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HULLBRIDGE SURVEY (1984 FIELD SEASON) Environmental Reports

- Jaywick Sands. Site 1. Macrofossils from estuarine deposits on the 'head' surface, from a linear feature and from a Beaker pit.
- 2. Peats at Walton-on-the-Naze and in the Blackwater Estuary: preliminary assessment (Sites 2, 3, 7, 8).
- 3. Prehistoric charcoal scatters at Walton and in the Blackwater Estuary (Sites 2, 3, 7, 8).
- 4. Macrofossils from a Neolithic pit at Mundon (context 49).
- 5. Wood from a brushwood trackway in the Upper Peat at Hullbridge (Site 52).
- Wood and other macrofossils from prehistoric wells at Rook Hall Farm, Goldhanger.

Introduction

During the 1984 field season sites in three areas were investigated: the coast between Clacton and Walton-on-the-Naze, the Blackwater Estuary, and selected sites on the Crouch Estuary in the vicinity of Hullbridge itself. Interim reports on the archaeological and environmental work will be published as an Essex County Council paper prior to final publication. This report details only the environmental results.

Site 1. Jaywick Sands

(a) Context 2

On the upper shore at this site an eroded sloping surface of homogeneous grey clay outcrops. It contains little organic material though there are occasional humic patches, and rare small wood fragments. The clay also includes very rare small flints. Mollusc shells were not observed. This clay is assumed to have been formed in marine/brackish conditions.

The lowest 20cm of the clay has a higher organic content and includes large pieces of wood, up to about l0cm in diamater. The section here is as follows:

- 0-20cm Soft grey organic clay with rare rounded and subangular flints up to 9cm. Wood and twigs. Sharp boundary.
- 20-35+cm Firm grey silty clay with prominent large brown mottles. Rare small rounded and subangular flints. (London Clay 'head')

Annelid burrows are visible throughout, but particularly in the top 20cm.

A short column sample, sub-divided at 5cm intervals, was taken from this organic clay and from the top of the subjacent London Clay 'head' for macrofossil analysis, and samples for diatom analysis were taken at 5cm intervals. Wood samples were collected for Cl4 dating and identification. 0.5kg samples were examined for macrofossils; extraction methods were as described in earlier reports. Resuts are given in Table

By far the most abundant macrofossils in the samples are seeds of <u>Salicornia</u> sp. Accurate counts could not be obtained since there were many fragmentary seeds, but there is no doubt that <u>Salicornia</u> would have accounted for well over 90% of the total seed count. Fruits of the sea poa, <u>Puccinellia maritima</u>, are also common. This grass is a characteristic species of low salt-marsh vegetation (Van Zeist 1974, 337). Other salt-marsh plants identified include Suaeda <u>maritima</u>, <u>Armeria/Limonium</u>, <u>Aster tripolium</u> and <u>Triglochin maritima</u>. Some remains of other plants with a coastal distribution (<u>Atriplex sp. Daucus</u> <u>carota</u>) are also present. From these results it is clear that the organic clay above the head surface was deposited on intertidal mudflats colonised by <u>Salicornia</u> and that it includes drifted plant material from adjacent salt-marsh vegetation.

Godwin and Godwin (1936, 185) report results of pollen analysis from a peat resting on the head surface at Jaywick Sands (then known as Lion Point.) High counts of Chenopodiaceae pollen were thought to indicate that the peat had formed in brackish conditions over salt-marsh. No peats, as such, were seen at the exposures visible in 1984, but the organic clay at site 1 is stratigraphically in the same position as the peat sampled by the Godwins and probably represents contemporaneous deposition but at a lower level relative to mean tide level. Clearly the high Chenopodiaceae pollen counts and the abundance of Salicornia seeds are entirely consistent.

All the macrofossil samples examined contained plant material derived from terrestrial vegetation, including twigs, thorns, buds, deciduous leaf fragments and seeds. Fruits and seeds from wetland and grassland vegetation are present (Ranunculus sp, Montia fontana subsp. chondrosperma, Prunella vulgaris, cf. Eupatorium cannabinum), together with weeds (Chenopodium album, Aphanes arvensis/ microcarpa, Rumex acetosella, Urtica dioica, Solanum nigrum) and scrub plants (Rubus fruticosus, Sambucus nigra). The two lowest samples produced charcoal fragments. These macrofossils represent material fluvially transported from areas beyond the tidal limits. The wood fragments collected are particularly interesting since several of them have been cut. One stem, about 10cm in diameter, shows clear fellingcuts (Plate). It is probably of hazel (Corylus sp.), but the cell structure is not well preserved and is partly mineralised. The remaining wood samples consist of stems 2-3.5cm in diameter and several of them show oblique transverse cuts. The relative abundance of wood in this organic clay just above the head and the virtual absence of wood at higher levels in the clay suggests that this drifted material might be related to clearance of new land necessitated by submergence on the coastal plain.

Diatoms from these deposits will be analysed in order to provide independent evidence to confirm or modify this interpretation based on macrofossils.

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Context No.	2	2	2	2	3
Depth (cm)	0-5	5-10	10-15	15-20	40-45cm
Ranunculus acris/repens/bulbosus	4	2	2+frags	_	-
Stellaria sp.	-	1	1	-	-
Spergularia sp.	-	-	_	-	lcf
Montia fontana L. subsp. chondrosperma	-	frag	1	-	-
Chenopodium album L.	-	1	-	-	-
Atriplex sp.	4	1	1	-	-
Suaeda maritima (L) Dumort	36+frags	13+frags	5+frags	frags	20+,frags
Salicornia sp. (1)	+++	+++	+++	43	106
Chenopodiaceae indet. (embryos)	9	6	3	1	1
Rubus fruticosus agg.	1	frags	frags	frags	-
Potentilla sp.	1	-		-	-
Aphanes arvensis/microcarpa	-	1	-	-	-
Daucus carota L.	-	.]		. -	-
Umbelliferae indet.	-	-	1	frag	-
Polygonum sp.	1]	-	-
Rumex acetosella agg.	-	-	1	-	-
<u>Urtica dioica</u> L.	1	1	2	-	-
Betula sp.	-	-	-	-	1
<u>Armeria/Limonium</u> (calyces)	6	1	-	P -	-
Solanum nigra L.	-	-	1	1cf	-
Prunella vulgaris L.	· _	2	1 ·	-	-
<u>Plantago</u> sp.	3		3	2	-
Sambucus nigra L.	1	-	-	-	-
<u>Aster tripolium</u> L.	-	1(+3cf)	5	-	-
cf. Eupatorium cannabinum L.	1	-		-	-
Compositae indet.	2	-	-	1	-
<u>Triglochin maritima</u> L.	10	14	6	2	1
Juncus spp.	-	-	-	+	-
Scirpus/Schoenoplectus sp.	-	-	-	-	
<u>Puccinellia maritima</u> (Hudson) Parl.	61	59	-	-	-
Gramineae indet. (2)	106	69	16	-]
Gramineae indet. (culm fragments)	÷	+	+	-	+
Twigs	+	÷	+	+	+
Thorns	-	-	+	÷	
Buds/budscales	+	-	+	-	-
Deciduous leaf fragments	+	+	-	-	-
Charcoal	-	-	+	+	+
Indeterminate seeds	1	4	3	1	2

Table : Plant macrofossils from contexts 2 and 3 at Jaywick Sands, Site 1

Taxa are represented by fruits or seeds except where indicated. An additional sample from context 2, 20-25cm contained no macrofossils.

Notes (1) Counts were not made of Salicornia seeds in the topmost samples.

(2) Fragmentary and/or opaque due to brown depositions, encrustations of clay or partial mineralisation with iron compounds.

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(b) Context 3

This is a linear ditch-like feature, apparently artificial, crossing the shore obliquely. It is about 2m wide and its edges are defined by lines of <u>in situ</u> <u>Phragmites</u> stems in a grey clay matrix. The central fill, seen on the surface, is of grey clay with probable calcareous concretions and includes wood fragments and valves of Cerastoderma and Scrobicularia in life position.

A small pit was dug near the centre of the feature to obtain a column sample for macrofossil analysis and diotom samples. The section was as follows:

0-5cm Grey clay with shells and fragments. Merging into
5-20cm Grey clay with abundant <u>Phragmites</u> stems and rhizomes. Scrobicularia in life position between about 10-20cm. Merging into
20-38cm Light greyish-brown clay with very large black mottles. Merging into
38-45cm Light greyish-brown clay.

The interface with the 'head' was not seen since the section dug rapidly filled with water.

Since this feature was seen only on the planed-off head surface there was no stratigraphic means of determining whether it was dug down through formerly-existing estuarine clays or whether it was dug before submergence of this area. In the latter case it seemed possible that the lower fills might have formed in terrestrial or freshwater conditions: the upper fills are obviously estuarine clays. Macrofossils from a 0.5kg clay sample at 40-45cm depth were therefore examined. The results are given in Table

Fruits and seeds identified from this sample are almost entirely of estuarine plants (<u>Spergularia</u> sp., <u>Suaeda maritima</u>, <u>Salicornia</u> sp., <u>Triglochin maritima</u>) and it is quite clear that the lowest fill sampled was formed in brackish water.

(c) Context 5

The entire fill of this Beaker pit was collected for analysis. This comprised 19.4kg of wet grey clay with charcoal, pottery sherds and struck flints. The sample was disaggregated by prolonged soaking in dilute NaOH solution. Some soil concretions still remained even after drying and re-treatment. Complete extraction of charcoal etc. was therefore not possible. Carbonised plant material was extracted by manual flotation/washover, using a 0.5mm collecting mesh, and the non-floating residue was wet-sieved in a 0.5mm mesh. The following material was recovered:

Bone 28g of burnt and unburnt fragments up to 2.5cm in size. These are mostly unidentifiable, but include fragments of pig teeth and of cattle-sized teeth. No small mammal or amphibian bone was seen.
 Carbonised cereals S.W. quadrant. Triticum dicoccum (emmer), one glume base. N.E. quadrant. One indeterminate cereal grain fragment, one broken glume base of Triticum sp.

<u>Charcoal</u> 182g of charcoal were extracted. Most of the charcoal has been submitted for C14 dating.

The very sparse bone and cereal remains from this feature might indicate a mixed farming economy, but clearly more material would be required to form any useful conclusions.

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(2) Peats

The stratigraphy in the Walton area and along the Blackwater Estuary was simple and consistent. Peat deposits up to about 20cm thick, but generally less, rest on the London Clay 'head' surface. These peats are exposed between tides as a horizontal platform and were originally overlain by estuarine clays.

a) Site 2, Walton-on-the-Naze. Context 14

This is the best-preserved area of peat at this site. The section is as follows:

- 0-10cm Dark brown fibrous peat. Some greyish-brown clay patches, possibly burrow fills. Sharp boundary.
- 10-18cm Firm pale grey sandy silt loam with small black mottles and large yellowish-brown mottles. Generally stoneless, but including rare heatshattered flints and struck flint flakes. Merging boundary.
- 18cm + Predominantly yellowish-brown firm sandy silt loam with sandy laminations in some sections.

Samples were taken from the peat for macrofossil analysis. It was anticipated the: there would probably be some contamination by recent plant material, introduced through the burrows of intertidal organisms, but it was hoped to establish at leas: the general type of peat present. The samples were, however, found to be grossly contaminated. Definite contaminants are small leguminous seeds of Lotus sp.and <u>Trifolium</u> sp. and probable contaminants are well-preserved grass fruits still contained within their inflorescence bracts. These account for the majority of fruits and seeds recovered, and it would appear that the peat has been extensively re-worked by intertidal burrowing organisms.

b) Site 3 Maylandsea

On the foreshore the peat is only patchily preserved and in most areas is only up to 2cm thick, though filling depressions in the head surface to depths of 12cm. It is extensively burrowed by piddocks and annelids.

The best preserved peat section was in area F.

0-15cm Dark brown fibrous peat with burrows. Very sharp boundary. 15-25cm Pale grey firm silt/fine sand with flint pebbles. Merging down into 25cm + Pale grey mottled yellowish-brown silt/fine sand. Wood occurs on the top of the peat surface including one stool of oak (Quercus sp.) apparently in situ.

Samples were taken from the peat at 0-5, 5-10 and 10-15cm for macrofossil analysis and a Cl4 sample was taken from the in situ stool (Context 41).

It was quite clear in the field that the peat at this side was extensively disturbed by burrowing organisms and the samples taken were therefore examined in outline only. They included twigs, fragments of grass culm, fruits and seeds of <u>Salicornia sp., Spergularia cf. media, Triglochin maritima, Aster tripolium</u> and Gramineae: an assemblage of plant remains characteristic of estuarine conditions. The apparently <u>in situ</u> stool of oak on the peat surface is clearly inconsistent with this. It may in fact be rooted in the head, having been subsequently overwhelmed by developing peat. This exposure requires re-examination.

c) Site 7. St Lawrence Bay

A thin peat, similar to that at site 3, overlies the 'head' surface in this area. A typical section is as follows:

0-20cm Dark brown fibrous peat with some wood

20-22cm Soft dark grey silty clay with charcoal flecks

22-30cm Soft light grey silty clay. Yellowish-brown mottles becoming more prominent with depth. Firmness increasing with depth. Rare small subangular flints, some burnt.

The peat is overlain by grey clays, assumed to be of estuarine origin. Samples were taken from the peat for macrofossil analysis, but in view of the results from site 3 plant remains from the peat must be viewed with caution: burrows were again conspicuous. Plant material extracted from these samples included twigs, grass culm fragments, fruits and seeds of <u>Salicornia</u> sp., <u>Spergularia</u> cf. <u>media</u>, <u>Suaeda maritima</u>, <u>Limonium/Armeria</u>, <u>Triglochin maritima</u>, <u>Aster tripolium</u>, <u>Juncus</u> spp. and one achene of <u>Ranunculus sceleratus</u>. Remains of estuarine plants clearly predominate, but the degree of contamination is uncertain.

d) Site 8 Bradwell-on-Sea

At this site the same basic stratigraphy as at sites 3 and 7 was observed: a thin peat resting on the head surface outcrops on the lower shore as a horizontal platform.

- O-5cm Dark brown fibrous peat, extensive burrowing by piddocks and annelids. Base sharp but undulating 3-7cm depth.
- 5-16cm Soft grey silty clay mottled black and pale grey. Small rounded and subangular flints (some burnt). Roots common. Boundary quite sharp.
 16cm+ Firm yellow-brown 'head'.

At three locations (contexts 31, 32 and 35) dense spreads of charcoal (c.lcm thick) are present at the base of the peat. At 32 charcoal spreads diffusely into lower part of grey clay.

On the lower shore the surface beneath the peat is firmer with a higher proportion of silt and fine sand. Here the peat is thicker, up to about 15cm. Wood occurs sporadically on the peat surface and there was one prostrate trunk (36). 33 was securely stratified in the top of the head.

- Samples: 31 For examination of charred material and ? Cl4.
 - 32 For examination of charred material and ? Cl4.
 - 33 Large piece of wood stratified in top of head.
 - 34 C14 sample. Wood from peat.
 - 35 For examination of charred material.
 - 36 Wood sample for identification
 - 37 For examination of charred material associated with pottery.

The wood samples 33, 34 and 36 were all of oak (Quercus sp.).

Samples were also taken from the peat and examined in outline. Foraminifera, <u>Balanus</u> fragments, paired valves of juvenile <u>Petricola pholadiformis</u>, <u>Cerastoderma</u> sp, abraded fragments of <u>Mytilus</u> shell, shells of <u>Hydrobia ulvae</u> and Retusa sp. were present. These are all thought to be recent contaminants.

Plant remains in the peat include twigs, leaf fragments, rare fragments of <u>Rubus</u> fruitstones, seeds and fruits of <u>Ranunculus sceleratus</u>, <u>Spergularia</u> cf. <u>media</u>, <u>Salicornia</u> sp. <u>Suaeda maritima</u>, <u>Aster tripolium</u>, <u>Triglochin maritima</u>, <u>Juncus</u> spp. and Gramineae. As in the samples from peats at sites 3 and 7 remains of estuarine plants predominate, but again it is impossible to assess how much of this material is intrusive.

e) Conclusions

This preliminary examination shows clearly that the peats exposed on the foreshore are extensively re-worked by burrowing organisms and contaminated be recent plant 0-5cm Dark brown fibrous peat, extensive burrowing by piddocks and annelids. Base sharp but undulating 3-7cm depth.

5-16cm Soft grey silty clay mottled black and pale grey. Small rounded and subangular flints (some burnt). Roots common. Boundary quite sharp.
16cm+ Firm yellow-brown 'head'.

At three locations (contexts 31, 32 and 35) dense spreads of charcoal (\underline{c} .lcm thick) are present at the base of the peat. At 32 charcoal spreads diffusely into lower part of grey clay.

On the lower shore the surface beneath the peat is firmer with a higher proportion of silt and fine sand. Here the peat is thicker, up to about 15cm. Wood occurs sporadically on the peat surface and there was one prostrate trunk (36). 33 was securely stratified in the top of the head.

- Samples: 31 For examination of charred material and ? Cl4.
 - 32 For examination of charred material and ? Cl4.
 - 33 Large piece of wood stratified in top of head.
 - 34 Cl4 sample. Wood from peat.
 - 35 For examination of charred material.
 - 36 Wood sample for identification
 - 37 For examination of charred material associated with pottery.

The wood samples 33, 34 and 36 were all of oak (Quercus sp.).

Samples were also taken from the peat and examined in outline. Foraminifera, <u>Balanus</u> fragments, paired valves of juvenile <u>Petricola pholadiformis</u>, <u>Cerastoderma</u> sp, abraded fragments of <u>Mytilus</u> shell, shells of <u>Hydrobia ulvae</u> and Retusa sp. were present. These are all thought to be recent contaminants.

Plant remains in the peat include twigs, leaf fragments, rare fragments of <u>Rubus</u> fruitstones, seeds and fruits of <u>Ranunculus sceleratus</u>, <u>Spergularia</u> cf. <u>media</u>, <u>Salicornia</u> sp. <u>Suaeda maritima</u>, <u>Aster tripolium</u>, <u>Triglochin maritima</u>, <u>Juncus</u> spp. and Gramineae. As in the samples from peats at sites 3 and 7 remains of estuarine plants predominate, but again it is impossible to assess how much of this material is intrusive.

e) Conclusions

This preliminary examination shows clearly that the peats exposed on the foreshore are extensively re-worked by burrowing organisms and contaminated be recent plant material. If the predominance of remains of salt-marsh plants in the peats in the Blackwater Estuary is taken at face value then it would appear that they were formed in brackish-water conditions. Clearly, however, it will be necessary to obtain well-sealed peat samples by augering or trial-trenching on the upper shore to check this. This could be most easily achieved at sites 3 and 7. Site 3, in particular, requires re-investigation.

(3) Charcoal Scatters

A common feature of the sites investigated in the Crouch and Blackwater valleys and on the coast between Jaywick and Walton-on-the-Naze is the presence of charcoal scatters on the surface of the London Clay 'head'. At sites where peats overlying the head have survived erosion these charcoal layers are securely stratified between the peat and 'head'. These layers vary greatly in density: at site 7 a dense charcoal spread up to 3cm thick is present, but at most sites the charcoal scatters are much more diffuse. At some sites there are associated artefacts suggesting settlement activity, but at others artefacts are absent. It seems likely that charcoal-rich deposits of this type were common on prehistoric land surfaces, but at dry-land sites they have been dispersed by later activity. These intertidal sites therefore provide a rare opportunity to date such deposits, and to assess their significance. Samples were collected at Walton (Site 2), St Lawrence Bay (Site 7), Bradwell (Site 8) and Hullbridge (Site 17).

a) Site 2 Walton-on-the-Naze

Three small charcoal concentrations (15, 16, 17) were sampled. The charcoal-rich deposits filled shallow depressions (\underline{c} .3cm deep) in the head surface. The following charred plant material was identified.

Context No.	15	16 [°]	17
Sample wt (kg).	0.1	1.4	0.25
Quercus sp. charcoal	+	+	+
Indeterminate diffuse porous twigs	+	-	-
Indeterminate fragments	+	+	× —
Prunus cf. spinosa L. (fruitstone frags)	-	+	-

The indeterminate charcoal either has very deformed cell structure or had iron depositions obscuring details of vessel structure. There is insufficient charcoal for radiocarbon dating.

b) Site 7 St Lawrence Bay

A 2.6kg sample was taken from context <u>43</u> part of the dense charcoal deposit, 1-3cm thick, between the head surface and overlying peat. The charcoal is almost entirely of oak (<u>Quercus</u> sp.) with one small fragment of <u>Prunus</u> sp. The oak charcoal was from large wood (not twiggy) and includes some fragments from slow-grown wood with narrow rings. After identification the sample was submitted for dating.

c) Site 8 Bradwell-on-Sea

Conspicuous charcoal scatters between the head surface and peat (contexts 31, 32, 35), and fill from a feature with associated pottery (context 37) were sampled.

Context No.	31	32	35	37
Sample wt (kg)	6.2	4.6	1.1	2.5
Quercus sp. (charcoal)	+++	+++	++	, +
Fraxinus sp. (charcoal)	-	-	-	+
Prunus sp. (charcoal)	-	-	••	÷
<u>Crataegus</u> -group (charcoal)	-	-	-	+
Indeterminate charcoal	÷	-	-	-
Carbonised buds	+	-	-	-
Carbonised roots/rhizomes	+	. –		-
Vicia sp. (seeds/cotyledons)	7	-	-	

<u>37</u> contained a small fragment of burnt bone. The indeterminate charcoal from <u>31</u> consists of diffuse porous twigs 6mm in diameter. The oak charcoal from <u>32</u>, <u>35</u> and <u>37</u> is from large wood and includes fragments from slow-grown wood with narrow rings. Oak charcoal from <u>31</u> includes some twigs up to 10mm diameter and some charcoal from larger wood with both narrow and wide rings. <u>31</u> and <u>32</u> produced sufficient charcoal for radiocarbon dating.

d) Site 17 Hullbridge

A 1.6kg sample was taken from a charcoal scatter on the 'head' surface. It contained the following carbonised plant remains.

Chenopodiaceae indet (embryo)	1
Trifolium sp. (seeds)	225
Rubus fruticosus (fruitstone)	1
<u>Plantago lanceolata</u> (seed)	1
Roots/rhizomes	+
Quercus sp. (charcoal)	+

There was not enough charcoal in the sample for radiocarbon dating.

e) Discussion

The results are summarised in Table It is clear that some of these charcoal scatters are directly related to domestic activity. Context <u>37</u> at Bradwell-on-Sea produced Neolithic pottery, flints and a chip of burnt bone. The charcoal from this context includes a wider range of woods than any other context sampled (oak, ash, sloe(?), hawthorn-group). Context <u>31</u> at this site produced oak charcoal, unidentified charred twigs, buds, roots/rhizomes and seeds of vetches. These seeds are probably derived from waste material produced during crop processing. The sample from Hullbridge, Site 17 also seems to be related to domestic activity. <u>Trifolium</u> spp. are typically grassland plants, but seeds have been reported in association with charred cereals from prehistoric sites where they apparently represented crop contaminants. <u>Plantago lanceolata</u> and plants within the family Chenopodiaceae are common crop weeds. The sample also contained a bramble fruitstone and some oak charcoal.

The remaining samples are quite different in composition, consisting exclusively or largely of oak charcoal. They also contain consistently high densities of charcoal, as compared to the 'domestic' samples. At Site 7, St Lawrence Bay there was only a very thin scatter of flints on the 'head' surface, insufficient to establish the presence of a settlement. A possible interpretation of the dense and extensive charcoal deposits at this site is that this layer represents a woodland clearance. The radiocarbon date for this deposit, if early, may provide some support for this.

Similar but much less extensive charcoal deposits at the other sites could perhaps have a similar origin. Radiocarbon dates for context <u>31</u> and <u>32</u> at Bradwell-on-Sea may help in interpreting these deposits. If <u>32</u> is significantly earlier than <u>31</u> then interpretation of <u>32</u> in relation to woodland clearance would be plausible.

(4) Context 49, Mundon

A 3.6kg sample was examined from the fill of a Middle Neolithic pit. It produced charcoal fragments, but these were mostly encrusted with iron concretions and were not identified. A few very small burnt bone fragments were also recovered.

Site and context	Context-type	Charcoal density (see note below)	Charcoals identified (in order of abundance)	Other carbonied plant remains	Bone	Artefacts
Walton, Site 2 Context 15	Charcoal scatter on head surface	High	Oak (<u>Quercus</u> sp.) Indeter- minate (Fe concretions)	-	Absent)
Walton, Site 2 Context 16	Charcoal scatter on head surface	High	Oak (<u>Quercus</u> sp.) Indeter- minate (Fe concretions)	Fruitstones of Sloe	Absent	Struck flints common in vicinity
Walton, Site 2 Context 17	Charcoal scatter on head surface	High	Oak (<u>Quercus</u> sp.) only	-	Absent	j
Bradwell, Site 7 Context 43	Charcoal scatter on head surface	High	Oak (<u>Quercus</u> sp.) Prunus sp.	-	Absent	Very rare struck flints in vicinity
Bradwell, Site 8 Context 31	Charcoal scatter on head surface	Medium	Oak (<u>Quercus</u> sp.) Indeter- minate twiggy charcoal	Seeds of vetches	Absent	
Bradwell, Site 8 Context 32	Charcoal scatter on head surface	High	Oak (<u>Quercus</u>) only	-	Absent	in vicinity but not in sample
Bradwell, Site 8 Context 35	Charcoal scatter on head surface	High	Oak (<u>Quercus</u>) only	-	Absent	
Bradwell, Site 8 Context 37	Charcoal scatter on head surface	Low	Oak (<u>Quercus</u> sp.) Ash (Fraxinus sp.) Prunus sp. Crataegus-group (hawthorn etc.)	-	Present	Pottery, flint in sample
Hullbridge Site 17	Charcoal scatter on head surface	Medium	Oak (<u>Quercus</u> sp.) only	Weed seeds and <u>Rubus</u> fruitstone	Absent	-
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Table : Summary of results from the 'charcoal samples'

Charcoal densities are deliberately given in an approximate form. This is because some soil samples included concretions which made complete disaggregation and charcoal extraction impossible, and also because in some samples the charcoal itself was partly coated and the vessels infilled with sediment or iron concretions. Due to these factors it was not possible to determine charcoal weights per sample with any great precision. The terms used to describe densities have the following meanings:

> High : more than 20g of charcoal per kg of soil Medium : 10-20g per kg Low : less than 10g per kg.

(5) Hullbridge, Site 52

At this site a platform or trackway of brushwood was recorded. It is stratified within the Upper Peat - here a <u>Phragmites</u> peat. Branches and twigs were collected for radiocarbon dating and description. Most of the wood collected is from stems between 1.0-3.0cm in diameter, though there are a few larger stems of oak (<u>Quercus</u> sp.) up to 6.0cm in diameter. The smaller twigs and branches included wood of <u>Quercus</u> sp. (oak), <u>Corylus</u> sp. (hazel), <u>Alnus</u> sp. (alder), <u>Prunus</u> sp. and probably <u>Tilia</u> sp.(lime). Most of the stems are entire, though a few are halved. Several show oblique transverse cuts. Systematic sampling from a controlled excavation, rather than the partly collapsed sections currently available, could well provide useful information on the species composition of local woodland and on the extent to which woodland was managed.

(6) Rook Hall Farm, Goldhanger

Samples from two prehistoric wells at this site on the north bank of the Blackwater Estuary, directly adjacent to the survey area, are included in this report. The features sampled (by Mr P. Adkins) are F49, which produced Deverel Rimbury pottery, and F661 which contained early Iron Age pottery. It was anticipated that the waterlogged lower fills of these features would produce environmental and economic information relating to later prehistoric activity around the estuary, and that this would supplement the information already gained from earlier prehistoric sites now exposed in the intertidal zone.

The samples

F49

1.56m Very firm dry pale brown silty clay; rare flints (some heat-shattered) up to 3cm; charcoal; very rare small burnt bone fragments; pottery (2.0kg).

1.68m Very firm dry pale brown silty clay; very rare flints (some heatshattered) up to 2cm; charcoal; pottery (1.0kg).

- 1.87m Very firm dry greyish-brown silty clay; fragments of heat-shattered flint up to 4.5cm; much charcoal; very rare small burnt bone fragments; pottery and fired clay fragments (1.2kg).
- 2.05m Firm moist yellowish-brown silty clay; with greyish brown patches; rare flint pebbles and heat-shattered flints up to 3cm; much charcoal; very rare small burnt bone fragments; pottery and fired clay (0.8kg).

2.00-2.45cm Firm moist dark grey silty clay; very rare small heat-shattered flint chips; charcoal common; shreds of decayed wood; pottery (0.4kg).

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F661

0.82m	Very firm dry light brownish grey clay; angular flint nodule fragments
	up to 7cm and rare small rounded flint and quartzite pebbles;
	charcoal; very rare small burnt bone frags; fibrous roots; pottery
	(l.8kg).
1.3m	Very firm dry pale brown clay; very rare small flints (some heat-
	shattered); rare charcoal; abundant small bone fragments including
	cattle-sized tooth fragments; pottery (0.7kg).
1.58m	Very firm dry pale brown clay; very rare small flints up to 1.5cm;
	rare charcoal; abundant small bone fragments, some burnt (1.6kg).
'Base of wel	l' Firm moist greyish-brown clay with patches of light yellowish-
	brown sand; rare rounded and subangular flints up to 3.5cm; fibrous
	plant remains and wood fragments (2kg).
101	Very firm day light burn it was along and webles of flight.

'Blue soil' Very firm dry light brownish-grey clay; rare pebbles of flint; quarzite and coarse sandstone up to 4cm; fibrous roots; pottery (1.2kg).

Plant macrofossils from these samples have been examined in detail and notes have been made on remains of insects, crustaceans etc. Extraction methods were as described in earlier reports. Plant remains identified are listed in Table

Wooden stakes from F661

Seven wood samples were received for examination. (Table) In most cases the surfaces are poorly preserved, partly rotted and with small pebbles impressed into the wood. No bark was observed, but may have been stripped off as the stakes were driven into the ground. Tool marks are visible on the tip of one stake (7).

Preservation of the cell structure is variable. Five stakes were identifiable as oak (<u>Quercus</u> sp.), but in two othersthe vessel lumina are closed and the rays are sinuous and discontinuous in cross-section. Stems between about 6-l2cm in diameter were used; some as entire stems, some as halved stems, and one quartered stem. The annual rings are generally wide, suggesting that the wood was obtained from trees grown in a favourable environment in fairly open conditions.

Stake No.	Species	Maximum ring-width seen	Description
1	-	· _	Badly decayed and fragmentary when received.Cell structure deformed.
3	Quercus sp.	3mm	15cm long. Cut from halved stem <u>c</u> .12cm diameter. Surfaces partly rotted.
4	Quercus sp.	2.5mm	18cm long. Cut from quartered stem <u>c</u> . 12cm diameter. Surfaces badly rotted.
5	Quercus sp.	-	20cm long. Cut from whole stem <u>c</u> . 7.5cm diameter, trimmed to bifacial tip.
б	Quercus sp.	5mm	40cm long. Cut from halved stem <u>c</u> .10cm diameter. Tip four-facetted. Upper part rotted.
7	Quercus sp.	5mm	Several fragments. Largest 35cm long cut from halved stem c. 12cm diameter. Radial face left untrimmed (now partly rotted) as split; circumference trimmed to give irregularly four-facetted tip. Clear too; marks.
'Stake point from base of well'	-	-	18cm long. Cut from whole stem c. 6cm diameter. Irregularly four-facetted tip. Cell structure deformed - lumina closed.

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Table : Stakes from F661

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Discussion

In both wells the lowest fills were fine-textured mineral sediments including a small proportion of organic material, but as a result of the lowered watertable this organic component is partly humified, and many of the fruits, seeds and other macrofossils present are degraded. The samples received for examination were small and consequently only restricted assemblages of macrofossils were recovered. These factors pose limitations on the information to be gained from the samples.

The sample from the base of F49, of Late Bronze Age date, produced a mixture of plant remains of wet grassland, weed and scrub species. Seeds of Juncus spp. (rushes) are very common and there are some fruits of Eleocharis sp. (spikerush) and Carex sp. (sedge). Seeds of Chenopodiaceae, mostly degraded but including Atriplex sp. (orache), are abundant. This may in part reflect the coastal location of the site, though the genus Atriplex includes several common weeds. Fruitstones of Rubus fruiticosus (bramble) and nutshell fragments of Corylus avellana (hazel) may indicate the immediate proximity of scrub plants, but could represent food refuse. There was a charred wheat grain (Triticum sp.) from this sample, and samples from domestic refuse deposits at higher levels in the well produced further charred cereal remains, including a spikelet fork of emmer (Triticum dicoccum) in association with abundant charcoal, some burnt bone fragments and a charred weed seed from a species in the family Chenopodiaceae. Though the evidence is sparse it appears that vegetation around the well was initially of damp grassland with some weeds and scrub and that the upper fill relates to domestic activity.

The seed assemblage from the base of F661, an early Iron Age well, consists almost entirely of weeds (<u>Chenopodium polyspernum</u>, <u>C. urbicum</u>, <u>Polygonum persicaria</u>, <u>Urtica dioica</u>) with some bramble fruitstones and rare rush seeds. The seeds of <u>Lemna sp. (duckweed) are presumably from plants growing in the well. A single charred seed of <u>Galium aparine</u>, a common arable weed, came from a sample at 1.3m. The wood from the base of this feature is described above. It appears to have come from oaks grown in open conditions.</u>

If further features of this type are revealed during gravel quarrying the opportunity should be taken to obtain larger samples for macrofossil analysis and also pollen samples. Systematic sampling would undoubtedly amplify the limited and tentative conclusions made here.

Godwin, H. and Godwin, M.E. (1936) 'Pollen analysis at sites on the Essex Coast' in Warren, S.H. <u>et.al</u>. 'Archaeology of the Submerged Land-Surface of the Essex Coast' <u>PPS</u> No.9 (1936), 185-6. Van Zeist, W. (1974) Palaeobotanical Studies of settlement sites in the coastal area of the Netherlands, <u>Palaeohistoria</u> XVI (1974), 223-371