MESOLITHIC TO NEOLITHIC COASTAL ENVIRONMENTAL CHANGE: EXCAVATIONS AT GOLDCLIFF EAST, 2003 AND RESEARCH AT REDWICK

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This is the third interim report on a project investigating the ecology of coastal environments and the interplay between natural factors and human agency in the period c. 6500-3500 Cal BC. During 2003 the excavation of a group of later Mesolithic activity areas at Goldcliff East was completed. The areas investigated included an area with heat-fractured stones, a probable hearth with evidence for aurochs butchery, an area with a concentration of fish bones (many calcined) and places where peat had accumulated within Mesolithic activity areas. Further evidence was found for the burning of oak trees. Animal footprints were found within the Mesolithic settlement area and there were abundant human and animal footprints in overlying banded silts. The origins and seasonality of this banding are examined. A floating dendrochronological sequence for the upper Submerged Forest is reported. Further palaeoecological work has been carried out at Redwick, where there is evidence of fire but no Mesolithic settlement.

INTRODUCTION (MB)

This is the third interim report on our current research campaign to investigate the later Mesolithic and early Neolithic archaeology in the Severn Estuary. We are concerned in particular with the interrelationships between human agency and other disturbance factors in the changing nature of these coastal environments and the human lifeways which evolved within them. This report focuses particularly on the project’s contribution to our understanding of Mesolithic human activities. Previous interim reports have appeared in this journal (Bell et al 2001, 2002).

All the sites discussed are within a sequence of Holocene deposits in the intertidal zone at Goldcliff East (Figure 1). The stratigraphic sequence within which the sites lie has been illustrated by Bell et al (2001, figure 4) and outlined in more detail by Bell et al (2002, table 1). In summary the sedimentary sequence is as follows, from earliest to latest (stratigraphic unit numbers are given in brackets): bedrock, Trias; (i) Ipswichian raised beach; (ii and iii) Devensian head; (iv) Holocene palaeosol (estuarine silts); (v) lowest peat and submerged forest; (vi) estuarine silts; (vii) upper peat and upper submerged forest, then raised bog.

During this season excavation concentrated in 6 Sites (Figure 1) at increasing OD heights within the tidal frame: C and E, D, B, A and J. In addition there was wider stratigraphic work and recording and sampling of the lower and upper submerged forests.

This interim report includes work which was done as part of a Channel 4 ‘Time Team’ television programme entitled ‘Goldcliff’ which was first broadcast on Sunday 22nd February 2004. This was the second involvement of the ‘Time Team’ in Severn Estuary research: in 1997 they made a film on the Greylake Bronze Age site on the Somerset Levels (Brunning 1997).

Linked to this project are four postgraduate student research projects. The main project interim report is followed by short papers in which these students outline aspects of their research: footprint tracks (Rachel Scales); submerged forests and coastal plant communities (Scott...
Figure 1. Mesolithic Inter-tidal excavation areas at Goldcliff East. Drawing by S. Buckley.
Timpany); insects of coastal environments (Emma Tetlow, formerly Paddock); Mesolithic to Bronze Age wetland-dryland relationships (Alex Brown).

This report is focused on the main area of our research at Goldcliff East but also includes a report on analytical work on a comparable basal submerged forest sequence at Redwick. Under the wider umbrella of this project other smaller scale pieces of fieldwork have taken place during the last year at Llandevenny (summarised by Brown below), Woolaston, Oldbury and Hills Flats.

Radiocarbon dates in this paper have been calibrated using the OxCal calibration programme (Ramsey 2004, version 3.9) which employs the INTCAL 98 calibration dataset (Stuiver et al 1998).

**BLOCK-LIFT METHODOLOGY (SB)**

The initial excavation method was designed to record three-dimensional artifact distributions and biological evidence exposed on the Mesolithic land surface. This was based on a grid system (divided into 1 m grid-squares) laid out at each site to cover the areas of identified archaeology. The excavated areas in 2002, at Sites J, A and B, are shown in Figure 1. All finds were plotted with easting and northing coordinates and a level, so that the spatial and vertical distribution of artifacts was recorded. Excavations proceeded one grid-square at a time, with all sediment from the occupation horizons being hand sieved, using a 1 cm mesh, and one bag of sediment (approx. 4 litres) taken from each grid-square of occupation horizon for flotation sieving, using a modified version of the Siraf-type flotation tank. During excavation, the strategy at Site B was adapted in recognition of the limited excavation time (maximum of c. 2 hrs 40 minutes) only on spring tides when the site was exposed. This appreciation of the difficulties of excavating at Site B led to the promotion part-way through the 2002 season of a ‘total recovery’ approach in which no further hand sieving was done on site and all the sediment from the occupation horizon was instead bagged and carried back for flotation on dry land.

In 2003, a modified excavation strategy was developed in order to tackle the main limitation of the small amount of time as highlighted above, when sites lower in the tidal frame could be excavated. It had become clear that without a change in approach further excavation of sites low in the tidal frame, such as Site B, would otherwise be restricted to only a small number of suitable tides per month. In contrast, Site J which is higher in the tidal frame at c. 1 m OD, and which can therefore be excavated for up to c. 6 hrs at every low tide, was excavated using the same approach as developed in the previous year. Elsewhere, at Sites A, B and D, a new strategy of block-lifting sediments was employed. Block-lifting had been successfully used in the small-scale excavation of the Mesolithic midden at Westward Ho!, Devon in 1983 (Balaam et al 1987). We proposed block-lifting on a larger scale using steel tins (dimensions 25 x 25 x 25 cm). A total of 32 tins allowed up to 2 m² to be excavated in a single tide. This way, areas of occupation horizon at each site could be lifted in-situ, and transported by quad-bike and trailer for micro-excavation back on dry land. In so doing, more time and care could be devoted to excavating these sediments, without the difficulties and time constraints encountered under normal inter-tidal conditions. Consequently, small artifacts that might otherwise have been missed or recovered only during the hand sieving phase previously, were now more likely to be accurately recorded.

As part of the block-lifting programme, each area was cleaned of mud using slurry scrapers and trowels and the surface exposures re-planned and correlated with the previously excavated sequences, as indicated by grey tone on Figure 1. Once the surface plan had been made, any upper layers not containing artefactual evidence were removed by careful spading to just above the interface with the occupation horizon. Individual 1 m squares were then divided into a 25 cm grid comprising 16 block-lifts (see inset: Figure 1), and block-lifted one grid-square at a time. Each block was initially cut with a knife, being mindful not to cause damage to any hidden artifacts, before a tin was carefully inserted and the block sample lifted (Figure 2). This was immediately accompanied by recording the height of the exposed surface beneath each block-lift with a level. The block-lift samples were then wrapped in cling-film and carried in a heavy gauge plastic bag, each sample being labelled with site name, square/block...
Figure 2. Goldcliff East: block lift excavation in progress on Site D (Photo. Edward Sacre).

Figure 3. Goldcliff East: excavation of 0.25 m³ blocks within 1 m² woodframes from Site B at the field base at Whitson. This was part of the Time Team excavation, the figures in the background right are Tony Robinson, Presenter and Michael Douglas, Director (Photo. Edward Sacre).
Figure 4. Goldcliff East: excavation at Site J. The area to the right is being excavated down to the Mesolithic old land surface. To the left is the Upper peat and submerged forest and beyond this posts of the recent salmon putchers (Photo. Edward Sacre).

Figure 5. Goldcliff East: the stratigraphy at Site J. (a) Sand of the Ipswichian raised beach. (b) Head containing Lias limestone. (c) Mesolithic old land surface, occupation horizon. (d) The upper peat and submerged forest (Photo. Edward Sacre).
number, orientation and which end was uppermost in the stratigraphic sequence.

Back on dry land individual block-lifts were re-assembled sequentially ready for micro-exavcation (Figure 3). In order to avoid any errors when recording the position of individual finds, the tins were re-orientated using a plastic label, which was placed in the bottom left-hand corner of every block, so that easting and northing coordinates could be readily determined. This practice was also facilitated by the use of a block-lift recording sheet, where every care was made to ensure that information about the OD heights of individual blocks was calculated and which, most importantly, allowed the vertical distribution of finds to be plotted. Finally, the sediment from the occupation horizons excavated from each block was retained and about 50% of it was flotation sieved in order to maximise recovery.

SITE J (MB AND SB)

This is the most westerly of the sites examined and the highest in the tidal frame. Here the Mesolithic old land surface occurs at between +1.25 and +0.7 m OD and the excavated area straddles the edge of the former Goldcliff Island (Allen 2000). In 2002, 29 m² had been excavated here. That excavation area thankfully suffered minimal erosion over the winter of 2002-3 and was partly covered by natural accumulations of sand and gravel. A further 35 m² were excavated in 2003; these extended the 2002 excavations to its north and west. The originally planned Site J was extended to the west by 2 m to include more of the edge of the former island and the underlying submerged forest was planned in this additional area. In the event the main concentration of finds lay within this extended area. Site J is exposed for around 6 hours at all states of the tide so the excavation here was done in the conventional way in units of 1 m² using trowels (Figure 4), sieving sediment on site in a 1 cm sieve, recording artifacts three dimensionally and taking a sample for fine sieving from each square.

The stratigraphic sequence in Site J was further investigated. Square -1/2 was excavated well into sediments underlying the Mesolithic soil (Figure 5) and below the excavation the sediments were sampled using a gouge auger. Trias Red Marl was encountered at 2.37 m below the base of the Mesolithic soil. This was overlain by sand of the Ipswichian beach (Context 333) as Haslett's (2002) foram analysis of samples from Pit J, 6 m to the north east, confirms. Unlike Pit J, the Ipswichian sand was covered by a thin (20-35 cm) and discontinuous layer of soliflucted head which in places contained grey Lias limestone; similar head deposits occur to both east and west of the former Goldcliff Island (Allen 2000). In the section shown in Figure 5 the head appears to be cut by a shallow bowl-shaped feature which is interpreted as a possible Holocene tree-throw hollow. If so this must relate to an earlier generation of pre-waterlogging woodland predating the submerged forest. Within the underlying Ipswichian sand there are pronounced areas of darker staining (Figure 5) which may represent the ghosts of later tree roots or animal burrows.

The Holocene soil (Context 328) developed on the Ipswichian sand and the discontinuous cover of sandy head. The origin and nature of the Holocene palaeosol is currently being investigated as part of an MSc project by Virgil Yendell. In Square -1/2, at the edge of the former island, the Holocene soil was thicker than elsewhere at Goldcliff East, c 0.4 m. At a depth of c 0.3 m there were discontinuous, and in places multiple, poorly developed iron pans. It is not yet established whether these are pedogenic feature of the original soil or the result of subsequent, ie post burial, diagenesis. The surface of the Holocene soil dips at about 5° to the north east away from the former bedrock island. Thus at the west edge of the excavation the old land surface is at 1.25 m OD, on the northern limit of 2003 excavation at 0.7 m OD and on the eastern limit of excavation at 0.75 m OD. In the lower north eastern 60% of the excavated area (from Squares 1/4 to 6/0 (Figure 1), the old land surface was overlain by estuarine silts (Context 331). The estuarine incursion did not extend into the higher, south western, 40% of the excavated area; here the old land surface was overlain directly by the main upper peat. Thus the excavated area straddles the limits of saltmarsh encroachment prior to peat formation. Where the old land surface is overlain by estuarine silts the boundary is often indistinct and merging and the upper part of the soil is more silty indicating that during the final stages of pedogenesis this soil was
subject to occasional estuarine sedimentation and silt became incorporated in the soil. Artifacts including flints and charcoal are present within the soil and in small numbers in the estuarine sediment. Thus it is clear that in its latest phases occupation took place at the very edge of the saltmarsh, and at times activities spread just onto the saltmarsh edge.

Close to the western edge of the excavation in Square -1/4 there was a concentration of 33 pieces of quartzite (Context 343) many of which showed evidence of heat fracture. Most of these were concentrated in an area c. 0.5 m in diameter in which some large pieces of bone were also found. This may represent a hearth but if so it was an oxidising fire because the concentration of charcoal was no greater here than elsewhere. The stones were at the base of the buried soil and there was no evidence that they were in a cut feature. It may be that the stones were originally deposited on the soil surface and then, over a period of decades, had become buried by earthworm action, in which case their deposition significantly predates the final phase of occupation and the burial of the soil by peat. In the surrounding squares, also towards the base of the buried soil, was a concentration of aurochs bones, some apparently smashed and burnt. It appears, therefore, that this may be an area for butchery and food preparation. The scatter of artifacts reduced to the east of this concentration. In the area excavated in 2002 it had been noted that many of the finds were in the top 10-20 cm of the buried soil. At the western side of the 2003 excavation artifacts were abundant to the base of the buried soil down to 0.3 or 0.4 m. It seems possible, therefore, that hints of different phases of activity may be picked out by depths of burial within the old land surface and this will be further examined during work on the 3D artifact distributions. So far 48 retouched and utilised lithic artifacts have been identified from a much larger assemblage of lithic debitage from the 2003 excavations at Site J, including 7 microliths, and 23 cores. There are 4 bones with cut marks among a larger assemblage of bones. The site has produced 162 pieces of heat fractured stone.

A total of 36 samples have been sieved from Site J, in all 95 litres, of which 29 have been sorted. One sample contained two fish bones. There is a scatter of micro-debitage across the excavation area but no marked concentrations.

Within the old land surface and the overlying estuarine sediments a small number of pieces of apparently worked wood were found, as in 2002. These included: a Y-shaped implement (9119) fashioned from a small forked branch 13 cm long, found horizontal in Square 1/3; the base of a possibly pointed post in 4/4 (Figure 6); and a small group of vertical stakes in 9/3 (10259). The identification of worked wood was made difficult by the large number of roots which penetrate the occupation horizon from the overlying submerged forest. It appears from these discoveries that, although the Mesolithic land surface began as a dry terrestrial soil, as the watertable rose a small amount of worked wood became incorporated in the soil, and some posts/stakes were driven down into already waterlogged deposits.

In excavating the occupation area of Site J and the estuarine sediments which overlay it to the east, small oval areas of peaty sediment were found intruded from the overlying peat. In section these involutions were typically c. 5 cm wide and 10 cm deep, and are most marked where the peat is underlain by estuarine sediment (eg Figure 6, 9-10 m east). Some of these peat intrusions resulted from the activities of small mammals, probably squirrels burying hazel nuts in small oval holes. Other involutions are the footprints of animals which were walking on soft sediments and treading peat down into the underlying estuarine sediments and old land surface. These were blocklifted, then recorded and micro-excavated by Rachel Scales at the project base. Figure 7 (overleaf) shows one example which is identified as deer, as are all the identifiable footprints from this site.

As sea-level rose so the minerogenic sediments on Site J became waterlogged and peat (Context 327) began to form, sealing the estuarine sediments and the old land surface on the island edge to the west. In Pit J, which was excavated in 2002 (Bell et al 2002, fig. 6), the base of the peat has been radiocarbon dated 5749 ±23BP (OxA-12356; 4690-4500 Cal BC). The top of the peat just below the transition to raised bog (of which
Figure 6. Goldcliff East Site J, east-west section across excavated area along northings 4 and 5. Drawings by Jemma Bezant and Shaun Buckley.
only traces have escaped erosion in this area) is dated 5061 ±21BP (OxA-12355; 3950-3790 Cal BC). Scott Timpany has prepared a pollen diagram and plant macrofossil study from this peat which forms part of his thesis (in prep). Emma Tetlow provides a summary report on work on the insect faunas in a following paper (this volume) and further detail is in her forthcoming thesis. Within the wood peat is the submerged oak forest which to the east, away from Site J, includes trees linked to form a tree-ring curve for Goldcliff East as reported by Nigel Nayling below. Although oaks, such as the large buttressed stump of Tree 8 (Bell et al 2002, fig. 3), are present in Site J none from this site or its immediate surroundings have been linked to the floating chronology.

During the period of peat accumulation human activity seems to have been very limited in the immediate vicinity. Only one flint flake has been found stratified within the peat. Some charcoal was present within the basal reed peat, as Scott Timpany’s (pers comm) macrofossil work confirms. There was a small amount of charcoal, including one burnt branch, found in 2002, within the peat but much less than in the underlying Holocene sediments. It may therefore have been the surrounding saltmarsh which attracted people to this particular spot. When peat encroachment took place they may have moved away, possibly to a more seaward part of the once much larger island/bedrock rise than the eroded island remnant which now remains (Allen 2000).

SITE A (MB)

Today this site is an eroding surface which slopes at about 5° to the south from a recent line of wooden posts and associated boulders. The sloping surface has a variable cover of mud which, when it is swept away, reveals an outcrop of the Quaternary stratigraphy which is shown in section in Figure 8A (see also Bell et al 2002, figs 9 and 10). 23 m² had been excavated here in 2002 by cutting back into the exposure (Bell et al 2002, figs. 8-10). The edges of that excavation had been
Figure 8. Goldcliff East: Section drawings from Sites A, B and D. Drawings by Jemma Bezant and Shaun Buckley.
somewhat eroded by the time of the 2003 season and some local collapse had occurred.

The basal unit in this area was sandy Pleistocene head with gravel (Context 317). Developed on this is a Holocene old land surface which is 0.2-0.3 m thick. The soil surface in the area excavated in 2003 is at -2.41 m OD. The base of this soil (Context 316) is sandy with some gravel, the surface (Context 315) is a silty sand with a high proportion of charcoal which accounts for the dark grey colour of this unit. Excavation shows that this soil dips to the north east at about 5° away from the former edge of Goldcliff island, ie in the opposite direction to the presently eroding surface of Quaternary sediments. Within the upper few centimetres of this land surface are discontinuous lenses of estuarine silt indicating that there was some estuarine input during the period of this soil. Overlying this there is an abrupt transition to estuarine silt with evidence for only slight local erosion and mixing at the interface, which is evidenced also by the occurrence of some charcoal fragments near the base of the overlying estuarine sediments.

Excavation in 2002 indicated that fish bones were most densely concentrated in the western part of the excavated area, so excavation in 2003 was concentrated in immediately adjacent squares to the north. Here 6.25 m² of old land surface were block lifted in 100 tins of sediment using the method described above. So far 137 samples have been sieved from this site averaging 6 litres each, a total of 820 litres of sediment. 67 of these samples have been sorted. This has confirmed a significant concentration of fish bones in this area: so far there are 3875 bones, the average number of bones in a sample is 58 and the maximum number 1191. The main concentration is in squares 3/3 and 4/4 and the immediately adjacent squares (Figure 1). Many of the fish bones are burnt. Lithic micro-debitage is also abundant on this site, with a total of 1532 fragments, and this is concentrated in the same area as the fish bones. Similar results were obtained in 2002, indicating that knapping occurred at the same place. Charred hazel nut shells were also numerous in the sieved samples, 556 fragments being found.

The site has also yielded 26 microliths, many from sieving. Among the 2003 bone assemblage 4 examples with cut marks have been identified. There are only 4 heat fractured stones; compared to Site J this is surprisingly few, given the greater concentration of charcoal and calcined fish bones on Site A. This seems to suggest that the activities producing heat fractured stones were distinct from those on Site A. Our working hypothesis is that Site A was particularly associated with the drying and processing of fish. These were mostly of small size and seem likely to have been caught with a basketry trap or net (Ingram 2000) and not with microlith barbed weapons. The concentration of microliths in the same area could therefore relate to implements such as knives used in fish processing, or to some other activities.

**SITE B TIME TEAM EXCAVATION (MB)**

Work on this site was mostly done over an intensive three day period by the ‘Time Team’ working jointly with members of our own team. This was done because of the additional logistical support which the Time Team could provide for work in this particularly difficult area. The site is an exposure of the basal peat surface which to seaward is eroded to create a small step. It was close to the eroding edge that a concentration of calcined bone, lithics, charcoal and other artifacts was found in 2001 when a trench 6 by 1 m was partially excavated and a sequence of environmental samples taken. In 2002 this trench was completed and 15 m² were excavated conventionally. Work in 2002 produced bones, lithics, a possible pounder and a sandstone artifact which reinforced the potential of this area. It is also the only area where Mesolithic artifacts occur within peat. It was therefore considered to have the highest potential for organic preservation. Excavation had been difficult in 2002 because the area was often muddy with standing water and the tidal window was limited to 2 hours 40 minutes under the best spring tides. It is not exposed at all at neaps. It was, therefore, with a view to taking forward work at Site B that we developed a blocklifting methodology.

The area we had intended to excavate was immediately west of that which had been productive in 2002. However, on initial inspection at the beginning of the season it was clear that the peat surface here had suffered
significant erosion over the winter. Streamwise erosion channels (Allen 1987) created by strong currents were previously developed over the eastern part of Site B but now extended over much of the area intended for excavation in 2003. Accordingly, the excavation area was moved to adjoin the north west corner of the previous excavation (Figure 1) because here the peat surface was preserved and much of it was overlain by estuarine silts.

An area 7 m$^2$ was excavated and in all 112 0.25 m$^3$ blocks were removed for excavation on dryland (Figures 3 and 9). Part of the area was excavated more deeply to examine the underlying Pleistocene stratigraphy. The sedimentary sequence is shown in Fig 8B. At the base of the sequence, 0.6 m below the Mesolithic horizons, is sand (Context 342), which is probably part of the Ipswichian beach. This was overlain by 0.25 m of sandy silt with gravel (322) which is thought to be head. The Mesolithic old land surface (321) developed on this and in total was 33 cm thick. This was a sandy silt with scattered charcoal pieces overlain by a peaty organic silt (Context 341) with a wavy and irregular basal contact overlain by compacted reed peat (319) of thickness 3 cm. This peat is the waterlogged top of the Mesolithic old land surface. The surface of this peat excavated in 2003 lies at -3.55 m OD and is radiocarbon dated to 6871 ±33BP (OxA-12357; 5840-5660 Cal BC). Above this thin peat were 5 cm in which peat was interstratified with estuarine sediments in laminae 2 to 10 mm thick. This is thought to represent the initial stages of saltmarsh encroachment onto the Phragmites peat. This was overlain by estuarine silts (Context 318), of the thickest Holocene minerogenic unit. As the section (Figure 8B) shows, the estuarine sediments contained a scatter of charcoal which may derive from a burning episode during the transitional stage from peat to minerogenics, and burning at

Figure 9. Time Team excavation of Site B using the block lift method, Tony Robinson and Phil Harding are filmed block lifting (photo. M. Bell).
this stage was identified by Dark on nearby Site D (Bell et al 2002).

Excavation of the lifted blocks under field laboratory conditions confirmed the evidence from previous seasons that artifacts occurred both in the reed peat and the underlying minerogenic soil. The peat produced a microlith, a burnt stone, an animal tooth, 3 pieces of calcined bone, charcoal, a struck flint and a burnt flint. The underlying palaeosol produced a microlith, charcoal, 13 pieces of struck flint, a core, 2 pieces of calcined bone, 2 charred hazelnuts, 8 pieces of heat fractured stone and flint. Excavation of one blocklifted tin revealed a footprint of an aurochs within the peat, which adds to the deer footprints previously identified in this context (Bell et al 2001, 33).

50% of the sediment excavated from Site B was subsequently water sieved: 85 samples, totalling some 600 litres. Of these 25 samples have been fully sorted. This revealed a thin scatter of micro-debitage across the squares excavated, suggesting that a little knapping must have taken place here, but not in a concentrated area. It is possible that the small micro-debitage might have been washed by the sea from the immediately adjacent more concentrated area of activity at Site B excavated in 2001 and 2002 (Bell et al 2001, 2002). However, the existence of that earlier nucleation of activity makes improbable the idea that artifacts at Site B as a whole have been subject to marine transportation, this conclusion is also supported by the nature of the Site B sediments: sandy palaeosol overlain by peat, both of which contain artifacts. Sieving produced 7 bone fragments, but no fish bones, in contrast to Site A. 5 fish bones had been found on Site B during smaller scale sieving in 2002. Sieving confirms the field evidence that the 2003 excavation was just at the edge of an activity area. The main concentration found in 2001 was 5 m to the south east. Work on this site confirms the impression from elsewhere at Goldcliff that activities were spatially clustered and discrete. It seems that the last of the main concentration of this activity area was eroded away over the winter between the 2002/3 seasons, evidence, if it were needed, of the pressing nature of these intertidal archaeological investigations. This point is further underlined by the discovery of many worked flints on current channel bed gravel banks immediately west of the excavated area. Among the artifacts found here during the 2003 season was a core tool of axe/adze type made of volcanic tuff. This was unstratified just 5.7 m from the excavation trench. In the same area was a stone with a dished and smoothed surface which may have been used as a mortar.

SITE D (SB)

In 2001 oak tree 103 was sampled for dendrochronology and in the process Test Pit D was excavated to examine the associated stratigraphy (Figure 8). From this Monolith 4071 was taken and a pollen, charcoal and macrofossil analysis prepared. The results indicated two distinct episodes of burning (Dark 2002) and also produced evidence for human intestinal parasites in the peat (Dark forthcoming). The peat here is undergoing erosion and is cut by parallel shallow gullies of streamwise erosional structures at intervals of c. 0.7 m (Allen 1987). Accordingly, it was decided to do some further excavation here to establish whether settlement evidence extended to this area. Only small-scale excavation was possible, however, owing to the short time of exposure, even at spring tides, and the constant flow of water onto the peat shelf from surrounding drainage channels. A grid 5 m by 3 m was positioned crossing Tree 103. Within this an area 2 m by 1 m was excavated in 32 block lift tins. Later the trench was extended to the west to investigate the stratigraphic section shown in Figure 8. Samples were also taken for micromorphological analysis.

At the base of the sequence was sandy head with gravel grade stones (Context 348). This was overlain by sandy silt (Context 346/347) provisionally interpreted as the basal Holocene soil with an estuarine silt component incorporated in its surface horizons. The distinction was difficult to recognise in the field but clearer in laboratory recording of Monolith 4071. Charcoal was present in this layer. A mainly reed peat (Context 345) 6 cm thick developed on this with the peat surface at -4 m OD. The base of this thin peat is dated 6790 ±38BP (OxA-12359; 5740-5620 Cal BC) and its top to 6726 ±33BP (OxA-12358; 5720-5560 Cal BC). The date is very close to that of an oak tree from this basal peat...
Here, unlike at Redwick (Bell et al 2001), the basal peat and the trees appear to be coeval. Indeed Oak Tree 103 was stratified within this peat (Figure 8). That tree is a thin (max diameter 35 cm), straight tree of total length 13.58 m and 12.3 m from base to first visible branch. This form suggests growth in closed woodland, although the remains of only a scatter of trees survive in this most westerly area of the basal peat shelf. The peat is covered by estuarine silts to the north and there was a thin cover of this (Context 344) in part of the excavated area.

Excavation of the blocks lifted from Site D produced charcoal, two worked flints and a stone with angular breaks, possibly anthropogenic. 15 samples from this site have been sieved, giving a total of 106 litres. The only finds from sieving are charcoal and a couple of fragments of lithic debitage, one flint, one not. A burnt stone which may have been used as a rubber was found stratified in the peat surface 17.5 m east of Trench D. It appears that Site D was beyond the main focus of human activity. Petra Dark’s evidence for human intestinal parasites suggests a toilet area, the earliest evidence perhaps, at least in Britain, of that particular little-considered dimension of the social use of space which has been more fully considered in Romano-British and later times when latrine structures are commonly found and coprolites occur particularly in urban contexts (O’Connor et al 1984). There is also the previously noted evidence at Site D for the modification of vegetation by burning.

**SITE C (MB)**

Banded minerogenic sediments outcrop between the lower submerged forest peat and the main upper peat (Bell et al 2001, figure 4). An exposure of the banded sediments occurs at Site C which is 170 m east of Site D. Here, and at nearby Site E, sediments which lie within a channel or embayment within the minerogenic sequence carry abundant footprint tracks (Figure 10). The extent to which these are exposed varies according to mud cover and the extent of the
modern sand bank which overlies these sediments to the north. Initial recording of footprint tracks on this site took place in 2001 (Bell et al. 2001). That survey area was extended in 2002 (Bell et al. 2002; Scales 2002). In 2003 this was the main footprint area investigated. South of the previously recorded areas Rachel Scales conducted a meticulous finger-tip excavation of the surface of a single band exposing 177 footprint tracks, most of which were human, (see Scales below). The surface on which these individuals walked is today at -4.17 m OD and the site is only exposed at the best spring tides for c. 2 hours 20 minutes. Patches of recent gravel in the surrounding area continue to produce unstratified worked lithic artifacts, but none has been found in the banded sediments and the unstratified finds are likely to have been swept along the channel floor from the main Mesolithic occupation site to the west.

**SITE E (MB)**

Here the banded sediments seen at Site C are exposed in an erosion cliff c. 1.5 m high at the north edge of an area of open water which never drains. This had been the main area of footprint recording in 2002 (Scales 2002). Nevertheless, in 2003 most of that area was covered by sand and shingle. However, footprint-tracks were observed emerging from bands on the western edge of the 2003 area and Rachel Scales did some excavation and recording of this additional area (Scales below). The excavation surface here lies at -3.9 to -4 m OD.

**UPPER SUBMERGED FOREST SURVEY (MB)**

For 3 days between 28th February and 3rd March 2003 further investigations were carried out on the stratigraphic context of the dendrochronologically sampled oak trees in the upper submerged forest; 6 trees were examined in detail. This submerged forest lies in the lower part of Smith and Morgan’s (1989) Goldcliff East pollen diagram and at that point the wood peat is dated between 5850 ±80 BP (Car-658; 4910-4490 Cal BC) and 5360 ±80 BP (Car-656; 4350-3990 Cal BC). One objective of stratigraphic work in 2003 was to select the most suitable tree in the upper submerged forest for wiggle-match radiocarbon dating. The tree eventually selected was a stump, T36, which is c. 55 m from Site J and is part of the floating Goldcliff East tree-ring sequence (Figure 12). The tree is 30-40 cm from the base of the upper peat at 1.7 m OD. A charcoal horizon corresponds approximately with the surface on which the tree lived, and 5 cm above this is the transition to raised bog. Another of the areas investigated was Site F, around Trees 39 and 40, which is 350 m east of Site J. These oaks overlay an area of alder woodland which was planned and sampled by Scott Timpany, who has completed wood identifications, pollen and macrofossil analysis from this area and gives a summary of the results below. The submerged forest outcrops intermittently to the east where Tree 70 is exposed. A sequence of samples has been obtained here by Emma Tetlow for work on beetles. Around Tree 70 there is also a charcoal layer within the peat. 350 m to the east of Site F is an extensive exposure of submerged forest where Scott Timpany has continued to plan and sample the trees of his Areas 1-5 (Timpany 2002). The investigation of this upper submerged forest is now completed and all suitable trees have been recorded and sampled for dendrochronology (below).

**BANDED SILTS (JRLA AND PD)**

The estuarine silts which dominate the Holocene deposits of the Severn Estuary Levels fall into a number of distinct facies on physical and micropalaeontological grounds. One of these, typified by the presence of visible banding (Figure 11), is of archaeological significance at Goldcliff and elsewhere for a number of reasons, and is the subject of ongoing work (Allen 1990, 2004; Dark and Allen 2004).

In the Holocene sequence generally, banded silts occur in at least four different kinds of stratigraphical context (Allen 2004). The banding is seen to be laterally extensive at outcrop, of the order of a centimetre to a decimetre in thickness, and composed of laminae on a sub-millimetre to millimetre scale. Each lamina, representing a single semidiurnal tidal cycle (higher tides only), is composed of quartz silt which grades up into a more clayey portion. The banding is evident because the laminae are arranged stratigraphically in inter-grading clusters of relatively coarse-
grained and relatively fine-grained examples. The latter are more resistant to weathering and erosion, and so either stand out as slight ribs on steep exposed surfaces of silt, or give rise to steps on gentle slopes, as at Site C. One coarse and one fine cluster combine to make a band. Grain-size analysis of thin, contiguous samples through banded silts has shown that the coarse-grained clusters of laminae can have up to about twice the arithmetic mean particle diameter (c. 35-45 µm) of the fine-grained ones (c. 15-25 µm).

At Goldcliff East banded silts occur at two stratigraphic levels and represent quite different environmental conditions. The lower is the deposit from which Scales (2002 and this volume) is describing a considerable variety of footprint tracks and trails, especially at Sites C and E. These silts (Bell et al 2002, fig. 12) occur as an offlapping sequence of erosively-related, gently eastward-dipping wedges that appear to have accreted laterally in response to the asymmetrical infilling of a small tidal embayment, or the wandering of a meandering tidal channel (Allen 2004). The higher banded silts, to a thickness of c. 1.5 m, can be traced continuously immediately beneath the main, mid-Holocene peat (Figure 1). Banded silts in the same stratigraphical position are exposed far and wide along the shores of the Caldicot Level, and may with those on the Goldcliff shore record a short episode when the area experienced an unusually rapid rise in relative sea level (Allen 2004).

Analysis of foraminifera and pollen grains preserved in banded sediments indicates that they usually formed in a salt-marsh environment, at a time when much of the surrounding landscape was heavily wooded with hazel (*Corylus avellana*), oak (*Quercus*) and elm (*Ulmus*) (Haslett et al 2000; Allen and Haslett 2002; Dark and Allen 2004).
Pollen analysis of a short sequence of the upper banded silts from Goldcliff East suggests that the bands are annual in origin, on the basis of differences in pollen content between the coarse- and fine-grained parts of each band (Dark and Allen 2004). Interpretation of the pollen sequence is complicated by the variety of sources of pollen in the area of the estuary, and by the lag between arrival of pollen in the waters of the estuary and deposition in the sediment. A seasonal signal nevertheless emerges. The fine-grained band parts contain a relatively high proportion of pollen from late spring- to summer-flowering plants, such as oak, while the coarse-grained band parts contain a higher proportion of pollen of late-flowering species, such as members of the goosefoot family (Chenopodiaceae), and fern spores such as polypody (Polypodium vulgare) and bracken (Pteridium aquilinum), which sporulate in late summer and early autumn. Furthermore, the total concentration of pollen and spores in the fine silts is substantially greater than that in the coarse deposits. These differences suggest that the finer deposits formed when the air was full of pollen in spring and summer, whereas the coarse silts appeared in the late autumn and winter months when few plants were in flower. Pollen and spore deposition declines but does not stop during the winter months, because the estuarine water-body represents a substantial 'reservoir' of spores and pollen remaining suspended from previous seasons/years and reworked from earlier deposits, and because rivers continue to supply pollen- and spore-laden waters from the surrounding catchment.

The pattern of deposition suggested by pollen analysis is supported by independent physical analysis of the sediments, which reveals differences in grain size compatible with annual band formation (Allen 2004). During the cold and stormy parts of the year, the estuarine water-body is stirred by waves and is cold, that is, of relatively high viscosity and enhanced turbulence, whereas during the warm months of calm weather wave-activity is low and the water is warm and significantly less viscous, and turbulent only because of tidal shear. Hence the mud which can be held in and deposited from the water-body during warm months, when many plants flower or sporulate, is expected on physical grounds to be finer grained than that available during the cold season (Allen 2004).

If the interpretation of the banding as annual is correct, the scale and character of the bands records sedimentary conditions so exceptional as to favour the unusual preservation of archaeological material and also possible evidence of climatic conditions (Allen 2004; Dark and Allen 2004). When the banded silts formed - on salt marshes and high mudflats, the evidence suggests - the rate of sediment deposition was one to two orders of magnitude greater than that normally permitted in these marginal estuarine environments by the rate of Holocene sea-level rise. The rapid burial, and consequently excellent preservation, of animal footprint-tracks and trails, as recorded by Scales (2002, and this volume), is favoured under these conditions. Wave and tidal currents will have had little opportunity to modify these telling but delicate traces in the sediment after their makers, which included humans, had moved away. The high rate of deposition will also have favoured the preservation after minimal dispersion and modification of artefacts that found their way into the intertidal zone, for example, the early twentieth-century pottery group found in banded silts at Tites Point in the inner Severn Estuary (Allen 1990).

Aspects of climate may be reflected in banded silts because the textural and palynological differences within a band, and the differences in thickness between successive bands, are expected on physical grounds to reflect the quality of the seasons in terms of temperature and storminess. A cool, wet and stormy spring and summer, for example, should favour coarser sediments and a poorer crop of pollen and spores than a season that is of average or better character. A stormy year should also be recorded by a band thinner than average. Our preliminary analyses have demonstrated the potential of banded sediments to provide annually-resolved records of environmental change, but a study of longer sequences will be necessary before long-term trends and cycles in climate, vegetation change and the activity of human and animal populations can be identified.
DENDROCHRONOLOGY AT GOLDCLIFF EAST (NN)

Significant progress has been made in the tree-ring analysis of samples taken from oak trees exposed on the eroding seaward edge of the upper submerged forest within the upper peat shelf at Goldcliff East. A total of 32 trees have been sampled either stratified within the peat or lying un-stratified immediately seaward of the peat cliff. Many of the trees contain bands of narrow annual rings which have made the production of reliable tree-ring width series difficult and in some cases impossible. Nonetheless, it has proved possible to cross-match the tree-ring sequences from 16 of the sampled trees so far. A 239-year mean calculated by combining these correlated ring sequences has been constructed. It has not been possible to match this site mean against previously dated tree-ring chronologies from Britain or Ireland, and the chronological date spans of the cross-matched tree-ring sequences shown graphically in Figure 12 are shown in relative years. The results of wiggle-match radiocarbon dating of decadal blocks of rings from a sample taken from stump 36 are awaited.

The cross-matched group of trees comprises 15 trunks and only one stump. Five of these trunks were un-stratified, found lying at the base of the peat cliff. Correlation with the stratified trees confirms that these have been eroded out of the retreating upper peat rather than having been washed inshore from the lower, earlier submerged forest of Mesolithic date. The eleven stratified trees were located across the full recorded extent of the submerged forest associated with the upper peat, from the vicinity of the fish weir in the west to the easternmost recorded group of oak trees some 540 m to the east-north-east.

The resolution with which the relative year of death of individual trees can be determined is variable within this cross-matched group of trees. Although sapwood and bark survived on a number of the samples, compression of the sapwood often made it impossible to measure, or even count, these outermost rings. It is clear nonetheless that the deaths of these trees cannot have been synchronous. Perhaps five died in the mid to late 100s (relative years), whilst four died in the mid to late 200s. These interim results suggest that conditions in the area allowed the growth of oaks, along with other tree species, over a period of at least some 250 years.
Progress has also been made during 2002 and 2003 in the analysis of additional samples taken from Mesolithic trees in the lower submerged forest on the lower foreshore at Goldcliff further to the east (c. ST385820). An enhanced 287-year Mesolithic sequence cross-matches well against the Mesolithic master from Redwick, and also a less well-replicated sequence from Gravel Banks on the English side of the Estuary. These three site masters from the Severn Estuary appear to match against a growing chronology derived from Mesolithic exposures in the bed of the Solent at Bouldnor Cliff on the north coast of the Isle of Wight (Figure 13). This progress bodes well for ongoing expansion of a network of Mesolithic tree-ring sequences in Britain, and in due course correlation against absolutely dated chronologies from the continent.

POLLEN INVESTIGATION OF THE BASAL SUBMERGED FOREST AT REDWICK (SB)

In 2001, survey was undertaken of the lower submerged forest exposed on the lower foreshore at Redwick, 4 km east of Goldcliff (see Bell et al 2001, for details). During the course of recording and sampling a large oak stump, Tree 40, a band of charcoal was identified within the surrounding deposits, providing evidence that the trees had been burned (Bell et al 2001). About 50 m to its north, an oak trunk (Tree 18) and stump (Tree 36) were also sampled for dendrochronology and a trench (TR018) was cut to investigate the stratigraphic context of both. Monolith samples for pollen and micro-charcoal analysis were taken from both sections, and additional bulk samples were also recovered for beetle analysis. Here, the preliminary results of analytical work underway on the sequence from Trench R018 are summarised. The lithostratigraphy at the sampling site is shown in Figure 14.

Trench R018

The trench, 4 m by 1 m, crossed the stump of Tree 36 (Bell et al 2001, fig 14) and the adjacent prostrate trunk of Tree 18. At the base of the sequence to a depth of c. 0.9 m, was sandy pebbly head (Context 313). On this there was organic sandy clay (Context 312), the uppermost layer of which was interpreted as the old land surface (Context 311). This layer was sealed by minerogenic clay (Context 310), c. 0.18 m thick, in which the trunk of Tree 18 rested. A band of decayed wood fragments and macroscopic charcoal was also recorded from the same level suggesting that the trunk had been eroded whilst it lay on the salt-marsh surface. Thereafter marine inundation continued, and was followed by the development of a thin reed peat (Context 309) which partly covered Tree 18 and which was, in turn, succeeded by a further phase of estuarine sedimentation. The later deposits have been eroded from the section.
Figure 14. Redwick: Trees 36 and 18 with photo of site, section of stratigraphy and samples including Monolith 3094. Selected pollen data from Monolith 3094 are shown. Drawing Shaun Buckley.
Monolith 3094

The pollen diagram (principal taxa only) from the peat and immediately under-lying estuarine clay in Trench RO18 is shown in Figure 14. Samples were taken contiguously every 0.5 cm for pollen analysis and prepared using standard techniques (Moore et al 1991). A total of 500 land pollen grains (TLP) were counted and percentages calculated on the basis of a sum including all identifiable pollen and spores, excluding those of obligate aquatics. Identification follows the key in Moore et al (1991); nomenclature is after Stace (1991) and Bennett (1994). Charcoal abundance was estimated using the point count method (Clark 1982). No dates are currently available from this profile. However, a radiocarbon date of 6625 ±40 BP (OxA-12360; 5630-5480 Cal BC) has been obtained from a similar sequence in nearby Trench T40 (monolith 3068) at a level 2 cm above the clay/peat interface.

The pollen record at the start of the sequence dominated by grass (Poaceae) reflects the growth of nearby reedswamp, which dominated the area under the influence of estuarine inundation (indicated by the minerogenic clay) and that led eventually to peat accumulation at the site. The data also suggest the presence at least initially of oak woodland in the area, but there is a change to dominance by hazel (Corylus avellana) from 15 cm depth. Stratigraphically this horizon corresponds to the position within the minerogenic clay on which Tree 18 lay, and may point to the time at which oaks growing locally died. This was followed at 9.5 cm depth by an increase in oak pollen within the accumulating peat, which together with the consistent presence of hazel points to the re-establishment of oak woodland, with stands of hazel, in the landscape. Poaceae remains strongly represented, however, while Cyperaceae is present in low but consistent quantities from 8 cm onwards reflecting local reed and sedge growth. Curiously, the pollen spectra from the peat also show an increase in Chenopodiaceae (typically associated with saltmarsh) and Aster type, which suggests a marine influence in the vicinity of the site at this time. If so, the representation of high-low-high-low values for Chenopodiaceae pollen probably identifies two phases of minor, and relatively short lived marine transgression in the area prior to the subsequent episode of marine submergence and renewed accumulation of blue-grey clay above the peat.

There is no direct evidence of human activity in the pollen record. However, a significant feature of the preliminary results presented here from an archaeological point of view, is the varying amounts of charcoal recorded in the upper part of the profile. There was a relatively large quantity of micro-charcoal particles on the pollen slide from 13.5-14 cm. Charcoal abundance also substantially increased between levels 2 and 9 cm. Among the charcoal from this monolith, gramminoid (grass family) microcharcoal was particularly common. The presence of occasional woody charcoal was also noted within the charcoal peak in estuarine silt (14.5-15 cm) and also within the thin peat (eg 6.5-7 cm). Despite the fact that the excavations in 2001 found no artefactual evidence of Mesolithic human activity at Redwick, and any conclusions must therefore be tentative, the occurrence of charcoal in such quantities might indicate an anthropogenic influence at the site.

Comparison with Site D, Goldcliff East

The pollen diagram from Redwick is similar to that recorded from Trench D (monolith 4071) at Goldcliff East (Dark 2002), also associated with the lower submerged forest and peat. The two sites are 4.6 km apart. There is, overall, correspondence in the representation of the principal taxa and establishment of reedswamp in both areas, which in turn is succeeded by saltmarsh. However, at Goldcliff hazel pollen percentages up to 60% total land pollen suggest that stands of hazel formed a more significant part of the local woodland. In the Redwick profile, by contrast, the representation of Corylus avellana is much more subdued which might suggest that hazel was not growing around the site. Alternatively, it may be that the pollen signal at Redwick is being masked by the proximity of the site to localised reedswamp development (as represented by the high percentage of Poaceae pollen). Radiocarbon dates from the lower peat investigated in Trench D at Goldcliff and Trench T40 at Redwick are also broadly comparable. The peat in Trench D at Goldcliff, monolith 4071 is dated 6790 ±38 BP (OxA-12359; 5740-5620 Cal
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Table 1. The main archaeological areas, their OD heights and dates with a provisional assessment of the environmental conditions and the main activities.

<table>
<thead>
<tr>
<th>Site</th>
<th>OD Height (2003 excav. area)</th>
<th>Date 14 C</th>
<th>Date Cal BP</th>
<th>Environment</th>
<th>Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>-4 m OD</td>
<td>6726 ±33 BP (OxA-12358)</td>
<td>5720-5560 Cal BC</td>
<td>Hazel oak woodland with sedges and reeds</td>
<td>Toilet area ? Burning</td>
</tr>
<tr>
<td>B</td>
<td>-3.55 m OD</td>
<td>6871 ±33 BP (OxA-12357)</td>
<td>5840-5660 Cal BC</td>
<td>ditto</td>
<td>Butchery and cooking</td>
</tr>
<tr>
<td>C &amp; E</td>
<td>- 4 m OD</td>
<td>-</td>
<td>-</td>
<td>Saltmarsh / mudflats</td>
<td>? fishing; fowling; hunting; gathering; playing.</td>
</tr>
<tr>
<td>A</td>
<td>-2.4 m OD</td>
<td>-</td>
<td>-</td>
<td>Dryland</td>
<td>Fish processing and drying, knapping</td>
</tr>
<tr>
<td>J</td>
<td>+0.7 to 1.25 m OD</td>
<td>Pre- 5749 ±23BP (OxA-12356)</td>
<td>4690-4500 Cal BC</td>
<td>Dryland / saltmarsh edge</td>
<td>Aurochs and pig butchery, knapping</td>
</tr>
</tbody>
</table>

BC) and 6726 ±33 BP (OxA-12358, 5720-5560 Cal BC) and the peat at Redwick T40 monolith 3068 is dated 6625 ±40 BP (OxA-12360, 5630-5480 Cal BC). This is especially interesting as it has been suggested, on the basis of micro-charcoal evidence at Goldcliff, that there may have been deliberate, and managed burning of reedswamp and oak trees in the vicinity. The clear similarities between the abundance of charcoal identified in the two pollen diagrams (Dark pers comm), clearly poses questions about the character of human-environment relationships at Redwick in the later Mesolithic.

CONCLUSIONS (MB)

We have structured this interim report around those sites where we have carried out detailed investigations. One of the especial features of this area, however, is that current coastal erosion presents us with a transect of Mesolithic landscape demonstrating contrasts in the spatial and temporal patterning of activities. In spatial terms we need to think not so much of discrete sites but of a variety of activity areas which present us with the opportunity to look in a seamless way at what people were doing in different facets of the landscape. In temporal terms, however, the sites are separated: the OD heights rise from east to west and they were progressively buried by the later stages of the rapid Holocene marine transgression between c 5700-4500 Cal BP. Thus we have a complex spatial and temporal pattern of environments and activities with growing evidence that later Mesolithic communities were performing different activities in different areas. Table 1 provides a provisional assessment of these factors.

An important objective of our research is to establish how the utilisation of this area fitted into seasonal patterns of activity. Given that this is a rich coastal ecotonal situation with a diversity of resources there was always the possibility that human communities could be supported year round. However, nowhere do we find the density and intensity of occupation evidence which is found, for instance, in later Mesolithic coastal sites in Denmark which are thought to have been associated with largely sedentary populations. Excavations of the Mesolithic site west of Goldcliff island indicated that activity there was concentrated in winter; this conclusion was based mainly on fish size and pig dentition (Bell et al 2000). The current excavations to the east of the island seem to be pointing to a more complex...
picture. Autumn and winter activities are suggested by the larger numbers of charred hazelnuts found at Site A, although hazelnuts can be stored. The work of John Allen and Petra Dark has been of great importance in demonstrating that the finer sedimentary bands in the main silt unit were deposited in summer and the coarser bands in winter. Some of the best preserved human footprints were clearly made in the fine grained sediments of summer; an example is the child's footprint from Site E (Scales 2002, fig. 1). Rachel Scales (pers comm) also notes the occurrence among the bone assemblage of neonatal pigs, indicating hunting in summer. These, however are preliminary observations which need to be tested and developed by the ongoing post excavation work.

Evidence for the occurrence of fire has been noted in the basal submerged forest particularly at Sites B, D and at I where some oak stumps and trunks were burnt. At Goldcliff evidence of charcoal and burning occurs both within the settlement area at Sites A, B and J and beyond at Sites D and I. What is particularly notable is the occurrence of burnt oaks and other evidence for burning in the basal peats at Redwick well away from known Mesolithic settlement. Above the basal submerged forest and occupation horizons charcoal is much more limited. In the peat sequence from Site J, for instance, once the upper peat had started to form there is only the slightest evidence for continuing human activity in the form of one flake. However, a charred branch was found in this peat in 2002 and work on the stratigraphic context of the upper submerged forest produced charcoal layers associated with the oak woodland layer around Trees 36 and 70. The tree-ring sequences from these two layers cross matching shows that for most of their lives they were contemporary. It is possible, therefore, that the associated charcoal represents one fire event. Thus, there may be evidence of two conflagrations, both affecting mature oak woodland, one in the lower submerged forest the second, and admittedly less securely attested, in the upper submerged forest. The question is whether one or both fires relate to deliberate burning by people. That affecting the lower oak forest was at a time when Mesolithic communities were very active at Goldcliff and apparently absent at Redwick. That affecting the upper submerged forest was at a time when there is little evidence for human activity at Goldcliff. As we move into the final post excavation stage of this project a particular challenge will be to evaluate the relationship between human activity and the range of environmental disturbance factors including fire.

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The Time Team are thanked for their contribution to work this season and for making archaeological work in the Severn Estuary more widely known, especially Michael Douglas (Producer), Professor Mick Aston, Phil Harding and Kate Edwards. Through the Time Team programme research on footprint-tracks also benefited from collaboration with Professor Robin Crompton. Victor Ambrus, artist in the ‘Time Team’, prepared three very fine reconstruction paintings of Mesolithic life at Goldcliff.

Finds processing and camp administration was by Jennifer Foster assisted by Pam Sacre, Alan and Janet Pritchard, Eleanor and Sarah Bell. The sieving programme was much greater this year and we are grateful to Sean Keating, Deni Vorst, Katie Smith, Alan Pritchard and Shaun Buckley for their contribution to this important activity.

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DEDICATION

This report is dedicated to the memory of Sue Beckett, our much valued helper in excavation and footprint studies and friend. Despite serious illness Sue assisted in the 2003 season and sadly passed away on 4.3.04.

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