APPENDIX 1 - PLANT REMAINS

1.1 Charred Plant Remains

by Ruth Pelling

Introduction

1.1.1 Samples were recovered during excavation works for the recovery of charred plant remains and charcoal. Dated deposits are either from the early Neolithic to the early Bronze Age or are Iron Age. A total of 34 samples were processed by bulk water flotation and the flots collected onto 250 μm mesh sieves. The volume of deposit processed ranged from 10 to 40 litres. Flots were air dried slowly before being submitted for assessment.

1.1.2 The recovery and study of the charred plant remains was undertaken in accordance with the Fieldwork Event Aims (see Section 2.2), in particular Aim 1.

1.1.3 The samples were taken in order to address questions concerning the diet and cereal economy of both the Neolithic/early Bronze Age and the Iron Age settlements. In addition a spot find of a *Malus sylvestris* (crab apple) core was recovered during the excavation from a late Neolithic context (18, pit 19).

Methodology

1.1.4 The sampling programme was intended to recover material from the full range of feature type and date excavated. Samples were taken from ditches, pits, layers, post-holes and tree-throw holes. Each flot was assessed by scanning under a binocular microscope at x10 magnification. Any seeds or chaff noted were provisionally identified and an estimate of abundance made. Random fragments of charcoal were fractured and examined in transverse section at x10 and x20 magnification.

Quantification

1.1.5 A total of 9 Neolithic/Early Bronze Age flots and 15 Iron Age flots were assessed. A further 10 flots of unknown date were also assessed.

1.1.6 Of the early prehistoric samples, two contained no charred plant remains and two contained charcoal only. Cereal remains were only present in small numbers (less than ten grains) and no chaff was noted. Four samples (1-4) produced fragments of *Corylus avellana* (hazel) nut-shell, including very large amounts in sample 1. These samples also contained moderate to abundant quantities of charcoal, including *Quercus* sp. (oak) and *Corylus/Alnus* sp. (hazel/alder). The cereal remains noted included *Hordeum vulgare* (barley) and hulled wheats including *Triticum spelta* (spelt wheat). The *Triticum spelta* in pit 23 is likely to be contamination from the later prehistoric deposits as it is not known in Britain from before the middle Bronze Age.

1.1.7 Of the 15 Iron Age samples charred remains were abundant in six, including over 1000 grains in at least two samples. Grain appears to dominate these deposits although abundant chaff and weed seeds were also noted. The cereal remains noted were dominated by *Hordeum vulgare* (barley) and *Triticum spelta* (spelt wheat), although *Triticum dicoccum* (emmer wheat), and *Avena* sp. (oats) were also recorded. Occasional additional plant items included *Brassica/Sinapis* sp. seeds, which may be derived from cultivated brassicas (cabbage, mustard etc.), a bracken frond, hazel nut shell fragments and hawthorn stones. Noticeable amongst the weeds were large quantities of *Bromus* subsect *Eubromus* (brome grass) seeds in samples

24 and 25. The preservation of remains in these samples is exceptionally good. Three samples contained fewer but still useful quantities of grain chaff and weeds. The remaining six samples contained little or no cereal grain and no chaff.

1.1.8 The undated samples produced very limited remains. No seeds or chaff were present in seven samples, while two samples contained occasional *Corylus avellana* (hazel-nut) shell fragments only and one sample (32) contained a single *Hordeum vulgare* (barley) grain. Charcoal was generally rare but more frequent in sample 8, consisting entirely of *Quercus* sp. (oak).

Table 6.1.1: Summary of plant remains in undated samples

Sample	Context	Feature	Period	Sample size (l)	Flot size (ml)	Grain	Id-Grain	Chaff	Id-Chaff	Weed seeds	Other	Id-Other	Charcoal	Comments
8	90	Pit		10	150	0		0		0	0		+++	
9	99	Ditch		20	20	0		0		0	0		+	Worm capsules
15	114	Pit	PR?	10	10	0		0		0	+	Corylus	+	
16	127	Pit		16	10	0		0		0	0		+	Modern insects worm capsules
20	138			30	10	0		0		0	0		+	
21	144	Ditch		7+10	10	0		0		0	+	Corylus	+	Rooty
22	146	Ditch		20	10	0		0		0	0		+	Roots, sand, coal
32	205	Pit		40	10	+	Hor	0		0	0		++	
33	189	Tree	PR?	40	10	0		0		0	0		0	
34	215	Pit		40	10	0		0		0	0		+	

Table 6.1.2: Summary of plant remains in Neolithic and Early Bronze Age samples

Sample	Context	Feature	Period	Sample size (l)	Flot size (ml)	Grain	Id-Grain	Chaff	Id-Chaff	Weed seeds	Other	Id-Other	Charcoal	Comments
1	22	Pit 23	LNE;BA	40	200	0		0		0	++++	Corylus	++++	pit
2	24	Pit 23	LNE;BA	26	50	+	T.spt/dic T.spt Hor	0		0	++	Corylus	++	small pit
3	61	Pit 60	LNE;BA	40	100	+	indet	0		+	+	Corylus	++	pit
4	62	Pit 60	LNEBA	16	150	+	Hor	0		0	++	Corylus	++	pit
5	71	Posthole 70	LNE?	10	10	0		0		0	0		+	Roots
6	72	Posthole 70	LNE?	10	10	0		0		0	0		+	charcoal flecks
7	73	Postpipe in posthole 70	LNE?	32	10	0		0		0	0		0	Occ. modern weeds
12	102	Pit 100	E-MNE	29	20	+	T.spt Hor	0		0	0		++	

13	103	Pit 100	E-MNE	20	10	0		0		0	0		0	

Table 6.1.3: Summary of plant remains in Iron Age samples

Sample	Context	Feature	Period	Sample size (l)	Flot size (ml)	Grain	Id-Grain	Chaff	Id-Chaff	Weed seeds	Other	Id-Other	Charcoal	Comments
11	76	Hollow 35/74	E-MIA	40	10	+	T.sp	0		0	0		+	
17	123	Hollow 124	E-MIA	10	10	0		0		+	0		+	
18	133	Ditch 135	E-MIA	36	20	+	Hor indet	0		0	0		+	Rooty
19	134	Ditch 135	E-MIA	40	50	+	Indet	0		0	0		+	Modern weeds, coal
23	11	Hollow 35/74	E-MIA	40	20	+	Hor	0		+	+	Corylus	++	
24	172	Pit 170	E-MIA	40	400	1000+	Hor T.spt T.dic Av	++	T.spt Av (wild)	++++	+	Brassica	+	Grain rich
25	173	Pit 170	E-MIA	40	300	++++	Hor T.spt T.dic	++	T.spt/dic Hor	+++	+	Crataegus	+	Grain rich
26	180	Pit 170	E-MIA	40	150	++++	Hor T.spt Av	+	T.spt/dic	++++	0		++	Grain rich
27	164	Pit 161	E-MIA	20	1500	1000+	Hor T.spt Av T.dic	+++	T.spt T.dic Hor	+++	+	Bracken	+	grain rich, less bromus
28	165	Pit 161	E-MIA	40	150	++++	Hor T.spt T.dic Av	++	T.spt/dic	+++	0		0	Grain rich
29	167	Pit 161	E-MIA	40	100	++++	Hor T.spt T.dic Av	++	T.spt T.dic	+++	+	Brassica	0	Grain rich
30	178	Pit 175	E-MIA	40	300	+++	Hor T.spt T.dic	+	T.spt	++	+	Vic/Pis Rosa?	++	preservation excellent
31	222	Pit 226	LIA	40	50	+++	Hor T.spt	+	T.spt	++	0		+	
35	223	Pit 226	LIA	40	50	+++	T.spt T.dic Hor Av	+	T.spt/dic	+	0		0	
36	225	Pit 226	LIA	14	10	++	Hor T.spt/dic Av	0		+	0		+	

Hor = Hordeum T.dic = Triticum dicoccum T.sp = Triticum sp. Vic/Pis = Vicia/Pisum sp.
T.spt = Triticum spelta T.spt/dic = T. spelta/dicoccum Av = Avena sp.

Provenance

1.1.9 The hazelnut rich early prehistoric deposits were derived from pits (23 and 60), and also contained frequent charcoal. It is likely that they represent the redeposited remains of fires, including the fuel. The fact that the hazelnut is represented by broken shell fragments rather than whole nuts suggests it to be derived from food residues, rather than entering the deposits attached to fuel wood.

1.1.10 The grain rich Iron Age samples are all derived from pits (161 and 170). It must therefore be considered that they are derived from stored product, perhaps recovered more or less *in-situ*, although the mixture of several types of cereal grain might contradict this. The presence of glume bases and weeds suggest that the grain had not been fully processed. The ditch deposits contained little or no material, and the remains that were present are likely to be no more than redeposited background scatters or 'noise', present across the site.

Conservation

1.1.11 The flots are in a stable condition and can be archived in their present state for long-term storage.

1.1.12 Samples that have been demonstrated to have no potential could be discarded.

Comparative Material

1.1.13 Hazelnut shell tends to be the most commonly recovered plant of economic importance found within Neolithic and Early Bronze Age deposits in Britain. Crab apple is also recorded on a number of sites throughout the British Isles (see Moffett *et al.* 1989). Hazelnuts clearly played an imported role in a Neolithic-early Bronze Age diet which must have still included a large wild element despite the introduction of agricultural technology at the beginning of the Neolithic. The Eyhorne Street samples do not suggest that cereal agriculture played a significant role and these results will be important for wider comparative analysis, although it is too early to establish if agriculture was important elsewhere in Kent at this time. Within the CTRL project Neolithic material has been identified from the White Horse Stone group and Tutt Hill. There are no known published records of material of this date from within Kent.

1.1.14 Spelt wheat and barley are the principal cereal species known in Southern Britain from the Iron Age (Greig 1991). Emmer wheat is less frequently recorded although there is some evidence of its cultivation from Late Iron Age sites. Within Kent a deposit of roughly equal proportions of emmer and spelt were recovered from a late Iron Age pit at Wilmington (Hillman 1982). Large deposits of emmer wheat have also been recovered from late Iron Age pits at Hascombe, Surrey, (Murphy 1977, 82-84), and Ham Hill, Somerset (Ede 1991). The late Iron Age deposits so far assessed from the within the Channel Rail Link project have not produced comparable results in terms of scale, although both spelt wheat and emmer wheat were represented within contemporary deposits at Thurnham Villa and South of Snarkhurst Wood. The Roman deposits from Thurnham Villa suggest a similar agricultural tradition was continuing into the Romano-British period. The evidence from within Kent is therefore suggesting that despite the widespread cultivation of spelt wheat, emmer wheat was also being cultivated within the Iron Age and Romano-British period. It is not clear whether this represents a continuation from the Bronze Age or a reintroduction within the Iron Age.

Potential for Further Work

1.1.15 Given the limited range of plant remains from Neolithic-Bronze Age and from Iron Age deposits within the region the present samples have considerable potential for increasing our existing dataset for the area. The Neolithic-Bronze Age samples are unlikely to extend the known species list for the period but will provide valuable data for the region. The Iron Age samples are exceptionally rich and therefore offer great potential for investigation of the role of specific cereals, such as emmer wheat and oats, as well as broader agricultural trends at both the site and within the region. Emmer wheat is now known from the Late Iron Age, but has not been widely recorded and it has not been established if it is present as a relic of earlier agricultural systems or is a reintroduction. It is therefore important to fully record (species identification and quantification) these present samples and extend the existing dataset. Likewise, oats are recorded in significant numbers from some sites in this period, but it is not clear how much it was cultivated or how much it appears as a weed. The late Iron Age deposits may represent *in-situ* stored products. In addition to providing valuable information about agricultural systems at the site, there is also therefore the potential to look at storage patterns and possible structured deposition in a ritual context. This data will be of particular value for comparison with the Iron Age settlement at White Horse Stone. The analysis of some charcoal from Neolithic/Bronze Age deposits may shed light on the woodland landscape in the period and provide some information about woodland management. The charcoal in the Iron Age period is very limited but its identification could shed light on what species was used for fuel. This would involve species identification and quantification.

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