4 Glassknapper's Cave, Antler Cave and Wetweather Cave

4.1 Background and methodology

During the examination of midden deposits in Smoo Cave reported above, archaeological deposits, including midden material, were also noted in the two marine caves in the western wall of the inlet and observed to be vulnerable to serious erosion caused by high tides and storm-driven waves. Consequently, a grant was provided by Historic Scotland to enable the rescue excavation and recording of these deposits before they were entirely lost to the sea. This work was carried out over four weeks in February and March 1995.

By the time of the excavation the deposits had already suffered heavily from marine erosion, with between 1 and 2m of deposit taken away between the Smoo Cave investigation in 1992 and the commencement of excavation in 1995. Given the rescue motivation of the work and the limitations on budget and time available, a pragmatic approach was adopted and the main objectives were set out by Historic Scotland. It was proposed that a sample assessment of between 30 and 50% of the deposits would establish the depth of midden, extent of midden, nature and date of stratigraphy forming the midden and the nature of any internal structure within the midden (R Hingley, pers comm).

Prior to excavation, the exposed section (Illus 2, C–D) was only partly visible behind a loose slope of earth and stones which had collapsed from the section face. Much of this material had accumulated since the site was first identified in 1992, clearly indicating the rapid rate of erosion. In order to obtain an impression of the nature and depth of the deposits it was necessary to remove this material. However, in case it contained residual in-situ deposits, two slots were first excavated through it. This controlled removal and examination of the sections confirmed that it entirely comprised loose material that had fallen from the section face.

The section face was cleaned by trowel and recorded by measured drawing. It was immediately obvious that there were differences between the deposits in the southern cave and those in the northern cave (Illus 2, C–D). The southern cave (Glassknapper's Cave) appeared to contain a far more complex series of deposits, which included several strata rich in marine shells and animal bones. The deposits in the northern cave (Antler Cave) were less well-defined and varied, with marine shells at this stage visible only at one level. The collapsed material in front of Antler Cave proved to contain fragments of red deer antler, which were also observed in this part of the cleaned-back section.

The presence of substantial fragments of limestone in various parts of the section indicated that the roofs of both caves had suffered collapse at some point in the past. The caves may therefore have been somewhat larger than they are now, which would have made them more fitting for human use than they appear today. Nevertheless, the presence of tractor batteries, boating equipment and even a length of Scalextric track in the southern cave clearly indicated its use an equipment store and dumping ground in recent times.

After surveying the cave interiors (Illus 2), it became apparent that the most efficient means of fulfilling the excavation objectives would be to cut a single trench from the exposed section to the back of Glassknapper's Cave. The same would also be attempted for the Antler Cave, but priority was given to the southern cave, as it appeared to contain more complex archaeological deposits. The cave floor was divided in two roughly along its central axis (Illus 2). By the end of the excavation, most of the material had been removed from the southern half, while the northern portion remained intact, proviHding a full section through the deposits. A lateral section was cut through the southern half of the cave (Illus 2, G–H), at right angles to the axial section, thus providing insight into the nature of the stratigraphy in a north/south plane (across the cave interior) as well as in an east/west plane from cave mouth to cave interior (Illus 2, E–F). The deposits were excavated in spits down onto the former beach surface, at which point the concreted nature of the gravels and safety considerations prevented further investigation.

An important aim of the project was to recover bulk samples from the excavated deposits, as coastal deposits rich in marine shells represent a rare opportunity to recover well-preserved faunal, palaeobotanical and organic artefactual evidence. Where possible, samples were removed from individual deposits. However, the stratigraphy in Glassknapper's Cave was of such complexity that sampling individual contexts was not always possible. In order to overcome this problem, a column sample was taken through the deposits, with samples removed in spits. Wet-sieving of samples was carried out on site.

4.2 Glassknapper's Cave

Glassknapper's Cave displayed the most extensive and complex series of archaeological deposits. The

Table 1 Radiocarbon determinations from Smoo Cave and Glassknapper's Cave (GKC). Dates have been calibrated using OxCal v3.8

Lab code	Sample material	Lab age	∂13C%	Calibrated dates	
				1-sigma	2-sigma
GU-4545	Birch and hazel from Hearth 021 (Smoo Cave)	1120 ± 50	–27.1	AD 880–1000 (68.2%)	AD 780–1020 (95.4%)
OxA-8210	Birch and willow from Spit 2 (near top of column sample, GKC – see section drawing) Context 008	1030 ± 40	–25.7	AD 900–920 (2.6%) AD 970–1040 (65.6%)	AD 890–930 (8.4%) AD 940–1050 (78.3%) AD 1090–1160 (8.7%)
OxA-8211	Birch from Spit 15 (middle of GKC column – see section drawing)	1160 ± 35	–27.1	AD 780–800 (5.5%) AD 810–900 (38.5%) AD 910–960 (24.1%)	AD 770–980 (95.4%)
OxA-8212	Hazel from Spit 33 (bottom of GKC column)	1120 ± 30	–25.7	AD 890–980 (68.2%)	AD 820–840 (1.1%) AD 860–1000 (94.3%)

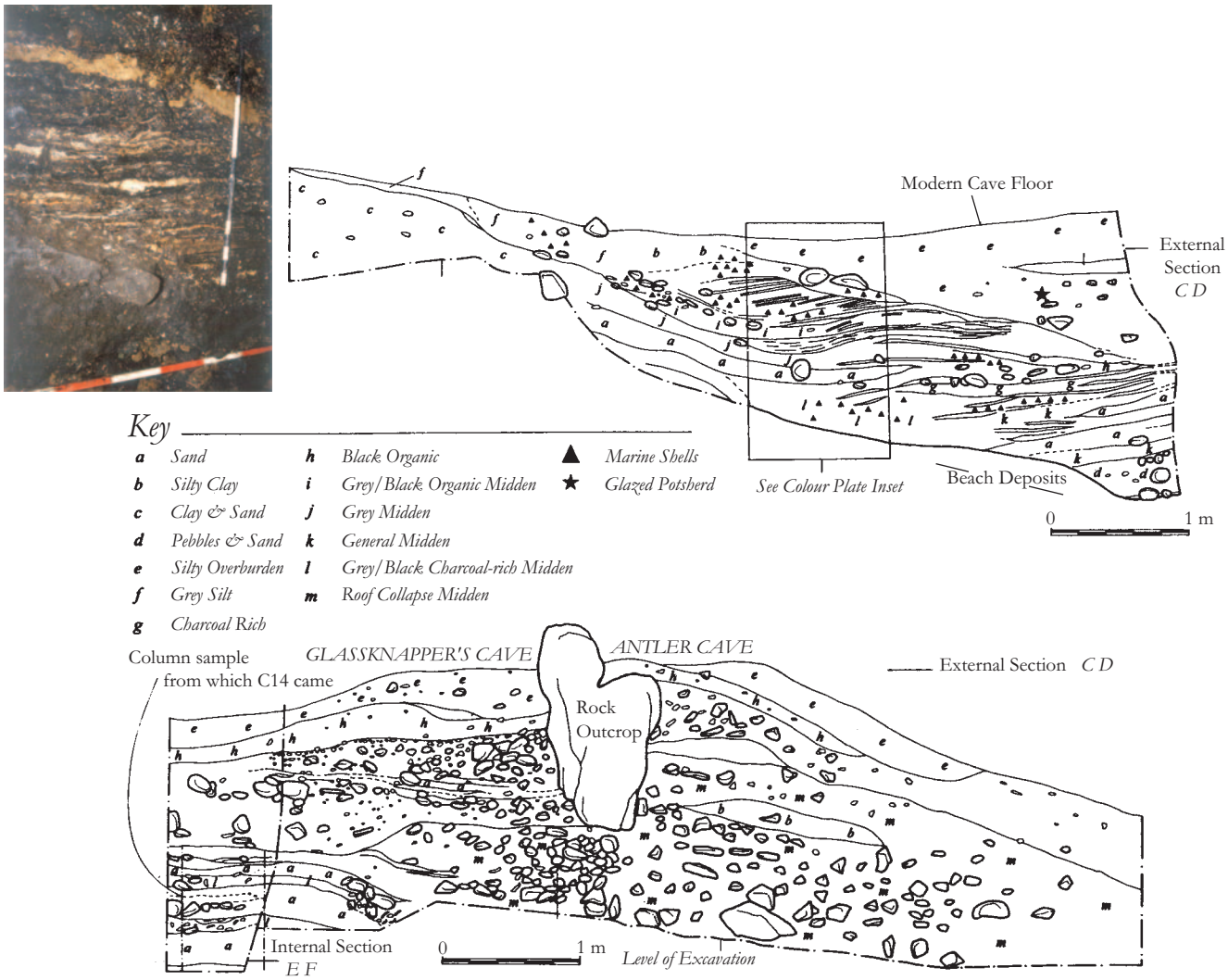
external section (Illus 2) contained a considerable amount of overburden in its upper portion, with a gritty deposit (001) overlying a black humic layer that contained many small fragments of quartz and other stone (003). The upper deposit (001) contained sherds of bottle glass, some of which, on first examination, gave the appearance of having been modified (they had not been), hence the name Glassknapper's Cave. The humic deposit (003) represented organic soils washed down from the cliff face above and did not extend far back into the cave.

An earlier episode of largely natural build up (context 004) was evident directly beneath the humic deposit (003). The presence of angular fragments of limestone in it suggested that this deposit (context 004) was at least partially composed of cave roof collapse. As in the case of the humic layer, the roof collapse appeared to be limited to the area of the cave mouth. However, it also contained rounded stones of various types, which may have been driven there by high tides and storm waves. Excavation of the trench through the cave (Illus 2, E–F) revealed relatively little difference between these upper deposits. Although they were largely sterile, the presence of the bottle glass and a number of brown-glazed pottery sherds suggests they accumulated during the 19th and early 20th centuries, although a piece of White Gritty Ware was also recovered from context 004.

These upper layers sealed a series of deposits rich in archaeological material, possibly accumulated over a long period of time. Evidence for this human activity was clearly visible within the eroding section (Illus 2, C–D), where deposits of marine shells and animal bone were visible throughout the lower half. The presence of midden-rich layers stratified between washed sand layers suggested the periodic use of the site interspersed by times when high water levels, perhaps promoted by spring tides or winter storms, washed marine sands into the cave. However, some of these thin, clean sand deposits may have been laid by those using the cave, perhaps to minimize dampness or to cover unpleasant organic deposits. The most substantial sand deposits lay toward the rear of the cave, where they were deposited by marine action before the high concentrations of archaeological material accumulated.

Excavation and recording of both the main internal cave section (Illus 2, E–F) and the internal lateral section (Illus 4; Illus 5, H–G) revealed a complex sequence of deposits, which bore only limited resemblance to those observed in the external, eroding section. The internal deposits (contexts 008, 012 & 013) on the whole consisted of numerous thin layers and lenses of organic material, clays and silts, ash, charcoal, crushed shell, animal bones and washed deposits. It was impossible to excavate each of these deposits individually, with many hundreds of individual contexts being stratified within the deposits. In order to overcome this problem, a column sample was removed from the deepest portion of the deposits (see Illus 2 and Illus 4 for location), with samples bagged in approximately 0.02m spits. Environmental analysis of these samples has revealed a wide variety of plant remains (see Section 7.5 – Plant remains) with recovered charcoal providing three radiocarbon dates (Table 1). The latest of these was from Spit 2 (toward the top of the column and consisting of birch and willow), with the date range being cal AD 890–1160 (OxA-8210); the second was from Spit 15 (middle of column, birch) and gave a range of cal AD 770–980 (OxA-8211); the third came from Spit 33 (bottom of column, hazel) and gave a range of cal AD 820–1000 (OxA-8212); all dates are expressed at the 2-sigma level of confidence (or 95.4%). These relatively closely spaced dates clearly indicate quite rapid accumulation of considerable quantities of material, with the 0.95m depth of the column sample forming in perhaps 100–150 years.

Excavation continued down through the tightly stratified deposits within the cave, onto what appeared to be the cave's primary floor, characterized by hard-packed, water-rolled stones. While these appeared to represent a beach surface, it is not possible to state for certain that earlier archaeological deposits were not sealed beneath; marine shells



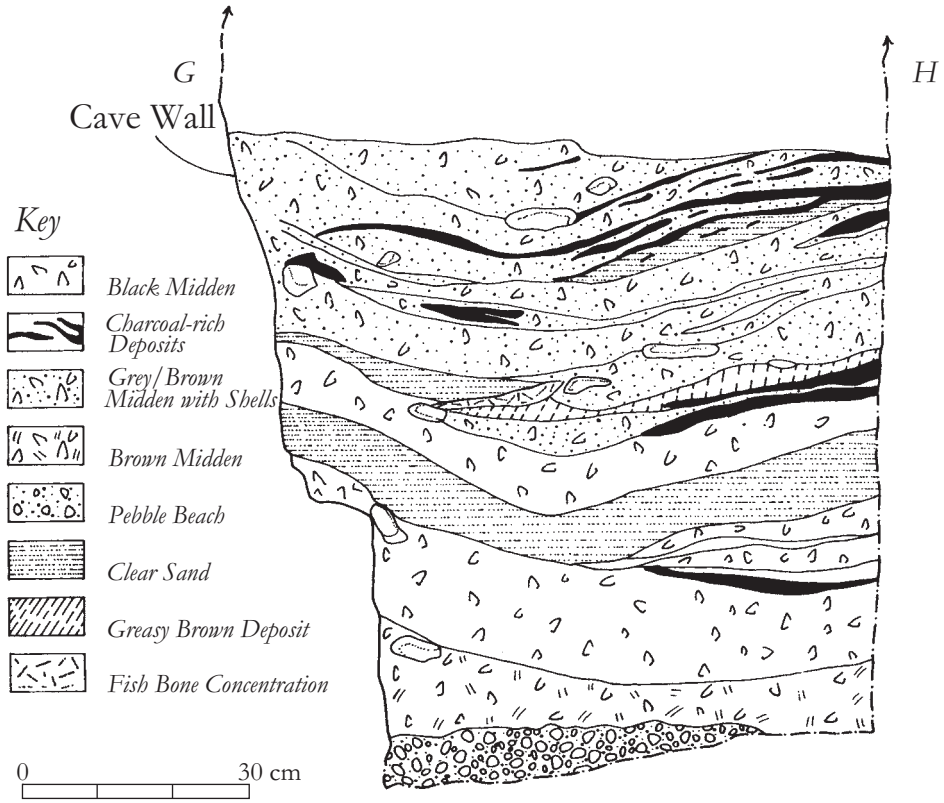
Illus 4 Smoo Cave

and animal bones were found intermixed with the loose beach gravels at the base of the external section. Unfortunately, the hard-packed nature of the basal deposit in Glassknapper's Cave and the obvious safety risks involved in digging the trench any deeper made it impossible to establish the presence or absence of earlier deposits.

There was no convincing evidence for substantial structural elements in Glassknapper's Cave, although two concentrations of stones appeared to represent artificial arrangements (not illustrated). The first of these (context 038) lay toward the rear of the cave and comprised a tightly packed layer of limestone chunks and water-rolled stones, the latter probably collected from the beach. The rear portion sat just beneath the modern surface but dipped down towards the mouth of the cave, following the contour of the sand deposit beneath it. The purpose of the stone concentration was unclear, but it did contain a beach pebble hammer-stone and several sherds of wheel-thrown, medieval pottery. The absence of any trace of this feature in the section drawing (Illus 4) suggests it was confined to the southern half of the cave.

The only other possible structural element consisted of several large, angular chunks of limestone (018) stratified well within (approx 1.1m from the surface) the complex cultural deposits (008) observed just inside the cave mouth. These appeared to have been set into the underlying deposits and may represent an attempt to cordon off the mouth of the cave. However, as in the case of the stones (038) toward the rear of the cave, the concentration exhibited little regularity and may simply have been the result of roof collapse.

In the external section, a brown silty layer containing limestone fragments (012) appeared at first to comprise only roof collapse; investigation of the layer farther into the cave, however, found concentrations of winkles, mussels and limpets as well as a scallop shell. The midden deposits (013) directly beneath were very loose, and in places simply consisted of bones and shells lodged in the gaps between fragments of limestone and other rocks. In the interior, however, deposits were on the whole highly compacted and stone-free, apparently representing areas of trample, burning and other



Illus 5 Detail of section G–H

activities. In order to clarify the nature of the deposits in the northern portion of the external section, a slot trench was cut back into the section (Illus 2, Trench 2), just east of the rock outcrop between Glassknapper's Cave and Antler Cave. The slot trench was cut back to the rock face that separates the entrances to the caves.

Archaeological material was present throughout the lower deposits (013) in this slot trench, those above representing the same process of silting and collapse observed elsewhere. However, the shells and bones were not present in distinct and compact layers, as in the interior, but on the whole were mixed with the rubble and stone, though in places higher concentrations of midden material existed independent of stone accumulation. A sheep's skull was recovered from the niche created by the outcrop and its juncture with the rock face, in which various other bones and shells had also lodged.

The appearance of water-rolled stones and limestone fragments (015) in this deposit suggests that both roof collapse and marine action had contributed to its formation. Limestone fragments, indicating roof collapse around the cave's mouth, were generally confined to the front part of the cave.

The presence of both water-rolled stones and washed sands within the midden deposits provides evidence for the complex nature of the processes of marine inundation and beach formation. Today the upper beach in front of the caves is composed of water-rolled stones, with sand only visible further down the beach at low tide. The dynamics of wave action and beach morphology must be studied in greater detail before the implications of the appearance inside the cave of both types of beach deposit, usually mutually exclusive, can be fully understood.

The loose midden material (013) identified in Trench 2 probably represents refuse removed from the cave interior and dumped into a semi-confined space otherwise occupied only by tumbled and wave-deposited stones. As this area was not subject to trampling, the deposits did not take on the compacted, greasy consistency of those inside the cave, each of which at some time in their history appear to have formed its floor.

4.3 Antler Cave

Archaeologically speaking, Antler Cave did not prove as productive as Glassknapper's Cave. The relative paucity of archaeological deposits may in part be due to the possibility that, as far as human activity is concerned, this cave has always been the damper cousin of its deeper and drier neighbour. However, this is not to say that archaeological deposits were totally lacking, and it is important to note that the consistently wet conditions regularly caused the sections to collapse and thus made it impossible to excavate as extensively as in Glass-

knapper's Cave. It cannot therefore be stated for certain that more complex deposits, similar to those in Glassknapper's Cave, do not exist within the largely unexplored body of the cave deposits. Excavation of the Antler Cave deposits was limited to a small slot trench cut back from the main section for a little over a metre (Illus 2, Trench 3; sections not illustrated).

The upper deposits were similar to those observed in the front section of the Glassknapper's Cave, with the same sequence of silting and collapse forming the upper horizons (contexts 022, 023 & 024 equating with contexts 001, 003 & 004, respectively). A number of distinct archaeological horizons were detected further down in the section. These were sealed beneath a considerable deposit (contexts 024/026), around 0.40m thick, of limestone fragments and chips, apparently from cave collapse. The first of these archaeological horizons lay directly beneath collapse (contexts 024/026) and consisted of a thin layer of winkles and animal bone in an orange/brown matrix (036). This overlay a less clearly defined deposit (027), some 0.20m thick; it consisted of large angular stones in a silty brown matrix, which had shells, animal and fish bones scattered through it. This in turn sealed a midden deposit (029) of shells and fragments of charcoal in a silty grey matrix, which again also contained angular stones. This deposit did not appear to extend far back into the cave, but of course it is impossible to say how much of the deposit outside the cave's present mouth has been lost to erosion. This overlay a sterile layer of orange silty clay with some stones (039), which itself sealed a deposit of large angular stones, grit and gravel (040). The lower limit of excavation was marked by a deposit of very large angular chunks of limestone with virtually no matrix (041), which continued beneath the level of the present beach.

Limited excavation of the Antler Cave succeeded in identifying a series of deposits related to past human activity. Unlike the majority of archaeological deposits in the Glassknapper's Cave, these generally lay within rubble horizons rather than in highly compacted lenses and layers. The deposits on the whole were looser and less dense than most of those in Glassknapper's Cave. The cave appears to have been used on a much more casual basis, with features such as firespots and artefacts largely absent.

4.4 Wetweather Cave

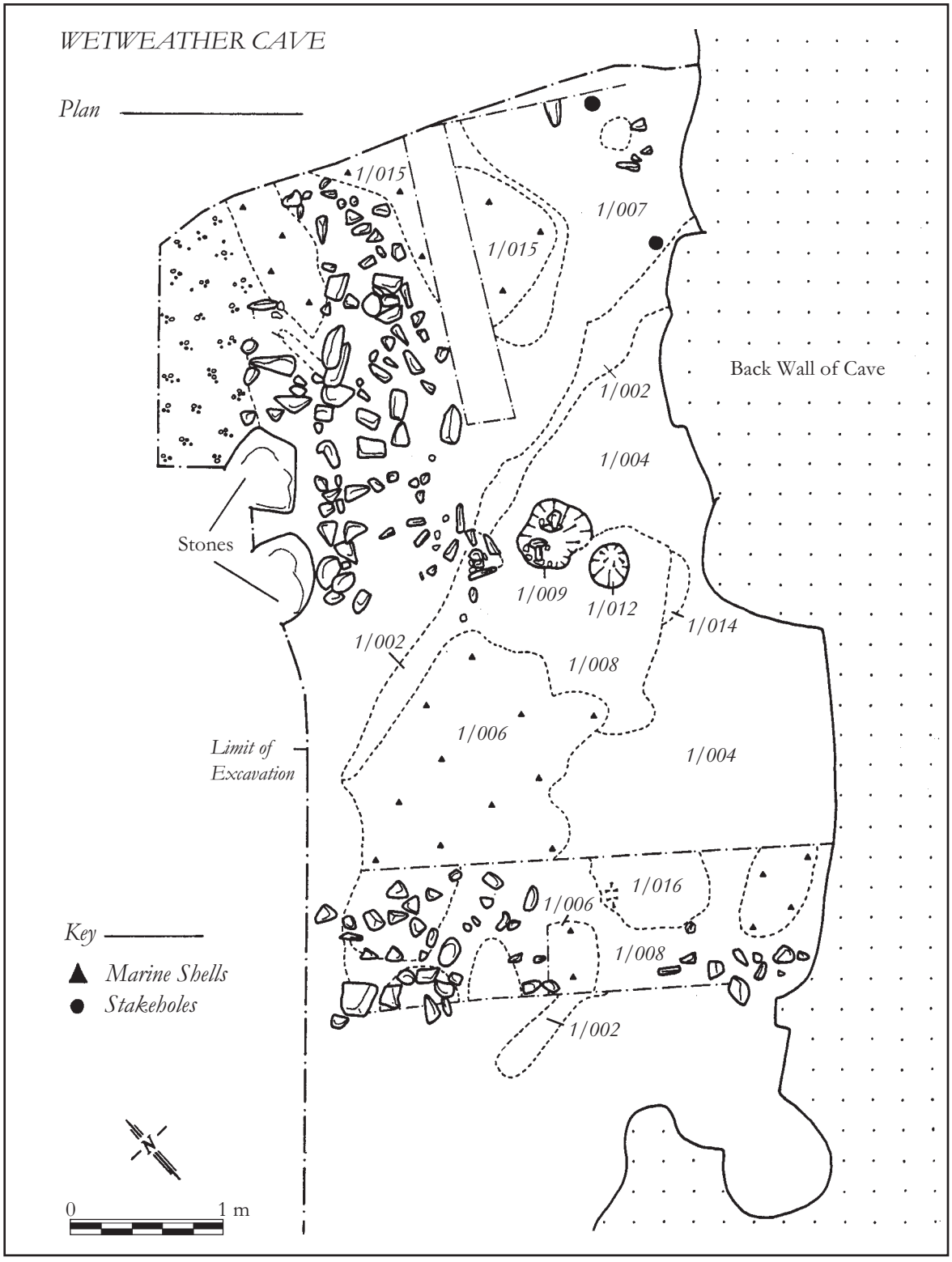
An investigation of Wetweather Cave was not included within the original brief to carry out work in the Smoo inlet caves that later became known as Glassknapper's Cave and Antler Cave. In fact, prior to the project the presence of this cave was unknown. The cave was identified during the general survey of the inlet which accompanied the instrument survey of the other caves. Although situated on much higher ground and lacking the eroding sections that made the presence of archaeological deposits obvious, the cave seemed a likely candidate for past human activity.

The original intention was to do nothing more with the cave than include it on the survey. However, as the project progressed, work began seriously to suffer from deteriorating weather conditions. Melting snow made conditions in both Glassknapper's Cave and Antler Cave extremely hazardous as the deep strata became unstable. At times conditions were too dangerous for work in the caves to continue. The third cave did not suffer from water inundation to the same extent, remaining dry and sheltered from the worst of the weather. In order to make the best of the time available it was decided to carry out a limited evaluation of the cave, which became known as Wetweather Cave, during periods when work in the other caves was inadvisable.

Wetweather Cave consists of three elements. The first of these is the outer chamber, which takes the form of a deep overhang that opens out to the north-west. The rear part of the chamber, closest to the entrance to Smoo Cave, is occupied by a deposit of talus and limestone concretion, behind which is a small chamber into which it is possible to gain access with relative ease. To the left of the entrance to this small inner chamber is a third, much larger chamber. However, gaining entry to this chamber is possible only by crawling through a narrow gap, which had been partially blocked by cave roof collapse, with rubble extending into the chamber as far as the eye could see.

Excavation of the Wetweather Cave was confined to the outer chamber, where removal of several centimetres of sheep dung revealed archaeological deposits (Illus 6). The first feature to be identified was a concentration of marine shells, dominated by limpets (context 1/006), which also contained butchered animal bones and a copper-alloy pin (SF 050). A number of cut features were identified with further cleaning. These included several stakeholes and possible post-holes (contexts 1/012 & 1/009), which had been cut into the chalk-like soil (contexts 1/002 & 1/008) that covered the cave floor. This highly mineralized deposit, which appears for the most part to be formed from dissolved limestone, was at first thought to be archaeologically sterile, although it did have features cut into it. However, cleaning back in spits revealed animal bones and, in several locations, sherds of late Neolithic impressed ware. A further shell midden deposit (1/015), consisting largely of limpet shells, was identified in the north-eastern part of the trench, lying in a shallow scoop (1/023), again cut into the deposit of degraded limestone (1/008) that covers the floor of the cave.

As the time devoted to this cave was dictated by the inability to work in the other caves, it was not possible to achieve anything more than an assessment of the deposits. However, it does appear that the cave was occupied as a far back as the late Neolithic, with features of considerable complexity



Illus 6 Site plan of Wetweather Cave

cut into the floor of the cave. The copper-alloy pin also indicates it was used in a more recent period. At the end of the fieldwork, plastic was laid down and the sheep dung deposit carefully reinstated, along with the excavated spoil, in order to preserve this potentially important archaeological site.