APPENDIX 1 MACROSCOPIC PLANT REMAINS AND CHARCOAL

by Ruth Pelling, with contributions by Dana Challinor

Introduction

1.1.1 Excavations during Fieldwork Event ARC BBW00 included the sampling of deposits for the extraction of charred plant remains and charcoal. Samples were taken from a range of features, including postholes, ditches, cremation deposits, refuse pits, and industrial features of Mesolithic, Neolithic, Bronze Age, Iron Age and Roman date.

1.1.2 The samples were processed by flotation in a modified Siraf-type machine. The flots were collected onto a 250 μm mesh and allowed to air dry slowly. A total of 161 samples were assessed. The assessment was intended to record quantity and quality of material present and to assess its significance at both regional and national level.

Methodology

1.1.3 Each sample submitted was first put through a stack of sieves from 500 μm to 2 mm mesh size in order to break the flot into manageable fractions. Each fraction was then scanned under a binocular microscope at x10 to x20 magnification. Any seeds or chaff noted were provisionally identified based on morphological characteristics and an estimate of abundance was made. Charcoal was broken in transverse section and provisionally identified.

1.1.4 Quantification was based on a four point scale where charcoal was recorded as present (+), common (++), frequent (+++) and abundant (++++), and seeds and chaff were based on numerical estimates of 1-10 (+), 11-50 (++), 51-100 (+++) and greater than 100 (++++).

Quantification

1.1.5 The majority of samples contained charcoal but no seeds or chaff. Charcoal was noted in 145 samples, although in the majority of cases was merely present in small quantities. More useful amounts of charcoal were noted in 24 samples (see Table 8.1). *Quercus* sp.(oak) was most commonly identified, while *Corylus/Alnus* sp. (hazel/alder), Pomoideae (apple/pear/hawthorn etc) and possible *Prunus spinosa* (sloe) were noted.

1.1.6 Cereal grain was present in 33 samples, of which only 5 produced more than 10 grains. Cereal chaff was present in 9 samples, two of which contained 11 to 50 items. Two samples produced large quantities of cereal remains, in both cases consisting of abundant grain (over 100) but only rare chaff or weed seeds. Sample <200> produced grain of *Triticum dicoccum* (emmer wheat), *Hordeum vulgare* (barley) and *T. dicoccum/spelta* while sample <216> produced a very large deposit of *T. spelta* (spelt wheat) and *Hordeum vulgare* (barley) grains with some *Avena* sp. (oats).

1.1.7 Non-cereal remains of possible economic origin were noted in 17 samples. Pulses were present in two samples: *Vicia faba* (Celtic bean) and possible *Pisum* sp. (pea). Remains of *Malus sylvestris* (crab apple) and *Malus/Pyrus* sp. (apple/pear) were noted in five samples of Early Bronze Age and Late Iron Age date, and included the seeds, pericarp, whole cores and whole fruits. Small quantities of fragments of *Corylus avellana* (hazel) nut shell were present in 12 samples, of Bronze Age and Iron Age date. Plant remains less likely to be of economic origin included a single *Crataegus monogyna* (hawthorn) seed in a Late Mesolithic/Neolithic sample and tubers of *Arrhenatherum elatius* (false oat-grass) in 4 samples of varied date.

Provenance

1.1.8 Large charcoal assemblages were recovered from samples of Middle-Late Iron Age and Roman date and occasional Bronze Age samples (also see Table 8.1). Seven samples from Late Bronze Age, Late Iron Age and Romano-British cremations deposits produced *Quercus* sp. (oak) only or *Quercus* sp. dominated assemblages. Context (1710) can be included here, since it also yielded possible cremation remains, again dominated by *Quercus* sp., and has been interpreted as the dislodged remains of a (secondary) cremation interment in barrow group 3012.

1.1.9 Five features in Area C associated with Late Iron Age/Early Roman industrial activity produced mixed charcoal assemblages, presumably derived from either fuel or from charcoal making. Large mixed charcoal assemblages were also recovered from ditches and postholes within Area A, including fill (2210) in sub-group 2150 (enclosure 3072) which produced an important pottery assemblage (see Appendix 1.2). These charcoal deposits might be derived largely from refuse.

1.1.10 Table 8.2. shows a summary of samples that produced charred seeds and chaff. The samples which produced cereal remains were of Middle to Late Bronze Age, Late Iron Age, and Late Iron Age into Early Roman date.

1.1.11 In terms of species, possible free-threshing wheat was present in a Bronze Age sample <246>, while hulled wheat was recorded from the Bronze Age (possibly late) onwards. Both *Triticum dicoccum* and *T. spelta* were identified in Late Bronze Age to Late Iron Age/Early Roman date. *Hordeum vulgare* was present in all periods while *Avena* seems to first appear in the Iron Age. The feature types which produced cereal remains are varied. The two large assemblages are from a Middle-Late Bronze Age pit/truncated cremation and a Late Iron Age pit/truncated cremation (samples 200 and 216). Small assemblages were noted in hearths, ditches, pits, postholes and cremation deposits.

1.1.12 The pulses were recovered from (sample 380) through Middle/Late Iron Age enclosure ditch sub-group 2150 in enclosure 3072, which also produced cremated human remains, and from a medieval pot (sample 291). The *Malus/Pyrus* sp. (apple/pear) remains were from the fills of a Beaker period pit [1374] (samples 277, 278, 279 and 280) associated with cremated human remains, and and Late Iron Age ditch fill (sample 281) which contained human cremated human bone. The samples from the pit [1374] also produced hazelnut shell fragments. Other samples with *Corylus avellana* (hazel) were from ditches and pits of Bronze Age to and Iron Age date.

Conservation

1.1.13 The flots are in a stable condition and can be archived for long term storage.

Comparative Material

1.1.14 While the cereal assemblages are limited from Beechbrook Wood, they do fit the pattern seen elsewhere in the Kent region. Both spelt wheat and emmer wheat have been recorded in Kent from CTRL and other sites from the Middle Bronze Age (Pelling unpub a) through to the Roman period (eg. Thurnham Villa). In other well studied areas of southern Britain, such as the Thames Valley and the Hampshire basin, emmer wheat is only present as a weed of spelt in the Iron Age, although it is recorded at some sites in the Roman period as a crop in its own right (eg. Pelling 2000). In the north-east of England emmer wheat does continue to be cultivated at some sites through the Iron Age, where the choice of wheat seems to be based on the agricultural regime of that site (Van der Veen and O'Connor 1998). It is yet to be demonstrated if there was a deliberate choice to grow either spelt, or emmer, or a mixed crop, in the Kent region or if the occurrence is totally random.

1.1.15 Crab apple and hazelnut remains are routinely found on Neolithic sites in the British Isles (eg. Moffett *et al* 1989; Robinson 2000), where they constitute the characteristic

'muesli diet'. In the Kent region hazelnut has been recorded on several Neolithic and Bronze Age sites, while crab apple has been identified from Middle to Late Bronze Age contexts at Pilgrims' Way. It is not clear on present evidence how important these wild woodland resources were in the Bronze Age of Kent. In much of southern Britain their importance declines by the Early Bronze Age, although recent work in Bedfordshire suggests that in some regions they may have continued to constitute a significant part of the economy into the Iron Age (Pelling, unpub b). It is interesting that wild resources may still have been significant in the Middle or even late Bronze Age in parts of Kent, yet sites yielding large quantities of cereal remains are known from the Middle Bronze Age (eg. Pelling, unpub a).

1.1.16 Recent work on the charcoal from cremation deposits indicates that wood taxa may have been specifically selected for cremations (eg. Thompson 1999; Straker 1988). The CTRL excavations have revealed a number of sites in Kent with cremation burials of both prehistoric and Roman date (eg. Tutt Hill, Chapel Mill and Waterloo Connection). The results from the charcoal assessments indicate strikingly similar assemblages dominated by a single taxon. The analysis of the charcoal from Beechbrook Wood will make a valuable addition to the growing body of data for the Kent region.

1.1.17 The greater taxonomic diversity in the industrial deposits at Beechbrook Wood is also of interest, both in its contrast to the cremation assemblages and in its similarity to the results from other Roman sites in Kent including Westhawk Farm, Ashford (Challinor in prep) and Southfleet (Campbell 1998). Moreover, ongoing assessment of material from CTRL sites is likely to provide further comparable data.

Potential for further work

1.1.18 The arable economy of Kent is still poorly understood, although the CTRL work has highlighted some interesting elements which seem to be characteristic of the region, but unlike neighbouring areas. The assemblage has potential to address issues highlighted for the Landscape Zone Aims of both the North Downs and Wealden Greensand Zone Fieldwork Event Aims in CTRL period categories 1, 2, 3 and 4i in particular as follows:

Hunter-foragers (4,00,000-4,500 BC)

- Define the range of human activity and where it took place, particularly through the study of palaeoeconomy
- What was the effect of climatic and environmental changes on human lifeways and adaptive strategies?

Early Agriculturists (4,500-2,000 BC)

- Define ritual and economic landscapes and their relationships
- Determine the nature of changes in economic lifeways, eg. relative importance of hunting-foraging and agriculture, studied especially through recovery of faunal and charred plant remains

Farming Communties (2,000-100 BC)

- Determine how settlements were arranged and functioned over time

Towns and their rural landscapes (100BC-AD 410)

- How were settlements and rural landscapes organised and how did they function?
- How did the organisation of the landscape change through time?

1.1.19 Principal characteristics seem to be the early introduction of spelt wheat and the continued cultivation of emmer through the Iron Age and Roman period. It is yet to be seen how important wild woodland resources were and for how long a period. While cereal remains from Beechbrook Wood are not particularly numerous, it is important to gather as much information about the cereal economies from as wide a range of sites as possible to facilitate a really useful analysis of the data.

1.1.20 It is important for example to establish why some sites produce abundant evidence for cereal production or processing and others do not. It is therefore recommended that the two cereal-rich samples are sorted and identified in full (samples 200 and 216) and also the other three samples which produced moderate remains (samples 271, 360, 380). The samples with *Malus/Pyrus* sp. remains should also be examined and quantified and the identifications confirmed, for the completeness of the data set of all classes of plant remains of economic importance. The assessment data should also be utilised in the final report.

1.1.21 The majority of the charcoal recovered is from redeposited fills of pits and ditches and as such probably represents firewood. Oak seems to be the most well represented taxa, as is often the case on archaeological sites, probably reflecting the availability and usefulness of the tree. Pomoideae likewise tends to be well represented in archaeological deposits. Any analysis of the charcoal from the majority of features is likely to be of limited use.

1.1.22 The industrial features on the site may reflect a more deliberate collection and use of wood taxa however, perhaps with taxa selected for its particular burning qualities, temperature ranges and so on. It is therefore recommended that charcoal be examined more closely from a selection of industrial features.

1.1.23 Cremation deposits similarly may reflect the deliberate selection of particular trees, although in the case of Beechbrook Wood oak seems to be the tree of choice in all samples. The well preserved cremation assemblages should be more closely examined to confirm the dominance of oak and to identify any additional taxa to add to the growing body of cremation evidence from the region.

1.1.24 The very large charcoal deposits from Area A include material found in association with an important pottery assemblage (context 2213). As it is believed that the deposits in this area represent deliberately placed material, and there is evidence for human cremated material from this section cut, it is recommend that the charcoal from a selection of samples be examined.

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Table 8.1: Samples with significant charcoal assemblages from ARC BBW00.

Sample	Context	Fill of	Feature type	Period	Comments	Quantification-Charcoal	Identification Charcoal
281	1479		Enclosure ditch	LIA	LIA industrial enclosure 1020 (group 3006), cremation deposit?	3	Quercus
283	1604		Cremation	BA	cremation overlying LM/EN flint pit [1623]; pot, burnt flint and bone from its quadrant 1674 may be intrusive from this	4	Quercus
261	277	265	Ditch	LIA	enclosure ditch 1022, industrial enclosure 1972	3	Pomodaeia, Quercus, Corylus/Alnus
218	825	504	Pit	LIA	pit within 1972, Area C: possible charcoal-making	4	Quercus, Corylus/Alnus
211	517	551	Hearth	LIA	slag pit [255] within 1972, Area C	3	Quercus
230	901		Cremation	?BA	not located, but likely near ditches 1748-50 and pits [727] and [730]	3	Quercus
270	1232	1234	Pit	ERB	pit possibly associated with trackway 3000, Area C	3	Quercus
272	1293	1294	Cremation	undated	cremation in group 3020, associated w/ field system 3018, Area C	3	Quercus
274	1346	1344	Cremation	ERB	cremation 1344, Area C	4	Quercus
275	1345	1344	Cremation	RB	cremation 1344, Area C	3	Quercus
276	1345	1344	Cremation	RB	cremation 1344, Area C	3	Quercus, Pomodaeia
220	776	255	Hearth	LIA	slag pit within enclosure 1972, Area C	3	Quercus, other
205	280	262	Hearth	LIA	slag pit within enclosure 1972, Area C	3	Quercus
208	505	506	Ditch	LIA	ditch 1022, part of industrial enclosure 1972	3	Quercus
212	550	551	Cremation	LBA	Area C	3	Quercus
213	561	651	Possible cremation	(L)BA	in activity area 1952, Area C	3	Quercus
214	570	651	Possible cremation	(L)BA	in activity area 1952, Area C	3	Quercus, other

297	1720	1719	Ring ditch	Beaker	ring ditch 1682 in barrow group 3012	3	Quercus, Pomodaeia
296	1710	1709	possible cremation	(BA)	possible secondary cremation cutting 1682 or part of animal burrow, Area C	3	
371	2198	2197	Posthole	MIA/LIA	internal 4-poster group 2203 within enclosure 3072, Area A	3	Quercus, Pomodaeia, other
380	2210	2150	Ditch	LIA	from [2212] in ditch sub-group 2150, enclosure 3072, Area A. important pottery assemblage & human cremation	4	Corylus/Alnus, Quercus, Pomodaeia
382	2342	2343	Ditch	MIA/LIA	ditch sub-group 2150, enclosure 3072, Area A.	4	Quercus
383	2345	2343	Ditch	MIA/LIA	ditch sub-group 2150, enclosure 3072, Area A.	3	Quercus, Corylus/Alnus, Pomodaeia
384	2346	2343	Ditch	MIA/LIA	ditch sub-group 2150, enclosure 3072, Area A	3	Quercus, Prunus

Table 8.2: Summary of samples containing seeds or chaff from ARC BBW00

Sample	Context	Feature	Date	Sample vol (l)	Flot vol (ml)	Grain	Chaff	Weeds	Other	Id-Other	Notes
200	233	Pit	MBA/LBA	20	0	++++	+	+	0		
203	261	Hearth	LIA	18	40	+	0	0	0		
206	210	Ditch	LIA	21	20	+	0	0	0		
212	550	Crem. grave	LBA	34	400	+	0	0	0		
214	570	Pit	LBA	40	300	+	0	0	0		Roots
215	735	Pit	ERB	40	60	+	+	+	0		
216	730	Cremation	ERB	20	160	1000+	+	+	0		mostly grain
223	865	Ring ditch	MBA	24	20	0	0	+	0		Bead
227	875	Ring ditch	MBA	20	10	0	0	+	0		sand, roots
229	899	Ring ditch	MBA	22	20	0	0	0	+	Corylus	Roots
230	901	Crem. grave	Undated	20	120	0	0	+	0		
236	914	Ring ditch	MBA/LBA	23	20	+	0	0	0		Roots, sand
237	920	Ring ditch	MBA/LBA	24	10	0	0	0	+	Corylus	
238	922	Ring ditch	MBA/LBA	22	0	0	0	0	+	Corylus	
243	944	Ditch	MBA/LBA	20	0	+	0	0	0		Roots
245	958	Ditch	MBA/LBA	22	10	0	0	0	+	Corylus	charred blobs
246	947	Ring ditch	MBA/LBA	30	10	+	0	0	0		sand, roots
254	980	Ring ditch	MBA/LBA	18	10	0	0	0	+	Corylus	Sand
261	277	Ditch	LIA	38	80	++	+	+	0		Roots
267	1193	Pit	MBA/LBA	40	30	+	0	0	0		Roots
268	1200	Pit	(LBA)	10	10	0	0	+	0		Roots
269	1201	Pit	(LBA)	7	10	+	0	+	0		
271	1289	Crem. grave	undated	20	120	0	0	+++	0		
276	1345	Crem. grave	RB	26	500	+	0	+	++	Tuber	
277	1375	Pit	Beaker period	20	10	0	0	+	++	Malus/Pyrus Corylus	
278	1376	Pit	Beaker period	14	0	0	0	0	++	Malus/Pyrus	residue
279	1377	Pit	Beaker period	46	0	0	0	0	+++	Malus/Pyrus Corylus, Tuber	
280	1409	Pit	Beaker period	20	0	0	0	+	+++	Malus/Pyrus Corylus	
281	1479	Ditch fill	LIA	8	60	+	0	0	+	Malus/Pyrus	