INTERTIDAL SURVEY IN THE WELSH SEVERN ESTUARY 1997

by Martin Bell and Heike Neumann

During 1997 survey work continued in the Welsh intertidal zone. A series of wooden structures were recorded associated with palaeochannel complexes at Peterstone and Collister Pill. The report concludes with a chronological summary of the results of the intertidal survey in advance of its final publication next year.

Introduction

The objective of this survey was to create a comprehensive record of the prehistoric intertidal archaeology of the Welsh Severn Estuary as explained by Bell and Neumann (1996). Part of the aim was to carry out an investigation of the many sites discovered by Derek Upton over the years and to put the detailed survey carried out at Goldcliff between 1990 and 1994 in a wider archaeological and palaeoenvironmental setting. The survey was funded for a total of sixteen months by the Board of Celtic Studies of the University of Wales and there was additional support from Cadw towards the cost of fieldwork. Initial results of the survey for each geographical area of the foreshore were summarised by Neumann and Bell (1997), and some of the project's conclusions are outlined in a general survey of the prehistory of the Estuary by Bell and Neumann (1997). This account outlines the results of some additional fieldwork carried out in 1997 and provides a summary of some of the survey results by periods for which individual maps are presented. The final report on the project as a whole, including the Goldcliff Project, is due for submission for publication in August 1998 (Bell *et al.* forthcoming).

Fieldwork in 1997

This year was largely devoted to completing the report on the project, so work in the field was limited to the investigation of types of site for which detailed planning had not previously been possible. The main site type in this category was wooden structures associated with palaeochannels. Many had been noted during the survey, and two examples had been investigated in a limited way at Goldcliff. Another had been investigated at Cold Harbour in 1996 and was shown to be an Iron Age wattlework structure, perhaps used for fishing (Neumann and Bell 1997,14). The intention in 1997 was to look at other associations between palaeochannels and structures. The method used was to clean and plan structures, and sample from exposed wood for identification. Excavation was generally limited to obtaining samples for radiocarbon dating, although some further excavation took place in the Peterstone palaeochannels. At Peterstone fieldwork took place over two days, the Rumney and the Collister Pill sites were examined in single days. The work was done with a team of eight or nine people daily.

Rumney

Earlier survey work at Rumney had identified small islands of peat surrounded by wooden stakes, in one case forming a box-like structure *c.*1 m square (Neumann and Bell 1997, 8). The objective had been to locate and excavate this structure but at the time it was covered by mud, though this structure and others at Rumney were subsequently investigated later in the summer by Nigel Nayling.

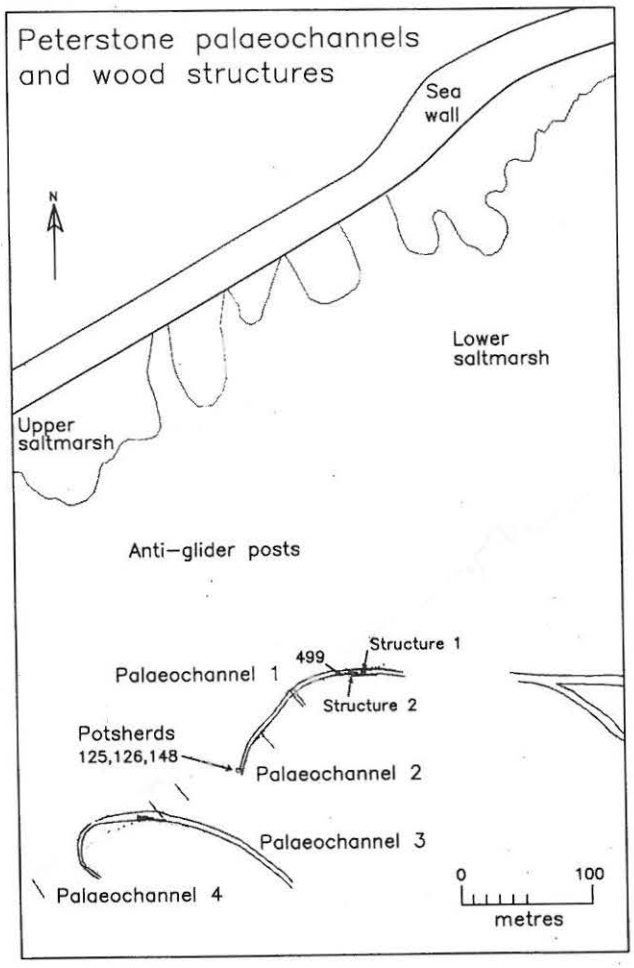
Instead, another patch of peat was identified surrounded by four wooden stakes in an area 1.5 m in diameter. The stakes were pointed and this, together with their stratigraphic position, is further evidence of probable prehistoric activity at Rumney in addition to that reported by Allen (1996), though this site was very eroded and its character uncertain.

Peterstone palaeochannels

A series of four palaeochannels were identified within the estuarine clays to the south of Peterstone Great Wharf during the field survey in March 1996 when the area was relatively clear of modern mud. The intertidal area to the south of the saltmarsh is at *c.*2.2 m O.D. The peatshelf is largely absent in this area, and occasional

exposures along the eroding edge of the saltmarsh and within palaeochannels are patchy and only a few centimetres thick. There are, however, indications in parts of this area that the peat which survives is the eroded remnant of a rather thicker peat which has been subsequently buried by renewed accretion of saltmarsh deposits (the Rumney Formation). Peat layers survive within the fills of palaeochannels and in several rectangular pits originally cut through the peat and underlying clay at ST 276 800. In one location the collapsed sides of the pits were embedded as horizontal blocks within later estuarine clay, and a peat layer *c.*0.2 m thick was identified within these blocks. This peat has subsequently been eroded away leaving only this collapsed block in the feature fill. A very similar series of rectangular pits have been recorded by Professor J.R.L. Allen (pers. comm.) and by this survey at ST 266 795. Both sets of pits are of unknown date and function, and though their form is reminiscent of peat diggings they are cut to well below the depth of the peat and in any case only thin peats are known in this area. Clay borrow pits are a possibility, as are retting pits perhaps for flax. Rectangular pits interpreted as for this purpose have been located at a number of sites in the Humber wetlands (Van de Noort and Ellis 1998).

Figure 1: Peterstone: map of the palaeochannels transcribed from air photographs with additions from ground survey in 1997 (Drawn by H. Neumann and B. Taylor)



Palaeochannels in the intertidal area at Peterstone were first identified on air photographs and later investigated on the ground. They cut into the estuarine clay and were filled, first with clay and later with peat. The preservation of this peat as slightly raised linear ridges dished in the centre made these features very clear (Figure 5). To seaward the peat fill has been eroded and the lines of the channels are normally obscured by mud. When this cover was greatly reduced in March 1996 they could be traced further seaward as bands of clay of contrasting colour along which there were occasional roundwood verticals and animal bones.

The original air photograph transcripts were enhanced by ground survey in March 1996 when the seaward extension of these palaeochannels could be added (Figure 1). In March 1997 wooden structures and artifacts were accurately located within the channel by Hazel Riley using a Global Positioning System (GPS). The four projecting ridges of peat are numbered 1 to 4 from east to west: 1 and 2 are part of the same channel curving widely to seaward, while 3 and 4 form two ends of another similar channel. Channels 1 to 3 were the subject of survey and recording during 1997.

Palaeochannel 1

The edges of the channel were marked along part of its landward course by peat covered ridges forming either side of a channel 5.4 m wide; elsewhere the peat appeared to have been eroded away. Some 33 pieces of wood were recorded along a 32 m stretch of the palaeochannel, comprising roundwood, split timber, and perhaps natural driftwood. Within this area three findspots were investigated.

Structure 1. When originally recorded this feature seems to have consisted of six small pegs in a rectangle within the clay fill of the palaeochannel. A photograph of it was published in the 1996 annual report (Neumann and Bell 1997, fig. 5), though the caption incorrectly stated that it was at Rumney Great Wharf: the text description was correctly included under Peterstone. What appears to be the same feature was relocated in March 1997, although certainty is impossible given the environment and constantly fluctuating mud cover and erosion. By this time there were only four pegs and the possible impression of a fifth; a gully may have eroded away a sixth peg. Making these assumptions the original structure would have been 0.5 m by 0.8 m. A small excavation was made which showed that the edge of the palaeochannel was picked out by a band of more organic clay. One of the two pegs examined had a natural break at the end, while the other had been cut. The survey in March to April 1996 had noted other similar rectilinear arrangements of 4 or 6 pegs making it probable that we are dealing with a specific type of structure. Given their size and plan, pegs to hold in place fishing baskets or nets seem plausible hypotheses. Peg 458 from this structure awaits radiocarbon dating.

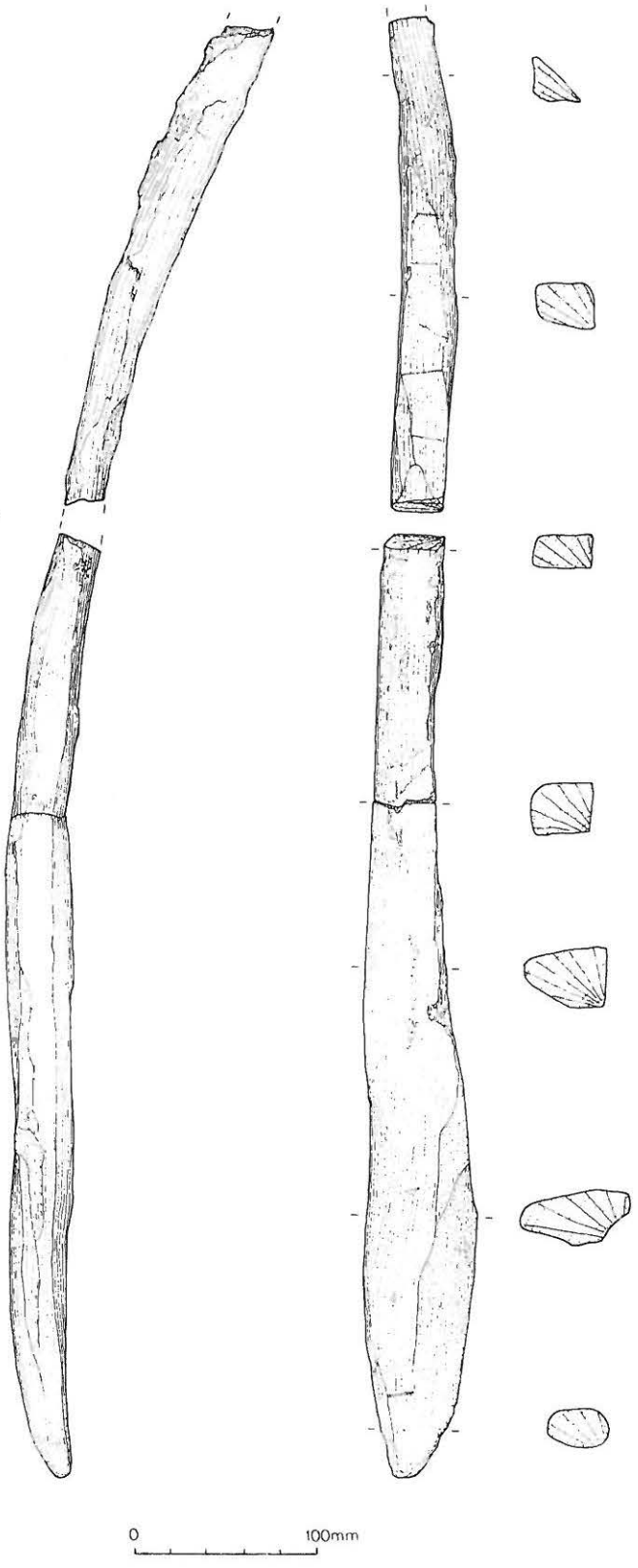
Structure 2. 6 m west of Structure 1 the clay fill of the palaeochannel had a particular concentration of roundwood verticals and small pieces of thin horizontal roundwood in an area 0.8 by 0.7 m. Some horizontals appeared to have been woven round the verticals in the fashion of wattles. The structure was planned and an area 1 m^2 was excavated to reveal many more pieces of wood. They were fragmented and ran in all directions, but many were of a similar diameter and may have been part of a light woven fence running, at least partly, across the channel. It might also have been the crushed and eroded remains of a basket or other structure.

Wooden Object 499

By Martin Bell and Steven Allen

Within the clay fill of the palaeochannel 11 m west of Structure 2, Heike Neumann observed a piece of horizontal wood which appeared to be worked. A small area was excavated to reveal the object shown in Figure 2. The object is in three pieces and appears to have been fashioned from a piece of radially split wood. Two of the three join to make an object, one end of which has a rectangular to square section, while the other end is wider and of more oval section, tapering to a

Figure 2: Peterstone: Wooden object 499 from Palaeochannel 1. Possibly a paddle or punt pole (Drawn by S.J. Allen)



point. The wider end is smoothed and rounded as if by frequent use. The object also has a slight curve and a slight S-twist to the wider end. The third fragment does not join but is of similar section, conversion and appearance and almost certainly comes from the same object, which would have been more than 0.89 m long, since there are breaks at both ends of the third fragment. The adjacent ends of the second and third fragments show signs of having been cut. It would appear that the object was deliberately cut up and a length of wood, which would have linked fragments 2 and 3, was either removed or lost. The thinner end is not so carefully worked although it is probable that the object has split at this end.

The shape of the object is similar to a paddle but the rounded end is less wide and fatter than would be expected for this purpose. The Bronze Age paddle from Canewdon, Essex, for instance, has a blade some 14 cm wide, a pronounced mid-rib and a circular shaft (Wilkinson and Murphy 1995, fig. 99). Iron Age examples from Hjortspring, Denmark, are also more 'paddle-shaped' and carefully worked than this find (Kaul 1988). The Somerset Levels have produced two objects with some similarities to the Peterstone find: part of a paddle-shaped piece from the Neolithic Sweet Track (Orme *et al.* 1993, fig. 28, SWF 1050) and a piece from the Meare Heath Track which is rounded and worn at both wider and narrow ends (Orme *et al.* 1983, fig. 44). Interestingly the Broighter Iron Age boat model from Ireland (Warner 1991) includes a wide variety of paddle and pole forms, for several of which there are parallels in the archaeological record (Millett and McGrail 1987, fig. 26): some of the paddle forms are quite similar to the Peterstone find.

It may also be significant that a wide variety of post-medieval coracle paddle shapes from Wales and the Marches, illustrated by Jenkins (1988), include some which are narrower than typical paddles (eg Jenkins 1988, 52), although none is so narrow as the Peterstone example. Some of those illustrated (eg Jenkins 1988, 70) do, however, seem to show the curve found in this example. It could be that in narrower palaeochannels, such as this, a dual purpose implement might have been favoured to serve both as a paddle and a punting pole, which could account for its worn and rounded end. It would be interesting to know whether there are any more recent parallels for such an artifact and whether, among recent ethnohistorically recorded paddles, there there is a correlation between paddle form and the environment in which they were used. If this did serve as a paddle it would not have been of much use to any fisherman whose coracle, or other vessel, happened to be swept out into the main estuary.

Although the identification of this artifact as a paddle is tempting, in view of its context within a palaeochannel and with the nearby possible fishing Structures 1 and 2, its unconventional shape makes this identification uncertain. It might have served many other functions: as a digging stick, or a tool for making holes in the mud for the emplacement of posts. Symbolism should also not be forgotten in this context: the Broighter boat model was after all deposited in a saltmarsh (Warner 1991). However, in the Peterstone instance a non-functional model of a paddle seems unlikely in view of the degree of wear at the wider end.

Palaeochannel 2

Just seaward of the saltmarsh the palaeochannel is marked by a ridge of peat, its upper surface concave and the ridge curving seaward. Close to the saltmarsh it was cut by an undated linear ditch 1.65 m wide. The channel could be followed for 25 m beyond the extant peat ridge. In the area where peat remained eleven vertical posts and pegs were recorded within the channel (Figure 3) but did not form a recognizable pattern. Within the channel there were also nine bones, including an antler, a fire cracked stone and some twisted wood fibres which are probably the remains of a withy tie; well-preserved examples of such artifacts were found in Iron Age contexts at Goldcliff (Bell 1993, fig. 41).

Near the western limit of this palaeochannel Derek Upton found a sherd of pottery in the palaeochannel fill, and accordingly a small area 3 m by 2 m was excavated and produced three sherds, a rib, a deer jaw and some charcoal. The pottery (Figure 4) may all be from one vessel and two sherds clearly join. The vessel seems to be small, of globular shape with a vertical neck; here, and on part of the body, are incised horizontal lines. Above and below the widest part of the vessel are groups of three horizontal lines between which is lighter diagonal cross hatching which in places is not contained by the horizontal lines.

The use of bold incised decoration of this kind is found on the Trevisker-related pottery assemblage from Unit 5b at Brean Down (Woodward 1990), where there are vessels of similar form and decoration, although there is nothing quite like the cross hatching. Radiocarbon dates for the Brean Down assemblage centre on the period between 2940 and 2730 BP uncalibrated, so the Peterstone palaeochannel is likely to be Middle Bronze Age. It may, therefore, be a little later than the Bronze Age roundhouse site at Rumney 3, 2.4 km to the west, which has a conventional radiocarbon date of 3080+/-50 BP (Beta-46951) (Allen 1996, 10).

Palaeochannel 3

The west end of this channel is overlain by recent saltmarsh deposits of the Rumney Formation. The palaeochannel extends from this as a raised peat ridge (Figure 5) which can be followed eastwards as a low clay ridge and beyond this by intermittent

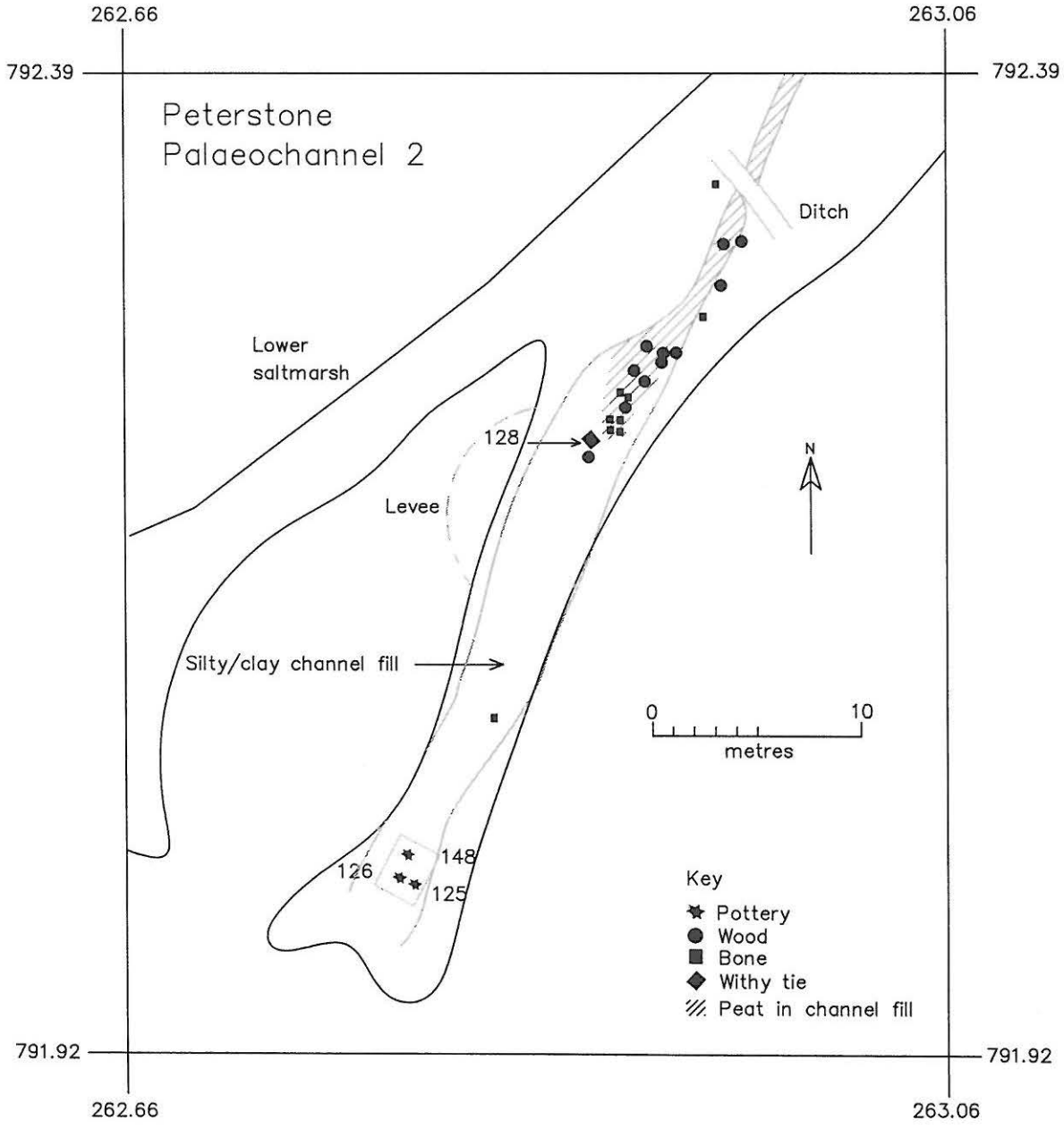


Figure 3: Peterstone: Palaeochannel 2: solid black outline transcribed from air photographic cover. Grey lines and artifacts are those picked up by GPS in 1997 (Drawing by H. Riley and B. Taylor)

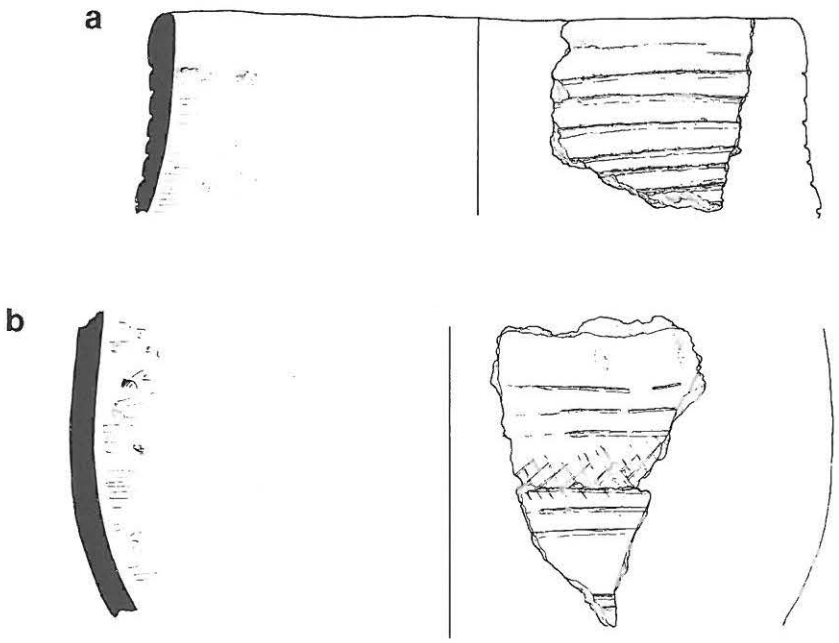


Figure 4: Peterstone: Bronze Age pottery sherds from palaeochannel 2 (Drawn by J. Foster)

wood posts and bones. A 20 m length of the channel was planned in March 1997. Twenty posts, six bones and four stones were recorded in this length. The posts were irregularly placed but eight split uprights were roughly positioned along the north side of the channel. One of these, vertical 523, was lifted for radiocarbon dating which is awaited. It was a timber of square section and an end pointed by many axe blows, the dished profile of which suggested to Richard Brunning that they may have been made with a bronze axe. This contrasts with the flatter axe marks for which iron implements have been suggested at Goldcliff (Brunning 1992, 23).

An undated ditch appears from below the Rumney Formation and approaches the palaeochannel diagonally, although unfortunately erosion appears to have bottomed the ditch out just north of the point at which they would converge. The ditch is one of a series of parallel ditches in the Peterstone area (Figure 1) which have a general similarity to numerous ditches in the intertidal area to the west at Rumney for which a Romano-British date has been suggested (Allen and Fulford 1986).

Palaeochannel 3 can be traced in places where the overlying Rumney Formation has been

Figure 5: Peterstone: Palaeochannel 3 looking south east along the line of peat marking the palaeochannel, the figure on the right is in the continuation of the palaeochannel marked by occasional roundwood verticals and bones. The figure on a peat ridge to the left is in palaeochannel 2 (Photo. M. Bell)

eroded away, curving west where it appears to join Palaeochannel 4. This again takes the form of a peat ridge, and beyond this a low ridge of clay. The only finds from that channel are a *Bos* jaw and one other bone.

Conclusions

The Peterstone palaeochannels are in a stretch of the foreshore which has so far been unproductive of finds, yet these discoveries made over just two days fieldwork under only moderately favourable conditions of mud cover have been surprising. They confirm our impression from elsewhere in the Estuary that prehistoric communities made wooden structures within palaeochannels probably for fishing purposes. The several discoveries from Peterstone also suggest the probability of a settlement nearby. If we are correct in inferring that peat once existed in this area and was largely eroded away some time before deposition of the overlying Rumney Formation, then it is possible that settlement traces have gone with it, leaving only remnants in the adjacent palaeochannels. Truncation of the channel fills and surrounding peat is likely to have exposed layers within these channels that are often still buried within less eroded channels, and serve to highlight the potential for discoveries in channels elsewhere in the Estuary. Interestingly this investigation of the Peterstone channels shows artifacts occurring not just in the peat but in the underlying clay channel fill, suggesting that here occupation may not be purely confined to the period of peat formation.

Collister Pill area

Fieldwork also took place east of Collister Pill where the distribution of sites is shown in Figure 6. The substantial submerged forest to the west of Collister Pill peters out eastwards and only occasional tree stumps are visible within 100 m to the east of the Pill. The peatshelf overlies a clearly laminated estuarine clay and over the next 600 m the peat gradually thins and merges into a reed peat before disappearing at ST 462 858. Four major palaeochannels, more than 10 m wide, dissect the peatshelf in this area and in at least two, prehistoric pottery and wood were reported by Derek Upton on previous visits. While the channels were active erosion caused the collapse of the channel margin as the peat surface fractured alongside the channel edge and peat rafts became frequently embedded *in situ* within the clay-fill of the larger channels.

Collister Pill 3

A substantial palaeochannel at ST 4573 8570 was marked by a 19.2 m wide gap in the peat shelf filled by clay. Derek Upton had reported discoveries from the eastern edge of this channel over several years including wood, stone and pottery. Accordingly an area 6 m by 7 m of the surface was cleaned and planned (Figure 7). At the edge of the channel peat blocks had shifted leaving cracks filled with clay which extended 5 m east of the channel, clearly showing that here the cracking of the peat surface is contemporary with cutting of the channel. Similar bank-parallel cracks were recorded in a palaeochannel at Magor Pill (Allen and Rippon 1995, fig. 23). Changes in the colour, particle size and organic matter content of the clay channel fill marked successive palaeochannel edges. Activity appears to have taken place at one such edge where three pieces of roundwood lie parallel to the channel edge. Each was 0.1 m in diameter, dipped into the channel and projected some 0.2 m from its eroding fill. Stratified in the channel fill were thirteen stones, mostly angular and clearly fire cracked, and other fire cracked stones were present in the same channel south of the planned area. There were also four pieces of roundwood 2 cm in diameter which may be pegs. One piece of bone was found nearby. Around 1994 Derek Upton had found pottery *in situ* within the clay channel fill. With admirable foresight he had measured the findspot in relation to the three roundwood posts, and using this record it is possible to mark the finds on Figure 7. Rim sherd 8a was found in the area of the burnt stone scatter. It has a simple, slightly out-turned rim from an almost straight-sided pot with coarse filler. An unillustrated body sherd was found 2 m north of the structure. Later during 1997 Derek Upton found a larger rim sherd (Figure 8b) unstratified in the surface of the same channel to the south. The rim forms and the coarse fabric has similarities to the assemblage from Brean Down Unit 4 which is dated to the late Bronze Age (Woodward 1990), and so a date in this period or the Iron Age seems probable. A radiocarbon date on the piece of roundwood 551 is awaited.

The parallel roundwood elements and pegs might suggest a trackway at the edge of a channel,

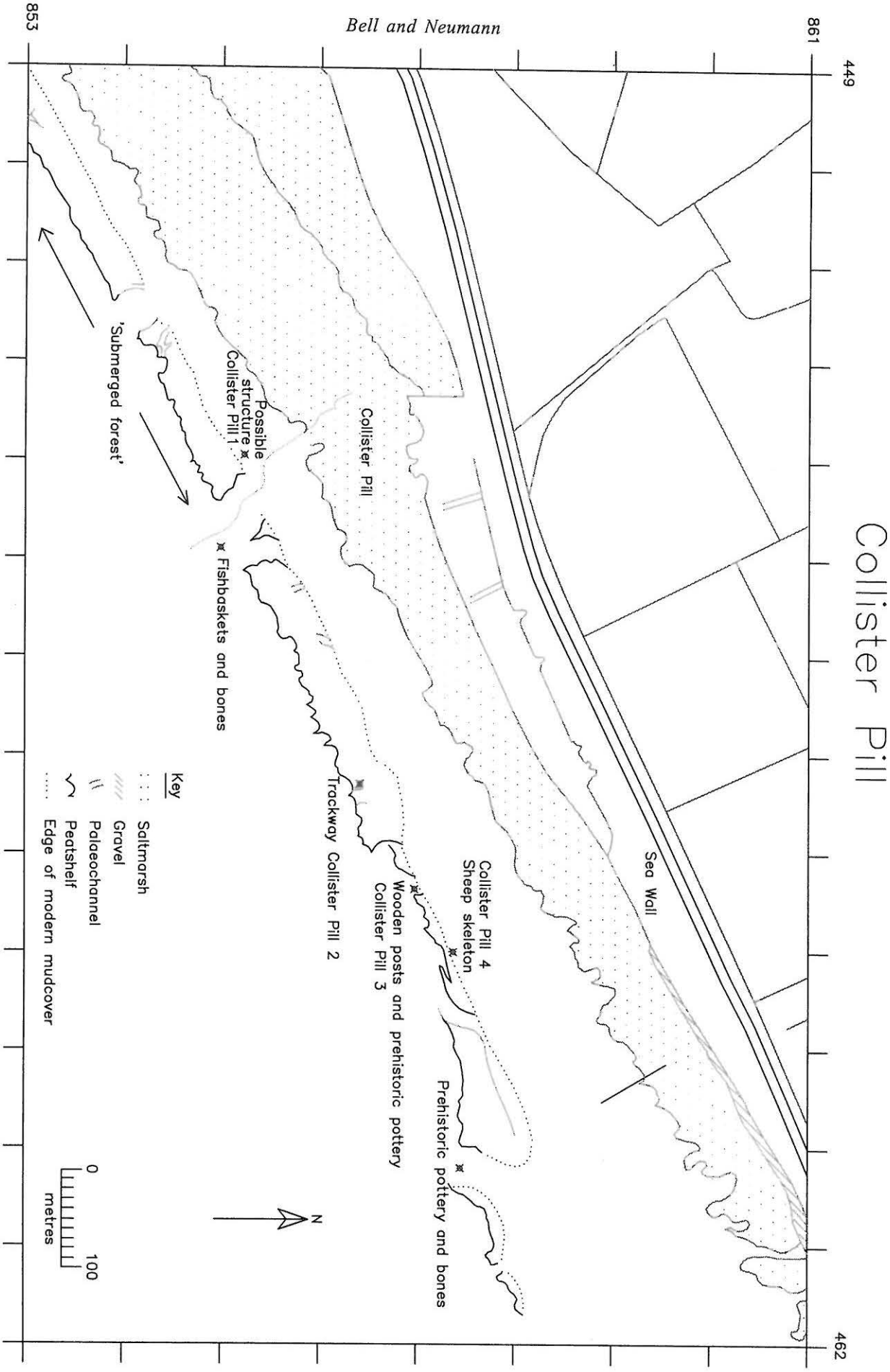


Figure 6: Collister Pill: Survey plan transcribed from air photographs showing the archaeological sites recorded during field survey including the locations of the Collister Pill 2, 3 and 4 sites described here (Drawing by H. Neumann and B. Taylor)

though the association with burnt stone, pottery and bone is not something which has been recorded in relation to trackways elsewhere in the Estuary. Burnt stones occur elsewhere in the Estuary notable in association with the Redwick Bronze Age settlement (Bell and Neumann 1997, 103) and in the fill of the palaeochannel at Caldicot (Nayling and Caseldine 1997, 246). Burnt mounds representing much larger concentrations of similar burnt stones are of frequent occurrence in western Britain and Ireland during the Bronze Age and are generally

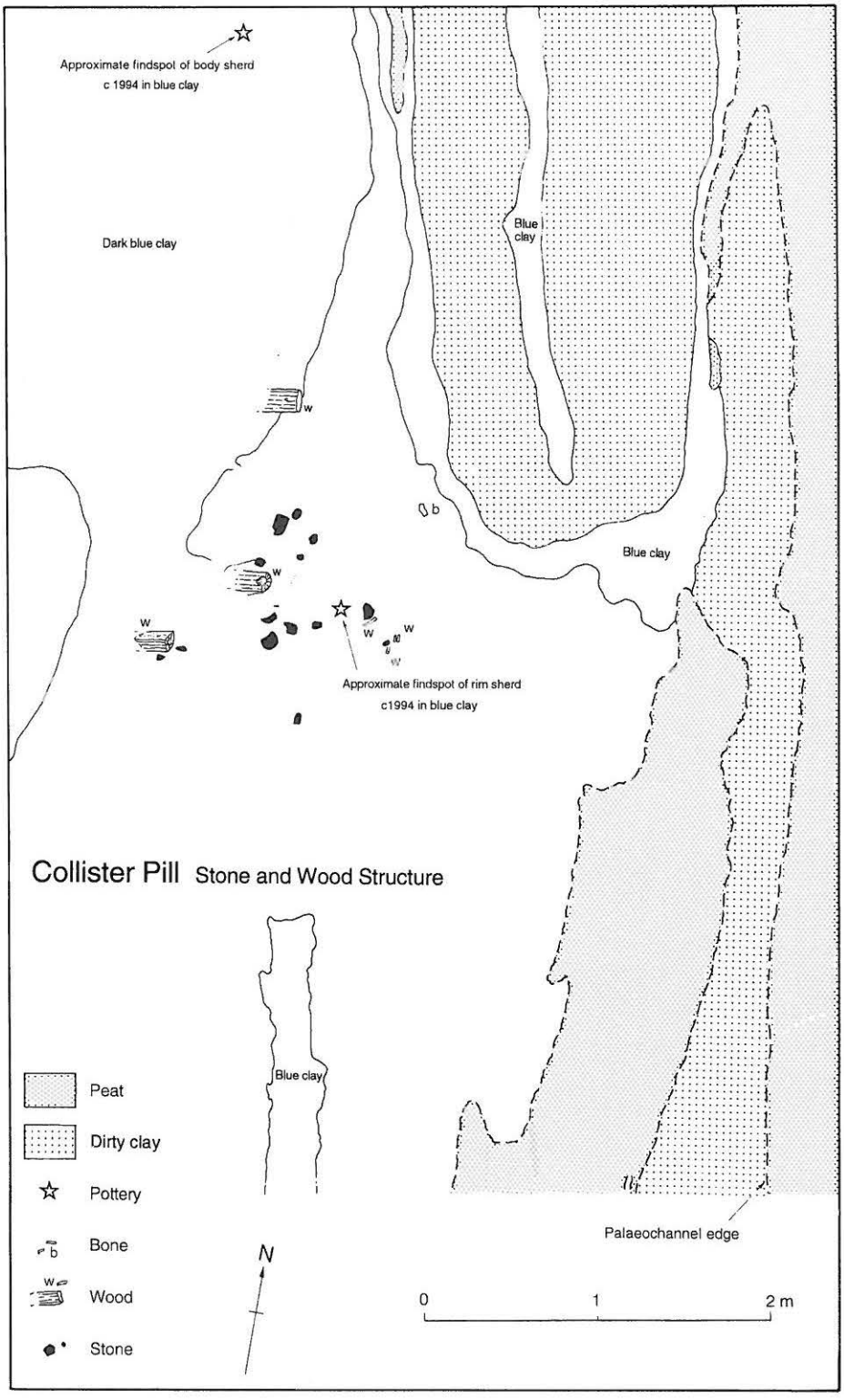


Figure 7: Collister Pill 3: The edge of a large palaeochannel showing a concentration of burnt stone wood and pottery (Drawn by S.J. Allen)

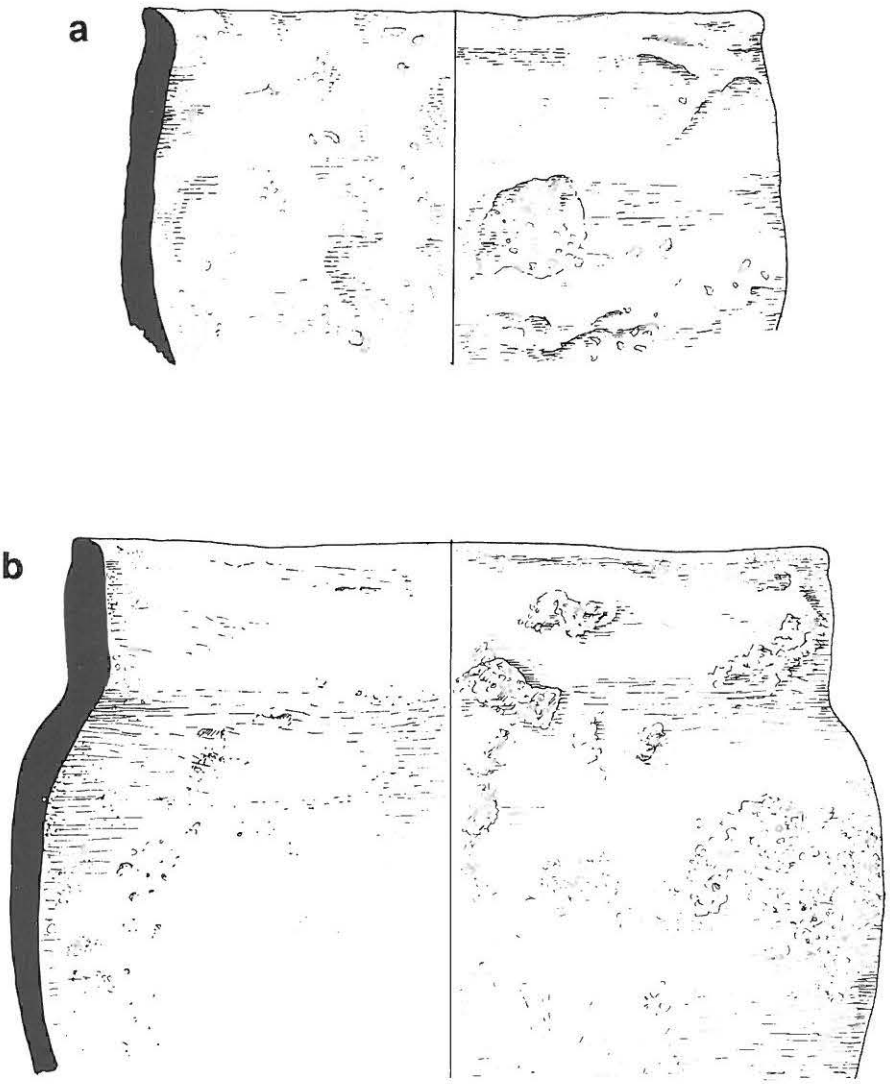


Figure 8: Collister Pill 3: Pottery from the palaeochannel (Drawn by J. Foster)

associated with watercourses. This structure seems likely to have been associated with some specific activity and it is probable that there was an area of settlement, either temporary or permanent, nearby. Cleaning of a small area of the adjacent peatshelf in order to draw Figure 7, and the rapid examination of the peat to the east, produced no evidence of archaeology, though is possible that the contemporary surface has been eroded or oxidized. Alternatively activity may have lain upstream. The only find from this peat surface was 59.5 m east of the Collister Pill 3 channel. Here what appeared to be a complete skeleton of an immature sheep was stratified in the surface of the peat. This is likely to be an animal which died naturally and was buried by accumulating peat.

Collister Pill 2

Smaller scale palaeochannels up to a few metres wide are also visible on the peatshelf and in one such channel a brushwood trackway was exposed at ST 4562 8564. The method followed here was to clean and plan what was visible in an area 4 by 4 m (Figure 9). The channel was 4.5 m wide and had a fill of mixed peat and clay. There was a scatter of 44 pieces of brushwood mostly oriented at right angles to the palaeochannel. Most of the wood was horizontal but a few pieces may represent pegs which held the brushwood in position. It is interpreted as the remains of a trackway crossing the channel. A sample of one of the pieces of brushwood awaits radiocarbon dating, though its stratigraphic position on the peat surface makes a Bronze Age or Iron Age date most likely.

Circular to oval patches of clay within the channel fill are interpreted as possible animal footprints. Only one or two of these examples were of clearly appropriate shape and their identification mainly rests on analogy with situations elsewhere in the Estuary where mottling of this kind has been shown, by more detailed investigation, to represent evidence of animal footprints, as for instance in the palaeochannel round Goldcliff, Building 6 (Bell 1995, fig. 48).

A notable aspect of the area planned is evidence for cracking of the peat surface, which has been seen on several other sites between here and Redwick. At Collister Pill 2 a sinuous crack filled with grey clay crossed both the peat surface and the palaeochannel fill. Two alternative scenarios seem to suggest themselves. The first is drying out and dessication of the peat surface

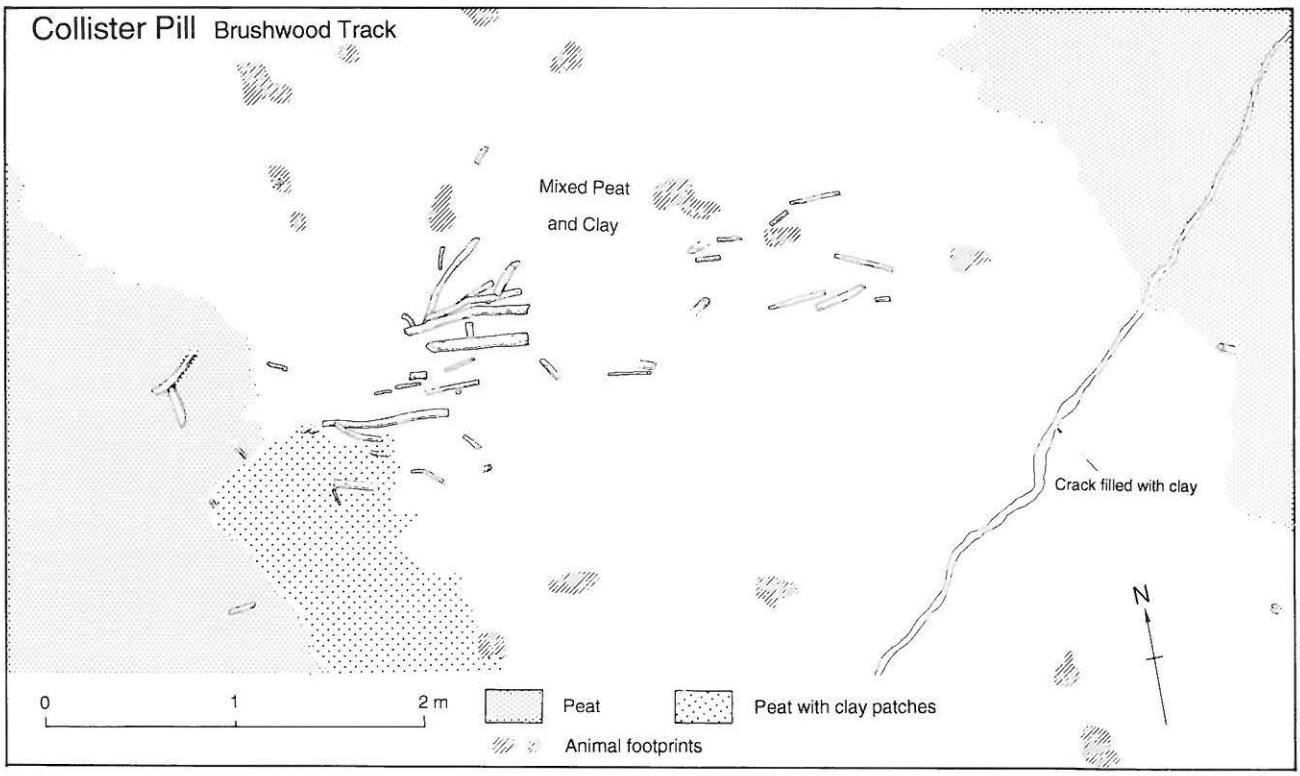


Figure 9: Collister Pill 2: Possible brushwood trackway crossing a palaeochannel (Drawn by S.J. Allen)

post-dating the period of the channel, but prior to burial by upper Wentlooge Clay. The second possibility is that the cracking is part of a post-exhumation phenomenon relating to offloading of the peat surface in recent times. Which scenario applied is important because it has a bearing on environmental changes at the crucial transition from peat bog to renewed marine influence where so much of the archaeological activity appears to be concentrated (Bell and Neumann 1997). The issue could be resolved by establishing whether the cracking phenomenon is also present where the peat is still buried by clay and by looking at the heavy metal composition of the clay from cracks, since Estuary sediment of recent centuries contains evidence of heavy metal pollution (Allen and Rae 1986).

Intertidal survey results

The spatial distribution of the main peat types

The survey of the peat types in the exposed shelves has shown that the environments of the former coastal wetlands ranged from raised bog, alder carr to reed swamp. It is clear that the raised bog developed in three main areas: Rumney Great Wharf (ST 236 778 to ST 242 781), Goldcliff (ST 350 822 to ST 382 822), and between Windmill Reen and Cold Harbour Pill in Redwick (ST 411 831 to ST 435 844). The raised bog peat was usually bounded by areas of alder carr and, in the lower-lying margins of the bog such as the vicinity of river estuaries and pills, reed swamp was prevalent. The terrestrial wetlands extended much further seawards at the time and during the later Neolithic and Bronze Age raised bog developed. Much of the reedswamp peat that developed at the margins of the raised bog has been eroded, especially on its seaward side. The edge of the great bog was likely to have been undulating and some lower-lying areas where carrs and reedswamps occurred were contemporary with the bog. In other areas woody peat and reed peats represent earlier stages of the succession to raised bog. Thus the exposed surface of the bog is time transgressive. The exposed intertidal area is a cross section of a diverse and zoned coastal wetland and the variations in the types of peat are both a reflection of the different vegetation zones that were prevalent at any one time and also of the succession over time from reed swamp to alder carr and raised bog as the edge of the terrestrial bog expanded seawards. Natural successions were also interrupted and reversed at various times and for varying periods by marine transgressions and episodes when fen woodland expanded over the raised bog.

Find distribution by archaeological period

Palaeolithic

The only Palaeolithic finds are from Pleistocene gravels on the eastern margins of the Gwent Levels at Sudbrook and Sedbury cliffs (Aldhouse-Green 1993; Green 1989). This is likely to be a reflection of site visibility. During glacial episodes sea levels were much lower and the Gwent Levels, together with the present intertidal area, would have been a low-lying dry landscape adjacent to the river Severn with the sea at a considerable distance. When the Levels were inundated as a result of sea level rise from the early Holocene onwards, the Palaeolithic landscape would have been buried by sediments. Pleistocene deposits are particularly exposed on the margins of bedrock as at Sudbrook. On the west side of the bedrock outcrop at Goldcliff is a Pleistocene Head exposed in the intertidal area which contains large numbers of bones, and a report on this fauna is currently being prepared by Dr Ros Coard. There is no archaeology from the Head but, together with the finds from the Sudbrook area, it highlights the potential of the outcrops of Pleistocene sediments.

Mesolithic

During this period (Figure 10) the only possible occupation site is an artifact scatter on the edge of the bedrock island at Goldcliff. During the early and middle Mesolithic sea level rose rapidly and laminated clays and silts accumulated over large expanses of the Gwent Levels: the lower Wentlooge Formation. To seaward of the peatshelves these sediments are now eroded downwards exposing animal hoofprints attesting the presence of red deer, aurochsen and wolf (Allen 1997, 503) as well as human footprints (Aldhouse-Green *et al.* 1993). Although the foreshore beyond the peatshelves was not investigated systematically as part of this survey, animal footprints were recorded at many other locations with particular concentrations east of Uskmouth, and at Redwick and Magor. Both the animal and human footprints appear to be best preserved near the outlets of major rivers such as the Usk, Cold Harbour Pill and Magor Pill and around the course of minor palaeochannels such as the deer hoofprints at Redwick, and aurochsen and human footprints at a palaeochannel at Cold Harbour Pill.

Unstratified finds of tranchet axes at Goldcliff East and Porton, together with the footprint sites may well represent forays from the site on the edge of the Goldcliff island, or some other, dryland settlement. The earliest radiocarbon dates from the base of the peat at Uskmouth (6140+/-100, OxA-3307), Goldcliff (5950+/-80, Car-659), Magor (5720+/-80, OxA-2626) and Sudbrook (6660+/-80, Beta-79886) indicate the expansion of reedswamp and alder carr towards the Estuary took place before the end of the Mesolithic.

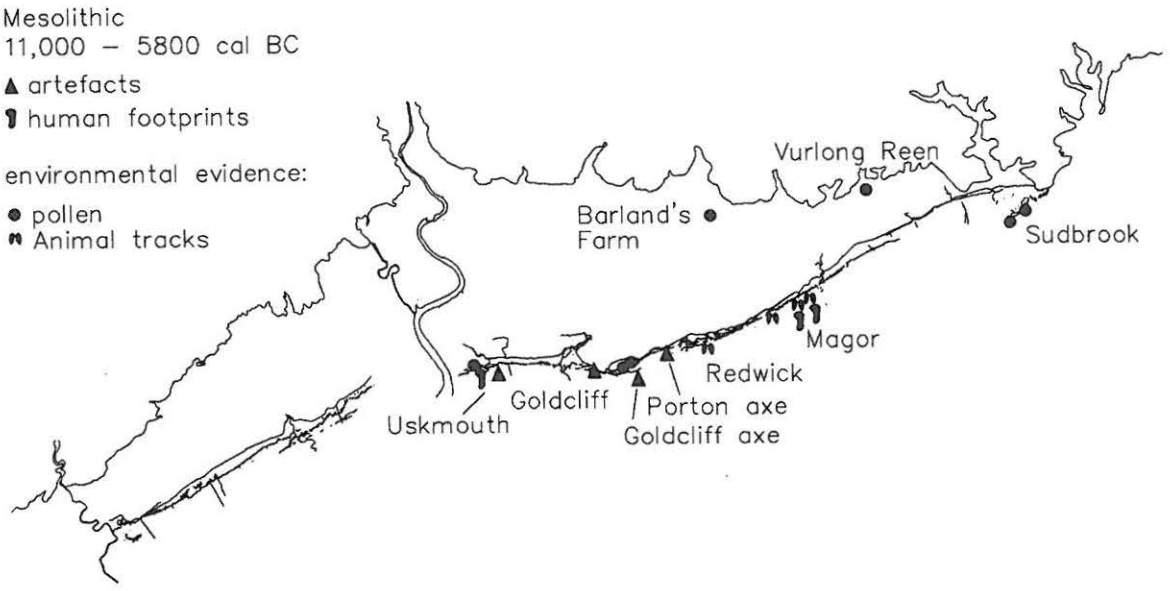


Figure 10: The Welsh Severn Estuary showing the distribution of Mesolithic finds in the intertidal area (Drawn by H. Neumann)

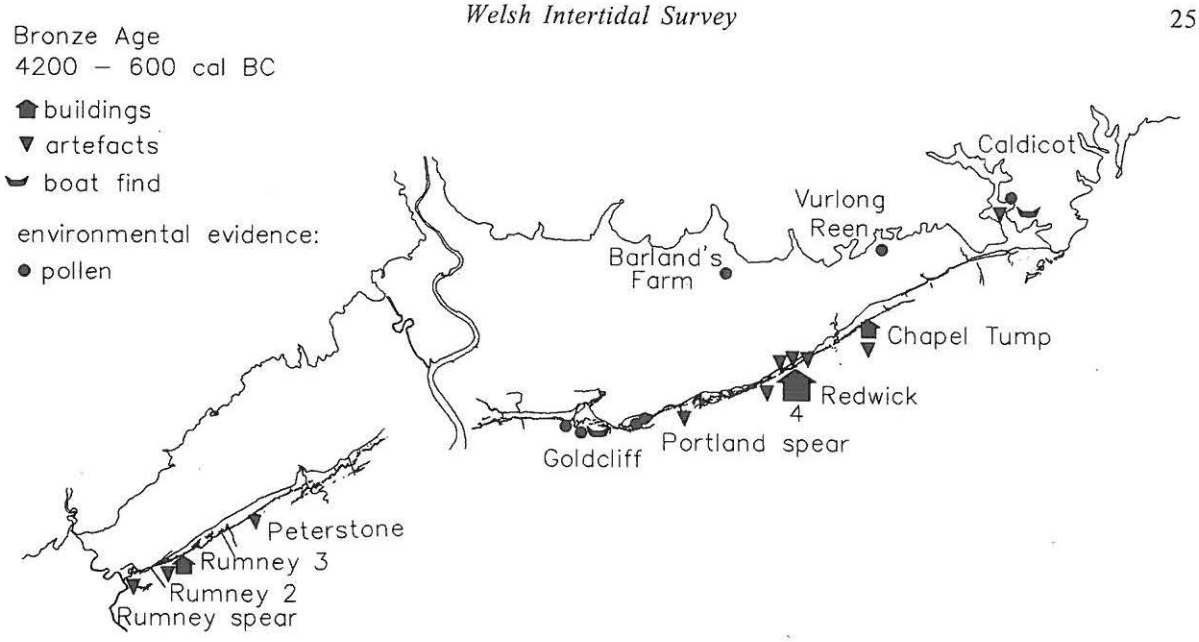


Figure 11: The Welsh Severn Estuary showing the distribution of Bronze Age sites (Drawn by H. Neumann)

Neolithic

The only finds recorded from the Neolithic period are a polished axe from Magor, a lithic flake at Sudbrook and a possible arrowhead at Rumney. Two dated aurochsen skeletons, not directly associated with human activity, also date to the Neolithic. There is evidence of clearance on the bedrock island at Goldcliff (Smith and Morgan 1989), and a human skull in peat at the edge of the Goldcliff island (Bell 1993, 88) appears to date to the Neolithic. There is, therefore, only evidence of limited Neolithic activity and no settlement within the peatlands during this period.

Bronze Age

The association of Bronze Age activities (Figure 11) on areas of raised bog has already been highlighted (Bell and Neumann 1997). Three major areas of Bronze Age settlement have been identified: Rumney Great Wharf, Redwick/ Cold Harbour and Chapel Tump, all of which are located on bog surfaces and are associated with structures and occupation debris. In most cases artifacts including charcoal, bone, wood and sometimes pottery preserved in a peaty clay layer immediately overlying the surface of the raised bog. Where this layer was eroded, more

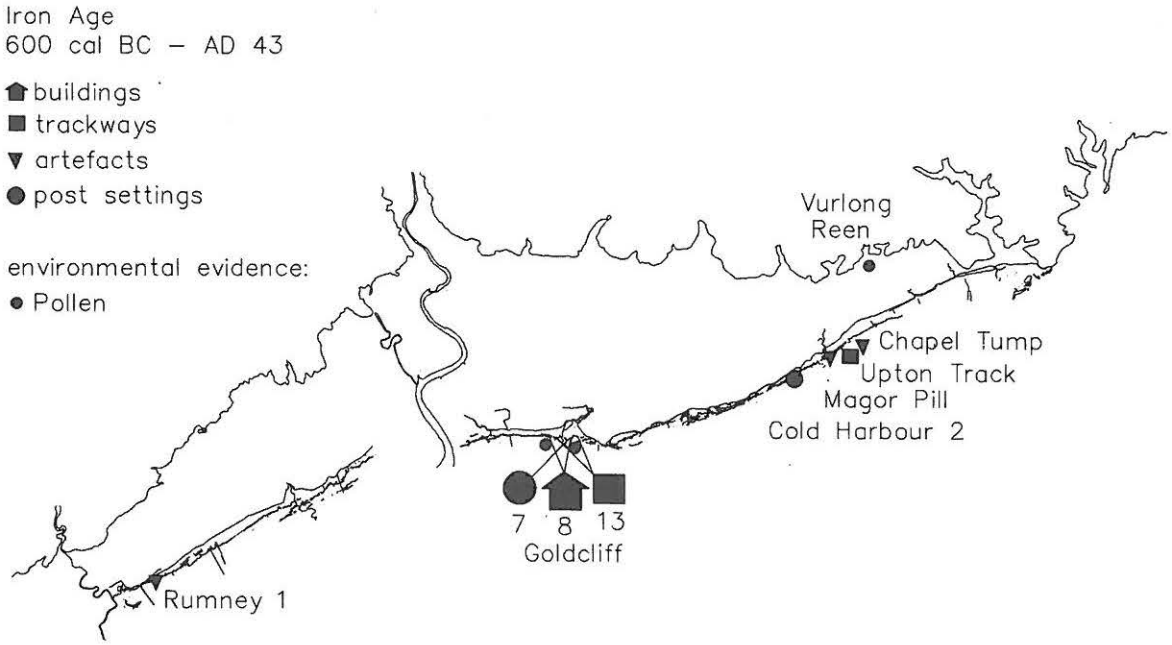


Figure 12: The Welsh Severn Estuary showing the distribution of Iron Age sites (Drawn by H. Neumann)

resistant wooden posts relating to building structures were still clearly visible. Two types of Bronze Age wooden structure have been identified. Roundhouses are found at Rumney Great Wharf (Allen 1996) and Chapel Tump (Whittle 1989), and such structures are typical of this period. The other type were rectangular wooden buildings at Redwick (Neumann and Bell 1997) the shape and dimensions of which are unique in British prehistory except for the later Goldcliff site. Pottery is so far absent from Redwick as it is, with the exception of just one sherd, from Iron Age Goldcliff. An artifact scatter at Rumney (Allen 1996) and wooden posts with bone and charcoal scatters at Cold Harbour (Whittle 1989) were interpreted as temporary encampments. The raised bog was drained by a dense network of narrow sinuous channels which can be clearly seen in the vicinity of the Redwick buidings (Neumann and Bell 1997, fig. 7) , though these have not yet yielded any Bronze Age artifacts.

It is clear that from the Middle Bronze Age the coastal bog was not only utilized but also occupied by communities using both round and rectangular structures. The evidence leaves little doubt that settlement took place on the bog surface. This is roughly a millennium earlier than the first evidence for settlement at Glastonbury (Coles and Minnitt 1995) and Meare (Coles 1987) on the wetlands of the Somerset Levels. Contrasting aspects of activity during the Bronze Age are apparently represented by the wooden structures associated with palaeochannels discussed above at Peterstone and the Collister Pill area.

Iron Age

During the Iron Age (Figure 12) evidence of occupation is concentrated at Goldcliff where there are eight rectangular buildings and a total of eighteen Iron Age trackways. The peat varies from raised bog at Goldcliff West to woody peat in the area of Buildings 1 to 4 and reed peat to the east where there is a concentration of trackways. This site has a highly diverse environment due to its location in the vicinity of a bedrock outcrop with dry-land and the probability of a major pill nearby, although its course during the Iron Age has not been established. A further category of Iron Age site was identified during the survey of the peatshelves at Cold Harbour Pill 2 where a palaeochannel contained a line of roundwood verticals and a woven structure which are thought to relate to fishing (Neumann and Bell 1997, 14). Iron Age pottery had previouly been recorded in a palaeochannel at Magor (Whittle 1989). An occupation associated with 'the topmost organic band' at Rumney Great Wharf has also produced an Iron Age radiocarbon date (Allen 1996) and it seems possible that activity which was associated with a temporary marine regression at Goldcliff also saw some renewed settlement at Rumney. It is likely that other Iron Age wetland sites existed at no great distance as suggested by finds of pottery, stratified at Magor (Whittle 1989), but unstratified elsewhere. Paradoxically, by far the greatest concentration of sites and archaeological activity at Goldcliff has produced only one sherd of pottery. This suggests the possibility that we may have an aceramic phase in the Early and Middle Iron Age between Bronze Age and later Iron Age ceramic phases.

What we see in the Iron Age is a retreat of settlement activity in the face of marine incursion with activity being very much concentrated at Goldcliff where conditions were probably that much dryer; at Goldcliff West the raised bog surface was not innundated until the 3rd century BC. Interestingly all but one of the trackways dated so far are Iron Age including the Upton Track at Magor. What they may represent are attempts to maintain a way of life and networks of communication in the face of the relentless upper Wentlooge marine transgression which by the Middle to Late Iron Age had apparently innundated the whole of the former bog.

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