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PLANT MACROFOSSILS FROM MUTLI-PERIOD EXCAVATIONS AT SLOUGH HOUSE FARM AND CHIGBOROUGH FARM NEAR HEYBRIDGE, ESSEX.

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Summary

During excavations at these sites on poorly-drained terrace gravels in 1988-9 large scale flotation produced carbonised plant material from dry features dating to all main periods between the Neolithic and medieval period and samples containing macrofossils preserved by waterlogging came from Bronze Age, Iron Age, Roman and Saxon wells and "watering-holes". The results are thought to indicate small-scale crop production and foraging in the Neolithic followed by a predominently pastoral economy perhaps in a hedged landscape in the Bronze Age, though remains of cereals and flax were also recovered. Early-Middle Iron Age contexts produced only relatively sparse assemblages of sediments, from waterlogged macrofossil assemblages and from markedly increased densities of carbonised cereals, together with the development of a ditched field system, implies arable intensification around the 1st century AD. This seems to have been based largely on spelt probably with some flax growing. Two Saxon wells seem, from their macrofossil assemblages, to have to have been related to the watering of stock, though again cereals and flax were present.

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Introduction

On the gravel terraces on the north bank of the River Blackwater, east of Heybridge, an extensive and well-defined crop mark complex, comprising field systems, settlements, ritual enclosures and ring-ditches has been defined (Brown 1988, Fig 2). The excavations at Chigborough Farm and Slough House Farm in 1988-9 can be considered to represent sample areas of this complex and the palaeoecological results from the two sites are therefore appropriately considered together.

The terrace gravels in this area are underlain by impervious London Clay, which, together with their low elevation has resulted in a locally high water table. This has had two main consequences. Firstly, deep features included permanently waterlogged basal sediments containing well-preserved biota. Secondly, the high but fluctuating water-table has had effects on shallower features. Some of them, when excavated, had wet fills though the absence of biota preserved by waterlogging indicated dessication at some stage in the past. In most shallow features, however, the fills were dry or moist when excavated and they included ferrimanganiferous concretions, a common feature of poorly-drained gravel-based soils in the coastal area of Essex (Sturdy 1976,71). As has been noted at the excavation at Lofts Farm, to the north-west of the Slough House and Chigborough Farm sites, carbonised plant material has acted as a substrate for precipitation of these concretions (Murphy 1988, 281). This causes problems in extracting and identifying carbonised plant material.

The carbonised plant material consists largely of remains of economically important plants, with some weeds, whilst the material from waterlogged contexts comprises mainly remains of the wild flora. It is therefore convenient to consider these two lines of evidence separately before attempting to integrate the results.

Economic plants and crop production

Sampling and retrieval

Carbonised plant material was retrieved from features of Neolithic to Medieval date at the two sites. At Slough House Farm groups of bulk samples (normally 12 litres) were taken from ditch segments of the Neolithic Enclosure A, from associated Neolithic pits, from ditch segments of the Late Bronze Age/Early Iron Age Enclosure B, from Middle Iron Age roundhouse ditches and from various pits of Beaker-Roman date. At Chigborough Farm the main dry features sampled were post-holes of a possible Neolithic building, and Neolithic pits, although bulk samples were also taken from Late Bronze Age - Medieval pits, hearths, ovens and wells. The ditches of field systems were not usually sampled since previous experience at Lofts Farm, confirmed at the present sites, shows that these usually produce only very sparse assemblages of carbonised plant material, of uncertain origin.

Ferrimanganiferous and soil concretions encrusting a proportion of the carbonised plant material (especially from Middle Iron Age and earlier contexts) had increased the density of the material so that retrieval using a flotation tank would have been ineffective. Instead manual flotation/washover, using 0.5mm meshes, was employed and the residues were re-floated after drying so as to ensure as high a rate of retrieval as possible in the circumstances. The plant remains recovered are, in general, not well preserved and encrustations have further reduced the proportion of material which could be identified. Carbonised plant remains from bulk samples are listed in Tables 1-9. Additionally the samples from waterlogged contexts included some carbonised and uncarbonised remains of crop plants.

Distribution of economic crop plant remains

The distribution of remains of plants believed to be of economic importance is summarised in Table 10.

The Neolithic features at both sites produced, in general, very low density scatters of grains, rachis fragments and glume bases of emmer, with some barley grains, a single abraded leguminous cotyledon possibly of pea and some charred remains of hazel, sloe and bramble. Only one feature - the Earlier Neolithic pit 3576 at Chigborough Farm - produced cereal remains at anything approaching the density found at the nearby intertidal Neolithic site of The Stumble, Blackwater Site 28 (Murphy 1989). The significance of this will be discussed elsewhere but in summary is thought to be related to destruction of carbonised plant material from the Neolithic by physical weathering in deposits which have not been sealed by later sediments. The cereal grains from 3576 are almost completely encrusted with ferrimanganiferous concretions, a further factor which has probably reduced rates of retrieval.

The Bronze Age ring-ditch (3187-3122) at Slough House Farm produced only a few cereal fragments but the well F015 included flax capsule fragments and carbonised emmer glume bases. Late Bronze Age/Early Iron Age to Late Iron Age contexts contained remains of emmer, spelt, bread wheat, barley and oats, whilst well F3887 included flax capsule fragments. Roman features included a similar range of crop plants, but no bread wheat. Apart from the flax remains from the well F2957 at Slough House Farm the only Saxon features producing crop plants were pits (contexts 196, 235, 295, 318) which included abundant charcoal but very few, presumably incidental, cereal remains. The medieval oven fill 154 at Chigborough Farm contained small amounts of carbonised cereals and might have been associated with some form of crop processing.

Soils and crop production

Soils on the terraces of the north bark of the Blackwater are included in the Hurst Association (Sturdy 1976; Hodge *et al* 1984, 227). The main soils in the association are developed on river terrace gravels with superficial fine loamy drift cover resting at depth on London Clay. They are prone to waterlogging but, when drained, are suitable for arable production, nowadays predominantly cereals. Without drainage seasonal waterlogging would result in reduced cereal yields, though it is probable that adequate yields of flax could be obtained. This crop, represented fairly consistently in wet deposits of Bronze Age to Saxon date has a restricted root system and requires ample soil moisture (Renfrew 1973, 124). It is quite likely that the macrofossils of flax relate to local production.

Assessing whether the assemblages of carbonised cereals and crop weeds are related to on-site production depends initially on a consideration of macrofossil densities and assemblage

Table 10 : Summary of the distribution of remains from economic plants

Records from insecurely dated contexts are omitted. Apart from remains of Linum all specimens are carbonised. For Avena only well-preserved floret bases are listed here.

N-B - Neolithic-Beaker; BA - Bronze Age; LBA/EIA - Late Bronze Age/Early Iron Age; MIA - Middle Iron Age; LIA - Late Iron Age; R - Roman; S -Saxon; M - Medieval

	N-B	BA	LBA/EIA	MIA	LIA	R	S	M
Triticum sp(p) (wheat)	+	-	+	+	+	+	+	+
Triticum dicoccum(emmer)	+	+	+	+	+	+	-	-
Triticum spelta (spelt)	-	-	+	+	+	+	-	-
Triticum aestivum sl. (bread wheat)	-	-	+	+	+	-	-	+
Secale cereale (rye)	-	-	-	-	-	-	+	+
Hordeum vulgare (6 row barley)	-	-	-	-	+	+	-	-
Hordeum sp (barley)	+	-	+	+	+	+	+	+
Avena sativa (oats)	-	-	-	-	+	-	-	-
Linum usitatissimum(flax)	-	+	-	-	+	+	+	-
'Pisum'-type (?pea)	+	-	-	-	-	-	-	-
cf Vicia faba(horsebean)	-	-	+	-	-	-	-	-
Rubus fruticosus(bramble)	+	-	-	-	-	-	-	-
Prunus spinosa (sloe)	+	-	-	-	-	-	-	-
Corylus avellana (hazel)	+	-	+	+	+	-	-	-

	Grains/litre of soil		Wheat glumes/litre of soil		
	Mean	Range	Mean	Range	No. of Samples
Neolithic - Beaker	0.08	0-0.69	0.007	0-0.17	29
Late Bronze Age/ Early Iron Age	0.15	0-0.5	0.09	0-0.92	11
Middle Iron Age	0.69	0-9.83	0.05	0-0.75	25
Late Iron Age	14.53	0-36.5	1.53	0.08-7.08	7
Roman	6.71	0.08-23.3	65.96	0.08-287.3	6

Table 11 : Summary of densities of cereal grains and wheat glume bases

Only contexts which produced some carbonised seeds etc and which are securely dated were included in the calculations composition, which can then be related to other sources of information. Assemblage composition (grain, chaff, weed seeds) is commonly expressed in percentage terms and displayed as a triangular diagram (Jones 1990), but at this site only a minority of samples contain sufficient carbonised macrofossils for percentage calculations to be meaningful. Instead, a crude impression of two main aspects of macrofossil densities and sample composition are presented in Table 11. This simply shows means and ranges for absolute densities of cereal grains and wheat glume bases in Neolithic to Roman contexts. The overall results for these phases may be summarised as follows:

Neolithic-Beaker Based on samples from the Neolithic enclosure A (Slough House), the probable Neolithic building (Chigborough) and various pits and hearths. The samples generally include exceedingly low densities of cereal grains with very rare wheat glumes. Weed seeds are present, but again very uncommon (Tables 1-4).

Late Bronze Age/Early Iron Age Samples from enclosure B (Slough House) Densities of grains and wheat glumes are scarcely higher than in the Neolithic features. Weed seeds again are very infrequent. (Table 4).

Middle Iron Age Samples from roundhouse gulleys etc (Slough House). The slightly higher mean grain density is largely related to two relatively grain-rich samples from Roundhouse gully C. If these were excluded grain densities would be similar to those of earlier periods. The main cereal in most samples from these features is barley, (unassociated with rachis fragments), hence the rarity of wheat glumes. The weed flora is again very restricted, with very few seeds. (Tables 5-6).

Late Iron Age Samples from pits and hearths at both sites. The pit samples from Slough House Farm produced relatively large numbers of wheat grains with some chaff but few weeds apart from Bromus spp. Macrofossil densities are clearly greater than in previous periods. (Tables 7-8).

Roman Samples from pits, ditches and wells at both sites. With the exception of one sample from a field ditch at Slough House the Roman contexts sampled included moderate-high densities of wheat grains and chaff, largely of spelt. The weed flora is somewhat more diverse but seeds are not abundant. (Tables 7-8).

From this it is quite clear that cereal remains were markedly more abundant in Late Iron Age - Roman features than in features of earlier date. This implies an increase in the intensity of cereal processing on site, with increasing amounts of winnowing/sieving by-products being discarded, certainly by the Roman period. (In contexts of this type, which may include material from more than one source it is not possible to be specific about the exact type of by-product represented). In itself this obviously need not necessarily indicate an increased emphasis on cereal production on the Blackwater terraces. It may, however, be significant that the ditched field systems at both sites are considered to be mainly of Late Iron Age/Early Roman date. Any intensification of arable production on soils of the Hurst Association would have necessitated some attempt at field drainage, and the ditches could certainly be interpreted in this light.

Waterlogged deposits

The London Clay underlying the terrace gravels at these sites had resulted in a locally high water-table, so that ditches, wells/watring holes and quarry pits had basal waterlogged fills when excavated. Not all of these included macrofossils preserved by waterlogging since they had dried out at some period of their history with consequent humification of organic materials. The features sampled were:

Chigborough Fm

Feature 72	Bronze Age enclosure ditch
Feature 645	Bronze Age well
Feature 3887	Early/Late Iron Age well
Feature 1839	Late Iron Age well
Feature 2603	
Feature 4158	Roman wells

Slough House Fm

Feature 015	Bronze Age well
Feature 2670	Early Roman quarry (2577)
Feature 2957	
Feature 130	6th-7th century timber-lined wells
Feature 2956	Shallow well with Roman tile fragment in fill

Feature 3080 A Middle Iron Age pit also included water logged fills, but largely due to the difficult circumstances of excavation adequate samples were not available.

Some of the features were exposed during gravel extraction and had to be excavated very rapidly, although in most cases it was at least possible to remove samples from each of the main fills. Others were excavated in more favourable conditions and here column samples, subdivided usually at 5cm vertical intervals, were collected. Macrofossils were extracted from sub-samples using the methods of Kenward et al (1980). Counts of macrofossils larger than 0.5mm were made and the finer fractions of the samples scanned over to assess the presence and abundance of smaller-seeded taxa (mainly Juncus spp.)

Descriptions of the lower, wet deposits are given below. The upper fills were not sampled since they comprised dry gravel-based deposits, probably intentional back-filling. The lower deposits were very variable in character from almost pure wet sand to organic silty clay loam. Determinations of % dry weight (made after 12 hrs at 100 C) and % loss on ignition (12 hrs at 375 C) were made and the results are given in Table 12.

Chigborough Farm
Feature 72

The lowest fill of this ditch (124) was a wet plastic dark greyish-brown clay loam, slightly stoney with rare angular-rounded flints up to 35mm. Samples were examined but apart from modern intrusive roots there was no organic content. Although very wet when excavated this deposit had clearly dried out at some stage in the past and no macrofossils preserved by waterlogging survived.

Feature 645

A column sample was taken from the lowest organic fills exposed in the half section of this feature (756, 808). Subsequently, when excavation was completed, a basal gravel fill, 1038, was distinguished beneath these layers. 1038 was not sampled but it is likely to have represented a rapid primary infill derived directly from the sides of the feature and would therefore not have produced significant numbers of macrofossils.

The deposits sampled were as follows:

70-90cm (756) Dark greyish-brown slightly organic sandy clay loam; moderately stoney with angular-rounded flints and quartzites up to 25mm; rare small wood fragments.

90-110cm (808) Very dark greyish-brown organic silty clay loam; very slightly stoney at top with small subangular flints and quartzites, becoming more stoney at base; wood fragments common.

Macrofossils identified are listed in Table 13.

Feature 3887

A macrofossil column with its top at 70cm depth was collected from the following deposits;

70-90cm (3987) Greyish-brown silty clay loam; reddish mottling; rare rounded flints; sharp boundary.

90-101cm(3988) Greyish-brown sandy clay loam; reddish mottling; rounded flint and quartzite pebbles common; sharp boundary.

101-109cm(3922) Greyish-brown clayey silt loam; faint reddish mottling; rare rounded flints; small wood fragments; sharp boundary.

109-150cm(3993-3997) Predominantly greyish-brown coarse sandy clay loam; numerous small discontinuous lenses of dark greyish-brown clay loam and sand; abundant mainly rounded flints and quartzites up to 70mm; wood fragments common.

Macrofossils identified are listed in Table 14.

Feature 1839

From the lowest layers of this feature (1915,2030) a 50cm column sample was collected. The basal fill was a dark greyish-brown sandy clay loam, stoney with mainly rounded-subrounded flints and quartzites up to 50mm and some soft degraded wood fragments.

Deposits above this were similar but less stoney. Samples from 20-30 and 40-50 were examined (Table 15) and a sample from 0-10cm scanned. Macrofossils were sparse and poorly preserved.

Feature 2603

The excavators collected bulk samples from layers 2934, 2933, 2932 and 2930; within this latter layer was a comparatively well-preserved wooden hurdle. The deposits were as follows:

2934 Yellowish-brown coarse sand; extremely stoney.
2933 Brown coarse sandy clay loam; very stoney with subangular-rounded flints and quartzites up to 70mm.
2932 Brown coarse sandy clay loam; very stoney with subangular-rounded flints and quartzites up to 60mm.
2930 Brown coarse sandy clay loam; stoney with subangular-rounded flints and quartzites up to 90mm; soft degraded wood fragments.

Samples were examined from each of these deposits. 2934 included virtually no organic material. 2933 and 2932 produced very badly degraded, fragmented and sparse assemblages comprising Juncus seeds with rare Urtica dioica and Montia fontana subsp. chondrosperma and some Cladoceran ephippia. 2933 also included intrusive viable seeds of Rorippa islandica. Macrofossils from 2930 included Ranunculus subg Batrachium, Ranunculus acris/repens/bulbosus, Ranunculus parviflorus, Stellaria media, Stellaria graminea/palustris, Rubus fruticosus, Chenopodium album, Polygonum aviculare, Polygonum sp., Rumex acetosella, Urtica dioica, Urtica urens, Tripleurospermum maritimum, Sonchus asper, Lemna sp, Juncus spp, Carex spp, Gramineae including Alopecurus sp, glume bases of Triticum spelta (carbonised and uncarbonised), wood, twigs, charcoal and mosses. There were, however, also seeds of Rorippa and Capsella which seemed to be modern and intrusive, and for this reason full analysis was not undertaken. Bulk samples from charcoal-rich deposits (2669, 2680, 2716) were flotated, and produced carbonised cereals etc (see above)

Feature 4158

The only samples collected by the excavators from this feature were from behind the wooden well lining. These were predominantly dark yellowish-brown sandy clay loam, very stoney, with virtually no organic content.

Slough House Farm

Feature 015

This well was exposed, and subsequently sectioned by machine during topsoil stripping and gravel grading. The section available was inadequate for thorough sampling of the upper fills in the time available, but they were composed of gravelly and clayey deposits. However, it was clear that the feature had been cut c.2m through gravel into the subjacent London Clay and that the lowest 35cm of fill was waterlogged and included organic material.

These lower waterlogged deposits were recorded in detail and sampled. Taking the top of the waterlogged layers as 0cm the section was as follows:

0-5cm	Very dark grey organic sandy clay; rare small rounded flint and quartzite pebbles; twigs, wood fragments and other plant detritus; merging boundary
5-20cm	Very dark greyish-brown organic sandy clay; very high proportion of twigs, leaves, stems and other plant detritus; sharp boundary
20-35cm	Soft greyish-brown silty clay; occasional wood fragments; coarse grey sand layers at 21-22cm and 24-25cm; merging boundary
35cm+	Slightly firm becoming very firm greyish-brown clay; well developed fine blocky structure with micro-pores. (London Clay; disturbed at surface).

Macrofossils from a column sample, collected from 0-35cm and sub-divided at 5cm vertical intervals, are listed in Table 16.

Feature 2577

A section was cut across this large early Roman quarry and a single sample obtained from its waterlogged lower fill, 2670. This was a dark greyish-brown coarse sandy clay loam; very stoney with rounded to subangular flints and quartzites up to 50mm. Macrofossils from this deposit are listed in Table 17.

Feature 130

Bulk samples, from which pollen samples were subsequently removed, were collected by the excavators from four of the main layers in this well as follows:-

362 Dark greyish-brown organic clay loam; slightly stoney with flints up to 20mm; wood fragments, pieces of grass/cereal culm.

313 Dark greyish-brown organic clay loam; virtually stoneless, but very rare small flints up to 15mm; wood fragments.

176 Pale brown coarse sandy loam; some brown clayey concretions; stoney with rounded to subangular flints up to 45mm; twigs.

175 Greyish-brown coarse sandy clay loam; slightly stoney with rounded to subangular flints up to 10mm; twigs.

Macrofossils from these samples are listed in Table 18.

Feature 2957

A column of small samples was collected by the excavators from this well. The upper fills (above 30cm depth) were gravelly with a sandy clay loam matrix and aerobic. Below this the wet deposits were:

30-50cm	Very dark grey stoneless silty clay loam; patches of greyish-brown coarse sandy clay loam; stoney with rounded to subangular flints and quartzites up to 50mm. Wood fragments.
50-70cm	Greyish-brown coarse sand; very stoney with rounded to subangular flints up to 70mm.

These predominantly mineral deposits had a low organic content and there was some fungal growth in the samples during storage. The macrofossil assemblages retrieved are comparatively poor. They are listed in Table 19.

Feature 2956

A column sample through layers 2959 and 2960 was collected. These deposits were as follows;

0-54cm (2959). Very dark greyish-brown silty clay loam; slightly stoney with rounded to angular flints up to 50mm; wood fragments and twigs.

54-70cm(2960) Grey coarse sandy clay loam; extremely stoney with rounded to subangular flints and quartzites up to 60mm.

Samples from both deposits were examined. The samples produced quite large assemblages of macrofossils but, unfortunately, proved to contain some recent contaminant seeds. Some specimens of Rorippa islandica, Capsella-type, Plantago major and Carex sp were viable seeds and germinated during processing. It is not clear why there should be intrusive material in this feature : it was similar in depth to the other features, it included similar waterlogged fills and similar sampling procedures were followed. However, the presence of contaminants clearly invalidates quantitative analysis, even though the condition of most fruits and seeds from the samples shows that they are definitely subfossil. A list of taxa present is, however, given in Table 20.

Feature 3080

A further feature, a Middle Iron Age pit F3080, also contained waterlogged organic deposits. It had to be excavated very hurriedly and, indeed, its precise location on the site plan could not be established. It was not seen by the writer and the organic character of its fills was evidently not appreciated during excavation. Consequently the two samples, 83 and 84 from fills 3081 and 3082 were included with samples for bulk flotation, following which the flots obtained were dried. Durable macrofossils survived this treatment but delicate structures have undoubtedly been lost. Quantitative analysis is therefore not worthwhile although the more common plant taxa represented include Ranunculus acris/repens/bulbosus, R subg.Batrachium, Fumaria officinalis, Capsella-type, Brassica sp, Chenopodiaceae, Rubus fruticosus, Crataegus monogyna, Montia fontana subsp.chondrosperma, Polygonum aviculare, Rumex spp, Urtica dioica, Sonchus spp and Carex spp.

Wood

The main wooden items from these sites were components of timber well-linings of oak which, following photography and illustration, were submitted to the Sheffield Dendrochronology Laboratory for dating. Other structural wood and timber has also been examined and identified but miscellaneous collections of twigs etc. from waterlogged well-fills were not thought to be worth detailed analysis. Much of the wood was poorly preserved with rotted surfaces, which were pocked with impressions of pebbles from the surrounding gravel.

Chigborough Farm Cross-sections of timber items are illustrated in Fig.1 where relevant. Items sent to Sheffield are marked with an asterisk.

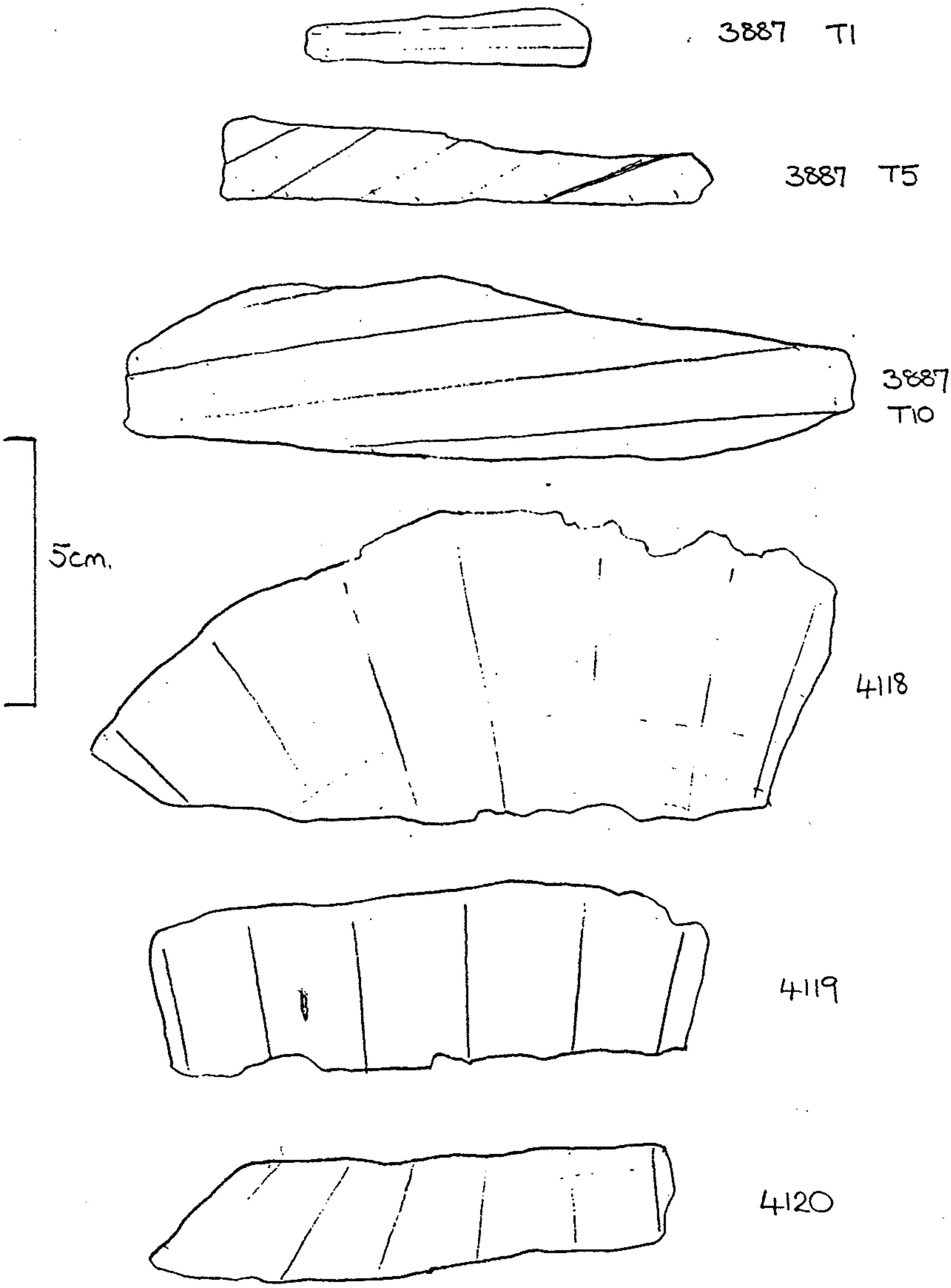


Fig 1: Cross-sections of selected wooden items.
Rings and rays are shown schematically to illustrate conversion methods.

887 3rd cent well 800

a) Three Stakes

i) Squared roundwood, c. 65mm diam. Quercus sp.

ii) Roundwood, one cut face, 53mm diam. Quercus sp.

iii) Halved roundwood c. 80 mm diam. Quercus sp.

b) Roundwood stem of Quercus sp, c.90mm diam. with bark.

971 BA well 645. Three timber fragments. Rotted and split surfaces, badly degraded cell structure

2030 LIA well 1839.

a) Four Stakes. Roundwood stems with bark, some trimmed-off side branches, 30-38mm diam. 4-8 years growth. Quercus sp.

b) Roundwood stem with bark, straight, 15mm diam. 7 years growth. Corylus sp.

2931 Roman well 2603

a) Three Stakes

i) Roundwood, 35mm diameter Populus/Salix sp (T10)

ii) Roundwood, 38mm diameter Quercus sp (T15)

iii) Roundwood, 35mm diameter Quercus sp (T16)

b) Curved roundwood stem, 35mm diam. Quercus sp (T14)

c) Components of hurdle

i) Rods
T11 17mm diam. 7 yrs. Quercus sp
T12 16mm diam. 4 yrs. Quercus sp
T13 14mm diam. 7 yrs. Quercus sp

T11 has a very narrow last ring with early wood vessels only; T12 and T13 show some late wood in last ring.

ii) Sails
T2 49mm diam. Populus sp
T3 33mm Populus sp
T4 34mm Populus sp
T5 52mm Populus sp
T6 48 x 33mm(crushed) Populus sp
T7 30mm Populus/Salix sp
T8 38mm Populus sp
T9 39mm Populus sp

Outer rings rotted in all cases.

3887 LIA well

a) T1*? Stave frag. Quercus sp (Fig 1)

b) T2. Roundwood stake, badly rotted, c 45mm diam. Quercus sp

c) T3. Roundwood. 50x34mm. Quercus sp

d) T5*? Board frag. Quercus sp (Fig 1)

e) T6. Roundwood, badly rotted, 90x65mm Quercus sp

f) T10*?Plank frag. Quercus sp (Fig 1)

4101 Upper timber frame of Roman well 4162
- a) 4102* Halved small trunk, very badly rotted *Quercus* sp
- b) 4103* Fragments. *Quercus* sp
- c) 4104* Outer split from tangential conversion of trunk. *Quercus* sp
- d) 4105* Halved small trunk, c200mm diam. Badly rotted surface. *Quercus* sp

4117 Bottom timber frame of Roman well 4162
- a) 4118* *Quercus* sp (Fig 1)
- b) 4119* *Quercus* sp (Fig 1)
- c) 4120* *Quercus* sp (Fig 1)

4136 Part of 4117 Wedge *Quercus* sp timber, insect borings,
4137 Part of 4117 Stake *Quercus* sp rotted surfaces

Slough House Farm

Timbers from the wells F130 and F2957 were sent to Sheffield for dating. Packing material between the central shaft and outer construction of F2972 was also sampled. This included miscellaneous fragments of oak timber (*Quercus* sp) (including some small fragments perhaps from radially-split boards), with some roundwood stems, 6-*c* 40mm diam.

Comments

From this small collection of generally poorly preserved wood it is not possible to draw any very significant conclusions about woodland exploitation or management. Oak was clearly the main timber used for the more substantial well-linings. As Fig 1 shows both radial and tangential conversion methods were used. The hurdle from 2603 had a rather unusual wood composition: the sails of roundwood 30-52mm in diameter were of poplar or poplar/willow whilst the three rods sampled were roundwood stems of oak, 14-17mm in diameter.

Local vegetation and land-use

The fills of the waterlogged features, and the macrofossils which they contain are a potential source of information on vegetational change and land-use between the Bronze Age and Saxon periods. There are, however, problems of interpretation. Firstly, the species lists obtained from these deposits are restricted compared to those from contemporary river-valley sites (eg Runnymede: Greig 1990; the Chelmer Valley: Murphy, Wilkinson and Wiltshire forthcoming) or to those from more intensively-occupied settlement areas. In part this is related to the fact that these features were isolated and comparatively small: the macrofossils which they produced were probably derived mainly from a relatively small catchment area around each feature, in which only a restricted range of vegetation-types could be expected to occur. In fact very much the same range of species is represented in features of all periods. Moreover it is difficult to be sure how typical the seed catchment areas of these features were of the landscape as a whole.

Despite these problems it is possible to characterise the vegetation-types represented and to distinguish some changes in assemblage composition which seem to be related to changes in land-use. The results are summarised in Table 21 in which taxa identified are grouped ecologically following the classification of communities developed by Ellenberg (1988). Ellenberg's classification provides a very useful context in which to discuss palaeobotanical results though, as several writers have emphasised, it is not safe to assume that modern communities are identical to those existing in prehistory. Furthermore, it is unlikely that any fully developed plant communities existed in and around the isolated wells and water-holes at these sites since the habitats were simply too small and the range of species present was, to a large extent, related to accidents of colonisation and seed dispersal.

Vegetation types

1. Freshwater and mire vegetation

Aquatic and wetland plants occurred commonly in most of the wet features. They include floating aquatic species (Lemna sp: duckweeds), rooted aquatics (Ranunculus subg. Batrachium: water crowfoot) and species characteristic of marginal reed and sedge swamps (Table 21). It is assumed that these plants represent vegetation growing in, and at the margins of, the features themselves. Overall there is no marked variation in species composition between periods. However, within periods there are quite striking differences, for example between the two Bronze Age wells F015 (Slough House) and F645 (Chigborough). Aquatic and wetland taxa are abundant and frequent in F645, but very rare in F015. It seems possible that this variation is related to the location and use of these features. Aquatic vegetation would rapidly have become established in these features unless intentionally prevented, either by covering the feature in some way or by regularly cleaning it out. The proximity of F015 to Late Bronze Age/Early Iron Age settlement features compared to the apparent isolation of F645 may suggest that F015 provided water for human consumption (hence it was kept clean) whereas F645 was used for watering animals.

2. Saltwater and sea-coast vegetation

The Saxon well F2957 at Slough House Farm produced a single seed of Salicornia sp (marsh samphire). This must have been derived from the salt marshes and mudflats of the Blackwater, about 1km to the south of the site, dispersed by birds or reaching the site in the guts of stock which had been pastured on the marsh.

3. Weeds etc.

Two species, Montia fontana subsp. chondrosperma (blinks) and Isolepis setacea (bristle scirpus) are particularly characteristic of stoney soils prone to seasonal waterlogging, conditions which are common on these poorly-drained terrace gravels. Species of the vegetational class Bidentetia are also represented (Table 21). These species, typical of muddy marginal wetland habitats were probably growing on inwashed and slumped sediment at the edges of the wet features. Spring germinating annual weeds (Chenopodietea) are common in wet samples from all periods, though the range of taxa in this class increases from eight in the Bronze Age, through twelve in the Iron Age, ten in the Roman period to sixteen in Saxon features (Table 21). Taxa particularly characteristic of dry sandy soils include Fumaria officinalis (fumitory), Thlaspi arvense (penny cress) and

Spergula arvensis (corn spurrey). Cornfield weeds (Secalietea) are less well represented, apart from Aphanes spp (parsley piert) which occurs in wet samples from most periods.

Persistent nitrophilous ruderal plants in the class Artemisietea occur, though only nettle (Urtica dioica) is abundant. Plantago major (plantain) is particularly characteristic of trampled habitats.

Some of these taxa were preserved by charring and were associated with carbonised cereals: Anthemis cotula (stinking mayweed), Vicia/Lathyrus spp (vetches) and Galium aparine (stinking mayweed) were only found carbonised; as was Tripleurospermum maritimum (subspecies uncertain). As has been noted above, carbonised weed seeds were uncommon in pre-Late Iron Age contexts.

5. Heaths and grassland

Rumex acetosella (sheep's sorrel), a characteristic plant of dry sandy soils, occurred relatively frequently in pre-Saxon contexts. Other grassland taxa are present but, with the exception of Ranunculus acris/repens/bulbosus (buttercups), not abundant. Gramineae caryopses from these samples were mostly not identified, although it appeared that wetland taxa (mainly Glyceria fluitans and Alopecurus sp) often predominated.

6/8 Scrub and woodland

Fruitstones of Rubus fruticosus (bramble) were consistently common, but seeds of Sambucus nigra (elder) rare. A range of plants characteristic of woodland habitats was identified, including Stellaria holostea (greater stitchwort), Moehringia trinervia (three-veined sandwort), Prunus spinosa (sloe), Malus sp (apple), Crataegus monogyna (hawthorn), Rosa sp (rose), Ilex aquifolium (holly), Corylus avellana (hazel), Cornus sanguinea (dogwood) and Quercus sp (oak). Several of these plants are characteristic of hedges (Prunetalia), and the possibility of the landscape having been hedged is discussed further below.

Land use

Having characterised the vegetation-types represented it is possible to consider how the results from the wet features may be interpreted in terms of land use.

Table 21: Summary of wild plant taxa

Taxa identified are listed in terms of modern ecological communities. (Ellenberg 1988).

Abbreviations: Neo-Beaker - Earlier Neolithic-Beaker; BA - Bronze Age; IA - Iron Age; R - Roman; S - Saxon.
c - present as carbonised fruits/seeds. NB (c) indicates presence in feature tentatively dated to Neolithic on artefactual grounds, though plant macrofossil assemblage indicates later date.
For waterlogged samples: 0 - not identified; 1 - present in one sample only; 2 - intermediate in frequency; 3 - present in all samples. +- presence, where there are too few samples for frequencies to be assessed.

		Neo-Beaker	BA	1A	R	S
1. Freshwater and mire vegetation						
1.1	Lemnetea					
	Lemna sp(p)		2	2	0	2
1.2	Potamogetonetea					
	Ranunculus subg..*Batrachiun*		2	2	+	2
1.4	Phragmitetea					
	Oenanthe aquatica		2	2	+	1
	Mentha cf.*aquatica*		0	1	0	1
	Lycopus europaeus		0	2	+	2
	Eleocharis palustris/*uniglumis*		0	2	0c	1
	Carex spp		2	2	+	2
	Glyceria fluitans		2	0	+	0
1.6	Scheuchzerio-Caricetea nigrae					
	Ranunculus flammula		1	2	0	0
2. Salt-water and sea-coast vegetation						
2.4	Thero-Salicornietea					
	Salicornia sp		0	0	0	1
3. Herbaceous vegetation of disturbed sites						
3.1	Isoeto-Nanojuncetea					
	Montia fontana ssp.*chondrosperma*		2	3c	+c	0
	Isolepis setacea		0	2	0	0
3.2	Bidentetea					
	Ranunculus sceleratus		2	2	0	0
	Polygonum lapathifolium		2c	2c	+	2
	Polygonum hydropiper		1	1	+	0
	Rumex maritimus		0	0	0	2
	Bidens cernua		0	0	0	1
	Bidens tripartita		0	0	0	1
3.3	Chenopodieta					
	Fumaria officinalis		0	1	+	1
	Capsella-type		0	1	+	1
	Thlaspi arvense		0	2	0	1
	Stellaria media-type		2	2	+c	3
	Spergula arvensis		1	2c	0	2
	Chenopodium album		3	3c	+c	2
	Chenopodium ficifolium		1	2c	0	2
	Chenopodium of rubrum		0	0	0	1
	Malva sylvestris	c	0	0	0	2
	Aethusa cynapium		0	0	0	1
	Polygonum persicaria		2	2c	+	2
	Urtica urens		1	2	+	1
	Solanum nignum		2	2	+	2
	Hyoscyamus niger		0	0	0	1

	Neo -Beaker	BA	1A	R	S
Sonchus oleraceus		2	0	+	2
Sonchus asper		0	2	+	2
Anthemis cotula		0	0c	+c	0
Chrysanthemum segetum		0	1	0	0
3.4 Secalietea					
Papaver rhoeas		0	0	+	0
Papaver argemone		0	0	+	0
Raphanus raphanistrum	c	0	1	0c	0
Vicia/Lathyrus spp	c	0	0c	0c	0
Aphanes arvensis/microcarpa		2	3	+	0
Fallopia convolvulus		2	0	0	0
3.5 Artemisietea					
Urtica dioica		3	2	+	3
Torilis japonica		1	0	+	2
Galium aparine	c	0	0	0	0
Lapsana communis		2	1	0	2
3.7 Plantaginetea					
Plantago major		2	2	+	2
5. Heaths and grasslands					
5.1 Nardo-Callunetea					
Rumex acetosella		2	3C	+c	0
5.4 Molinio-Arrhenatheretea					
Ranunculus acris/repens/bulbosus		3	2	+	2
Trifolium sp		0	0c	0	0
Plantago lanceolata		0	0c	0	0
Prunella vulgaris		2	2	0	1
Anthriscus sylvestris		1	0	+	0
Chrysanthemum leucanthemum		0	0c	0	0
6. Woodland-related shrub communities					
6.2 Epilobietea augustifolii					
Rubus fruticosus	c	3	3	+	3
Sambucus nigra		1	0c	+	2
8. Broadleaved woodland					
8.4 Querco-Fagetea					
Stellaria holostea		0	0	+	2
Moehringia trinervia		2	0	0	2
Prunus spinosa	c	2	0	+	1
Malus sp		0	0	+	0
Crataegus monogyna		2	0	+	0
Rosa sp		2	0	+	0
Ilex aquifolium		2	1	0	1
Corylus avellana	c	0	0c	+	2
Cornus sanguinea		0	0	+	0
Quercus sp		3	0	+	0

Unclassified taxa. (mostly incompletely identified or various habitats probable).

	Neo-Beaker	BA	1A	R	S
Pteridium aquilinum		1	0	0	0
Ranunculus parviflorus		2	2	0	0
Rorippa islandica		0	0	+	0
Viola sp		1	0	0	0
Silene sp		0	0	0	1
Stellaria graminea/palustris		2	2	0	1
Cerastium sp		2	0	0	0
Caryophyllaceae indet		2	2	0	0
Atriplex patula/hastata	c	2	2c	+	2
Chenopodiaceae indet		2	3c	+c	2
Linum catharticum		1	0	0	0
Potentilla sp		2	2	+	2
Heracleum/Pastinaca		2	0	0	0
Rumex sp	c	2	2c	+c	3
Polygonum sp		0	1	0	2
Polygonum aviculare		2	2	+c	2
Polygonaceae indet	c	2	0	+	0
Solanum sp		0	2	0	0
Stachys sp		2	0	0	0
Lamium sp		1	2	0	0
Ajuga reptans		1	1	0	0
Galeopsis tetrahit/speciosa		2	0	0	0
Plantago sp		0	1	0	0
Lithospermum arvense	(c)	0	0	0	0
Sonchus sp		2	0	0	0
Cirsium/Carduus sp		2	2	0	2
Leontodon sp		2	0	+	0
Tripleurospermum maritimum		0	0c	0c	0
Alopecurus sp		2	0	0	0
Bromus sp	(c)	0	0c	0	0
Sieglingia decumbens		0	0c	0	0
Gramineae indet		3	3c	+	3

The wells and 'watering holes' at these two sites were all broadly similar in size, and probably became infilled by similar processes. The lowest, waterlogged, fills were very varied in composition, ranging from organic silty clays through to almost pure sand and gravel. It seems probable that the more organic fills accumulated relatively slowly as plant detritus fell, was blown or washed into the features. The sandy fills, in contrast, probably represent rapidly formed deposits related to surface run-off from the surrounding area depositing its sediment load and causing collapse and gullying of the edges of the features. The upper fills, it is assumed, are likely to represent deliberate backfilling of the disused features, and are not considered further.

To provide an objective measure of the organic content of the deposits % dry weight and % loss on ignition was determined for all well-dated basal deposits, and the results are summarised in Fig 2. The loss on ignition varied from 0.2-12.4% with a mean value of 3.97% (based on 31 determinations), so even the most organic sediments at this site included a high mineral component. The results are considered by period in Table 22

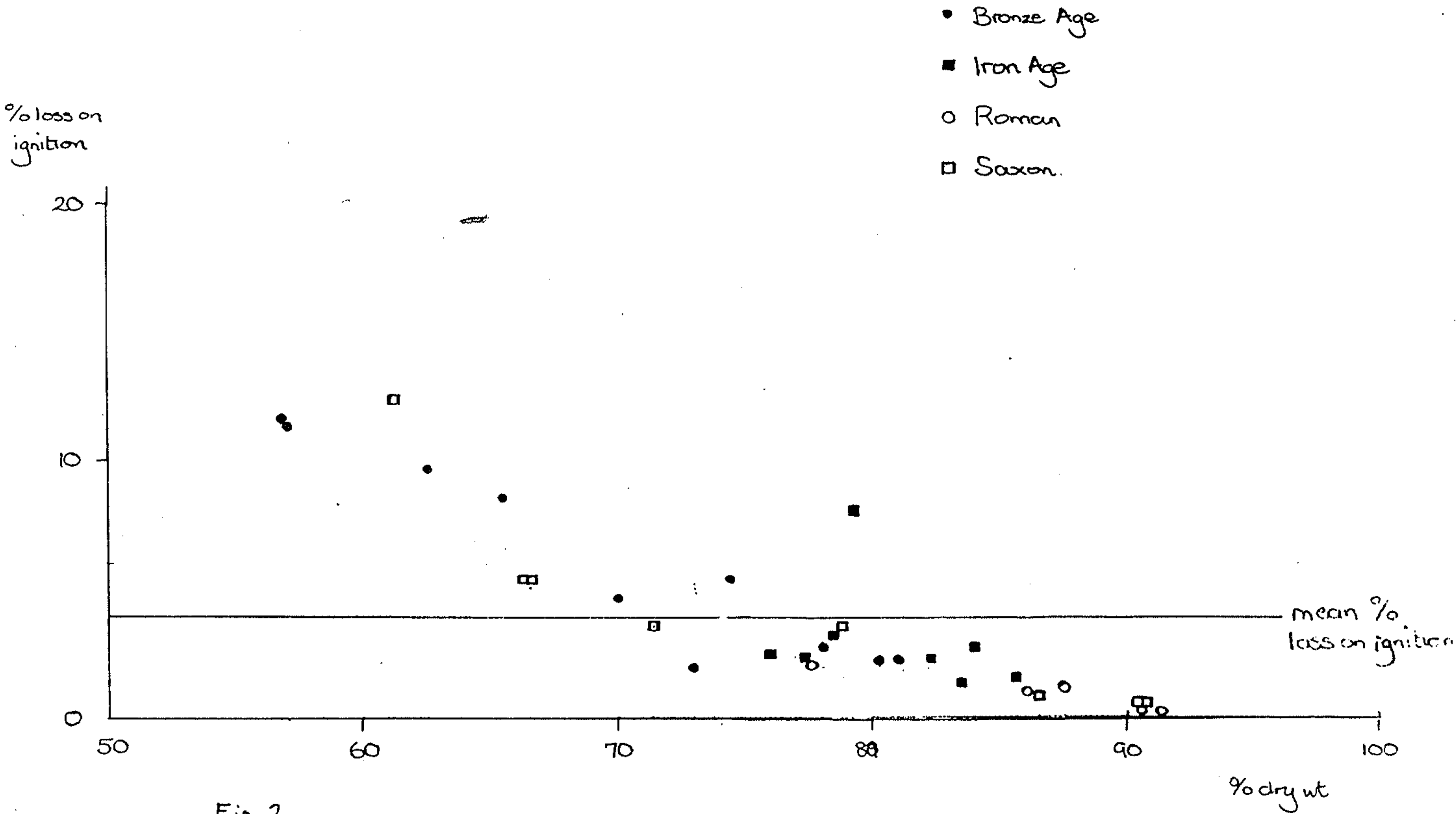
	Loss on ignition	
	Above mean	Below mean
Bronze Age	6 samples	4 samples
Iron Age	1 "	7 "
Roman	0 "	5 "
Saxon	3 "	5 "

Table 22 : Summary of loss on ignition results

In general the Iron Age and Roman samples were less organic than those of the Bronze Age and Saxon periods. This suggests more rapid erosion and infilling caused by higher surface run-off, which in turn implies that soil surfaces in the vicinity had a less complete vegetation cover in the Iron Age-Roman period. This could result either from tillage or from other types of disturbance, such as trampling by cattle. The relative frequencies of Gramineae caryopses in these deposits cannot be used as an indicator of arable or pastoral land-use in the surrounding area because in most contexts with well-preserved grass caryopses the most abundant taxon is the semi-aquatic grass <u>Glyceria fluitans</u>, which was probably growing in the features together with other aquatic and wetland plants. One means of distinguishing between these alternatives is to examine the % frequencies of seeds of weeds in the classes Chenopodietea and Secalietea characteristic of bare sandy ground: here these are taken to comprise <u>Papaver argemone</u>, <u>Raphanus raphanistrum</u>, <u>Fumaria officinalis</u>, <u>Spergula arvensis</u> and <u>Aphanes</u> spp (Table 23)

Fig 2: % dry weight and % loss on ignition for fills of waterlogged wells etc., at Slough House Farm and Chigborough Farm.

F2956 (Slough House) has been omitted since it is not well-dated and F4158 (Chigborough) is excluded since the available samples came from behind the well-frame and consist principally of re-deposited gravel.



Bronze Age
Iron Age
Roman
Saxon.
% loss on ignition
20
10
0
50
60
70
80
90
100
mean % loss on ignition
% dry wt

Fig 2

		Bare ground weeds (as % of total 'seed' count)	
		Range	Mean(for all samples)
Bronze Age	F015	0 - 4.2%	1.94%
	F645	0 - 0.3%	0.1%
Iron Age	F1839	2.5 -4.1%	3.3%
	F3887	3.1-10.9%	6.85%
Roman	F2670	1.0%	
Saxon	F130	0 - 0.6%	0.2%
	F2957	0	0

Table 23 : Summary of % of bare-ground weeds

Unfortunately most of the Roman samples examined had too low an organic content to produce useful macrofossil assemblages apart from the 'quarry' fill F2670, which may be atypical. However, the two Iron Age features did, indeed produce higher percentages of seeds from weeds of this type, and it may therefore be suggested that the predominantly mineral character of their fills was a consequence of higher rates of run-off and erosion, related to tillage.

However, the Saxon well fills were also predominantly mineral in character, yet seeds of bare-ground weeds were absent or rare. The exceptionally high frequencies of Urtica dioica nutlets in the Saxon deposits, compared to those of earlier date (Table 24) implies nitrogen enrichment of soils in the vicinity and at a rural site away from settlement areas this is most likely to have been related to deposition of excreta by grazing animals. In this case soil destabilisation was probably related at this time to trampling by stock.

		Urtica dioica (as % of total seed count)	
		Range	Mean (for all samples)
Bronze Age	F015	7.4-18.1%	12.6%
	F645	2.5- 8.4%	4.32%
Iron Age	F1839	0 - 1.3%	0.7%
	F3887	2.5-13.3%	6.75%
Roman	F2670	0	
Saxon	F130	30.4-76.7%	55.72%
	F2957	8.8-52.2%	36.85%

Table 24 : Summary of % of Urtica dioica

A final feature of interest is the marked variation in frequencies of fruits/seeds from scrub, hedgerow or woodland plants between periods (Table 25). The taxa considered in this Table are Rubus fruticosus, Prunus spinosa, Crataegus monogyna and Sambucus nigra. (Other scrub/woodland taxa are either rare or their macrofossils, such as leaf fragments, are not readily quantifiable)

		'Scrub' taxa (as % of total 'seed' count) Range	Mean (for all samples)
Bronze Age	F015	2.1-33.3%	19.5%
	F645	8.3-17.1%	12.45%
Iron Age	F1839	1.3-1.4%	1.35%
	F3887	0.4-2.2%	1.25%
Roman	F2670	2.0%	
Saxon	F130	0.3-1.0%	0.52%
	F2957	1.9-7.9%	4.85%

Table 25 : Summary of % of 'scrub' taxa

The Bronze Age features clearly included markedly higher percentages of these scrub/woodland plants, and they also included most species listed in Table 21 (section 8.4). Ajuga reptans (bugle), Torilis japonica (upright hedge parsley), Anthrisus sylvestris (cow parsley) and Pastina/Heracleum-type (wild parsnip/hogweed) are taxa which Ellenberg (ibid) does not classify or includes in other communities, though these are all plants common in hedges in the lowland English landscape. What this means in terms of vegetational structure is difficult to say. The results could indicate that the Blackwater terraces in the Bronze Age were comparatively lightly exploited so that isolated patches of scrub/woodland persisted or that the landscape was hedged. The Bronze Age well from Lofts Farm, nearby (Murphy 1988), produced a rather different assemblage, in which scrub taxa were very uncommon, implying fairly intensive grazing but this could just indicate that the Lofts Farm well was remote from scrub/hedgerow areas so that few macrofossils from this vegetation were incorporated into its fill. Comparison with sites elsewhere in the country is similarly not particularly helpful : the Bronze Age sites at Runnymede and the Wilsford Shaft (Greig, ibid; Robinson 1989) produced comparable ranges of 'woodland' taxa but at both sites ecological interpretation was limited to the tentative conclusion that either scrub or mixed hedges were represented. To demonstrate conclusively that hedges were used in the Bronze Age it would be necessary to obtain seeds of appropriate taxa from the ditches of field systems.

Land-use changes : conclusions

The exceedingly sparse carbonised plant remains from Neolithic-Beaker contexts at Slough House and Chigborough Farms provide very little information other than indicating an economy involving both cereal production (emmer and barley) and wild plant food collection (hazelnuts, bramble, sloe).

The Bronze Age wells produced some remains of emmer and flax, but are thought to be more probably related to a predominantly pastoral economy given the poor drainage of soils on the Blackwater terraces : arable weed seeds are relatively uncommon in the macrofossil assemblages from these features. The abundance of macrofossils from scrub, hedgerow or woodland plants may indicate either that the terraces were lightly grazed at this time so that areas of scrub persisted, or that the landscape was hedged.

Enclosure B at Slough House Farm (Late Bronze Age/ Early Iron Age) was of unusual form, suggesting some kind of specialised function but the very sparse carbonised remains of emmer, spelt, bread wheat, barley, possibly horse-bean, hazel nutshells and weed seeds from its ditch give no indication of what this might have been. The plant remains certainly do not suggest crop processing on a large scale. Most of the Middle Iron Age ring-ditch fills at Slough House produced rather sparse carbonised assemblages comprising a similar range of taxa, though there are a few larger assemblages consisting predominantly of barley grains with no rachis fragments. These are more likely to represent activities associated with the treatment of cleaned batches of crops than crop cleaning activities.

Several lines of evidence are thought to point to arable intensification in the Late Iron Age/Early Roman period. Firstly, there is a marked increase in the absolute density of carbonised cereal remains in deposits of this date. Material from the Roman features in particular seems to represent by-products from cereal processing. Secondly, the lower fills of the wells of this date have, overall, a higher mineral content that those of other periods, which implies increased surface run-off and soil erosion. The macrofossil assemblages from these Late Iron Age/ Romal well fills include a higher proportion of weeds characteristic of bare, dry, sandy soils than those from earlier prehistoric and Saxom contexts. Finally, the ditched field systems at both sites are largely of Late Iron Age/ Roman date, and it seems likely that these ditches were inteded partly as a drainage system, without which cereal yields on these terrace soils would have been reduced by seasonal waterlogging. None of these lines of evidence is conclusive in itself but taken together the results provide a basis for a model of land use in which cereal and probably flax production became more important around the 1st century AD.

Saxon features at Slough House Farm consisted of pits and wells. The pits contained high concentrations of charcoal and were associated with metal-working activity: the few grains of wheat, barley and rye from these features are probably quite incidental. Macrofossil assemblages from the wells included a high proportion of Urtica dioica (nettle), indicating soil nitrogen enrichment, believed to be associated with deposition of excreta by grazing animals. This implies that the wells were principally for watering cattle. A single seed of Salicornia sp (marsh samphire) gives a reminder of the rich salt-marsh pasture available along the north bank of the Blackwater but obviously provides no direct evidence for the exploitation of grazing marsh. Sparse remains of flax and cereals came from this well.

The latest feature sampled was a medieval oven at Chigborough Farm, which produced a few carbonised remains of bread wheat, rye and barley, insufficient to indicate clearly the function of the feature.

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Context	233	233	233	330	230	230	230	423	423	423	423	281	280
Sample	1	2	3	4	5	6	7	8	9	10	11	18	21
Cereal indet (frags)	-	+	+	-	+	+	+	-	+	-	-	+	-
Cereal indet. (ca)	-	-	1	1*	1	-	1	-	-	-	-	-	1
Triticum sp. (ca)	2*	-	1	-	-	-	-	2	-	-	-	-	-
Triticum dicoccum-type (ca)	-	1*	-	-	-	-	-	-	-	-	1	-	-
Triticum dicoccum (gb)	-	1	-	-	-	-	-	-	-	-	-	-	-
Triticum sp (ri)	-	-	-	-	-	1	-	-	-	-	-	-	-
Raphanus raphanistrum L	-	-	-	-	-	-	1	-	-	-	-	-	-
Vicia/Lathyrus spp	-	-	-	-	1	-	-	-	-	1	-	-	-
Polygonaceae indet	1	-	-	-	-	-	-	-	-	-	-	-	-
Bromus sp	-	1	-	-	-	-	-	-	-	-	-	-	-
Gramineae indet	-	1	-	-	-	-	-	-	-	-	-	-	-
Corylus avellana L. (frags)	+	-	-	-	-	-	-	-	-	-	+	+	-
Root/rhizome frags	-	-	-	-	-	-	-	-	1	-	-	-	-
Indeterminate seeds etc	-	1	-	-	1	1	-	1	-	1	-	1	1

<u>Table 1 : Carbonised plant remains from segments of the neolithic Enclosure A (Slough House)</u>

Abbreviations : ca - caryopsis; gb - glume base; ri-rachis internodes. Samples 12,13 (452), 14,15 (462), 16,17 (439), 19,20 (281) produced only small charcoal fragments. Specimens submitted for accelerator dating are marked with an asterisk.

Context	409	409	411	413	413	325	323	323
Sample	23	24	25	26	27	28	29	30
Cereal indet (frags)	-	+	+	+	+	+	+	+
Cereal indet. (ca)	-	-	-	1	-	1	-	-
<u>Triticum</u> sp. (ca)	-	-	-	2	-	-	-	-
<u>Triticum</u> <u>dicoccum</u> (gb)	1	-	1	-	-	-	-	-
<u>Atriplex</u> sp	-	-	-	-	-	-	-	1
'<u>Pisum</u>-type' (co)	-	-	-	-	1	-	-	-
<u>Rubus</u> <u>fruticosus</u> agg.	-	-	-	-	1	-	-	-
<u>Rumex</u> sp	-	-	1	-	-	-	-	-
<u>Galium</u> <u>aparine</u> L	1	-	-	-	-	-	-	-
<u>Corylus</u> <u>avellana</u> (frag)	-	-	-	-	-	-	+	-
?Tuber frag	-	+	-	-	-	-	-	-
Indeterminate seeds etc	2	-	-	-	1	-	-	-

<u>Table 2 : Carbonised plant remains from pits associated with Enclosure A. (Slough House)</u>

Abbreviations : ca - caryopsis; co - cotyledon; gb - glume base

Context	3576	586	625	698	2122-3	3673/6/7	4427	3568/71	4420	4423	4230	4228	2138	2132	1722/7
Sample	421	16-17	18-22	31-3	159-60	422-4	431	419-20	427	428	429	430	152	154	123-4
Date	EN	LN	LN	LN	LN	LN	LN	?N	?N	?N	?N	?N	?N	?N	B
Feature-type	P	P	P	P	P	P	P	P	P	P	P	P	PH	PH	H
Cereal indet (frags)	+	-	-	-	-	+	-	+	+	+	-	-	+	-	+
Cereal indet (ca)	31	1	-	1	-	1	-	1	1	21	-	-	2*	1	-
Triticum sp (ca)	-	-	-	1	-	-	-	-	-	6	-	-	-	-	1
Triticum dioccum-type (ca)	2	-	-	-	-	-	-	-	-	-	-	-	2*	-	-
Triticum spelta L (gb)	-	-	-	-	-	-	-	-	-	7	-	-	-	-	-
Triticum sp (ri)	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-
Triticum sp (spb)	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-
Hordeum sp (ca)	-	-	-	-	1	-	-	-	2	25	-	-	1*	-	-
Hordeum sp (rn)	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
Malva sp	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-
Vicia/Lathyrus sp	-	-	1co	-	-	-	-	-	-	-	-	-	-	-	-
Prunus spinosa L (frag)	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
Rumex sp	-	-	-	-	-	-	-	-	1	-	-	1	-	-	-
Polygonaceae indet	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-
Corylus avellana L (frags)	-	-	+	+	+	-	-	-	-	-	-	-	-	-	-
Lithospermum arvense L	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-
Galium aparine L	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-
Bromus mollis/secalinus	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-
'Tuber'	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
Indet seeds etc	-	-	1	-	-	-	-	1	-	1	-	-	-	-	-
Sample volume (litres)	48	48	60	36	120	48	48	48	24	24	24	24	36	72	48

Table 3 : Carbonised plant remains from neolithic and ?neolithic contexts at Chigborough Farm.

Period abbreviations: EN-Earlier neolithic; LN-Late neolithic;?N-possibly neolithic; B-Beaker

Feature-types; P-Pit; PH-post-hole; H-hearth.

Other abbreviations: ca-caryopsis; gb-glume base; ri-rachis internode; rn-rachis node; spb-spikelet base

Samples from the pit fill 701 and from gully and post-hole fills 2142, 2129, 2130, 2115, 2114 and 2127 contained only small charcoal fragments.

Specimens submitted for accelerator dating are marked with an asterisk.

Period	Beaker	Bronze Age		LBA/EIA											LBA/EIA
Feature-type	Pit	Ring Ditch		48-58 from Enclosure Ditch B											Pit
Context	2223	3187	3122	470	470	470	470	470	769	775	2040	2040	2129	858	30
Sample	86	92	93	48	49	50	51	52	53	54	55	56	57	58	104
Cereal indet (fr)	-	-	+	+	+	-	+	-	-	-	-	-	-	-	+
Cereal indet (ca)	-	-	-	4*	-	-	1	-	-	1	1	-	-	-	-
<u>Triticum</u> sp (ca)	-	-	-	-	-	1	1	-	-	-	-	3	-	-	-
<u>Triticum aestivum</u>-type (ca)	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
<u>Triticum dicoccum</u> (gb)	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-
<u>Triticum spelta</u> (gb)	-	-	-	-	1	-	1	-	-	-	-	-	-	-	-
<u>Triticum</u> sp (gb)	-	-	-	-	-	-	5	-	-	-	-	-	-	-	-
<u>Triticum</u> sp (spb)	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-
<u>Triticum/Secale</u> (rn)	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-
<u>Hordeum</u> sp (ca)	-	-	-	1*	1	-	1	1	-	2	-	-	-	-	-
<u>Avena</u> sp (ca)	-	-	-	1*	-	-	-	-	-	-	-	-	-	-	-
<u>Avena</u> sp (a fr)	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-
cf. <u>Vicia faba</u> (co fr)	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-
<u>Raphanus raphanistrum</u> L	-	-	-	-	-	-	-	-	-	-	-	-	fr	-	-
<u>Vicia/Lathyrus</u> sp	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
<u>Polygonum</u> sp	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
<u>Rumex</u> sp	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-
<u>Corylus avellana</u> L (fr)	+	-	-	-	-	-	-	-	+	-	-	-	-	-	-
<u>Galium aparine</u> L	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-
Gramineae indet	-	-	-	-	1	-	-	-	-	-	-	-	-	13	-
Gramineae indet (c fr)	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-
Bud	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-
?Tuber fragment	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-

<u>Table 4 : Plant remains from various Bronze Age - Middle Iron Age contexts (Slough House)</u>

Abbreviations : a - awn; c - culm; ca - caryopsis; co - cotyledon; fr - fragment; gb - glume base; rn - rachis node; spb - spikelet base

Other samples produced no plant remains apart from charcoal. These were: 112 (Ct.2224) ?Beaker pit; 94 (Ct.3196) BA ring-ditch; 101 (Ct.20), 102 (Ct.22), 103 (Ct.29), 105 (Ct.34), 106 (Ct.36), 108 (Ct.128), Charcoal-rich LBA/EIA pit fills; 119 (Ct.405) EIA pit fill; 83 (Ct.3081), 84 (Ct.3082) MIA pit fill: Specimens submitted for accelerator radiocarbon dating are marked with an asterisk.

Context	921	726	901	948	903	905	907	909	911	419	697	917	964	2645	2646	264[illegible]
Sample	31	32	33	34	35	36	37	38	39	40	41	42	43	70	71	7[illegible]
Cereal indet (frags)	+	+	-	+	+	+	-	++	+	+	+	+	+	+	+	+
Cereal indet	5	6	1	3	-	-	-	14	8	-	1	-	3	1	-	-
<u>Triticum</u> sp (ca)	-	2	1	-	-	-	-	-	1	-	1	-	1	-	1	-
<u>Triticum</u> <u>dicoccum</u> (gb)	-	1	-	2	-	-	-	-	-	-	-	-	-	-	-	-
<u>Triticum</u> <u>dicoccum</u> (spb)	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-
<u>Triticum</u> <u>spelta</u> (gb)	-	-	-	-	-	-	-	-	-	-	-	-	6	-	-	-
<u>Triticum</u> sp (gb)	-	1	-	1	-	-	-	-	-	-	-	-	1	-	-	-
<u>Triticum</u> <u>aestivum</u> sl. (rn)	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<u>Hordeum</u> sp(p) (ca)	1	2	1	-	-	-	2	104	28	3	-	-	-	-	-	-
<u>Avena</u> sp (afr)	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
Leguminosae (co fr)	-	1	-	-	+	-	-	-	-	-	-	+	-	-	-	-
Chenopodiaceae indet (fr)	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-
<u>Corylus</u> <u>avellana</u> L (fr)	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-
<u>Plantago</u> <u>lanceolata</u> L	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-
<u>Anthemis</u> <u>cotula</u> L	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
<u>Sieglingia</u> <u>decumbens</u> (L) Bernh.	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<u>Bromus</u> <u>mollis</u>/<u>secalinus</u>	-	2	-	-	-	-	1	-	-	-	-	-	4	-	-	-
Gramineae indet	1	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
?Root/rhizome frag.	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-
Charred 'cokey' material	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
Indeterminate seeds etc.	-	-	-	1	-	-	-	1	1	-	-	1	-	1	-	-

<u>Table 5 : Plant remains from the gully of Roundhouse C and associated features (Slough House)</u>

Abbreviations : a - awn; ca - caryopsis; co - cotyledon; fr - fragment; gb - glume base; rn - rachis node; spb - spikelet base

Context Sample	D 929 59	D 929 60	D 929 61	D 929 62	D 929 63	E 2617 68	F 2594 65	F 2611 67	F 2621 69
Cereal indet (frags)	+	-	+	+	+	-	+	-	+
Cereal indet (ca)	3	1	2	-	1	1	-	1	1
Triticum _aestivum_-type (ca)	-	-	-	-	-	1	1	1	-
Hordeum sp. (ca)	1	1	-	-	-	1	-	-	-
Avena sp (a.fr)	-	-	-	-	-	-	-	-	+
Vicia/_Lathyrus_ sp (co)	-	-	-	-	-	-	1	-	-
Gramineae indet	-	-	-	-	-	-	1	1	4
Buds	-	-	-	-	-	-	-	-	3
Catkin frags	-	-	-	-	-	-	-	-	+
Monocot stem frags	-	+	+	-	-	-	-	+	-
Indeterminate seeds etc	-	-	-	-	-	1	-	-	1

Table 6 : Plant remains from gullies and postholes of Roundhouses D,E and F (Slough House)

Abbreviations : a - awn; ca - caryopsis; co - cotyledon; fr - fragments

Period	LIA	LIA	LIA	LIA	LIA	Roman	Roman	Roman
Feature-type	Pit	Pit	Pit	Pit	Pit	Pit	Ditchfill	Pit
Context	999	2174	2568	2752	3114	454	2875	3065
Sample	44	47	64	74	90	46	75	81
Cereal indet (frags)	+	+	+	+	+	+	+	+
Cereal indet (ca)	33	-	17	2	143	2	-	51
Cereal indet (cn)	-	-	-	-	5	-	-	-
Cereal indet (cb)	-	-	-	-	5	-	-	-
Triticum spp (ca)	183	-	20	2	58	1	1	10
Triticum spp (gb)	4	2	21	-	5	-	-	16
Triticum spp (ri)	1	-	2	-	-	-	-	1
Triticum spp (spf/spb)	-	-	1	-	-	-	-	-
Triticum spp (tspf)c	-	-	2	-	-	-	-	-
Triticum dicoccum Schubl(gb)	8	2	15	-	1	2	-	8
Triticum dicoccum Schubl (spf/spb)	1	-	3	-	-	-	-	3
Triticum spelta L (gb)	1	1	27	1	2	1	1	30
Triticum spelta L (spf/spb)	-	-	3	-	-	-	-	2
Triticum aestivum s.l. (rn)	-	-	2	-	-	-	-	-
Hordeum sp(p) (ca)	3	-	1	-	-	-	-	2
Hordeum sp(p) (ri)	-	-	-	-	-	-	-	6
Avena spp (ca)	2	-	-	-	70	-	-	2
Avena spp (afr)	-	-	+	+	++	-	-	++
Avena spp (fb)	-	-	-	-	-	-	-	1
Avena sativa L (fb)	-	-	-	-	2	-	-	-
Spergula arvensis L	-	-	-	-	1	-	-	-
Chenopodium album L	-	-	+	-	-	-	-	+
Chenopodium ficifolium Sm	-	-	+	-	-	-	-	-
Atriplex patula/hastata	-	-	+	-	-	-	-	-
Chenopodiaceae indet	+	-	+	-	-	-	-	-
Montia fontana L. subsp chondrosperma	-	-	-	-	13	-	-	2
Trifolium-type	-	-	1	-	-	-	-	-
Vicia/Lathyrus sp(p)	-	-	1	1	-	-	-	4
Rumex sp	-	-	-	1	1	-	-	6
Rumex acetosella agg	-	-	-	-	2	-	-	5
Corylus avellana L	-	+	+	-	-	-	-	-
Tripleurospermum maritimum (L) Koch	-	-	-	-	1	-	-	3
Chrysanthemum leucanthemum L	1	-	-	-	-	-	-	-
Bromus mollis/secalinus	1	1	24	-	10	3	-	13
Gramineae indet	1	-	-	1	-	-	-	4
Gramineae indet (cn)	-	-	-	fr	-	-	1	2
Catkin	-	1	-	-	-	-	-	-
Thorn	1	1	-	-	-	-	-	1
Indeterminate seeds etc.	-	-	1	1	-	1	-	5
% flot sorted	25	25	100	100	50	25	100	50

Table 7 : Plant remains from Late Iron Age (Late 1st c.BC - early 1st c.AD) and early Roman features. (Slough House)

Unless otherwise indicated taxa are represented by fruits or seeds. Abbreviations: a - awn; ca - caryopsis; cb - culm base; cn - culm node; fr - fragments; fb- floret base; gb - glume bases; ri - rachis internode; rn - rachis node; spb/spf - spikelet base/fork; tspf - terminal spikelet fork. NB Chenopodiaceae seeds were very fragmentary and impossible to count.

Context	4517	1829	1830	2669	2680	2716	154
Sample	435	125	126	400	401	402	8
Date	LBA/IA	LIA	LIA	R	R	R	M
Feature-type	P	H	H	W	W	W	O
Cereal indet (fr)	-	-	+	+	+	+	+
Cereal indet (ca)	-	-	-	16	5	5	3
Cereal indet (c frags)	-	-	-	-	-	+	-
Cereal indet (spr)	-	-	-	4	-	-	-
Triticum spp (ca)	-	1	2	10	8	3	-
Triticum aestivum-type (ca)	-	-	-	-	-	-	7
Triticum spp (gb)	-	3	2	92	17	11	-
Triticum spp (ri)	-	-	-	38	6	4	-
Triticum spp (spf/spb)	-	-	-	17	3	1	-
Triticum dicoccum Schubl (gb)	-	-	-	-	1	-	-
Triticum dicoccum Schubl (spf)	-	-	2	-	-	-	-
Triticum spelta L (gb)	-	5	2	267	30	16	-
Triticum spelta L (spf/spb)	-	-	-	19	2	-	-
Triticum sp (bri)	-	-	-	1	-	-	-
Triticum sp (rn)	-	-	-	-	-	-	1
Triticum aestivum sl.(rn)	-	-	-	-	-	-	1
Triticum sp (afr)	-	-	-	+	-	-	-
Hordeum sp (ca)	-	-	-	-	2	-	1
Hordeum vulgare L emend (ca)	-	1	-	9	-	2	-
Hordeum sp (rn)	-	-	-	-	-	1	-
Avena sp (afr)	-	+	-	-	-	+	-
Secale cereale L (rn)	-	-	-	-	-	-	2
Ranunculus sp	4	-	-	-	-	-	-
Raphanus raphanistrum L	-	-	-	-	-	fr	-
Stellaria media-type	-	-	-	-	-	1	-
Chenopodium album L	-	-	4	-	-	-	-
Chenopodiaceae indet	-	-	-	-	-	1	-
Montia fontana L.subsp.*chondrosperma*	-	1	-	-	-	-	-
Vicia/*Lathyrus* sp(p)	1	-	1co	1	1	3co	1
Leguminosae indet	-	1co	-	-	-	-	-
Rumex acetosella agg	-	-	-	-	2	5	-
Rumex sp.	-	2	1	2	1	-	-
Polygonum aviculare agg	-	-	-	-	-	1	-
Polygonum persicaria/*lapathifolium*	-	1	-	-	-	-	-
Sambucus nigra L	-	1	-	-	-	-	-
Anthemis cotula L	-	-	-	10	-	-	-
Tripleurospermum maritimum (L) Koch	-	-	1	16	-	-	1
Compositae indet	-	-	-	3	-	-	-
Eleocharis palustris/*uniglumis*	-	-	-	-	-	2	-
Bromus mollis/*secalinus*	-	1fr	1fr	10	5	5	-
Gramineae indet	-	13	6	1	-	-	-
Indeterminate seeds etc	2	4	1	3	-	1	-
Sample volume (litres)	6	18	24	24	24	24	18
% flot sorted	100	100	100	6.25	100	100	100

Table 8 : Carbonised plant remains from Iron Age - Medieval contexts at Chigborough Farm

Taxa are represented by fruits or seeds except where indicated. Other contexts sampled, which produced only charcoal were 155, 3805, 4532, 4533, 4518.
Period abbreviations : LBA/IA - Late Bronze Age/Early Iron Age; LIA - Late Iron Age; R - Roman; M - Medieval.
Feature-types: P-Pit; H-Hearth; O-Oven; W-Well. Other abbreviations as in previous tables.

Context	196	235	295	318
Sample	111	114	115	117
Cereal indet (frags)	+	-	-	+
Cereal indet (caryopses)	-	2	3	-
<u>Triticum</u> sp (caryopsis)	1	-	-	-
<u>Hordeum</u> sp (caryopsis)	-	-	1	-
<u>Secale</u> <u>cereale</u> L (caryopsis)	-	-	1	-
Indeterminate seeds	-	-	1	1

<u>Table 9 : Plant remains from Saxon pits F195 and F294 (Slough House)</u>
These contexts all contained high charcoal densities, as did 204 (sample 113).

Table 12 : % dry wt. and % loss on ignition determinations

		% dry wt	% loss on ignition
F645	80-85cm	74.3	5.3
	85-90	62.5	9.7
	90-95	65.5	8.4
	95-100	56.9	11.5
	100-105	56.8	11.6
F3887	109-120	83.5	1.6
	120-130	79.3	8.0
	130-140	78.4	3.2
	140-150	85.6	1.8
F1839	28-30	76.5	2.5
	34-36	77.3	2.4
	40-42	84.1	2.9
	44-46	82.2	2.4
F2603	(2930)	87.6	1.1
	(2932)	90.4	0.5
	(2933)	86.1	1.1
	(2934)	91.4	0.2
F015	10-15cm	80.3	2.1
	15-20	81.2	2.2
	20-25	78.0	2.7
	25-30	70.0	4.7
	30-35	72.3	2.0
F2670		77.5	2.4
F2957	30-40cm	61.1	12.4
	40-50	78.8	3.6
	50-60	90.9	0.7
	60-70	86.5	1.0
F130	(313)	66.5	5.4
	(362)	66.3	5.6
	(175)	71.4	3.6
	(176)	91.8	0.6
F2956	30-40cm	51.9	13.5
	50-54cm	58.4	8.4
	64-70cm	73.8	5.1

Depth(cm)	80-85	90-95	95-100	105-110
Ranunculus acris/repens/bulbosus	3	1	5	1
Ranunculus parviflorus L	2	1	3	4
Ranunculus flammula L	-	-	-	1
Ranunculus sceleratus L	-	5	4	-
Ranunculus subg.*Batrachium*	25	27	29	21
Viola sp	-	2	-	-
Stellaria media-type	-	3	1	-
Stellaria graminea/palustris	-	-	1	-
Moehringia trinervia (L) Clairv.	-	3	2	-
Caryophyllaceae indet	3	-	-	3
Montia fontana L. subsp *chondrosperma*	-	-	1	1
Chenopodium album L	10	13	7	53
Atriplex patula/hastata	-	-	1	-
Chenopodiaceae indet	5	4	8	21
Ilex aquifolium L (lf fr)	+	+	+++	-
Potentilla sp	-	1	-	3
Aphanes arvensis/microcarpa	-	1	-	-
Rubus fruticosus agg	25	55	49	24
Rubus sp	-	-	-	1
Rubus-type (th)	-	+	+	-
Prunus spinosa L	-	-	-	2
Crataegus monogyna Jacq.	5	4	4	1
Prunus/Crataegus-type (th)	-	-	+	+
Oenanthe aquatica (L) Poiret	-	-	1	2
Umbelliferae indet	1	-	2	1
Polygonum aviculare agg.	-	1	-	1
Polygonum persicaria/lapathifolium	2	5	14	1
Polygonum hydropiper L	-	-	1	-
Rumex acetosella agg.	3	4	4	6
Rumex sp	1	2	-	-
Polygonaceae indet	-	-	2	4
Urtica dioica L	20	9	12	11
Quercus sp (lf fr)	+	+	+++	+++
(lfg)	+	-	-	-
(cup fr)	-	+	-	-
Solanum cf.*nigrum* L	-	2	-	-
Prunella vulgaris L	-	-	-	3
Stachys sp	-	1	1	-
Galeopsis tetrahit/speciosa	2	-	1	-
Ajuga reptans L	-	-	2	-
Plantago major L	-	-	2	2
Sambucus nigra L	1	-	-	-
Compositae indet	-	1	1	-
Lemna sp	52	75	215	64
Juncus spp	-	+	+	+
Carex spp	2	2	4	2
Gramineae indet	74	107	109	52
Indeterminate seeds etc	2	4	3	11
Twigs	+	+	+++	+++
Buds	+	+	+++	+++
Charcoal	+	+	+	+
Mosses	-	-	-	+
Beetles	+	+	+	+
Fly puparia	-	-	-	+
Cladocera	+	+	+	+

Table 13 : Macrofossils from F645

All samples 0.5kg. Taxa are represented by fruits or seeds except where indicated. Abbreviations: cup - cupule; fr - fragment; lf - leaf; lfg - leaf gall; th - thorns. The Gramineae have not been fully identified but include *Glyceria fluitans* (L) R. Br. and *Alopecurus* sp.

Depth (cm)	101-109	120-130	130-140	140-150
Ranunculus acris/repens/bulbosus	6	7	10	2
Ranunculus parviflorus L	2	4	1	-
Ranunculus flammula L	8	8	1	6
Ranunculus sceleratus L	3	1	14	14
Ranunculus subg. Batrachium	6	32	23	26
Fumaria officinalis L	-	1	-	-
Raphanus raphanistrum L (si fr)	+	-	-	-
Thlaspi arvense L	-	-	4	1
Capsella-type	1	-	-	
Cerastium sp	-	-	-	1
Stellaria media-type	-	5	23	2
Stellaria graminea/palustris	-	1	-	2
Spergula arvensis L	1	18	43	5
Caryophyllaceae indet	6	1	-	4
Montia fontana L. subsp chondrosperma	7	4	2	2
Chenopodium album L	2	33	101	15
Chenopodium ficifolium Sm	1	1	4	1
Atriplex patula/hastata	1	-	8	5
Chenopodiaceae indet	1	1	18	3
Ilex aquifolium L (lf fr)	-	-	-	+
Linum cf. usitatissimum (cap fr)	-	-	+	-
Potentilla sp	1	-	6	2
Aphanes arvensis/microcarpa	6	4	5	2
Rubus fruticosus agg	2	1	7	5
Oenanthe aquatica (L) Poiret	1	-	-	1
Mentha sp	-	-	-	1
Lycopus europaeus L	-	9	4	4
Prunella vulgaris L	3	1	2	-
Lamium sp	1	1	-	-
Ajuga reptans L	-	1	-	-
Polygonum aviculare agg.	6	3	9	10
Polygonum persicaria/lapathifolium	-	-	4	1
Polygonum hydropiper L	1	-	-	-
Polygonum sp	1	3	3	2
Rumex acetosella agg	13	8	12	9
Rumex sp	-	3	19	10
Urtica dioica L	6	9	32	30
Urtica urens L	-	-	1	-
Solanum nigrum L	-	-	1	1
Solanum sp	-	-	3	1
Plantago major L	14	1	1	-
Plantago sp (capl)	-	-	1	-
Cirsium/Carduus sp	-	-	1	1
Lapsana communis L	-	-	-	1
Sonchus asper (L) Hill	-	1	2	1
cf. Chrysanthemum segetum L	2	-	-	-
Compositae indet	1	-	-	-
Lemna sp	73	30	19	10
Juncus spp	+	+	+	+
Carex spp	9	11	10	4
Eleocharis palustris/uniglumis	2	-	2	3
Isolepis setacea (L) R.Br	7	5	-	-
Gramineae indet	32	11	32	29
Triticum dicoccum Schubl (gb)	1	-	-	-
Triticum sp (ri)	1	-	-	-
Indeterminate seeds etc.	15	8	10	8
Woods/Twigs	+	+	+	+
Buds	-	-	+	+
Charcoal	+	+	+	+
Gramineae (culm frags)	+	-	-	-
Mosses	+	+	+	+
Beetles	+	+	+	+
Fly Puparia	+	-	-	-
Cladocera	+	+	+	+

Table 14 : Macrofossils from F3887

All samples 1kg. Taxa are represented by fruits/seeds except where indicated. Abbreviations : cap - capsule; capl - capsule lid; carb - carbonised; fr - fragment; gb - glume base; lf - leaf; ri - rachis internode; si - silique

Depth(cm)	20-30	40-50
Stellaria media-type	3	4
Chenopodium album L	31	25
Chenopodium ficifolium Sm	6	-
Chenopodiaceae indet	9	9
Montia fontana L.subsp.chondrosperma	4	6
Aphanes arvensis/microcarpa	2	3
Rubus fruticosus agg	1	1
Rumex acetosella agg	2	2
Polygonum aviculare agg	-	2
Polygonum sp	2	-
Urtica dioica L	1	-
Urtica urens L	11	10
Lamium sp	3	4
Gramineae indet	1	4
Indet seeds etc.	3	2
Wood	+	+
Twigs	+	+
Buds	+	+
Leaf fragments	+	+
Charcoal	+	+
Cladoceran ephippia	+	+
Beetles	+	+
Fly puparia	-	+

Table 15 : Macrofossils from Feature 1839

Both samples 1kg; a further sample from 0-10cm was scanned but produced a still sparser assemblage.

Depth (cm)	0-5	5-10	10-15	15-20	20-25	25-30	30-35
Pteridium-type (pi)	-	-	1	-	-	-	-
Ranunculus acris/repens/bulbosus	1	7	1	1	3	10	6
Ranunculus parviflorus L	3	5	2	2	3	4	-
Papaver argemone L	-	1	-	-	-	-	-
Cruciferae indet	-	1	-	-	1	-	-
Stellaria media-type	2	21	17	9	11	35	9
Stellaria graminea/palustris	-	1	2	-	1	1	-
Cerastium sp	-	-	-	-	1	-	1
Spergula arvensis L	-	-	-	-	-	-	1
Chenopodium album L	4	22	20	8	18	37	9
Chenopodium ficifolium Sm	-	-	-	-	-	2	-
Atriplex spp	5	21	7	6	5	3	4
Chenopodiaceae indet	3	11	8	6	5	11	4
Linum catharticum L	-	-	-	-	1	-	-
Linum sp (cap.fr.)	-	-	-	-	-	-	+
Potentilla sp(p)	2	1	-	3	-	6	2
Aphanes arvensis L	-	-	-	-	1	-	-
Aphanes arvensis/microcarpa	-	-	1	1	3	5	2
Rosa-type (th)	+	-	-	+	+	+	+
Rubus fruticosus agg	23	20	9	3	2	7	8
Rubus-type (th)	+	+	+	+	+	-	+
Crataegus monogyna Jacq	1	-	-	-	-	-	-
Prunus spinosa L	-	2	-	-	-	-	-
Prunus/Crataegus-type (th)	-	+	+	+	-	+	-
Anthriscus sylvestris (L) Hoffm	-	-	-	-	-	1	-
Torilis japonica (Houtt) DC	-	1	-	-	-	-	-
Pastinaca/Heracleum sp	-	1	-	-	-	2	1
Umbelliferae Indet	1	2	-	-	-	-	1
Polygonum aviculare agg	2	13	12	6	6	6	2
Fallopia convolvulus (L)	-	-	1	1	-	1	-
Rumex acetosella agg	-	1	2	2	3	12	-
Rumex sp(p)	2	9	7	4	6	3	2
Urtica dioica L	13	21	11	10	7	31	9
Urtica urens L	1	-	-	-	-	-	-
Quercus sp (imm.cup.)	1	-	-	-	-	-	-
(cup.fr.)	+	-	+	-	-	-	+
(lf.fr.)	+	+	+	+	+	+	+
(lfg.)	+	+	+	+	+	+	-
Solanum nigrum L	-	1	1	-	-	-	-
Prunella vulgaris L	1	2	1	-	3	4	2
Lamium sp	-	-	-	-	1	-	-
Galeopsis tetrahit/speciosa	1	-	1	-	-	-	-
Plantago major L	1	1	-	-	3	2	-
Cirsium/Carduus sp	-	1	-	1	4	1	-
Lapsana communis L	1	-	1	-	-	-	1
Leontodon sp	-	-	-	1	-	1	-
Sonchus oleraceus L	-	-	-	1	1	2	-
Sonchus sp	-	1	1	-	-	1	1
Compositae indet	-	-	1	1	1	1	-
Lemna sp	-	-	-	-	-	-	2
Juncus spp	+	+	+	+	+	+	+
Carex spp	-	3	1	1	2	6	1
Bromus sp	-	-	-	-	-	-	1
Triticum cf dicoccum (gb)	-	-	1	-	2	-	-
Gramineae indet	2	2	5	2	-	-	1
Indet seeds etc	3	8	6	2	-	5	3
Twigs/wood frags	+	+	+	+	+	+	+
Charcoal	+	+	+	+	+	+	+
Buds/budscales	+	+	+	+	+	+	+
Mosses	+	+	+	+	+	+	+
Beetles	+	+	+	+	+	+	+
Fly puparia	+	+	+	+	-	-	-
Cladoceran ephippia	-	+	+	+	+	+	+
Sample wt (kg)	0.25	0.5	0.5	0.5	0.5	0.5	0.5

Table 16 : Macrofossils from F015

Plant taxa are represented by fruits/seeds except where indicated.
Abbreviations: cap-capsule; cup-cupule; fr-fragment; gb-glume base; lf-leaf; lfg-leaf gall; pi-pinnule; th-thorn

<u>Papaver</u> cf. <u>rhoeas</u> L	1
<u>Papaver</u> <u>argemone</u> L	1
<u>Fumaria</u> <u>officinalis</u> L	3
<u>Chenopodium</u> <u>album</u> L	2
<u>Atriplex</u> sp	38
Chenopodiaceae indet	65
<u>Montia</u> <u>fontana</u> L.subsp.<u>chondrosperma</u>	2
<u>Rubus</u> <u>fruticosus</u> agg.	8
<u>Polygonum</u> sp	2
<u>Polygonum</u> <u>hydropiper</u> L	1
<u>Rumex</u> sp	9
Polygonaceae indet	1
<u>Potentilla</u> sp	1
<u>Plantago</u> <u>major</u> L	2
<u>Juncus</u> spp	+++
<u>Carex</u> sp	5
<u>Triticum</u> sp (ca:c)	1
<u>Triticum</u> sp (spb:c)	1
Gramineae (ca:c)	1
Gramineae	238
Indet seeds etc	9
Wood fragments	+
Charcoal	+
Beetles	+
Caddis larval cases	+
Cladoceran ephippia	+
Sample wt (kg)	0.5

<u>Table 17 : Macrofossils from F2577</u> (2670)

The Gramineae fruits are predominantly 2.5-3.0mm long. In most cases the hilum and cell patterning are obscured by an overall dark brown colouring. Specimens not obscured have mainly long linear hilums extending usually to the fruit apex - an outer polyhedral cell layer with brown deposits over rectangular wavy edged cells. These key out as <u>Glyceria</u> <u>fluitans</u> using Korber-Grohne (1964). Other forms are also present including <u>Alopecurus</u>-type.

Context	362	313	176	175
Ranunculus acris/repens/bulbosus	-	1	-	1
Ranunculus subg.Batrachium	-	-	-	1
Fumaria officinalis L	1	-	-	-
Thlaspi arvense L	-	-	-	1
Cruciferae (Capsella-type)	4	3	-	2
Stellaria media-type	4	23	6	13
Stellaria graminea/palustris	-	1	-	-
Spergula arvensis L	1	1	-	-
Chenopodium album L	5	4	-	7
Chenopodium ficifolium Sm	-	-	-	1
Chenopodium cf.rubrum L	-	-	4	2
Atriplex spp	2	13	25	34
Chenopodiaceae indet	6	10	12	11
Malva sylvestris L	3	-	-	
cf.Onobrychis viciifolia Scop	-	-	-	3
Rubus fruticosus agg	1	3	3	2
Potentilla sp	1	-	4	-
Prunus spinosa L	-	-	+	-
Torilis japonica (Houtt) DC	-	-	-	2
Aethusa cynapium L	1	-	-	-
Polygonum aviculare agg	-	3	-	8
Polygonum sp	1	-	1	-
Rumex maritimus L (+perianth)	6	1	-	5
Rumex spp (+perianth)	7	5	14	25
Rumex spp	6	13	26	116
Urtica dioica L	180	620	179	139
Urtica urens L	-	-	-	3
Corylus avellana L	-	-	+	-
Solanum nigrum L	-	-	1	-
Mentha sp	-	1	-	-
Stachys sp	-	1	-	-
Labiateae indet	3	1	1	2
Plantago major L	3	7	1	2
Bidens cernua L	-	-	-	2
Bidens tripartita L	-	-	-	2
Anthemis cotula L	-	7	5	14
Cirsium/Carduus sp	-	8	3	5
Sonchus oleraceus L	1	4	-	15
Sonchus asper (L) Hill	-	2	14	15
Sonchus sp	-	7	-	6
Lemna sp	1	1	-	1
Juncus spp	-	+	+	++
Eleocharis palustris/uniglumis	-	1	-	-
Carex spp	1	-	1	1
Gramineae indet	68	56	8	11
Hordeum sp (carbonised)	-	-	1	-
Indet seeds etc	5	11	-	4
Indet fruiting heads	-	-	-	+
Twigs/wood frags	+	+	+	+
Charcoal	+	+	+	-
Thorns	-	-	+	-
Leaf frags	+	-	-	-
Grass/cereal culm frags	+	+	+	+
Mosses	-	+	-	-
Beetles	+	+	+	+
Fly puparia	+	+	-	-
Cladoceran ephippia	-	-	-	+
Small mammal bone	-	+	-	-
Sample wt (kg)	0.25	0.25	1.0	0.5
% sorted	50	100	100	100

Table 18 : Macrofossils from F130

Plant taxa are represented by fruits/seeds except where indicated. In 176 the fraction under 0.5mm included small grass caryopses. The grass fruits in 362 are mostly under 2mm with short dark oval hilums some distance from fruit base without evident pericarp cell walls.

Context	30-40	40-50	50-60	60-70
Ranunculus acris/repens/bulbosus	1	2	2	2
Ranunculus subg. *Batrachium*	1	2	1	1
Cruciferae (*Capsella*-type)	-	-	1	-
Stellaria media-type	13	10	10	6
Stellaria holostea L	1	2	4	-
Silene sp	-	-	-	2
Moehringia trinervia (L) Clairv	-	1	1	-
Chenopodium album L	5	3	-	1
Chenopodium ficifolium Sm	-	-	1	-
Atriplex sp	1	-	1	-
Salicornia sp	-	1	-	
Chenopodiaceae indet	2	1	-	1
Malva sylvestris L	1	-	-	-
Ilex aquifolium L	-	-	1	-
Linum usitatissimum L	-	1	-	-
Linum sp (capsule frag)	-	-	1	-
Rubus fruticosus agg	3	2	8	4
Potentilla sp	2	1	-	1
Torilis japonica (Houtt) DC	-	1	1cf	-
Oenanthe aquatica (L) Poiret	1	-	-	-
Polygonum aviculare agg	3	8	2	7
Polygonum persicaria/lapathifolium	-	2	-	1
Rumex sp(p)	1	9	1	4
Urtica dioica L	5	36	51	50
Corylus avellana L	-	-	+	-
Solanum nigrum L	-	-	1	2
Hyoscyamus niger L	1	-	-	-
Prunella vulgaris L	-	-	3	-
Lycopus europaeus L	4	1	-	-
Plantago major L	3	2	-	1
Sambucus nigra L	1	-	2	1
Anthemis cotula L	3	9	3	4
Lapsana communis L	-	1	1	-
Sonchus oleraceus L	-	1	-	-
Sonchus sp	1	-	-	-
Compositae indet	-	-	1	1
Lemna sp	1	2	-	-
Juncus spp	+	-	-	-
Carex spp	-	-	1	-
Gramineae indet	3	1	1	3
Triticum sp (carbonised rachis frag)	-	-	-	1
Indet seeds etc	-	4	2	1
Twigs/wood	-	+	+	+
Thorns	+	-	+	-
Charcoal	+	+	+	+
Buds	-	-	+	-
Leaf frags	-	-	+	-
Stem frags	+	-	-	-
Mosses	-	+	+	+
Beetles	+	+	+	+
Fly puparia	-	-	+	+
Cladoceran ephippia	+	+	+	+
Amphibian bone	+	+	-	-
Sample wt (kg)	0.5	0.5	1.0	1.0

Table 19 : Macrofossils from F2957

Plant taxa are represented by fruits/seeds except where indicated.

Table 20 : Macrofossils from F2956

Due to contamination quantification is not appropriate though the more abundant taxa are R subg Batrachium, Rubus fruticosus, Polygonum hydropiper, Urtica dioica and Solanum dulcamara. Taxa including viable seeds are marked with an asterisk.

Ranunculus acris/repens/bulbosus
Ranunculus subg.Batrachium
Cruciferae (Capsella-type)*
Rorippa islandica (Oeder) Borbas*
Stellaria media-type
Stellaria holostea L.
Chenopodium album L
Linum usitatissimum L (seeds & capsule)
Rubus fruticosus agg
Potentilla sp
Aphanes arvensis/microcarpa
Prunus spinosa L
Crataegus monogyna Jacq.
Prunus/Crataegnus (thorns)
Rosa-type (thorns)
Rubus (stems and thorns)
Malus sp (seeds and endocarp frags)
Cornus sanguinea L
Anthriscus sylvestris (L) Hoffm
Torilis japonica (Houtt) DC.
Apium sp
Oenanthe aquatica (L) Poiret
Polygonum aviculare agg
Polygonum hydropiper L
Polygonum lapathifolium L
Rumex acetosella agg
Rumex sp
Urtica dioica L
Urtica urens L
Corylus avellana L
Quercus sp (leaf frags)
Solanum dulcamara L
Solanum nigrum L
Lycopus europaeus L
Plantago major L*
Sambucus nigra L
Anthemis cotula L
Leontodon sp
Sonchus oleraceus L
Sonchus asper (L) Hill
Lemna sp
Juncus spp
Carex spp*
Gramineae indet
Twigs/wood
Charcoal
Mosses
Beetles
Fly puparia
Cladoceran ephippia
Amphibian bone