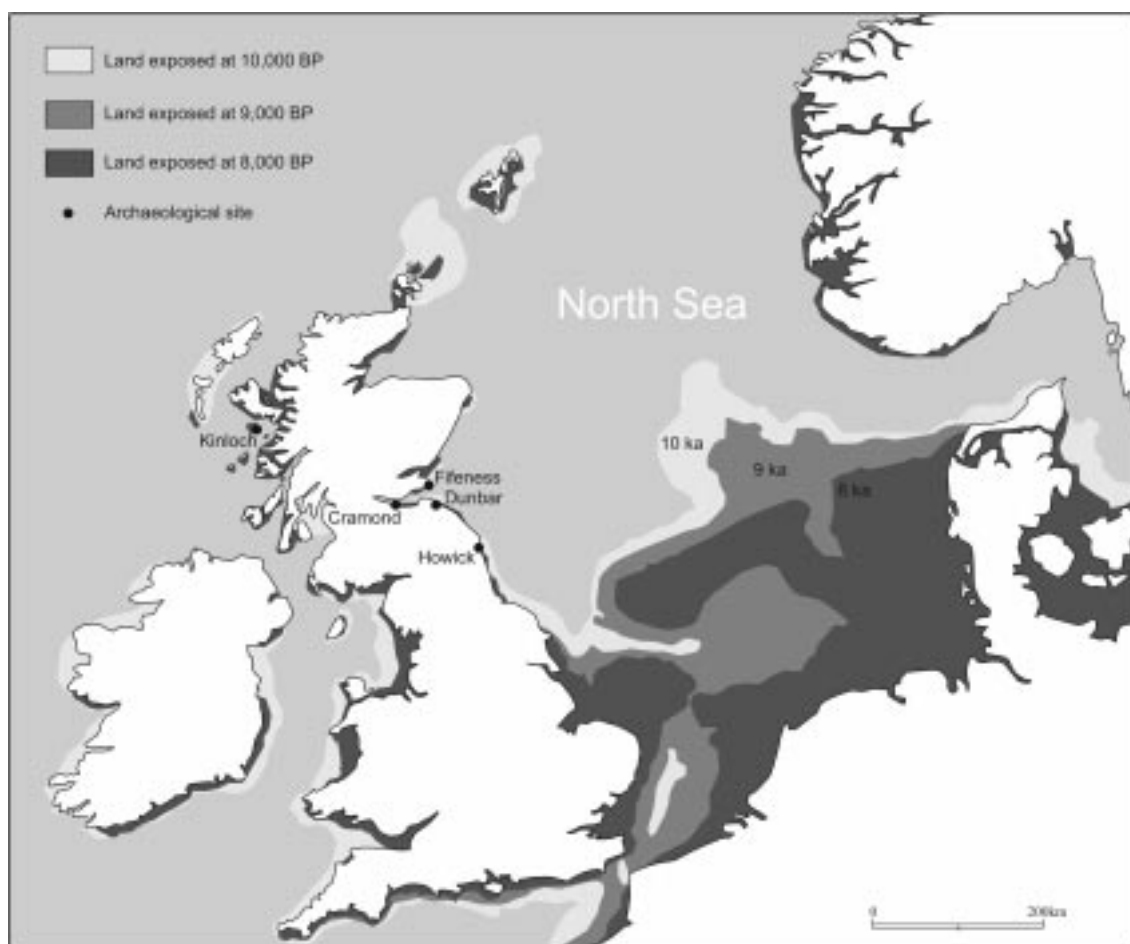


Fig. 6 Ancient coastline of the British Isles at 1000 year intervals, after Shennan *et al.* (2000b). The dates are uncalibrated radiocarbon years before present.

foraminifera, diatoms and pollen). The sediments are predominantly blue-grey to grey-green silt or sandy-silt with occasional sand laminae (usually less than 10mm thick). The fine particle size of these sediments indicates that they were deposited in a relatively low-energy stream environment with occasional storm surges represented by the more coarse-grained sand layers. Analysis of the pollen profile from the sediment core is in progress and this will allow the local vegetation sequence around the burn to be reconstructed for the entire prehistoric period.

Radiocarbon dates from plant material samples (Table 1) indicate that the sediments between 7 and 4m deep were deposited during the mid-Holocene (*c.* 5850–5470 BC). Deeper sediment samples have also been acquired and new dates are awaited on this core. Analysis of these cores should provide an important archive for analysis of palaeoenvironmental change along this coast at a time when relative sea-level was rising rapidly – approximately 1m per 1000 years, (Shennan *et al.*, 2000a). Relative sea-level reached a maximum level 1m higher than present at about 4000 BP which is the

approximate age of the Bronze Age cist cemetery. The biological records reflect this change in local sea-level with the lower part of the core indicating brackish water conditions, while the upper part was deposited under freshwater conditions.

### Soils

The soil over much of the site belongs to the Wilsford Series (Payton and Palmer 1989) comprising a typical brown sand found on wind-blown sand parent material. The parent wind-blown sand contains carbonate-rich shell sand and this, in combination with alkaline influence from the sea, would help to slow down the formation of acid soils along the coastline. Therefore these soils should have a weak acid to alkaline pH and thus favour the survival of organic materials such as bone. The surveyed soils show evidence for a slightly acid soil though as witnessed by the presence of iron movement in the form of common reddened mottles. Water retention may be a problem in these soils, especially under the conditions that probably prevailed in the early postglacial, when more extensive woodland would have resulted in extra transpiration and interception. However, such properties would have meant that the ground selected for the Mesolithic settlement would remain dry even in times of excessive rainfall.

### CONCLUSIONS

The investigations at Howick have revealed evidence for a well-preserved Mesolithic coastal settlement that has considerable potential to throw light on issues of wider North-West European significance and interest. Our preliminary conclusions are as follows:

- Sub-surface anomalies representing Mesolithic features can be detected by non-intrusive geophysical survey, and suggest that this technique has a wider role to play in investigations of Mesolithic archaeology in this type of coastal setting.
- The Howick Mesolithic settlement site dates from *c.* 7800 BC (Cal.) and thus adds to a growing picture of early coastal settlement at this time in northern Britain.
- The flint industry attested at the site is a typical late Mesolithic narrow-blade industry with a range of artefact types, made on locally available raw material.
- Charred organic remains were preserved and include shells of hazelnuts and marine molluscs, the latter collected as either decoration, food or bait for fishing.
- Bone was poorly preserved and fragmentary because of the soil pH, but a number of identifiable pieces of burnt bone were present and include wild boar, fox, and a canid – either wolf or a domestic dog.
- The complexity of the Mesolithic settlement, its robust structural form, the lack of any observable hiatus in the stratigraphy and successive rebuilding of the site strongly suggest permanent or semi-permanent occupation of this site over many years. This degree of permanence has not previously been documented for the Mesolithic and it challenges traditional models of Mesolithic settlement organisation. The precise duration of occupation at the site will hopefully be clarified by the results of the radiocarbon dating programme.
- The local fluvial sedimentary sequence revealed excellent conditions of organic preservation and is allowing for the reconstruction of the wider environmental setting and history of the site, and its relationship to the palaeogeographical transformation of the North Sea basin by rising sea level

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