Southampton French Quarter 1382
Specialist Report Download E5: Charcoal

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Introduction

The excavations at Southampton French Quarter produced a large number of samples, of which 166 were assessed (Challinor, OA Assessment Report). Wood charcoal was abundantly and well preserved from a range of features dating from the Late Saxon to the Post Medieval periods. The assessment also indicated that many of the samples contained a wide diversity of tree taxon, which would be time-consuming to identify in full. Consequently, time constraints determined that only 10 samples were fully analysed; the results of which are presented in this report. The samples were focussed on four phases of the site; the Late Saxon, Anglo-Norman, High and Late Medieval. The Post-Medieval samples were not analysed, although a few comments are made on the basis of the assessment results. The aims of the charcoal analysis were to provide evidence for:

- the use of woodland resources and managed woodland
- the type and character of fuelwood used
- the presence of any exotic woods
- any temporal differences over the periods represented
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Although the dataset was limited, there are few publications on medieval charcoal from Southampton and this site offered the opportunity to examine the use of fuelwood in an urban context.

Methodology

Charcoal which was >2mm in size was considered for identification. Large assemblages were divided using a riffle box, so that an optimum number of *c.*100 fragments were identified from each sample (the percentage of the flot identified is given in the table). 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 in longitudinal sections 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. The maturity of the wood was noted where possible. The preservation was generally excellent although some samples, particularly those in the Late Saxon period, were covered in oyster fibres, obscuring the anatomy.

Notes on identifications

The results by fragment count are given in Tables 1. Classification and nomenclature follow Stace (1997). A wide range of nineteen taxa were positively identified. The taxonomic level of identification varies according to the anatomical similarity between genera. Most of those given to species level are based upon the likely provenance and period, i.e. Where a genus is represented by a single species.

PINACEAE. *Pinus* sp., pine.
ULMACEAE: *Ulmus* sp., elm
JUGLANDACEAE: *Juglans regia* L., walnut
FAGACEAE: *Fagus sylvatica* L., beech; *Quercus* sp., oak

BETULACEAE: *Betula* sp., birch; *Alnus glutinosa* Gaertn., alder; *Corylus avellana* L., hazel. The last two genera have very similar anatomical structures and can be difficult to separate, hence the category *Alnus/Corylus*. Since both species were positively identified, this category may represent either or both taxa.

SALICAEAE: *Salix* sp., willow; *Populus* sp., poplar; rarely possible to separate on anatomy.

ROSACEAE: Amygdaloideae, subfamily including *P. spinosa* L., blackthorn, *P. avium* L., wild cherry, *P. padus* L, bird cherry and *P. domestica*, plum. One fragment was confirmed as *P. spinosa* on the basis of wide ray widths; the others appeared to have the smaller rays consistent with *P. avium*, but it was not possible to confirm the identification.

Maloideae, subfamily including *Pyrus* sp., pear; *Malus* sp,. apple; *Sorbus* sp., rowan/service/whitebeam and *Crataegus* sp.(hawthorn); all are anatomically similar.

FABACEAE: *Cytisus scorparius* L., broom, *Ulex* sp., gorse; these taxa are not easily separated by anatomical characteristics.

AQUIFOLIACEAE: *Ilex aquifolium* L., holly.

RHAMNACEAE: *Rhamnus cathartica* L., purging buckthorn.

ACERACEAE: *Acer campestre* L., field maple

OLEACEAE: *Fraxinus excelsior* L., ash.

Indeterminate fragments were not identified 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.

Late Saxon (900-1066)

Three samples from pits dating to the Late Saxon period were examined. Context 5220 was dominated by oak (*Quercus* sp.), with two small (<20mm diameter) stems; one a 7 year old hazel (*Corylus avellana)* stem and the other a 3 year old broom/gorse (*Cytisus/Ulex)* stem. This differs from the other two pits (210 and 287) which produced more mixed assemblages, including hazel (*Corylus avellana*), alder *(Alnus glutinosa*), blackthorn (*Prunus spinosa*), purging buckthorn (*Rhamnus cathartica*), alder buckthorn (*Frangula alnus*), hawthorn group (Maloideae), field maple (*Acer campestre*) and ash (*Fraxinus excelsior*). A single fragment of pine (*Pinus* sp.) was identified from context 491 in pit 210. The provenance of the pine is interesting since it is thought that the native Scot's pine (*Pinus sylvestris*) had died out from England and Wales by this period (Rackham 2006), in which case the wood must have been imported. Despite the fragmentary nature of the archaeology for late Saxon Southampton, the town was a functioning port at this time (PX assessment report) and the pine wood may have come from an imported artefact.

Anglo-Norman (1066-1250)

The samples dating to this period from pits 7572, 6528, 3453, were mostly dominated by oak (*Quercus* sp.), although a range of other species was present including beech *(Fagus sylvatica*), birch (*Betula* sp.), alder (*Alnus glutinosa*), cherry type (*Prunus* sp.), hawthorn group (Maloideae), holly (*Ilex aquifolium*), field maple (*Acer campestre*) and ash (*Fraxinus excelsior*). The samples contained mixed mature and young roundwood; for instance most of the alder, in all three samples, was from narrow roundwood, including one *c.*3 years old when cut. Context 3456 was notable for the massive quantity of charcoal in the sample and the large sizes of the pieces (more than 40mm in diameter). The oak was dominated by mature heartwood, including many large fragments with more than 60 years growth. The wood was obtained from slow-grown trees, which might suggest that the tree was under some stress, such as competition from dense woodland. The use of such valuable wood suggests there may have been a specific function for the fire; at least it indicates that a mature timber tree had been burned. This is different from the other samples, which produced a mix of roundwood, sapwood and heartwood oak fragments. Where possible to count, it appeared that the oak roundwood was 7-20 years old. This is consistent with the use of coppiced oak supplies.

Pit 7572 contained cess material and the charcoal was covered in fine oyster fibres. It has been posited that charcoal from mid Saxon cess pits in Southampton was deliberately dumped into the pit to absorb the odours of the sewage (Gale 2005). Certainly there was a significant quantity – of largish-sized charcoal in pit 7572 which would be suitable for this purpose.

The remains of two burnt timbers were examined in the assessment from tenement 237. Context 4308 appeared to be oak, and context 4309 appeared to be ash. Most of the other assessment samples produced assemblages of mixed species, but a few were predominantly oak.

High Medieval (1250-1350)

Two samples from hearth 5194 in tenement 176 and pit 3115 in tenement 237 were analysed. Oak (*Quercus* sp.) is common, but beech *(Fagus sylvatica*) is also well represented, along with other species including birch (*Betula* sp.), alder (*Alnus glutinosa*), cherry type (*Prunus* sp.), hawthorn group (Maloideae), purging buckthorn (*Rhamnus cathartica*), ivy (*Hedera helix)* and ash (*Fraxinus excelsior*). The ivy probably entered the assemblage accidentally, attached to the firewood. The majority of the oak and beech fragments came from largewood, but the other species were frequently from small diameter roundwood. The assessment also revealed that most of the samples dated to this phase contained roundwood fragments. Oak was present in almost all samples, predominantly in some, with a reasonably high component of beech.

Late Medieval (1350-1570)

Oven 4163 from tenement 237 and pit 5003 from tenement 178 produced similar assemblages with probable elm (*Ulmus* sp.) oak (*Quercus* sp.), beech *(Fagus sylvatica*), birch (*Betula* sp.), alder (*Alnus glutinosa*), poplar/willow (*Populus/Salix*), holly (*Ilex aquifolium*), alder buckthorn (*Frangula alnus*), field maple (*Acer campestre*) and ash (*Fraxinus excelsior*). Both samples also contained taxa not noted in the earlier assemblages, of which the most interesting are walnut (*Juglans regia*) and wild privet (*Ligustrum vulgare*). Walnut is the only confirmed identification of a non-native taxon in the charcoals from Southampton French Quarter. It is generally thought to have been introduced to Britain by the Romans, and was probably planted as a garden tree for harvesting for nuts, since there is little evidence for it from wood or charcoal prior to the medieval period (Gale & Cutler 2000). The walnut charcoal was recovered from an oven in tenement 237, which at this time was Polymond's Hall. By the late 14th century John Polymond was thought to have maintained a garden in part of tenement 238, (OA Assessment report) and it is plausible that the walnut derived from a tree in his garden. The privet came from a pit filled with rubbish in tenement 178 and could have derived from several sources, but it is worth noting that privet was traditionally popular for ornamental hedging and is not often used as fuel (Gale & Cutler 2000).

Post-Medieval

No samples were analysed for this period, but the assessment of charcoal from Post-Medieval features revealed the presence of a similar range of species to the earlier periods, most frequent of which were oak (*Quercus* sp.) and beech (*Fagus sylvatica*). Other taxa provisionally identified included birch (*Betula* sp.), alder/hazel (*Alnus glutinosa/Corylus avellana*), poplar/willow (*Populus/Salix*), hawthorn group (Maloideae) and ash (*Fraxinus excelsior*). The presence of exotics was not possible but not confirmed at the assessment level. A number of the fragments came from small diameter roundwood. The samples appeared to contain mixed assemblages of species, which is consistent with the earlier fuelwood collections. However, further analysis would no doubt have extended the species list and may have revealed exotic species.

Discussion

Although some structural or artefactual remains may be represented in the samples from Southampton French Quarter, the provenance of most of the charcoal is likely to be from firewood. It is not surprising, therefore, that most of the species identified were native to Britain. Timber may have been imported, for construction or industrial uses, but firewood for domestic use was generally gathered from local resources. The charcoal from Southampton French Quarter indicates that a wide range of species were utilised for fuelwood, with a high oak content. A range of habitats are represented; wetland is indicated by alder and alder buckthorn; heathland by gorse/broom; scrub by purging buckthorn, blackthorn and hawthorn-group. Birch is a pioneer tree, which grows in open woodland or heaths. This suggests that the inhabitants of Southampton were drawing firewood from a broad region and exploiting different habitat types. This appears to be fairly consistent throughout the phases represented (Figure 1), although there are some interesting differences. For instance, there is an apparent rise in the use of beech wood in the later phases, and hazel is not recorded after the Late Saxon period.

Woodland management

Although it is difficult to verify from fragemented charcoal residues, the narrow diameter stems and growth ring patterning observed in some pieces are appropriate for coppiced stems. By the Norman Conquest, all the woodlands were in known ownership (Rackham 2006); one of the reasons that William I's decision to create royal Forests, thereby taking any timber rights under his control, was not popular. Within woodlands the trees were carefully managed to provide firewood, along with timber requirements for construction and fencing. Commonly the underwood trees were those coppiced or pollarded on a regular cycle to supply fuel and fencing, whilst a scatter of large timber trees, usually oak, were allowed to grow to a larger size for construction. It is suggested that there was little selection in the composition of the underwood species (and by association the type of firewood) , although there may have been discrimination in the choice of wood for making charcoal (Rackham 1996).

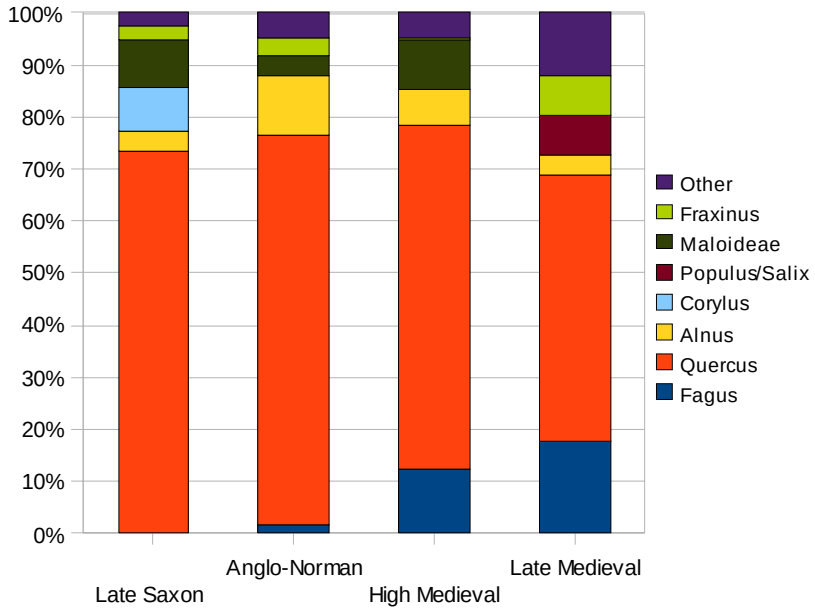

Figure 1: Composition of charcoal taxa by phase (% based upon fragment count)

Fuel sources

Evidence for woodlands from the Domesday book suggest that this region was not heavily wooded in 1086 (Rackham 1997). One of the sources for firewood for Southampton would have been the New Forest, which was created into a royal Forest by William I, with some concessions for fuelwood supplies granted to locals. The New Forest at this time was not entirely woodland, but what is termed wood pasture; a system of land management that uses the same area for trees and grazing animals. Wood pasture is characterised by areas of scrub, grassland and scattered trees within the wider area of more dense woodland (Fay & Robinson 2002). This type of environment is consistent with the fuelwood evidence from Southampton French Quarter where a variety of habitat types are represented.

Interestingly, the charcoal record also reflects changes that occurred in the New Forest over the medieval period. Hazel declined and was replaced by oak, which was succeeded more gradually by beech. It is thought that these changes, which are also apparent at other Forests, were brought about over time, by the practices of woodland management (Rackham 1996).

Conclusion

A wide range of taxa was identified from the charcoal from Southampton French Quarter, including pine (*Pinus* sp.) probable elm (*Ulmus* sp.), walnut (*Juglans regia*), oak (*Quercus* sp.), beech *(Fagus sylvatica*), birch (*Betula* sp.), alder (*Alnus glutinosa*), hazel (*Corylus avellana*) poplar/willow (*Populus/Salix*), blackthorn (*Prunus spinosa*), cherry type (*Prunus* sp.), hawthorn group (Maloideae), broom/gorse (*Cytisus/Ulex),* holly (*Ilex aquifolium*), purging buckthorn (*Rhamnus cathartica*), alder buckthorn (*Frangula alnus*), field maple (*Acer campestre*), ivy (*Hedera helix*) and ash (*Fraxinus excelsior*). With the exception of two taxa, the wood was sourced from native species,. The utilisation of wood for fuel is fairly consistent across all phases represented, but there are two notable differences. Hazel disappears from the charcoal record after the Late Saxon phase, and there is increasing use of beech through the Anglo-Norman to Late Medieval periods. Oak (*Quercus* sp.) remains dominant in all phases. The general picture from the charcoal evidence is consistent with the usual firewood collected from managed woodlands in the medieval period – a range of underwood species and branches of timber trees. Some interesting similarities between the charcoal record and the New Forest suggest this was a likely source for the fuel supplies for the town.

The two non-native identifications were pine (*Pinus* sp.) and walnut (*Juglans regia*). The pine came from a Late Saxon sample, and whilst it might have been the native pine (*P.* sylvestris), it must have been imported since the native pine would not have grown in this area at this time. The walnut tree was introduced to Britain by the Romans but did not become naturalised (as, for instance, sweet chestnut did) so would not have grown in the local woodland. It is suggested that the walnut wood might have derived from a tree grown in the garden of Polymond's Hall.

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Appendix 1 Charcoal Table

	Phase	Late Saxon			Anglo-Norman			High Medieval		Late Medieval	
	Feature type	Pit	Pit	Pit	Cess pit	Pit	Pit	Hearth	Pit	Oven	Pit
	Tenement	176	173	172	167	170	237	176	237	237	178
	Feature number	5192	210	287	7572	6528	3453	5194	3115	4163	5003
	Context number	5220	491	289	7573	6527	3456	5227	4438	4163	5009
	Sample number	89	9	2	172	152	122	82	141	130	78
	Volume/Weight floated	40	40	40	40	10	20	20	20	5	40
	% flot identified	12.5	25	25	25	12.5	1.56	12.5	12.5	6.25	6.25
Pinus sp.	pine		1								
cf. Ulmus sp.	elm										1
Juglans regia	walnut									10rh	
Fagus sylvatica	beech				5			10r	16r	17	21r
Quercus sp.	oak	108rhs	53rhs	59rs	79rhs	80rhs	78h	81rhs	58rhs	56rhs	53rhs
Betula sp.	birch				3			2		10r	
Alnus glutinosa	alder			7r	3r	9r	24r	10r	4r	3	5
Corylus avellana	hazel	1r	17r	4r							
Alnus/Corylus	alder/hazel			7r							
Populus/Salix	poplar/willow									11r	5r
Prunus spinosa	blackthorn			1r							
Prunus sp.	cherry type			1	6				4r		
Maloideae	hawthorn, pear, apple		9r	18r	6r	4r	2r	10r	10r		
Cytisus/Ulex	broom/gorse	1r					1r				
Ilex aquifolium	holly				1	3r					1
Rhamnus cathartica	purging buckthorn			1r					1r		
Frangula alnus	alder buckthorn		1r								1r
Acer campestre	field maple			1	1						1r
Hedera helix	ivy							2			
Fraxinus excelsior	ash		6	3		11r			1	6rhs	10h
Ligustrum vulgare	wild privet										2
Bark			1						1	1	2
Indeterminate			3	4	4		1	2	2	1	2
Total		110	91	106	108	107	106	117	97	115	104