INTERTIDAL SURVEY, ASSESSMENT AND EXCAVATION OF A BRONZE AGE SITE AT REDWICK, GWENT 1999

by Martin Bell and Heike Neumann

Four rectangular wooden structures of middle Bronze Age date occur on the surface of the most prominent intertidal peatshelf at Redwick. The archaeological potential of that site was assessed and the rate of peat erosion examined. The most vulnerable and eroded structure, Building 5, and its surroundings were excavated. Nearby a hearth and short-term activity area was examined at the peat/clay interface. Four trenches were cut across palaeochannels and linear depressions on the peat surface. At the peat/clay interface there was evidence for footprints of cattle, sheep/goat, horse and people. It is concluded that despite the significant truncation of Building 5, areas survive with a very high quality archaeological record and merit more detailed investigation.

Introduction

Waterlogged wooden structures were found by Derek Upton at Redwick at least fifteen years ago. In February and March 1996 a small team cleaned recently deposited mud off the surface of the peat in the area of four rectangular structures, and plans were made of each. Key hole excavation was carried out in order to obtain samples for radiocarbon dating. An interim report on this investigation was published by Neumann and Bell (1996) and recently a fuller account of this survey has appeared (Bell et al 2000, 292-299). At the time the structures were the only comparanda for the rectangular buildings at Goldcliff. With the publication of Goldcliff, and growing evidence of the vulnerability of waterlogged wooden structures in the intertidal zone, it was considered important to carry out a further investigation of Redwick. That site was known to be a millennium earlier and showed both similarities to, and contrasts with, the middle to late Iron Age site at Goldcliff. Work in 1999 was focused on assessing the archaeological potential of Redwick and excavating what remained of one of the structures which was particularly vulnerable to erosion. Allen and Bell (this vol .) describe a tidal palaeochannel 160 m west of the most westerly Redwick building, and that paper also outlines the stratigraphic sequence (Allen and Bell this vol Figure 1c) within which the Redwick buildings and occupation horizons occur. They are on the surface of the main peat shelf. Each of the buildings has

been radiocarbon dated and the dates are centred on 3060-2930 BP (SWAN 225-228; Bell *et al* 2000, 292-299). The buildings and occupation horizons are sealed by upper Wentlooge clay.

Survey of the peat shelves and erosion (Figure 1)

This survey was designed to enhance and develop the existing air photo-based digital survey in this area prepared by Heike Neumann which has recently been published on CD (in Bell *et al* 2000) by providing a more detailed EDM ground survey. The main objective was to accurately map the edge of the main peatshelf, its associated palaeochannels, lower peat exposures, extent of modern mud cover and exposure of upper Wentlooge clay. This will provide the basis for future monitoring of the erosion and information about the OD heights of the different levels of peat. Marker pegs associated with the individual structures were also located.

The edge of the main peat shelf was mapped at approximately 1m intervals over a length of 550 m. The survey point was positioned at the edge of the horizontal shelf, before the angle dipped steeply towards the seaward edge. The EDM data was transferred onto an Excel datasheet and a map was produced on Intergraph GeoMedia Professional version 3.0. A total of 861 readings were taken along the edge of the main peat shelf, 54 from a lower peat, 34 from the lowermost peat and 54 from the upper peat. This represents a much more detailed survey of the site and the first ground survey of the palaeochannels.

The OD heights of the main peatshelves range from 2.5 m to 3.9 m, the higher values being recorded on the landward side near the base of the armourstone apron revetment forming the seawall where the peat has been less exposed to erosion and is often covered by mud. At the seaward edge of the peatshelf OD heights are only 1.9 m to 2.2 m, the lower values here being probably mainly due to full exposure to wave action for a longer period causing truncation of the peat surface seaward for which there is evidence in many Severn Estuary exposures. Observation suggests this truncation occurs as a

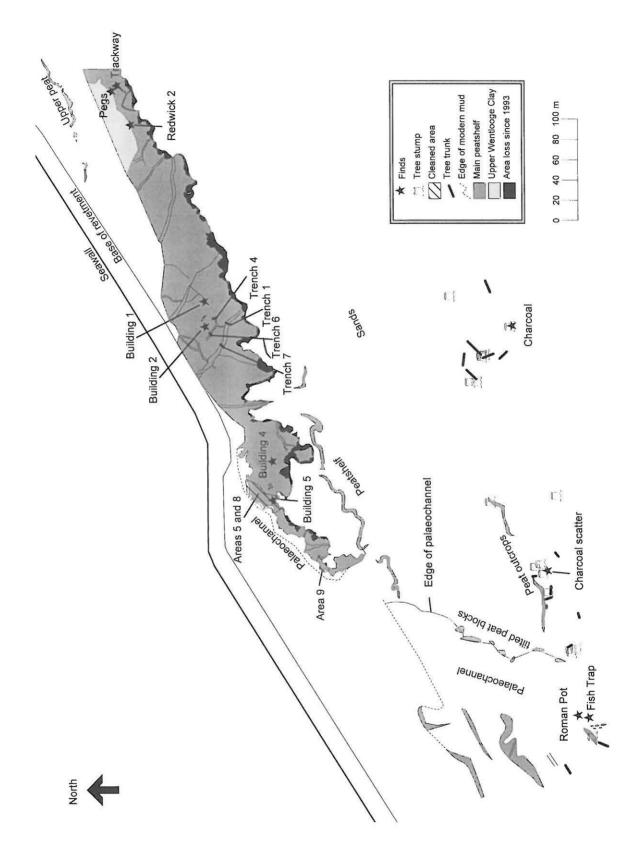


Figure 1: Redwick: Survey of the peat shelf and associated archaeology. Darker shading indicates the peat lost between photographic cover taken in 1993 and the EDM survey of August 1999 (survey and drawing by H. Neumann).

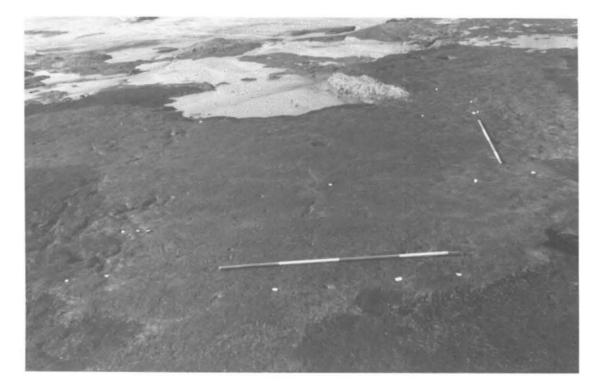


Figure 2: Redwick: Cleaning the surface of the peat around Building 5 (photo. E. Sacre).

result of medium scale (c 1-10 m) processes of flake failure documented by Allen (1999) and smaller scale processes including the desiccation and washing away of peat fragments (<20mm) particularly in hot weather. The OD heights suggest that the extent of peat surface truncation at Redwick could be as much as 0.5 m to 1 m at the peat edge but this remains to be tested by coring.

A lower band of reed peat is exposed for a length of 250 m to the east of the Redwick palaeochannel and dips down to the east away from the palaeochannel from 0.6 m OD. Further south

Figure 3: Redwick: Building 5 from north, on a low peat hummock. The positions of posts are marked by white labels. The peat is truncated by erosion to seaward (photo. E. Sacre).



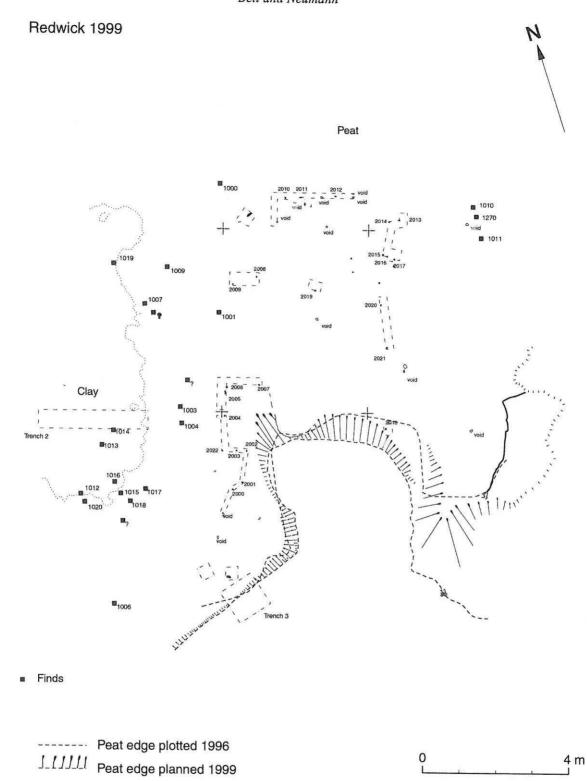


Figure 4: Redwick: Plan of Building 5, showing the distribution of artifacts in the surroundings (by S.J. Allen).

towards the sea another reed peat outcrop is visible along a length of 150 m with OD heights ranging from -2.94 m to -2.34 m OD. Tree trunks and stumps occur below this peat.

At Redwick 2 the peat shelf is covered by upper Wentlooge clay at 2.4 m-2.8 m OD, and another thin outcrop of reed peat occurs above this clay at 3.23 m to 3.44 m OD.

Erosion rates for the main peatshelf were estimated by comparing an aerial photograph taken in 1993 with the ground survey carried out in 1999. Measuring the retreat rate at every 20 m along the shelf edge shows an average retreat of 1.94m over the 6 year period. In terms of the area of exposed



NB: Horizontal relationships not to scale Vertical dimensions and relative (O.D) levels correct.

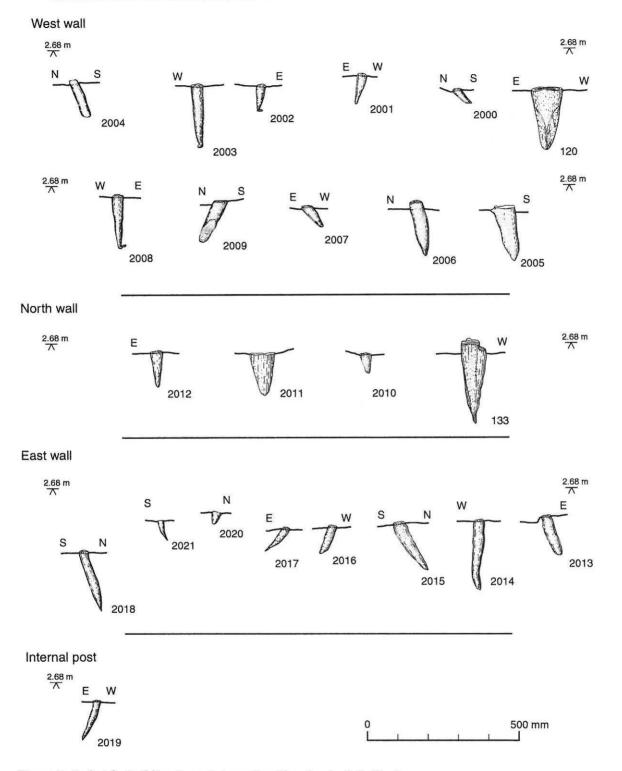


Figure 5: Redwick: Building 5, posts in section (drawing by S.J. Allen).

peat lost this was calculated as 8.2% of the total peat area as delineated on Figure 1. These figures need to be regarded with caution as maximum values because of the problems with comparing the results using two different survey methods and the difficulties of georectification of the air photographs which was carried out with relatively few control points near the edge of the peat. This is due to the absence of ground survey points for 1993. The only accurate way to measure retreat rates would be to repeat a ground survey of selected areas at intervals. It should be noted that a monitoring visit in February 2000 by Derek Upton and Martin Bell showed that there had been very significant further erosion of peat blocks as a result of winter storms. The intention is to quantify this by resurvey of selected areas in August 2000.

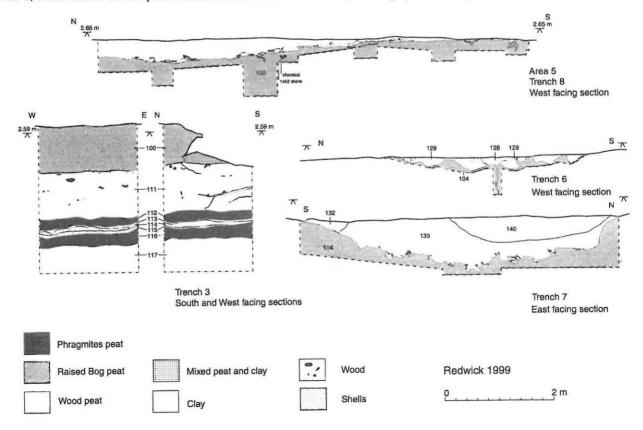
Building 5

This building was right on the edge of the peat shelf, and as a great bite had already been taken out of the middle of this structure by erosion before the 1996 survey (Bell *et al* 2000, fig. 16.12), it was seen as the most vulnerable to erosion. Accordingly the decision was made to clean, record in more detail, plan and excavate this building in 1999 (Figure 2). It had previously been planned in 1996 and three pieces of wood were lifted, one giving a radiocarbon date of 2950+/-70BP (SWAN-228; 1400-990 Cal BC).

The building (Figures 3-4) is on a low peat hummock the top of which is at c 2.6 m OD. Reexamination of the building in 1999 recorded 26 posts and 7 voids which might have held decayed post. They were mostly round the periphery of a rectangle 10.6 m by 4.4 m. Five posts (20%) had been lost in the 3.5 years since the first plan was made. However, the much more careful cleaning which was possible on this occasion revealed six more posts not found in the original survey. 17 pieces are recorded as roundwood and 7 as split timbers. 24 pieces sampled in 1996 have been identified by Astrid Caseldine and Kate Barrow: 17 were roundwood, of which 11 were *Corylus avellana* (hazel) and 6 *Alnus glutinosa* (alder), with a further 7 pieces of split *Quercus* (oak) timber. The posts (Figure 5) were very slight (length varying between 8-23cm, average 13cm).

We have no firm evidence that this was ever a roofed building. There was no trace of axial posts which were a distinctive feature of the other structures, although one small piece of roundwood (2019) was in a position which suggested it might represent part of the packing for a lost axial post. None the less, given the dimensions and the character of what was found, it seems likely this is a structure of a type essentially comparable to Redwick Buildings 1, 2 and 4, but severely truncated by erosion so it is possible that axial posts have been lost. If it was originally also comparable to the well preserved Goldcliff buildings' (eg 1 and 2), or the excavated wall post of Redwick 3, then it is probable

Figure 6: Redwick: Sections of the peat shelf edge at Building 5 (Trench 3), Trench 8 across the peat clay edge in Area 5, and sections across palaeochannels in Trenches 6 and 7 (drawing by S.J. Allen).



that around 0.4 m have been eroded. If that is accepted then some of the roundwood elements (eg 2008 and 2007) might represent traces of internal subdivisions for which there is rather clearer evidence in Redwick Buildings 2 and 4 (Bell *et al* 2000, fig. 16.10-11).

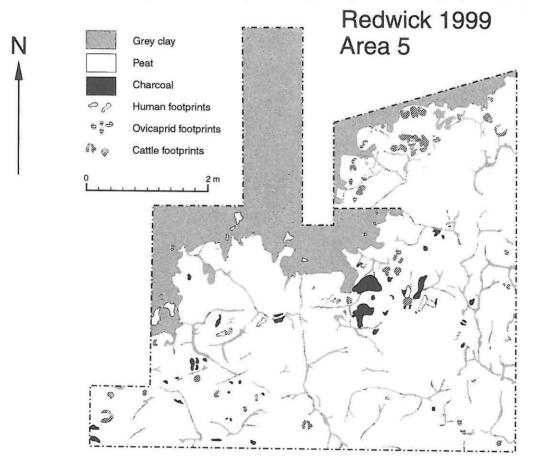
As part of the excavation of Building 5 an area 40 m by 20 m was cleared of mud using slurry scrapers and then gently hoed in order to establish whether there was other archaeological evidence. Two to three metres west of the building the peat surface was covered by estuarine clay (Figure 4). Where the peat dipped below the clay an area was excavated revealing many animal footprints at the interface. Around Building 5, almost entirely to its west, were the following numbers of finds: charcoal (27); wood (6); stone (12 of which at least 3 were heat cracked); pottery (1); bone (1); (?)coprolites (2). The possible herbivore coprolites will be examined for pollen and plant macrofossils in order to try to establish whether these animals had been grazing on saltmarsh, raised bog, or elsewhere. The artifacts were mainly 1 m or more west of Building 5 in the top 5 cm of the peat and at its junction with the clay. This is thought likely to represent an occupation layer associated with the

building which has been eroded from the top of the low peat hummock within, and just outside, the area of the building itself.

Peat erosion at Building 5

Replanning of Building 5 showed that the peat edge in this area had not undergone any further erosion since 1996. However, Trench 3 (Figure 6) put down at the peat edge highlighted the vulnerability of the structure to future erosion. There was evidence of roughly horizontal and vertical cracks developing in the peat edge and filled with clay of very recent date and a substantial horizontal fissure (Context 114-115) filled with sandy silt and shells. Similar horizontal fissures were seen to be associated with peat erosion at Goldcliff Building 8 (Bell et al 2000, 324). The probable mechanism responsible for their formation is the impact of waves on the edge of the peat shelf setting up lines of weakness within the peat, the process of flake failure described by Allen (1999). There is also the effect of the greater buoyancy of the peat to incoming tide which may cause peat rafts to raise and cracks to extend landward. Trench 3 and the evidence from Goldcliff Building 8 shows these processes operating on a scale of 1 m to c 10 m, although what is not yet clear

Figure 7: Redwick: Area 5 showing the distribution of charcoal, peat surface cracks and footprints (by S.J. Allen).



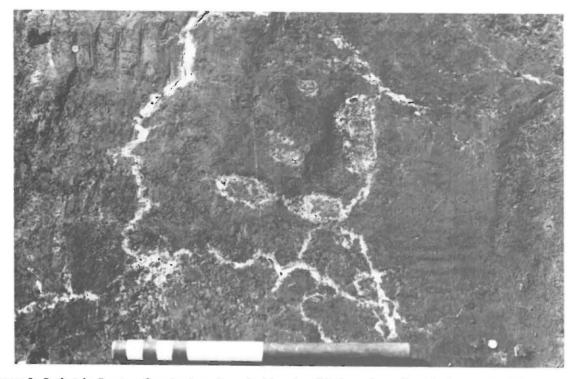


Figure 8: Redwick: Peat surface in Area 5 marked by clay filled cracks and with clay outlined footprints of ovicaprid size (photo. E. Sacre).

is whether they are related to the much larger fissuring evident in plan on the peat surface elsewhere in the estuary (eg at Collister Pill; Bell *et al* 2000, fig. 16.4) on a scale of tens to hundreds of metres or more. In either case these planes of weakness must increase the vulnerability of the peat shelves to erosion.

Area 5

This lies within the cleaned area 24-29 m north of Building 5 (Figure 1). Much of this area was originally covered by 10-30 cm of recent mud which was cleaned away to reveal the peat clay interface. The clay overlies the peat shelf which here dips to the north west (Figure 6 top). A concentration of charcoal covered an area 1.3 m in diameter and there was a surrounding activity area c 6 m by 4 m markedby charcoal (Figure 7), some burnt stone, wood chips, bones, and fragments of pottery. Two diagnostic sherds were present: one a simple rim with finger pinching below the rim; the other from a large pot with an applied curving strip which might represent a horseshoe handle. Both these traits are represented in the Brean Down Unit 5b assemblage which has radiocarbon dates between 1400-800 Cal BC (Bell 1990).

At the peat/clay interface the peat surface revealed many footprints including cattle, some sheep/goat and human footprints (Figures 8 and 10, discussed below). Many of the human footprints have a thin lining of blue clay indicating that the peat had been covered by a thin film of marine clay at the time when they formed. Some also trod hearth ash into the surface of the peat. The surface of the peat showed a pronounced polygonal pattern of cracks which were filled with grey clay (Figures 7 and 8). The cracks were not deep and by the time 5-10 cm of peat had been removed only a few cracks remained. Generally the cracks postdated the footprints, but some footprints postdated cracks. I am grateful to Professor J.R.L. Allen for the observation that the grey colour of the clay filling these cracks takes in the order of a millennium or more to develop. The cracks cannot therefore be a phenomenon relating to the recent exposure of the peat shelf and this evidence would seem to indicate drying out of the bog surface on the settled hummock prior to deposition of the marine clay.

Activity at this time seems only to have been brief and small-scale. A fire was lit once, or only a few times, some oak timbers were worked, meat was prepared and cooked, and the people probably heated water using potboilers, and two pots were broken. Hazel nuts were cracked and eaten round the fire. Both adults and children were involved, the footprints representing their movements around the hearth. Some other footprints a little later were made after the fire had gone out and these trod hearth ash into the peat.

Area 9

The peat shelf narrows and is increasingly broken by erosion west of Building 5. In one area 80 m to the west is a low hummock of peat truncated by erosion to the south and buried by clay to the north and west. A post had been recorded here in 1996. An area 12 m by 8 m was more thoroughly cleaned and planned in 1999 revealing three roundwood posts in a line, two (diameters 3 and 6 cm) 0.5 m apart and the other (size 14 by 10 cm) 4.8 m west. In the surroundings were some charcoal and fire cracked stones. Where the edge of the peat was overlain by clay there were animal footprints. Little can be said about such ephemeral evidence except that it shows the site originally extended to the west to within 20 m of the major palaeochannel (Figure 1). We know that this channel was in existence in Romano-British and sub-Roman times (Allen and Bell this vol), but it is not clear whether an incipient palaeochannel feature existed here in the later Bronze Age, although this is possible, given evidence of marine inundation recorded at the time of Bronze Age activity. More may be revealed eventually as the clay in this area is eroded.

Palaeochannel trenches

The surface of the peatshelf is marked by a series of sinuous linear depressions (Figure 1). The largest is a clearly defined palaeochannel (1) which runs north west to south east 20m west of Building 2 and contains a fill of silty clay. Other less pronounced linear depressions mostly have a fill of mixed peaty clay. Two such examples partially surround the low hummock occupied by Building 2. Three trenches were put down across linear depressions in the area south west of Buildings 1 and 2. The aim was to assess the archaeological potential of these features and to establish whether they were coeval with the Bronze Age activity. This was considered an important question because previous surveys by Derek Upton, Heike Neuman and the writer had found a tendency for artifacts to be concentrated in palaeochannels, notably at Goldcliff where a palaeochannel around Building 6 contained the main concentration of artifacts (Bell et al 2000, 111-121).

Trench 1

This trench, 1 m by 6 m, was put down across the most prominent palaeochannel (1) 19 m west of Building 1 and 17 m south west of Building 2. The channel was 3.2 m wide and 0.4 m deep with a fill of clay. Animal footprints on the east channel edge included 6 of adult cattle size and 3 of probable

juvenile cattle size.

Trench 7

This trench 1 m by 5 m also crossed the main palaeochannel (1) west of Building 2. Here the channel was 3.7 m wide and 0.45 m deep (Figure 6). The floor of the channel showed many cattle footprints which had created marked involutions. The sides of the channel were steep and with little trample. No artifacts were found in this channel.

Trench 4

This 1m by 5 m trench was put down across a linear depression which ran west of Building 1, and was located 10.5 m west of that building and 10 m south of Building 2. On cleaning the depression was found to be 2.8 m wide and just 10-15cm deep, with a fill of mixed peaty clay. Within, and at the base of this, were animal footprints including 3 adult cattle, 3 possible juvenile cattle and 1 of ovi-caprid size. One very clear human child's footprint (Fig 9) was found sealed by peaty clay in the base of the channel. The peaty clay produced wood fragments (2); a tooth (1); a piece of charcoal (1); and heat cracked stones (2).

Trench 6

This 5 m by 1 m trench was put down across a linear depression immediately west of Building 2 which was 2 m wide with a fill of peaty clay and clay 10-20 cm thick (Figure 6). Animal footprints included 10 of adult cattle size, 2 of juvenile cattle size and 1 of possible ovi-caprid size. These footprints occur just outside the west end of Building 2. In the middle of the depression was a marked clay-filled vertical fissure in the peat. Finds included heat cracked stones (2); woodchips (3); wood (2); and hazelnut fragments (2).

Palaeochannels and linear depressions: conclusions

The four trenches put down across these features in 1999 have shown that they contain small numbers of artifacts, and have cattle and human footprints in their fills. The most prominent such feature, Palaeochannel 1 is clearly a channel cut in the peat surface. Professor J.R.L. Allen (pers. comm.) is of the view that this is likely to significantly postdate the peat and was probably cut from a level in the overlying clay. Thus the animal footprints in Trenches 1 and 7 may prove to be later than those in the other trenches and areas. It is not yet clear whether the more ephemeral linear depressions examined around Building 2 are shallow



Figure 9: Redwick: Child's right footprint A7, Trench 6, length 170mm (photo. E. Sacre).

palaeochannels, or encircling depressions surrounding the slight hummocks occupied by the buildings. Both types of feature occurred round the buildings at Goldcliff West (Bell et al 2000, Chapter 8). The Redwick features contain some clay, often mixed with peat by animal trample. Stratigraphically it is possible that the depression fills are contemporary with the activity, because we know from footprints and other sedimentary evidence in Area 5 and Building 5 that clay innundation onto the peat surface was occurring at the time of activity. It is also possible that the linear depressions are a little later than the buildings and the artifacts they contain have been eroded from occupation horizons. The relationship between the linear depressions and the occupation has not yet been fully resolved and

requires further investigation of the minor depressions around buildings. Such work is further justified by the excellently preserved human footprint in Trench 4 (see below). The limited numbers of artifacts from the palaeochannels means that the excavations of sections across channels away from buildings is not a high priority.

Footprints

Footprints (Figures 8-10) provide potentially the most exciting aspect of the archaeological record at Redwick. The current work complements earlier work on Mesolithic human footprint tracks at Uskmouth and Magor Pill (Aldhouse-Green et al 1992) and footprints of varied dates from non-settlement contexts in the sedimentary sequence reviewed by Allen (1997). The discovery of well-preserved footprints represents a new source of evidence for the people and animals associated with the Bronze Age structures. They provide an alternative dataset on faunal composition, and potentially age structure, which it will be possible to compare with the small collection of animal bones when these are identified. They may also potentially tell us something about the directions in which people and animals habitually moved within the settlement and thus to the ways in which the various structures and activity areas articulated together as part of a wider landscape.

In 1996 an area apparently trampled by cattle was recorded just outside the north east corner of Building 2 and possible cattle footprints were noted in a feature within Building 4 at Redwick (Bell *et al* 2000, Figs 16.10-11). This had not prepared us, however, for the extent of footprints which was found in 1999. They occurred in three main contexts: (i) at the interface of peat and clay west of Building 5 and in Area 5; (ii) in the fill of palaeochannel 1; and (iii) in the linear depressions near Buildings 1 and 2.

Using this footprint evidence is not, however, simple. Many of the prints are only partial, particularly those in such extensively trampled areas that it is not possible to identify the complete outlines of individual prints. Furthermore the prints are 3 dimensional structures. Cleaning of the peat surface reveals patches of clay with regular form and sharp edges. In some cases (eg Figure 9) an outline of clay suggests that a thin film of clay overlying peat has been trodden into the peat. In other cases footprint impressions in peat may have been filled with clay. In both cases the activity occurs at the transition from peat to clay. So far recording has been mainly by tracing onto plastic sheets the successive outlines revealed by stages in the cleaning of an individual print. These field drawings clearly show that the depth at which a footprint is cleaned affects its overall size. It also depends whether the foot has slipped. In future we need to explore ways of obtaining more detailed 3-dimensional information, for instance from casts.

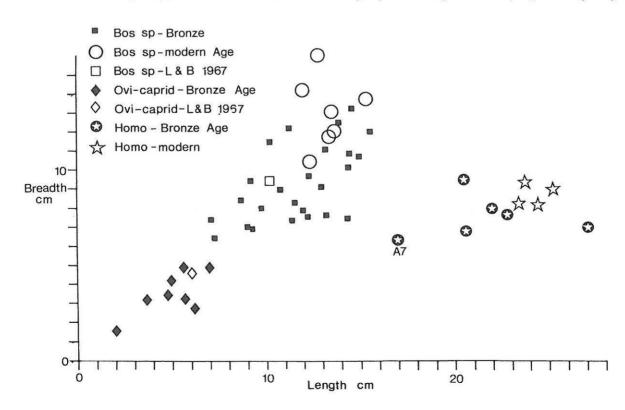
Even so, some provisional conclusions can be drawn about the 39 human and animal footprints found in 1999 which were sufficiently complete for tracing and where the length and breadth of the print could be measured. These dimensions have been plotted as a scatter diagram in Figure 10. Three definable clusters can be identified.

A group of small prints is of ovi-caprid type, up to about 5 by 7 cm, of which 7 or 8 have been identified. These are compared with the idealised size of a sheep footprint in Lawrence and Brown (1967, Fig 4.32). At least one of the probable ovicaprid footprints is much smaller than the others and seems likely to be juvenile.

A group of 25 larger prints are of cattle size and shape, which are 7-16 cm long by 6-14 cm wide. They are compared with an idealised cattle footprint in Lawrence and Brown (1967, Fig 4.32) and with the footprints of 7 modern dairy Friesians at Redwick. The latter are unsurprisingly at the larger end of the spectrum but the degree of overlap shows some large animals were present in the Bronze Age. Of the cattle prints c 6 are at the smaller end of the spectrum and are likely to represent juvenile animals.

The third group of prints on the graph are human, 17-27 cm long by 6-9.5 cm wide. The 27 cm long example was a foot which had clearly slipped. All of the human footprints, where the form of the print could be identified in sufficient detail, had been unshod. It seems that in the Bronze Age people coped with the muddy conditions in the estuary by walking barefoot. We do, however, need to keep in mind the possibility that a shod foot may have produced a less easily recognisable print. On Figure 10 the human prints are compared to the feet of the writer (MB) and his family: two modern adult feet (shoe size 8 and $5^{1}/_{2}$) and the feet of two teenagers of below average size aged 14 and 17 (sizes $4^{1}/_{2}$ and $5^{1}/_{2}$). These modern footprints were

Figure 10: Redwick: Scatter diagram showing the length and breadth of Bronze Age footprints of humans (including A7), cattle and probable ovi-caprids. These are compared with the dimensions of idealised modern footprints in Lawrence and Brown (1967); modern cattle at Redwick and the footprint sizes of the writer (MB) and his family.



measured as outlines of the foot, rather than impressions in mud, they are probably therefore underestimates of impression size. This part of the diagram clearly shows that at least one of the footprints, the best preserved example A7, is likely to be that of a child; three, or four, other examples are likely to be children or teenagers. This raises the interesting question as to whether the seasonal herding of cattle and ovicaprids on the wetland was partly, or perhaps even largely, a task delegated to children and teenagers. If so, a further question is raised as to whether this was a purely practical arrangement, or was related in some way to rites of passage, or initiation, at particular times of year. That point reflects an interesting suggestion made to the writer by Professor J.G. Evans (pers. comm.) concerning the possible use of the rectangular buildings at Goldcliff. Such questions might be addressed if we are able to obtain information from the footprints about the age and sex of those who made them. It is far too early to reach any conclusions on these aspects, we would need a much larger sample of prints recorded in greater detail, but it does illustrate the interesting issues which this unusual form of evidence might enable us to tackle.

One other print is of note, it was larger than the others, C-shaped, c 20cm in either dimension and seems likely to be a horse. This is not shown on the graph because it was inundated in a storm before it could be traced or sufficiently precisely measured. It is, however shown on the plan in the south west corner of Figure 7.

Conclusions

The existing survey base for this area has been significantly enhanced and a start has been made in monitoring peat erosion rates. No information of comparable quality has been published elsewhere so far as we are aware and erosion monitoring is seen as an important aspect of future work at Redwick.

The 1999 assessment exercise has indicated that Building 5 had been subject to significant surface erosion, so much so that it is uncertain whether this was originally a roofed structure, although this seems probable. The assessment confirmed that there is a diffuse scatter of artifacts around the structures which points to limited, and probably temporary, occupation. It was demonstrated for the first time in Area 5 that activity areas occur away from structures and, particularly where they are sealed by clay, can provide an exceptionally well preserved record of short term activities as the footprints show. Evidence from the 1996 survey shows that Buildings 2 and 4 are much better preserved than Building 5.

Redwick is now known to be one of three sites on the Gwent Levels with rectangular wooden buildings of prehistoric date on peat. Redwick and Goldcliff are intertidal and a third site at Barlands Farm has been excavated inland of the seawall in advance of building development (Locock pers. comm.). As a result of our 1999 work at Redwick we must revise some of our preliminary observations on the site. Contrary to previous statements pottery is present but is not very abundant. Thus, although Goldcliff and Redwick are similar in terms of the presence of rectangular buildings and their association with many animal footprints, the two sites contrast in terms of the presence at Redwick of pottery, charcoal and fire cracked stone. Much more extensive survey and excavation at Goldcliff produced just a single potsherd and 1 piece of charred wood, both from a palaeochannel context round Building 6. The Redwick buildings are also longer, narrower and less substantially constructed than those at Goldcliff. There are hints of subdivisions within Buildings 2 and 4 and more detailed field investigation and palaeoenvironmental analysis may help to establish whether these housed animals as was shown to be the case with some of the Goldcliff structures. The rectangular building tradition is now seen to have lasted for at least a millennium on the Welsh Severn Levels. Work at Redwick will help to establish the nature and function of these buildings and may help to clarify whether they are likely to have contributed to the later Welsh long house tradition.

Acknowledgements

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References

- Aldhouse-Green, S.H.R., Whittle, A., Allen, J.R.L., Caseldine, A. Culver, S.J., Day, M. Lundquist, J. and Upton, D. 1992. Prehistoric human footprints from the Severn Estuary at Uskmouth and Magor Pill, Gwent, Wales. Archaeologia Cambrensis 141, 14-55.
- Allen, J.R.L.1997 Subfossil mammalian tracks (Flandrian) in the Severn Estuary, SW Britain: mechanics of formation, preservation and distribution. *Philosophical Transactions of the Royal Society of* London B352, 481-518.
- Allen, J.R.L. 1999 Flake failure: a new mass-movement mechanism affecting peat beds eroded intertidally, Severn Estuary, southwest Britain. *Engineering Geology* 53, 23-33.
- Allen, J.R.L. and Bell, M. forthcoming 2000 A late Holocene tidal palaeochannel, Redwick, Gwent: late Roman activity and a possible early Medieval fish trap. Archaeology in the Severn Estuary 1999 (this vol).
- Bell, M. 1990 Brean Down excavations 1983-87. London: English Heritage Archaeological Report 15
- Bell, M., Caseldine, A and Neumann, H. 2000 Prehistoric Intertidal Archaeology in the Welsh Severn Estuary. York: Council for British Archaeology Research Report 120.
- Lawrence, M.L. and Brown, R.W. 1967 Mammals of Britain: their Tracks, trails and signs. London: Blandford Press.
- Neumann, H. and Bell, M. 1996 Intertidal survey in the Welsh Severn Estuary. Archaeology in the Severn Estuary 1996 (vol 7), 3-20.

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