

# Roman botanical remains

Site code: ONE94

**Undated**

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			S1		S24		OA37							
			OA6		OA32		OA40x 3							
			OA11x 3		OA33		OA45x 4							
					OA41		OA47							
					OA43x 3		OA55							
					OA44		OA75x 3							
					OA45									
<b>Total samples</b>	<b>1</b>	<b>11</b>	<b>15</b>	<b>7</b>	<b>20</b>	<b>2</b>	<b>28</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>5</b>

Flots were scanned using a low-powered binocular microscope, and the estimated abundance of identified waterlogged and mineralised plant remains recorded using the following scale: + 1-10, ++ 11-50, +++ 51-approx. 250, ++++ over 250 (many hundreds). Charred remains were extracted from the flots and fully quantified after identification, apart from material such as fragmented cereal grains, hazelnut shells, or plant stems, which could not be accurately counted and were given approximate abundance ratings as for waterlogged material. A few large charred assemblages were sub-sampled to produce more manageable numbers for identification, and the fraction studied in detail is indicated on the relevant tables. Two samples, {964} (period 2 phase 1, Open Area 4) and {811} (period 2 phase 3, Open Area 22) which had not originally been assessed, had small sub-samples scanned very briefly when found to contain important assemblages after the practical work had been completed.

Identifications were made with the help of a modern plant reference collection and reference manuals including Beijerinck (1947), Berggren (1981), and Anderberg (1994). Nomenclature follows Stace (1991). Identifications and abundance were recorded on the MoLAS Oracle botany database, and this was used to produce lists of taxa and their abundance for each sample. These are shown in tables 2-9 (ONE94\_botreptab02-09.xls), ordered by period and landuse, and table 10 (ONE94\_botreptab10.xls) summarises the taxa recovered from each period of the site.

A number of samples were scanned and recorded by John Giorgi and Lisa Gray, but the majority are the responsibility of the author. Dr. Ann Butler from the Institute of Archaeology was very helpful in the identification of leguminous pods, and Dr. M. Kislev confirmed the identification of pomegranate in one of the samples.

Analysis of the waterlogged assemblages included grouping the taxa found in each assemblage according to habitat preference and potential use, using information from Clapham et al (1987), Stace 1991), Hanf (1983) and Ellenberg (1988). The relative size and composition of these habitat groups in individual samples, and within landuses and periods, were then used to help identify activities taking place on site, and search for any spatial differences or chronological changes. Analysis of the charred assemblages included calculation of percentages of each cereal, and of grain, chaff and weed seeds for each sample with more than 50 items. The

environmental preferences and soil requirements of charred weed seeds were also investigated.

General information about the plant remains recovered is provided below, while plant assemblages from each sample, and their most likely interpretations, can be seen in the chronological part of the text (chapters 3 to 8). Fuller discussions of the more important material and its implications are in the thematic sections (chapters 9 to 13). The term 'seed' is used for convenience throughout the text, and covers a variety of plant propagules including nutlets, achenes and fruits.

### **1.1.3 Results**

#### *1.1.3.1 Preservation*

Anaerobic conditions in many deposits, particularly those from the eastern side of the site, closest to the Walbrook stream, resulted in excellent "waterlogged" preservation of plant remains in many of the samples. The majority of identifiable material consisted of fruits and seeds, but plant stems, leaves, wood and other tissue also survived in many samples. Differential preservation was seen in some samples, with mainly robust, woody seeds such as elder and blackberry surviving, as a result of the deposit drying out at some time. Very few of the plant remains from this period were preserved by mineralisation. Charred remains were also widespread and, apart from the ubiquitous charcoal fragments, consisted mainly of cereal grains which were present in most samples, though often in small numbers. Several larger assemblages of charred cereal remains, and also of other food plants, were also found however.

#### *1.1.3.2 Charred plant remains*

Charred grains of wheat (*Triticum* sp.) and barley (*Hordeum vulgare*) were widespread in the samples, usually in low numbers, although several larger assemblages were also recorded. Oats (*Avena* sp.) were much less common and only three grains of rye (*Secale cereale*) were identified from the site. Several samples contained significant amounts of small grain fragments, which could not be identified or counted, but were given an approximate abundance value as for the waterlogged plant remains. Cereal chaff, mainly in the form of wheat glume bases and spikelet bases, was also common and occasionally abundant. Wheat was slightly more common than barley overall, although assemblages with large numbers of each of these cereals were found. The composition of the larger assemblages of charred plant remains from all periods can be seen in table 11 (ONE94\_botreptab11.xls).

Identification of individual wheat species by grain morphology is difficult as there is much natural diversity and overlap within and between each taxon and in addition, the heating which results in charring tends to distort many of the grains. Wheat chaff can be identified with much greater accuracy however, and this confirmed the presence of all the species identified from the grains. The majority of wheat grains in all samples were characteristic of spelt (*Triticum spelta*), which has a relatively flat and elongated shape and no dorsal ridge. Spelt spikelet forks and glume bases also dominated the chaff from all samples. Much less common were rather narrower grains with a pronounced dorsal ridge, highest just behind the embryo, and a flat ventral surface, which were identified as emmer (*T. dicoccum*). Occasional spikelet forks and glume bases of emmer were also present. More rounded grains with very

blunt ends and a slight dorsal ridge were present in a few samples, and identified as free-threshing wheat, probably bread wheat (*T. aestivum* s.l.), and a number of rachis nodes in sample {977} (period 4 phase 1, Open Area 75) confirmed the presence of this species. Bread wheat is a regular component of Roman grain deposits, but is usually, as in this case, only a minor constituent.

In some samples up to 50% of the wheat grains had begun to germinate before burning, and sprouts of varying length were seen, as well as loose coleoptiles. This is commonly found in charred assemblages from Roman London, and may suggest that storage methods were not appropriate to the damp climate.

Grains of hulled barley were found in almost all samples, but were less numerous over all than wheat. Twisted grains were common in all the larger assemblages, indicating that six-row barley was present, although the condition of the grains was not good enough to calculate ratios. Rachis nodes of barley were also found in a number of samples. Oat grains were very much less common than wheat or barley, and although no identifiable florets were found, which could have identified the species found, it is likely that the grains occurred here as weeds of the main wheat or barley crops. Only three grains of rye were identified from the site.

Charred weed seeds were very abundant in some of the charred assemblages. Many were typical weeds of arable fields, such as corn cockle (*Agrostemma githago*), vetch/tare (*Vicia/Lathyrus* spp.), corn gromwell, and brome grasses (*Bromus* spp.). Spike-rush (*Eleocharis palustris/uniglumis*) and sedge (*Carex* spp.) seeds are also common components of charred cereal assemblages probably growing on damp areas of the fields or in surrounding ditches. Several samples contained few cereal remains but very many seeds of wild plants, including grassland taxa such as yellow rattle (*Rhinanthus* sp.), ribwort (*Plantago lanceolata*), self-heal (*Prunella vulgaris*), lesser knapweed (*Centaurea* cf. *nigra*) and wild grasses (Poaceae). These are thought to represent dried grasses and other plant material used as fuel.

While cereals made up the majority of the economic plants preserved by charring, several samples contained significant quantities of other foodstuffs. Charred remains of spices were found in a few samples, notably in [9094], where a large of cache of spice seeds was found consisting mainly of mustard (*Sinapis alba*) and dill (*Anethum graveolens*) with smaller quantities of fennel (*Foeniculum vulgare*), coriander (*Coriandrum sativum*) and black cumin (*Nigella sativa*). Three samples contained substantial numbers of charred lentils (*Lens culinaris*), and occasional examples of this were recovered from a number of other samples. Charred peas (*Pisum sativum*) were identified from two samples, and a few *Prunus* stones and seeds of fig (*Ficus carica*) and wild strawberry (*Fragaria vesca*) were found.

#### 1.1.3.3 waterlogged remains

The assemblages were often very large, and included elements from the local vegetation, and probably seeds which had arrived from outside the site by natural methods of dispersal. In addition, remnants of many human activities such as food preparation, crop processing and storage, animal husbandry and waste disposal were common. Apart from the more readily identifiable fruits and seeds, leguminous pods were found in many of the more organic samples. Some of these were identified by Dr. Ann Butler as common vetch (*Vicia* cf. *sativa*), which may have been cultivated as a fodder crop. Cereal bran was present in many samples, and often

very abundant. Where this was identified, the majority had the characteristic criss-cross pattern of wheat/rye (*Triticum/Secale* sp.) (Dickson 1987.), with only occasional tentative identifications of barley (*Hordeum vulgare*). Also very common were fragments, and sometimes whole caryopses, of brome grass (*Bromus* sp.), a very common weed of cereal crops. Waterlogged glume bases and spikelet forks of wheat (*Triticum* sp.) were also found in many of the samples, identifiable in some cases to spelt (*Triticum spelta*) and occasionally emmer (*T. dicoccum*). Other, less commonly encountered plant parts survived because of the often excellent preservation conditions, however insufficient time was available to pursue identification of most of these. Plant stem fragments were very common and abundant in many samples, mostly from monocotyledonous plants and likely to be from wild or cultivated grasses (straw and hay) and possibly rushes, reeds etc. Bracken leaves and stems were found in some samples, possibly from use as animal bedding or fodder. Flowering structures in one or two samples were tentatively identified as clover (*Trifolium* sp.) and (*Centaurea* sp.), and seed capsules of rushes (*Juncus* sp.) were also found.

The plant assemblages included taxa from a variety of habitats, and many which can be found in several different environments. The majority of plants however can be allocated to one or more of the following broad habitat groupings. A number of the species identified, including corn cockle (*Agrostemma githago*), wild radish (*Raphanus raphanistrum*), corn salad (*Valerianella dentata*) and stinking mayweed (*Anthemis cotula*) are found mainly as weeds of arable fields, many associated particularly with cereal crops. They may have become incorporated in deposits as waste from crop-processing, inclusions in cereals used as fodder, or remnants of cereal straw used for thatch, animal bedding etc. The most common, and often the most abundant, remains were from ruderals: plants which grow on waste-ground and other disturbed habitats, often including cultivated land. Some of these, such as stinging nettle (*Urtica dioica*), greater celandine (*Chelidonium majus*), hemlock (*Conium maculatum*) and black nightshade (*Solanum nigrum*) are characteristic of the nitrogen-rich soils found where rotting organic matter is present, often around human habitation. The majority of ruderals may be found in a wide range of situations however, and there is a large overlap in habitat with arable weeds.

Remains from plants of woods, hedges and scrub tended to form only a small part of the assemblages here, and most were probably present on the site because of their exploitation for food, such as blackberry/raspberry (*Rubus fruticosus/idaeus*), sloe (*Prunus spinosa*) and hazel (*Corylus avellana*), or fuel, represented by unidentified wood, thorns and buds. Box (*Buxus sempervirens*) and holly (*Ilex aquifolium*), whose leaves were each recovered from only one sample, may have been grown as decorative plants or hedging in gardens or along roadsides. Elder (*Sambucus nigra*), alder (*Alnus glutinosa*), hawthorn (*Crataegus monogyna*), and rose (*Rosa* sp.) are relatively small trees and shrubs, whose remains may well have come from trees and shrubs growing on the banks of the Walbrook or on patches of waste land, as indeed may holly, although only the first of these was at all well-represented in the samples. Two climbing plants, bryony (*Bryonia dioica*) and hop (*Humulus lupulus*), the first of which appeared occasionally throughout most of the sequence, are also characteristic of hedgerows, scrub and woods.

Seeds from grassy and other open habitats were present in most samples and very common in some. Many, including yellow rattle (*Rhinanthus* cf. *minor*), purging flax (*Linum catharticum*), ribwort (*Plantago lanceolata*) and lesser knapweed (*Centaurea*

cf. *nigra*) were meadow and pasture species which may be interpreted as remains of hay (Greig 1984) or perhaps pasture, eaten by livestock and deposited here in dung. It is also possible however that many of these species, and particularly the more ubiquitous taxa in this category, such as buttercups (*Ranunculus acris/bulbosus/repens*), lesser stitchwort (*Stellaria graminea*) and wild grasses (Poaceae) may have found suitable habitats in open areas of the site itself. A few plants in this group are also found on rough grassland and heaths.

Remains of several fully aquatic plants were found, but much more common were taxa found in shallow water or mud at the edge of streams, and in ditches and ponds. These included water dropwort (*Oenanthe fistulosa*), spike-rush (*Eleocharis palustris/uniglumis*), marsh marigold (*Caltha palustris*) and celery-leaved crowfoot (*Ranunculus sceleratus*). These, as well as the very common remains of sedges (*Carex* spp.), may reflect the local environment in the Walbrook valley, but could also represent cut vegetation used as flooring or thatch.

Wild and cultivated food plants were common in many of the samples, including several Roman introductions such as walnut (*Juglans regia*) and mulberry (*Morus nigra*), and exotic foods such as olives (*Olea europaea*), stone pine (*Pinus pinea*), almond (*Prunus dulcis*) and pomegranate (*Punica granatum*) imported from Southern Europe. These are discussed in detail in chapter 13.2 .

No convincing botanical evidence was found for plant-based crafts or industries. Seeds of weld (*Reseda luteola*), a wild plant sometimes used for yellow dye, are probably derived from plants growing as weeds, while occasional seeds of the fibre plants hemp (*Cannabis sativa*) and flax (*Linum usitatissimum*) are as likely to have been used as food or oil sources as to indicate textile-based industries on or near the site.

### **Additions to Bibliography**

Anderberg, A-L, 1994 *Atlas of seeds and small fruits of Northwest-European plant species. Part 4 Resedaceae-Umbelliferae*, Swedish Museum of Natural History, Stockholm.

Beijerinck, W, 1947 *Zadenatlas der Nederlandsche Flora I-II* Veenman and Zonen, Wageningen.

Berggren, G, 1981 *Atlas of seeds and small fruits of north-west European plant species, part 3 Salicaceae -Cruciferae*, Stockholm.

Dickson, C, 1987 The identification of cereals from ancient bran fragments  
*Circaea* 4, 95-102