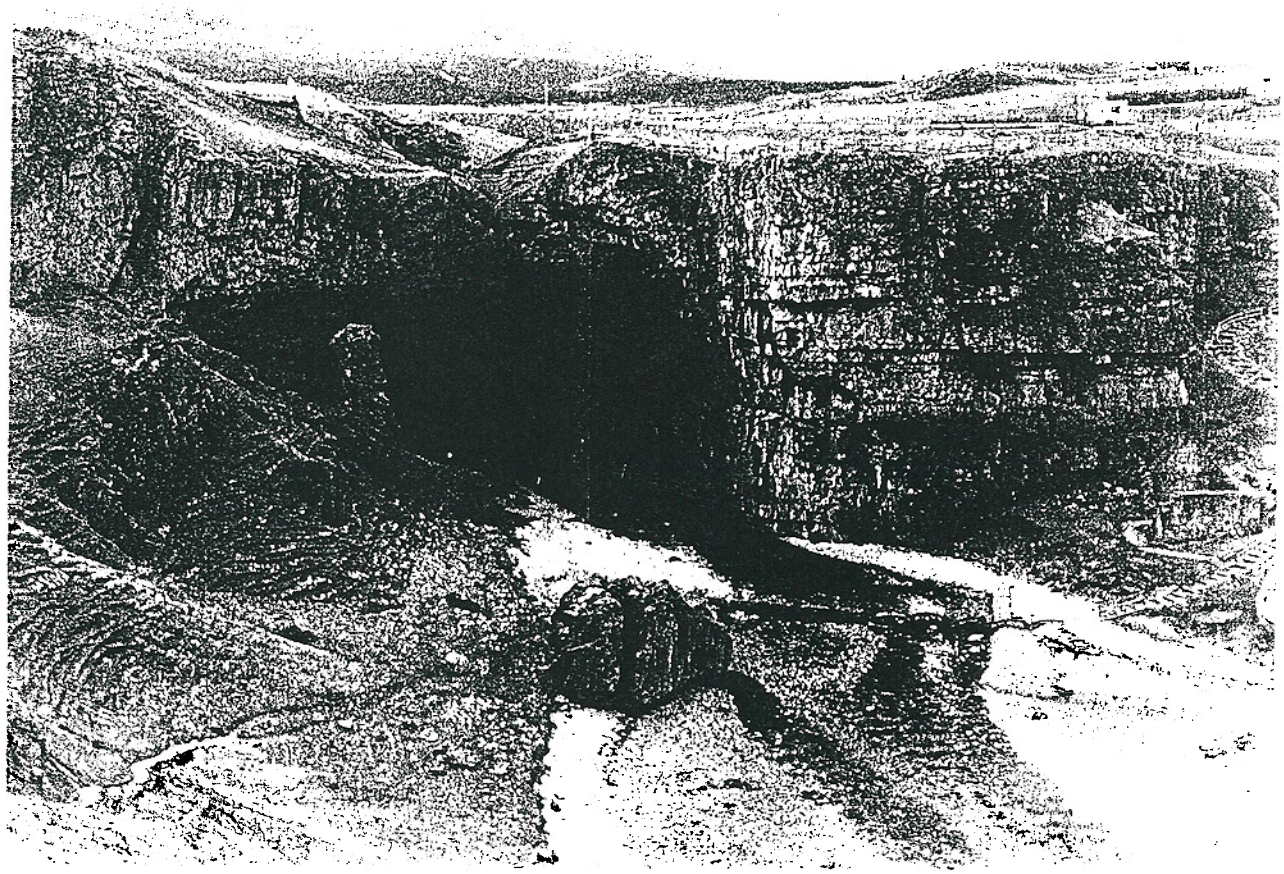
SMOO CAVE



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Archaeological excavation of Smoo Cave, Sutherland for Caithness and Sutherland Enterprise, carried out by

Glasgow University Archaeological Research Division

Contents

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SMOO CAVE

by

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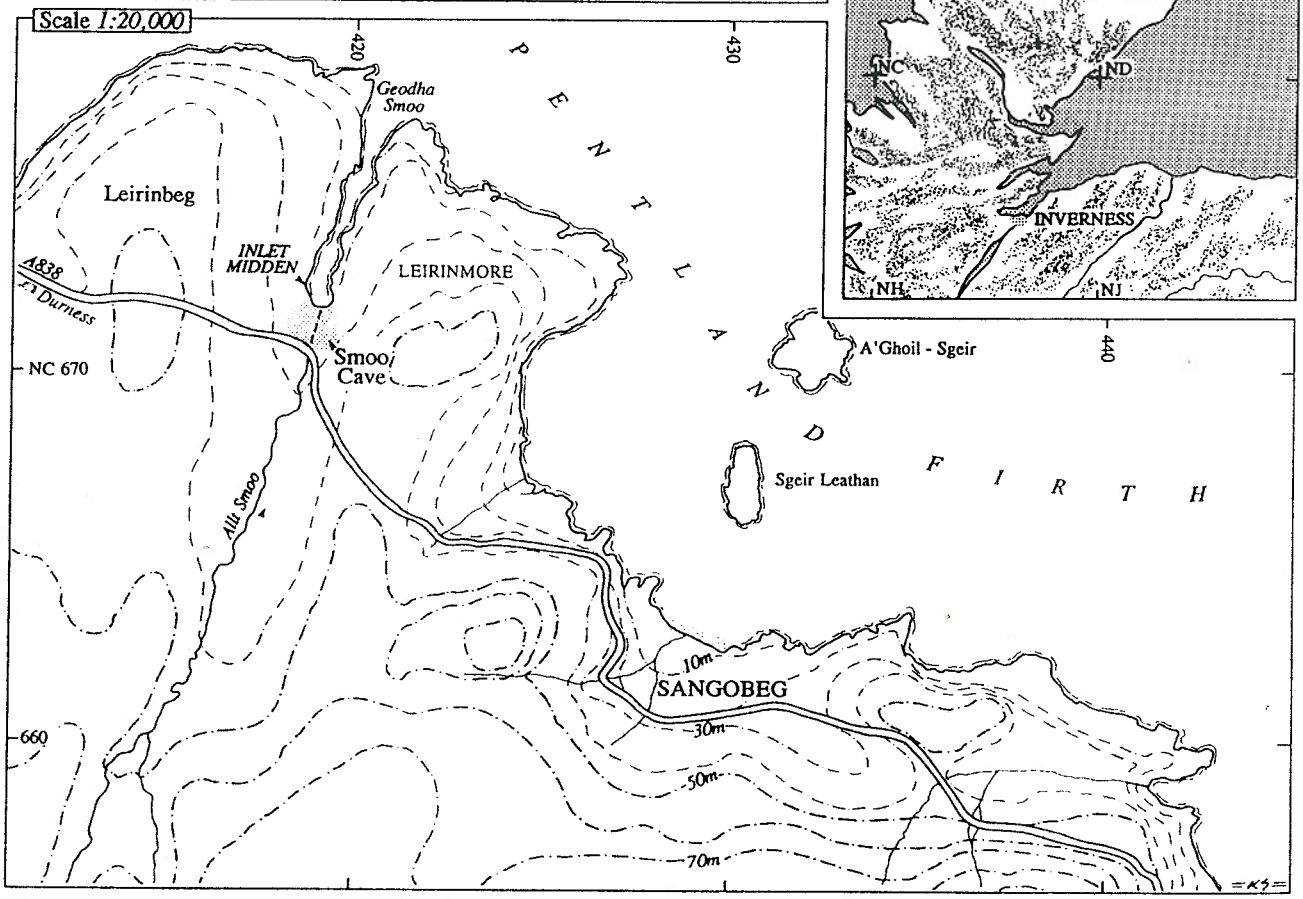
1992

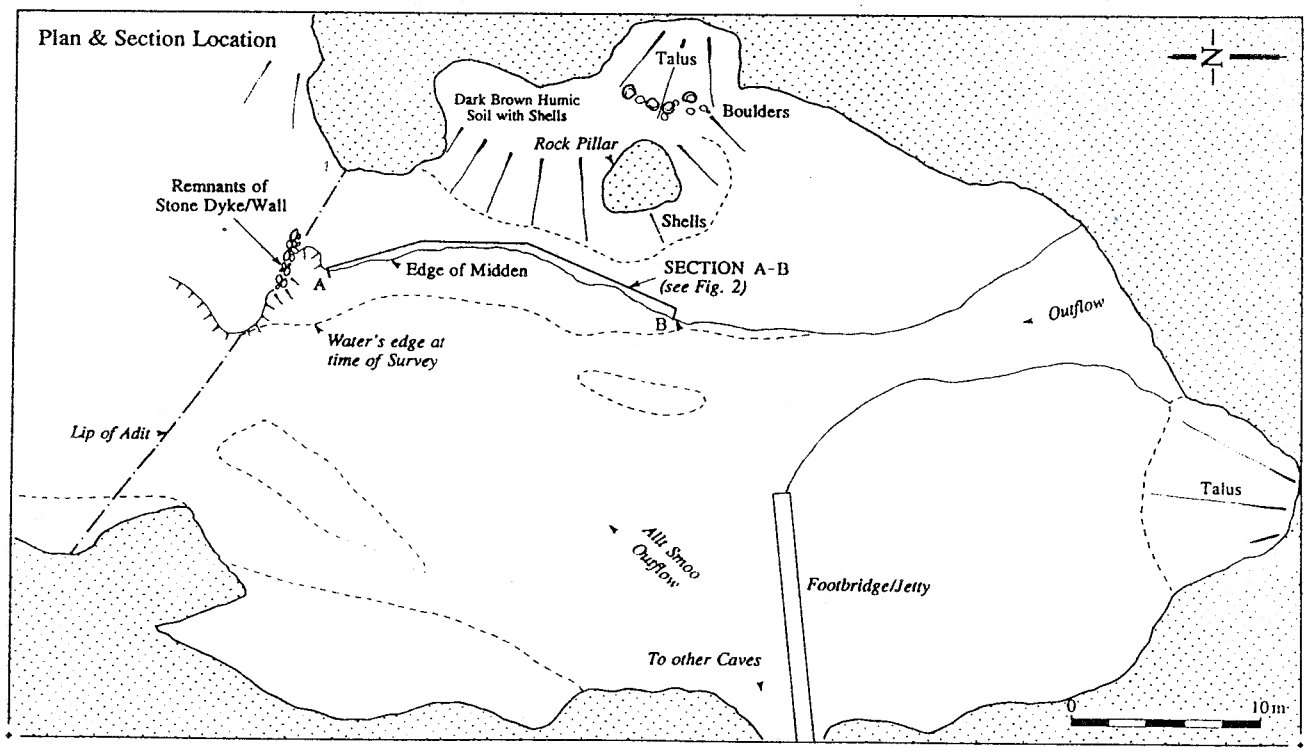
GLASGOW UNIVERSITY ARCHAEOLOGICAL RESEARCH DIVISION
Glasgow

G.U.A.R.D 60

SMOO CAVE

near Durness, Sutherland





Summary

The cutting back and recording of an eroding shell midden section in Smoo Cave, Sutherland, resulted in the identification of several occupation/activity horizons. The shell midden, the earliest phases of which appeared to be Iron Age, represented the latest phase of this activity. The earliest deposits, which are substantially lower than the present cave floor, may represent Mesolithic activity within the cave. The investigation also brought to light a further shell midden deposit located in a former cave some 50m to the north-west of Smoo Cave.

1. Introduction

Figure 1 (facing): Location map of Smoo Cave near Durness, Sutherland.

GUARD were contracted by Caithness and Sutherland Enterprise to carry out the archaeological investigation of an eroding shell midden in Smoo Cave, Sutherland, prior to the construction of a protective wall. This work involved the cutting back, sampling and recording of the eroding section and was carried out by Tony Pollard (GUARD) and Dorothy Low (Highland Regional Council, Assistant Archaeologist) between the 2nd and 6th of March 1992.

2. Site location

Smoo Cave (NC 41386714) is situated at the head of a narrow inlet (Geodha Smoo) which runs inland for some 600m from the northern coast of Durness, Sutherland. The main cave, which is of impressive dimensions (approx 33m wide by 48m deep), has been carved into the local limestone by successive episodes of high sea level over the past several hundred thousand years. This marine cavern is situated adjacent to a series of smaller fresh water caves, cut by the Allt Smoo as it found its way to the sea. The scouring action of the river has joined the caves and it is this same erosive capacity which has necessitated the present archaeological work.

A stone causeway (fig 1), constructed several years ago to facilitate passage from the main cave to the smaller caves, has inadvertently diverted the course of the Allt

Smoo so that during times of heavy rain it now flows directly alongside a shell midden situated within the mouth of the cave at its eastern side. The erosive action of the river has exposed the midden face and over the last several years has removed at least two metres of the deposit. It was therefore decided to construct a revetting wall against the cut-back face of the midden to prevent further erosion.

3. *The nature and extent of the archaeology*

This project is the first systematic archaeological investigation to be carried out in Smoo Cave. What few references there are to the site come in the main from Ordnance Survey records and a short entry in *Discovery and Excavation in Scotland* (Keillar 1972: 41).

The reference for the site in the Highland Region Sites and Monuments Record gives the dimensions of the midden as: 3.0m in diameter by 0.2m high. Cursory examination of the site soon established that this was a considerable underestimate of the scale of the deposits. The exposed midden face which was recorded and cut back during this work was found to extend southwards into the cave for some 17m, with deposits possibly several metres in depth stretching back for at least 8m towards the eastern wall of the cave.

The area defined by a natural pillar in the north-eastern quarter and a small recess in the northern curve of the cave wall (fig 1) is occupied by a flat topped mound which rises for well over a metre above the top of the eroding section. Marine shells could be seen eroding from the humic soil which covers this mound, and a sondage rapidly excavated on its top and western slope soon established that archaeological deposits, consisting of shells and areas of burning, were situated some 30cm below the surface. It also became apparent, following an initial cleaning back of the section, that the shell midden was not the only evidence for archaeological activity within the cave; deposits below the shell midden provided convincing evidence for several occupation horizons.

The first phase of this project was to carry out a

theodolite survey of the main cave, incorporating the position and visible extent of the midden deposits on the plan produced (fig. 1). Time constraints did not permit a full assessment of the midden's true extent as this would have involved extensive trial trenching. However, it was possible, from the presence of marine shells eroding onto the cave floor, to estimate the limits of the deposits, which appear to roughly correspond with the extent of the mound.

It was immediately apparent that the threatened section was in a seriously denuded state. Recently collapsed portions of the midden face could be seen covering the narrow pebble beach, which at the time separated the midden from the river. However, during the course of the work, with several days of only moderate rain, this water level rose dramatically. At its highest point the river could be seen to run directly along the base of the section, totally inundating the pebble beach.

4. The section

4.1. Recording procedure

In order to gain an initial impression of the nature and extent of the deposits the eroding face was quickly cleaned and drawn, removing as little material as possible at this stage. This initial section drawing is not reproduced here in its entirety, as in many respects it closely resembles the final cut-back drawing. However, there are several features which were present in the initial section in an extremely denuded state but did not survive a further trowelling, thus providing further evidence of the destructive capacity of the river. These ephemeral features included a cut pit (015), which may have been a posthole, and the last remnants of a possible hearth (012), both of which are shown on a detail of the initial section (fig 2).

With the completion of the initial section drawing the process of cutting back the face could begin. In order to accommodate the revetting wall, while at the same time removing as little material as possible, the section face was cut back on 3 planes (fig 1).

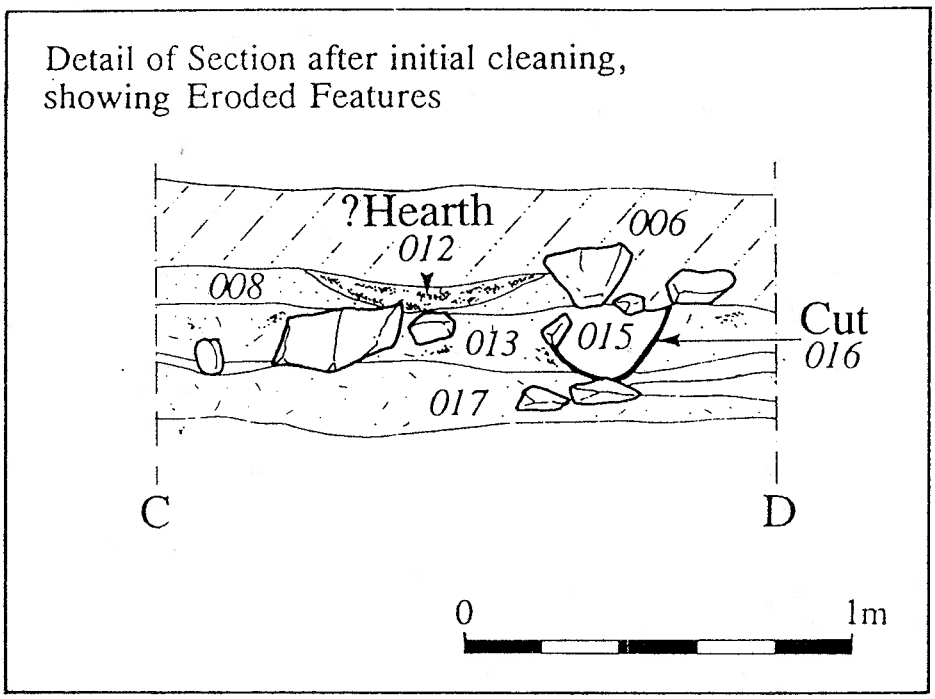


Figure 2: Detail of section after initial cleaning.

4.2. *The deposits*

A full context list can be found in the appendix of this report.

The following description gives a summary of the deposits and outlines the nature of the archaeological episodes represented in the section.

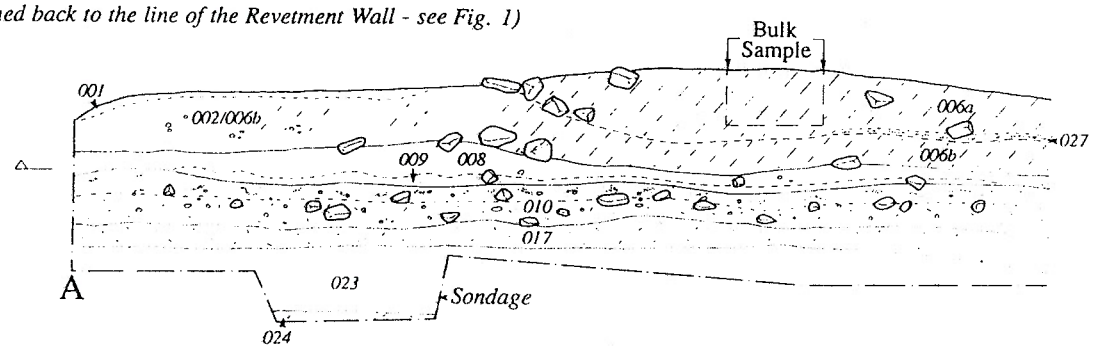
Only the uppermost deposits within the section (006A and 006B) display attributes consistent with shell middens. These layers consist of large numbers of shells in a matrix of dark, organic rich sandy soil. The upper layer (006A) consists of shells (mostly limpets and winkles) within a dark brown sandy matrix and is for most of its length c.20-30cm deep. However, towards the northern end of the section, that is towards point A, this deposit is considerably deeper, up to 40cm, and in the initial section there was some suggestion of a cut pit which had been filled with shells. Again, this feature did not survive more than the initial clean, but after the section had been cut back the northern side of this cut was still evident and can be seen in fig. 1 where the upper deposit rises to the surface.

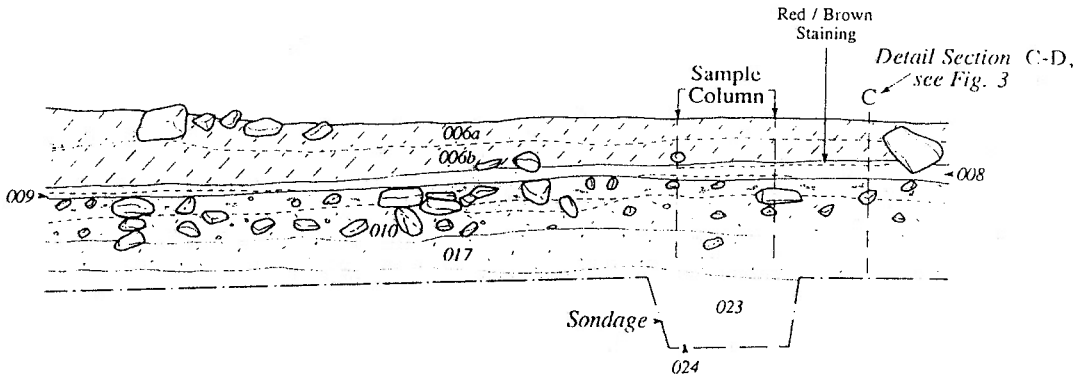
Figure 3: Section through the Midden and Occupation deposits.

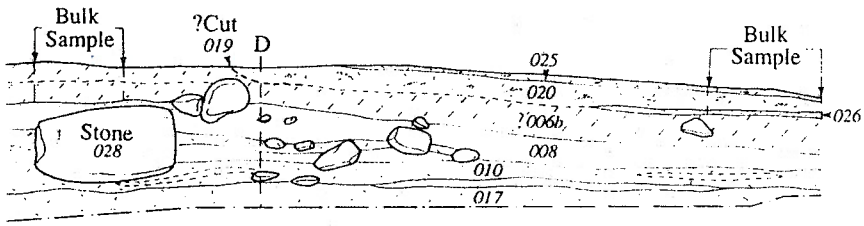
SMOO CAVE

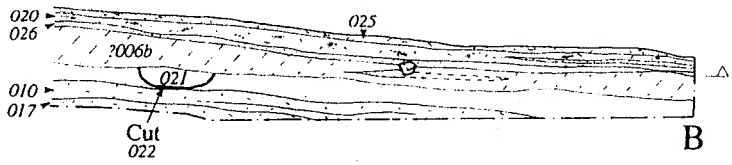
Section through the Midden & Occupation deposits

(cleaned back to the line of the Revetment Wall - see Fig. 1)









Key

Charcoal

Stained Sand

Shell Midden

Clean Sand

0 2m

Underlying 006A is another shell midden layer (006B) which on initial cleaning appeared to be the same as 006A. However, when it came to removing samples it became apparent that due to a higher charcoal content the matrix was considerably darker than that above. Layer 006B therefore appears to represent a phase of deposition distinct from that represented by 006A. This conclusion is strengthened by the presence, towards the northern end of the section, of a thin charcoal rich layer (027), apparently devoid of shells, which overlies 006B and underlies 006A, thus separating these two events.

The upper layer of the shell midden (006A) can be seen to terminate towards the southern end of the section. Beyond this point, marked by a possible cut into the upper surface (019), a deposit of dark greasy soil, containing butchered animal bone, was noted, which in turn was overlain by a thin spread of a similar nature but with a higher charcoal content.

Immediately below 006B was a deposit of reasonably clean yellow sand which has at some point in the past been deposited by wave action during marine inundation of the cave. Such inundations are still a regular occurrence, with northerly winds and Spring tides, making it difficult to establish exactly when or for how long this inundation or series of inundations took place. Immediately below 008, though not visible throughout the entire section, is a thin band of grey sand which may have been stained as a result of human activity, which is more obvious in the layer immediately below it.

A hearth or firepit (021), which was extremely rich in charcoal, was located towards the southern end of the section. This sat in a cut (022) in the sand layer below 006. It thus appears to represent activity on the sandy surface (008) prior to the laying down of the shell midden deposits which overlie it. The thin bands of washed sand, including 026, which were observed in the southern portion of the section are more likely to represent riverine deposition (by the Allt Smoo) than marine inundation.

Situated immediately below 008 and 009 (where it is visible) is a deposit of water rolled and fractured stones with some gravel and pebbles. The majority of these stones most probably represent a natural beach surface,

with the stones being smoothed and rounded by the action of the waves. However, this beach surface has witnessed extensive human activity, as evidenced by layers of dark humic sandy soil and the frequent appearance of charcoal. Discolouration caused by human occupation is most obvious in the upper part of 010, but there are also clear archaeological horizons in its lower levels. Artefactual material, such as butchered bones and worked stones, was found throughout this deposit. Marine shells were present but in nowhere near the numbers present in 006.

Some of the larger stones in 010, including 028, may represent structural features, but it was not possible to substantiate this from the section alone. However, it is interesting to note that the possible posthole (016), which was visible only in the initial section, was actually situated alongside the large stone (028), which only became visible once the section was cut back. The close proximity of these two elements does strengthen the case for the large stone being a structural element, perhaps part of a wall.

The lower levels of 010 could be seen to merge with a substantial deposit of layered sands, again representing successive episodes of marine inundation. The upper levels of these sands were heavily stained and contained both charcoal and butchered animal bone, again providing clear evidence for human activity.

In order that the true depth of deposits could be ascertained two small sondage pits were dug along the base of the section (fig 2). These revealed a layer of clean marine sand (023) some 65-80cm deep lying below 017, thus representing a period when no obvious human activity had taken place in this part of the cave. Excavation of these sondages was terminated as they came onto a surface which provided evidence for what could be the earliest phase of human activity on the site (time did not permit excavation below this level). This evidence took the form of pieces of quartz, possibly chipped by human action, butchered animal bones and flecks of charcoal. This material lay on the upper surface of a deposit of heavily stained marine sand.

4.3. *Summary and interpretation*

The cleaning back and recording of the eroding section has revealed considerable evidence for sequential phases of human activity.

Excavation of the sondages terminated on an archaeological surface which provides evidence for the earliest known human activity in the cave, at a time when the cave floor was substantially lower than today. Unless the sea level was considerably lower than at present, marine inundation would have been a more common occurrence at the time of this activity than it is today. The substantial deposit of clean marine sand overlying 024 was deposited over an unknown period of time by these incursions of the sea. Without dates or diagnostic artefactual material it is not possible to say during which period of time these deposits were laid down.

Despite these reservations, a case can be made for these deposits being of considerable age, perhaps corresponding to the last period of low sea levels, which took place immediately after the last Ice Age. Due to the rapid recovery of the land following the retreat of the ice sheets, between around 9,000 and 7,500 BC, sea levels were considerably lower than those of today. If the archaeological horizon present on 024 does date from this period it would represent the most northerly extent of early Mesolithic activity so far known in Britain. If this were the case then the extensive deposit of washed sand (023) which lies above the archaeological horizon would correspond to marine inundation during the major post-glacial transgression which took place from around 7,500 to 4,000 BC.

It must be emphasised that such a suggestion is, without the benefit of radiocarbon dates, purely hypothetical, and is weakened by the fact that lower deposits would be more susceptible to marine inundation, no matter what the period. Indeed, it is feasible that rather than being the result of a major transgression lasting several thousand years, the 60-85cm depth of washed sand (023) in fact represents the depositional action of temporary inundations over several decades. Whatever the case, the presence of this archaeological horizon below the present floor of the cave does bode well for the survival of archae-

ological deposits of an early date throughout the cave.

Above the deposit of marine sands (023) which overlies 024 there is another horizon of human activity (017). This is evidenced by the charcoal and animal bone deposited within a heavily stained sandy matrix. Sitting directly on top of this layer is another horizon which clearly represents occupation of the cave (010), with an abundance of charcoal, animal bone and the possibility of stone structural elements within what otherwise appears to be a stony beach deposit.

The next clear archaeological horizon is the shell midden (006B) which appears to have a later phase (006A). The earliest elements of this deposit appear to have been formed no earlier than the Iron Age, as suggested by a possible iron fibula found towards the southern end of the section. Activity related to the shell midden may have continued into the Norse or even Medieval periods (as suggested by the bronze stud described in section 5). A small fragment of hand made pottery and various iron nails and rivets were also recovered from the shell midden layers.

The presence of 4 main archaeological horizons must be seen as a simplified breakdown of the stratigraphy. The real picture is likely to be a great deal more complicated, with various layers separated by thin washes of both clean and stained sands, the discolouration of the latter probably being the result of human activity. With only the section being recorded, and prior to the examination of the samples, it is very difficult to make a more concise interpretation of these deposits.

At present it is enough to say that the archaeological deposits are of considerable extent and hold the potential to cast light on human activity in the cave which may have taken place over several thousand years.

5. Sampling

In order to obtain a clearer impression of the nature of past human activity in the cave various samples were taken from the deposits while the section was being cut

back to accommodate the wall. A full list of the samples taken can be found in the appendix and the main sample points are marked on figure 2. As yet these samples have not been fully processed or examined. This task, which is vital to the understanding of the site, will be conducted as part of the post-excavation analysis. However, cursory examination of a sample from the shell midden deposit (006) has established the rich nature of the evidence which these samples contain. A small amount of material was removed from a bag of 006 in order that some estimate could be made of the nature of the shell-fish assemblage. While quickly sorting this material various interesting items came to light. These included fish and mammal bones, chipped pieces of quartz and most interestingly a very small and finely cast piece of bronze. This probably represents a rivet cover or belt stud and may be Medieval in date.

6. The inlet midden

Cursory examination of the rest of the cave and its immediate environs brought to light the presence of a further shell midden. This site is located some 50m to the north-west of the main cave entrance (fig 1). The deposits are situated in a former marine cave cut into the western side of the inlet, much of which has collapsed. The talus formed by the former cave roof is clearly visible in the section (fig.4). Like the deposits found in Smoo Cave this site has undergone serious erosion, this time marine in nature. The upper tidal limit lies not far below the site, and the section must be regularly washed by high tides and wind driven waves. The deposits here are of considerable extent, the eroding section being some 9m long and around 2.5m deep. The section reveals several deposits rich in marine shells and butchered animal bone, and may represent activities similar to those evidenced in Smoo Cave.

Since the completion of this assessment, a quern stone has been found eroding from this section (by Dr Richard Hingley of Historic Scotland), thus emphasising its archaeological importance and the threat posed by the continual damage caused by the sea. It is strongly recom-

mended that this site is investigated before it is totally lost to the sea. A proposal for this work has been submitted as a separate document.

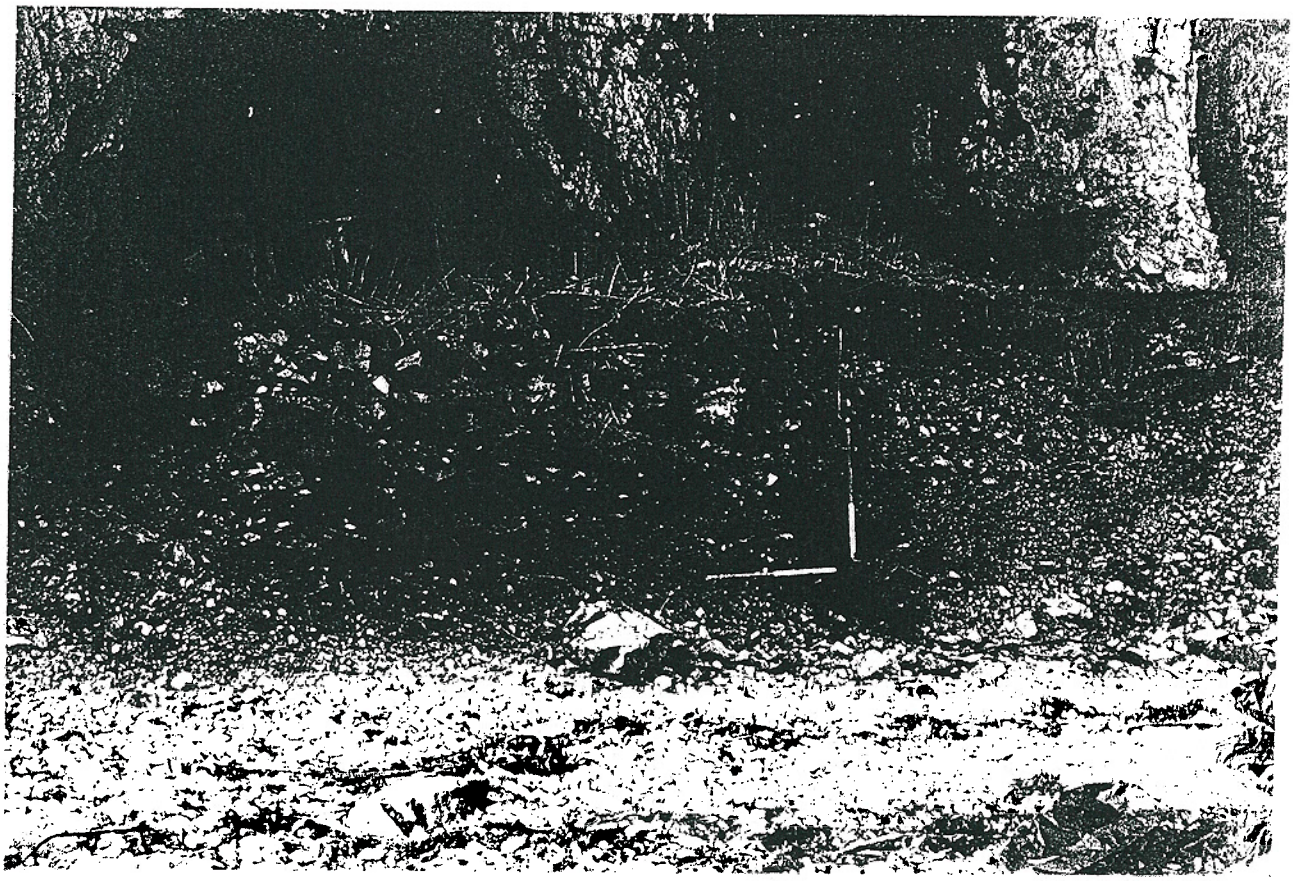


Figure 4: The inlet midden taken from the east.

7. Conclusions

The archaeological deposits recorded in and around Smoo Cave are clearly of a substantial nature and contain a valuable source of evidence for multi-period occupation in a region where archaeological investigations have been few and far between. Due to the small scale of the present investigation work and in the absence of the results of the sample analysis, the conclusions which can be drawn are of course limited.

The earlier phases of activity are intriguing and potentially of great interest, particularly with the possibility of Mesolithic levels. Under the limitations of the present

work the major contribution as far as this material is concerned could be the identification of the most northerly site of Mesolithic activity in mainland Scotland, attempting any interpretation beyond such a statement would certainly be asking too much of the present evidence.

Much more can be expected of the later evidence, which at Smoo Cave manifests itself in the form of a shell midden. Iron Age shell middens are a common feature along the coastline of northern Scotland (e.g. Freswick Links, Caithness and Culbin Sands, Moray) and since the time of their initial identification in the 19th century, when they were known as kitchen middens, their form and function have intrigued archaeologists. As sites, shell middens are distinct from brochs, duns and the various other forms of dwelling usually equated with later settlement. Even today they remain enigmatic, in as much as their role within the social framework of settlement and economy, most obviously represented by those more commonly discussed types of site, is still not fully understood.

The clarification of the role of these sites must be regarded as an issue central to our further understanding of society and economy in the Iron Age of northern Scotland. The investigations at Smoo Cave will provide the ideal opportunity to make considerable advances within this field.

There are various interpretations which can be applied to the Smoo Cave site, each of which is equally applicable to many of the other similar sites. These can be summarised as:

i) The Smoo Cave shell midden represents a site from which Iron Age communities, whose settlement existed nearby, carried out activities such as shellfish collection and fishing, which, though specialised, were fully integrated within a mixed agricultural economy.

ii) The Smoo Cave shell midden represents a temporary breakdown, for whatever reason, in the existing pattern of agricultural subsistence, when less nutritious resources, such as shellfish, had to be fully exploited in order to make up the short fall

iii) The Smoo Cave shell midden represents a more permanent type of settlement, one which is distinct from those already mentioned. Such a scenario may suggest the presence of a portion of the population which, by choice or necessity, did not fully participate in an agricultural economy, nor did it lay claim to parcels of the landscape, which today can be seen packaged within the remains of field dykes and settlement systems.

Only when supplemented with the careful analysis of the recovered samples can we hope to approach a more specific interpretation. It is then that the present course of work will make its full contribution, not only to our understanding of the archaeology of the area in and around Smoo Cave, but also to our knowledge of the settlement and exploitation of coastal and marginal regions in general.

8. Post-Ex Research design for the Smoo Cave material

8.1. Potential of the samples

The recovered samples provide the ideal opportunity to assess the nature of subsistence strategies practised by those communities responsible for the build up of these deposits. Analysis of the marine shells and butchered animal bones will allow an insight into the types of animals exploited and the subsistence strategies into which these various dietary components were integrated. For instance, the apparently large number of fish bones present in the shell midden deposits indicates that fishing played an important role in the economy of those people living around Smoo Cave. The apparent importance of fishing may in turn suggest that the many shell-fish were collected not primarily for human consumption, but to be used as bait in the line fishing of large fish such as cod.

The samples also hold the potential to provide important evidence for the role of botanical components, such as pollens and seeds. The presence of vegetational elements within the cave deposits could indicate a further

dimension to subsistence strategies while at the same time providing a contribution to the further understanding of the vegetational history of the area.

8.2. Wet Sieving

In order that the evidence outlined above can be analysed it must first be separated from the bulk of the sample. The first step in this procedure is wet sieving, in which samples are separated through flotation and the use of graded sieves. Once the various elements have been removed from the sample they can then be sorted and prepared for detailed analysis. This later phase will be carried out by specialists in animal bone analysis, palaeobotany and the study of artefacts.

8.3. Dating

One of the forms of evidence which will be separated from the bulk of the sample through flotation will be fragments of charcoal. Such material will allow us to date various phases of the site through the application of radiocarbon techniques. Without such an approach the dating of the various elements of this site will not be possible, though the presence of metalwork in the shell midden deposits does suggest a late date.

The extraction of samples from various points within the shell midden may allow us to ascertain the period of time over which the deposits were formed, and indeed may allow us to establish the age of the marine inundations indicated by the layers of washed sand. Our understanding of the geomorphological processes responsible for the build up of the cave's deposits will hopefully be enhanced by the results of work recently carried out within the cave by geologists from Coventry Polytechnic.

8.4 Phosphates

It is hoped that phosphate analysis, which up until now has been little utilised on midden sites, may cast some light on the nature of activities taking place within the cave. This technique will hopefully allow us to ascertain whether or not the staining present in many of the sand deposits was caused by human activity.

8.5. Reporting

The preliminary results of the Smoo Cave project have already demonstrated that the site is of considerable archaeological value and it is therefore vital that these findings reach as wide an audience as possible. With this in mind it is our intention to publish the final report, perhaps including the results of a proposed investigation of the inlet midden, in a national journal (e.g. *P.S.A.S, G.A.J, P.P.S.* etc.). A grant to cover publication is included in the cost estimates.

Acknowledgements

I would like to thank Colin Coventry for making available various finds made in the cave and for imparting his considerable knowledge on the site. The illustrations were done by Keith Speller.

9. Appendix

9.1. List of Contexts

001 Hard packed gravel of northern part of footpath over midden.

002 Coarse brown soil matrix with crushed shell.

003 Coarse brown/black soil matrix with shell and stones (5-10cm). Periwinkles and Limpets.

004 Dense concentration of shells (Limpets, Periwinkles). In coarse brown/black soil matrix, some small stones (2 to 5cm), quartz chips. Possible tip line.

005 Possible cut for 004.

006 Coarse black/brown soil matrix with shell - not as concentrated as 004 and appears darker. Few stones. Possibly just its appearance in section.

007 Probably no real difference between this and 006 - just that shells appear more concentrated. Places where limpets appear in lines - single episodes of deposition. Over 40cm deep at northern end, down to c.18cm at southern.

008 Dirty sand (green/grey), some shells, overlies thin layer of white/grey sand - not visible everywhere. Marine?

009 Thin band of grey/white sand with possible charcoal staining in it. 1 to 2cm thick.

010 Stone layer. Large water rolled stones and angular chunks with smaller chips and pebbles. Matrix is dark sandy soil with some shell in it. Many places there is no matrix. Possible structures - or beach deposit?

011 Concentration of grey/black sandy soil. Rich in charcoal - fire spot? (not shown on section drawing)

012 Dark grey/black sandy deposit. Possible fire spot.

013 Dark grey/black sandy matrix - charcoal rich. Same level as 010. Some stones - possibly related to hearth?

014 Thin deposit of clean yellow sand, some stones. Not seen everywhere. Possibly same as 008 but appears cleaner.

015 Dark sandy soil with rounded pebbles - incl. quartz. Charcoal flecks. Below large stone. Fill of pit cut 016.

016 cut of pit. 30cm at widest, c.20cm deep.

017 grey/brown sandy matrix with stones. Charcoal flecking. Rounded pebbles 5-10cm dia. Occupation deposit.

018 Coarse brown sand sandwiched by cleaner yellower sand. Very few stones. Occupational staining?

019 Possible cut between 020 and 006

020 Dark brown fine greasy sandy soil. Very little shell - some animal bone. Interlaced by thin 1-2cm thick layers of clean washed sand. At most southerly point at least 3 layers of clean washed sand.

021 Fire spot. Heavy concentration of charcoal and some small stones.

022 Cut of fire 021.

023 Fine clean sand - marine? still some bone appearing.

024 Fine silty sand with pebbles - on water table. Some chipped stone and bones, some charcoal.

025 Dark brown/black greasy soil on present cave floor, with charcoal. Overlies 020.

026 thin layer of washed sand in southern end of section - riverine deposition?

027 Band of charcoal rich sandy soil between 006A and 006B, only visible in northern part of section.

028 Large semi-rectangular stone sitting in 010 - possibly structural.

9.2 List of finds

Animal Remains: As yet no specialist examination has taken place on the recovered animal bone assemblage. This list is the result of a cursory examination prior to full identification and must therefore be treated with caution.

Shell-fish - Mostly limpet (*Patella vulgata*) and periwinkle (*Littorina littorea*), with some mussel (*Mytilus edulis*) and pullet carpet (*Venerlpus pullastra*).

Fish - Almost exclusively from the shell midden deposits. Some of the bones were of considerable size, suggesting large species such as cod.

Mammals - A large number of animal bones were recovered, most of them from the shell midden deposits. Many pieces displayed butchery marks, and several of them may have been worked into pointed, awl-like, implements. The main species present appear to be cattle, with sheep, pig and deer also recovered.

The lower jaw of a seal had been recovered from the back of the cave. It had been butchered and its presence clearly suggests the exploitation of marine mammals around the area of the cave at some point in the past.

Artefacts:.*Bone* - As already suggested several of the butchered bones appear to have been worked into points. Most of these were recovered from the shell midden deposits but as mentioned in the report butchered animal bones were also recovered from several other contexts.

Stone - Numerous flakes and fragments of quartz were recovered from most of the archaeological horizons. Without thorough analysis it is not possible to state whether some or all of these were purposely struck in order to provide implements. The discovery of a platform core of high quality quartz, with clear blade scars (from the Allt Smoo to the south of the section) does suggest that stone tools were being manufactured and used in the cave. This find, which is typically Mesolithic in appearance, clearly strengthens the argument for early activity in the cave. Rounded beach pebbles with pecked and bashed ends were also recovered from the shell midden deposits.

Pottery - One small sherd of pottery was recovered from the shell midden deposit - it may be Iron Age in date.

Iron - Several iron nails and rivets were recovered from the shell midden deposits and from the surface of the pebble beach onto which they had eroded. The pin of an iron fibula was also recovered from the shell deposits towards the southern end of the section.

9.3 List of samples

Column: 006A 2 bags; 006B 2 bags; 008 1 bag; 009 1 bag; 013 1 bag; 010 2 bags.

Bulk: 006A 1 bag; 006B 1 bag; 021 1 bag; 025 1 bag; 020 1 bag; 024 1 bag