LATTON LANDS (LALA 01-04)
The Wood Charcoal
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INTRODUCTION

Following the assessment of the charcoal, it was decided to analyse a selection of charcoal samples, mainly relating to the Early Roman 'bustum' burial (1095). Two other samples of Roman date came from pits which also produced cremated human remains. Three Iron Age contexts were examined; one was from a cremation burial and the others were from domestic/industrial contexts. The aims of the charcoal analysis were to determine the taxonomic composition of deposits relating to the cremation process and to investigate the evidence for the selection of fuelwood during the Iron Age and Roman periods. The results from the assessment are included in the discussion where relevant, in particular from the Late Neolithic/Early Bronze Age causewayed enclosure, although no further analysis was merited on these samples.

METHODOLOGY

The samples selected for analysis were all rich in charcoal and were divided to provide a representative sub-sample of *c.* 100 fragments. Charcoal that was >2mm in size was identified using standard techniques. The charcoal was fractured and sorted into groups based on the anatomical features observed in transverse section at X7 to X45 magnification. Representative fragments from each group were then selected for further examination using a Meiji incident-light microscope at up to X400 magnification. Identifications were made with reference to Schweingruber (1990), Hather (2000) and modern reference material. A total of 1032 fragments were examined. Classification and nomenclature follow Stace (1997).

RESULTS

The results by fragment count are given in Table *. The taxonomic level of identification varied according to the biogeography and anatomy of the taxa, but nine taxa were positively identified; *Ulmus* (elm), *Quercus* (oak), *Alnus* (alder), *Populus/Salix* (poplar/willow), *Prunus* (blackthorn, cherry), Maloideae (hawthorn, apple, pear etc), *Ilex* (holly), *Acer* (field maple) and *Fraxinus* (ash). The preservation of the charcoal was also extremely variable; in some samples it was crumbly and heavily infused with sediment, but other samples produced well-preserved large pieces. There were a few fragments in all samples categorised as indeterminate, which were not identifiable because of poor preservation or an unusual cellular structure. It is likely that these indeterminate fragments represent additional specimens of taxa positively identified at the site.

DISCUSSION

Late Neolithic/Early Bronze Age

Several samples from causewayed enclosure 2255 and a few other pits and ditches dating to this period were examined as part of the assessment. In all of these samples the charcoal was sparse and comminuted and did not merit further analysis. The assessment suggested that oak or ash was present in most of the deposits, with only two ditch contexts (2378 and 2370) producing mixed assemblages, including *Prunus* (cherry type) and Maloideae (hawthorn type). Since the provenance of the charcoal in

these assemblages is difficult to determine, little interpretation is possible, but the taxa identified are consistent with comparable sites (Smith 2002).

Iron Age/Roman

Pits

The two analysed Iron Age pits (1131 and 2918) produced markedly different assemblages. Pit 1131 was dominated by large fragments of Maloideae (hawthorn type) charcoal, while 2918 contained a mixed assemblage with a large component of *Alnus glutinosa* (alder). The difference in these assemblages probably relates to the function of the fire and may provide an insight into the selection of fuelwood for specific purposes. Pit 1131 produced a large quantity of animal bone and charred cereal remains, suggesting that the charcoal is likely to have come from a domestic hearth. The wood selected for this purpose would have been easily available and gathered from the local woodland resources. The species of Maloideae and *Prunus* (cherry type) are commonly found in hedgerows and would have provided reasonable firewood. The lesser quantities of *Quercus* (oak) and *Fraxinus* (ash) suggest that while the higher value wood of these trees was also used, it was not the primary fuelwood. The assemblage from pit 2918 may have been associated with industrial activities and this may explain the quantity of *Alnus* (alder) recovered. Alder does not burn well as an unseasoned wood fuel, but does make a very good charcoal fuel (Edlin 1949). The use of charcoal as fuel in some industrial activities, certainly metalworking, is necessary (Cleere & Crossley 1985). Interestingly, the assemblages from pits 3674 and 3869, which did produce evidence for metalworking, were dominated by oak, which is more commonly found in deposits of this type.

Cremation deposits

The cremation burials at Latton Lands came from features cut into two enclosure ditches (1285 and 3930) and were dated to the Late Iron Age/Early Roman and Late Roman periods respectively. The earliest burial, 1156, was dominated by a single species (Maloideae), with a few fragments of other taxa. This trend has been observed in Bronze Age ritual, in particular, where a single species seems to have been selected for cremating bodies (Thompson 1999). There is much less published data for the Iron Age period, but it seems that later cremations were following a similar ritual selection of species. The species is not always consistent, it is often oak, but there are examples of Maloideae-dominated cremation assemblages (Challinor forthcoming). It is not always possible to determine from the charcoal which genus of the Maloideae family is represented, but most of them have reasonable burning properties, if used in enough quantity. The fact that the bones were poorly cremated (Geber, this volume), suggests that either one of the less calorific Maloideae woods was used, or that not enough fuelwood was used. Estimates of the quantity of wood required to cremate an adult range between 300-500kg (McKinley 1994, 80).

The presence of smaller quantities of other taxa is often explained by its inclusion as kindling, but this is unlikely as the genera of the Maloideae family would provide good kindling anyway and a number of small roundwood fragments were present in the charcoal assemblage of 1156. Accidental inclusion, or the burnt remains of pyre goods remain more likely possibilities in this instance.

The 'bustum' samples (grave 1095) contrast sharply with the preceeding burial 1156, both in the use of different species and the nature of the assemblages. The samples are not consistently dominated by a single taxon and have an average of 5 taxa per sample (Figure *). Even samples 157 and 165, which came from the same context, 1104, have noticeably different quantities of species. Context 1104 was a layer of burnt timbers beneath skeleton 1100, and directly above the primary fill, context 1574 (sample 166). Sample 155, context 1097 was a deliberate back fill of the grave, with mixed pyre debris. The differences between the assemblages probably relate to the pyre structure, and is of great interest since it differs from other busta and pyre sites. For instance, the results from the charcoal analysis of five bustum pits from the Roman cremation cemetery at Pepper Hill, Kent, revealed that the assemblages were almost exclusively dominated by oak (Challinor, forthcoming c). There was no spatial difference in the burials which might reveal pyre structure, and this often appears to be the case at pyre sites of Roman date (e.g. Challinor, forthcoming b), but burial 1095 at Latton Lands shows great variation in the assemblages.

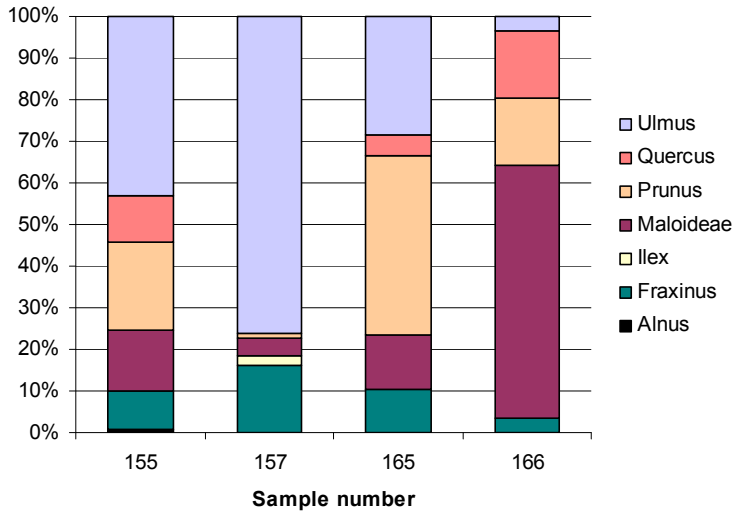

*Figure *: Composition of charcoal assemblages from 1095 (based upon fragment count)*

The use of *Ulmus* (elm) in the samples is particularly interesting as it is rare to find this genus in cremation charcoal, certainly in Britain. Elm does not make good firewood as it burns reluctantly and smoulders, although the heartwood emits relatively good heat when enclosed (e.g. in stoves) - perhaps the reason the body at Latton Lands was only partially burnt. Of course, elm may not have been deliberately selected as fuel. The primary fill 1574 produced very little elm and was composed of 60% Maloideae, with some oak, blackthorn and ash. It seems likely that this deposit represents the main fuelwood or brushwood infilling of the pyre structure which would have collapsed into the pit during the cremation. The elm probably relates to the pyre structure and perhaps represents the remains of a platform, since there were a number of burnt timbers surrounding the body when the grave was excavated. There seems to be too much elm in the burial to indicate a pyre good, since it was also present in the mixed pyre debris (sample 155) above the body. Elm was certainly used for coffins in more recent centuries, particularly for low status burials - it provides large cheap planks, but there are no confirmed records of coffin woods on pyres for the Roman period (Gale & Cutler 2000).

It is of great import, therefore, that the other two Mid-Late Roman cremation burials (1488 and 1491) which were deposited into enclosure 3930, also produced assemblages containing elm. 1491 was dominated by oak, but 1488 produced similar quantities of oak and elm. Similar to 1095, the bodies were poorly cremated – could this be due to the use of elm platforms or coffins on the burial pyre? Not all of the burials were sexed, but all were adults (Geber, this volume), so any differences in the selection of fuelwood is unlikely to relate to age. It has been suggested that busta are associated with status and/or military position, and the potential use of coffins in cremations may be associated with this.

In conclusion, the Roman cremation burials are significant in the utilisation of elm in the pyres, which is very rare, in British burials of this date. It is suggested that the elm was used as a platform for the body on the pyre or possibly a coffin, rather than intentional fuelwood, and that the poor burning properties of elm contributed to the incomplete burning of all three bodies.

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	Phase	Middle Iron Age		Late Iron Age/Early Roman	Early Roman				Mid-Late Roman	
	Feature type	Pit	Pit	Cremation	'Bustum' burial				Cremation	
	Feature number		2918	1156	1095				1488	1491
	Context number	1130	2921	1157	1097	1104	1104	1574	1489	1493
	Sample number	151	206	152	155	157	165	166	162	163
	% flot identified	50	50	25	25	25	3.13	50	25	25
Ulmus sp.	elm				47	71	39	4	68	3
Quercus sp.	oak	9s	6		12h		7	18h	49	97rs
Alnus glutinosa Gaertn.	alder		52		1					
Alnus/Corylus	alder/hazel		9							
Populus/Salix	poplar/willow									6
Prunus spinosa L.	blackthorn			1	23	1	59	18		
Prunus sp.	cherry type		3							
Maloideae	pear, apple, hawthorn etc	95	12	106r	16	4r	18r	68r		
Ilex aquifolium L.	holly					2				
Acer campestre L.	field maple			4						
Fraxinus excelsior L.	ash	21	7	1	10	15	14	4		
Indeterminate		2	8	5	3	2	3	2	3	4
Total		**127**	**97**	**117**	**112**	**95**	**140**	**114**	**120**	**110**

*Table *: Results of the charcoal analysis (r=roundwood; s=sapwood; h=heartwood)*