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**Oxford Wessex Archaeology Joint Venture**

# The charred plant remains from Bower Road, Smeeth, Kent (ARC 440/99)

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## 1 INTRODUCTION

Fifty-five environmental samples were taken during the excavations at Bower Road (ARC 440/ 95+900 - 97+100 /99) of which twenty-four were processed and assessed. Preservation within some of these samples was very good and cereal remains were highly abundant within five samples. A further sample from pit 242 was noted to contain mineralised remains. These six samples were analysed in full. All were Roman in date, the earliest coming from pit 886, dated to the 1st century - mid 2nd century AD, the latest from pit 242 dated to the later part of the fourth century AD. The remaining three samples were all dated to the 2nd and 3rd centuries AD.

## 2 METHODS

The samples were processed by flotation in a modified Siraf-type machine, with the flots collected onto a 250µm mesh. The residues were fractionated into 10, 4, 2 and 0.5 mm mesh sizes. The flot was dried and the residue sorted by eye, while a low-powered binocular microscope was used for sorting the flot. Plant macrofossils were then extracted, identified and quantified. The plant taxa identified from each sample are shown in Table 1 following the nomenclature of Stace 1997 (Table 00). Table 1 can be found at the end of the report.

In several cases samples were extremely rich in hulled wheat glumes, fragments of cereals and large grass seeds, mainly of oats and brome grass. In these cases, some of the smaller sieved fractions (< 2ml) were sub-sampled to produce estimated counts. The size of the sub-sample was in most case one-tenth the original size of the sieved fraction. The estimates were then calculated by multiplying the count by 10. The sample from pit 891 was exceptionally rich and in this case the counts from the 2mm was estimated from one quarter of the original fraction size while the counts from the 1mm and 500µm fractions were estimated from a twentieth of the original fraction.

## 3 RESULTS

All the analysed carbonised samples contained more than 1000 charred items and in the case of pit 886 more than 30,000 items. By far the most common remains came from spelt wheat (*Triticum spelta*), in particular glume bases and spikelet forks, which made up the vast number of identified remains. While emmer glumes (*Triticum dicoccum*) were identified they formed a very minor component especially when compared to the sheer numbers of spelt glumes recorded. A small number of grains of possible short-grained spelt or free-threshing wheat were also noted. Other remains of free-threshing wheats (*Triticum aestivum sl*) were

more positively identified including rachis fragments and remains of lemmas. Barley grains (*Hordeum vulgare sl*), mainly of the hulled variety, were also present in the samples although they formed only 3% or less of the total number of grains. Barley rachis fragments were only recorded from one sample (pit 123, context 125). Many seeds of oats (*Avena* sp.) present. Several floret bases were recovered, but none could be identified as of the cultivated variety.

Seeds of wild species were common in the samples and while in similar numbers to grains they were less numerous than glumes. The most common species seeds represented were dock (*Rumex* sp.), oats (*Avena* sp.) and brome grass (*Bromus* sp.). Large numbers of grass floret bases were recovered from four of the samples, but they were absent from the earliest sample, pit 886. These resembled oats *Avena* sp., but it could not be established whether they were of the cultivated (*Avena sativa*) or wild variety (*Avena fatua*). However, when studied alongside reference material the floret bases were identified as belonging to brome grass (*Bromus* sp.). This identification is supported by the absence of positive identifications of brome grass (*Bromus* sp.), from pit 886 from which such floret bases were absent.

Other species whose seeds were relatively common within the samples were vetch/tare/wild pea (*Vicia*/*Lathyrus* sp.), stinking-mayweed (*Anthemis cotula*), scentless mayweed (*Tripleurospermum inodorum*), annual meadow grass /cat's tails' (*Poa* sp. /*Phleum* sp.), and perennial rye grass (*Lolium* cf. *perenne*).

## 4 DISCUSSION

### 4.1 The charred plant remains

Several points of interest arise from the examination of the samples. The first is that the high amounts of glume waste in the samples. For hulled wheats, such as emmer and spelt, pairs of grains remain tightly enclosed in what are termed spikelets. To release the grains they must first be pounded, then the glumes removed through further sieving and winnowing. In wet climates these operations are likely to have been carried out after the crops are taken from storage (Hillman 1981, 1984). Such waste is often referred to as the waste from fine-sieving (van der Veen 1992). Fine-sieving has also been characterised by high numbers of small weeds (Jones, G. 1987). However, relatively few small weeds were present in the samples compared to those of larger weeds especially grasses. This predominance of larger weed seeds might suggest that rather the samples result from the waste charred from the pounding and processing of semi-clean spikelets that had already been fine-sieved of many weed seeds perhaps prior to storage.

Several species present in the samples are characteristic of specific soil conditions. Associated with lighter, often acid and/or dry soils were corn marigold (*Chrysanthemum segetum*), sheep's sorrel (*Rumex acetosella*), scentless mayweed (*Tripleurospermum inodorum*) and runch (*Raphanus raphanistrum*). Accompanying the seed of (*Chrysanthemum segetum*), in pit 886, were several seeds of various species that were only present in this one sample. Many of these varied from each other in their ecological preferences, for example, narrow-fruited corn-salad (*Valerianella dentata*) is common on drier calcareous soils, while spikerush (*Eleocharis palustris*), whose seeds were present within the same sample, is associated with wetter, possibly even flooded soils.

The range of ecological conditions represented within the samples in general might suggest that the crops reaching Bower Road came from a number of widely situated fields, located within varying hydrological and geological regions. It is however possible that even within a single field such changes in ecology can be found, especially where the field crosses both geological and topographical boundaries.

Of the species recovered, one of the more significant in terms of soil conditions is stinking mayweed *Anthemis cotula*. The species received some considerable attention from Martin Jones with respect to its increased presence through time (Jones 1981, 1989). The species is characteristic of heavier clay soils and through the difficulty of working such soils Jones associated it with improved ards and ploughs. However, while Jones has seen it as increasing through time from the Iron Age, others have seen it as a Roman introduction (Godwin 1984).

Whether the species is native or not, it only becomes frequent in charred and waterlogged samples from the Roman period, and only abundant from the medieval period (Greig 1991). With respect to charred assemblages it has been recovered on relatively few Roman sites; e.g. Oxford (Jones 1975, 1979, Pelling 2002), Gloucester (Clarke 1971), Milton Keynes (Jones 1987), York (Hall and Kenward (1990), and Lancaster (Huntley in Buxton *et al*. 2000). In many of these cases finds are from later Roman features, especially corn-driers, although a few are from earlier dated features. In terms of southeast England it is absent from many of the Roman sites in London and Sussex, but present at Little Waltham, Essex (Wilson 1978). It has also been found at a number of waterlogged sites around Oxford (Robinson 1980, 1979) and York (Kenward *et al* 1986, Hall *et al* 1980) where it is notably absent from earlier deposits.

### 4.2 Note on mineralised and waterlogged material from Pit 242

A sample from a single feature of later Roman date was examined predominantly for waterlogged and mineralised material. The feature contained little to no charred material and while spelt chaff and probable grains were identified it is possible such material is residual,

especially given the amount of charred material from earlier periods. More unusually the feature contained seeds and other material in a mineralised state, although some may have been preserved through mineralisation combined with waterlogged and anaerobic conditions. Calcium-phosphate mineralisation is usually indicative of the presence of cess or cess like material. Found with these cereal grains were numerous fragments of straw (Cereal culm nodes and internodes), a few mineralised weed seeds and numerous seeds of bramble (*Rubus* sp.). While the material may be derived from human cess the presence of three whole goat or sheep droppings indicates that the material including the straw is representative of compost, stabling or manure type material.

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*Table 1: The charred plant remains from Bower Road*

| **Period** | | | 180-270 | 180-220 | 150-200 (350) | 150-200 | 80-150 | 370-400AD |
|---|---|---|---|---|---|---|---|---|
| **Feature** | | | Ditch | Ditch | Pit | Pit | Pit | Pit |
| **Cut** | | | 507 | 566 | 123 | 123 | 886 | 242 |
| **Context** | | | 508 | 559 | 124 | 125 | 891 | 250 |
| **Sample** | | | 1 | 4 | 46 | 47 | 67 | 50 |
| **Vol. size (l)** | | | 41 | 40 | 40 | 35 | 40 | 1 |
| **Flot size (ml)** | | | 70 | 45 | 28 | 35 | 800 | n/a |
| **Items per Litre** | | | 49.2439 | 84.475 | 48.425 | 155.2571 | 959.325 | 16 |
| **Latin name** | **common name** | **plant part** | | | | | | |
| **Cereals** | | | | | | | | |
| *Hordeum vulgare* L. *sl* | barley | - | 2 | 6 | - | 10 | est. 22 | - |
| *Hordeum vulgare* L. *sl* | barley | G | - | - | - | 4 | - | - |
| *Hordeum vulgare* L. *sl* | barley | R | - | - | - | 2 | - | - |
| *Triticum* sp. L. | wheat | - | - | - | - | - | - | 1 |
| *Triticum* cf. *dicoccum* (Schübl) | emmer wheat | - | cf.1 | - | cf.4 | 1 | est. 48 | - |
| *Triticum dicoccum* (Schübl) | emmer wheat | GB | cf. 1 | cf.20 | 1 | 2 | est. 24 | - |
| *Triticum dicoccum* (Schübl) | emmer wheat | SF | - | - | 1 | - | est. 60 | - |
| *Triticum spelta* L. | spelt wheat | GB | 447 | 612 | 296 | 2140 | est. 23428 | 2 |
| *Triticum spelta* L. | spelt wheat | SF | 1 | - | 3 | 6 | est. 88 | - |
| *Triticum dicoccum/spelta* | emmer/spelt wheat | - | 123 | 189 | 351 | 244 | est. 3447 | 3 min |
| *Triticum dicoccum/spelta* | emmer/spelt wheat | G | 1 | - | 5 | 10 | - | - |
| *Triticum dicoccum/spelta* | emmer/spelt wheat | TG | 10 | - | 3 | - | est. 24 | - |
| *Triticum dicoccum/spelta* | emmer/spelt wheat | SF | 2 | 33 | 2 | 5 | est. 88 | - |
| *Triticum dicoccum/spelta* | emmer/spelt wheat | GB | est. 640 | est. 1950 | 52 | est. 1990 | est. 8000 | 1 |
| *Triticum dicoccum/spelta* | emmer/spelt wheat | R | - | - | - | - | est. 16 | - |
| *T.* cf. short grained *spelt/ aestivum sl* | spelt/bread wheat | - | 2 | 16 | 8 | 5 | est. 38 | - |
| *Triticum* cf. *aestivum* L. *sl* | bread wheat | R | - | 1 | 1 | 1 | est. 4 | - |

| **Period** | | | 180-270 | 180-220 | 150-200 (350) | 150-200 | 80-150 | 370-400AD |
|---|---|---|---|---|---|---|---|---|
| **Feature** | | | Ditch | Ditch | Pit | Pit | Pit | Pit |
| **Cut** | | | 507 | 566 | 123 | 123 | 886 | 242 |
| **Context** | | | 508 | 559 | 124 | 125 | 891 | 250 |
| **Sample** | | | 1 | 4 | 46 | 47 | 67 | 50 |
| Cereal fragments Indet. (est whole grains) | cereal | - | 15 | est.150+ | est. 60 | - | est. 80 | - |
| Cereal | cereal | R | - | - | - | - | - | - |
| Cereal | cereal | RB | - | - | - | - | est. 4 | - |
| Cereal | cereal | CN | 1 | - | - | 1 | - | 1 min |
| Cereal | cereal | IN | - | - | - | - | - | +++ min |
| Cereal | cereal | LBCN | - | 2 | - | - | - | - |
| Species | | | | | | | | |
| *Ranunculus* L. sp. subg *Ranunculus* arb | buttercup | - | 1 | - | - | - | - | 1 min |
| *Corylus avellana* L. | hazel | NS | - | - | 1 | - | est. 12 | - |
| *Papaver somniferum* L. | opium poppy | - | - | - | cf.3 | - | - | - |
| Chenopodiaceae L./Caryophyllaceae L. | goosefoot/campion | - | - | - | - | 3 | - | - |
| *Chenopodium album* L. | fathen | - | - | 1 | 1 | 1 | - | - |
| *Atriplex* sp. L. | oraches | - | - | 1 | 1 | 3 | - | - |
| *Stellaria palustris* Retz/*graminea* L. | marsh stitchwort/lesser stitchwort | - | - | - | - | 1 | - | - |
| *Silene* sp. L. | campions | - | 1 | - | - | 1 | - | - |
| *Polygonum/Persicaria* sp. | knot grasses | - | 1 | - | - | - | - | - |
| *Polygonum aviculare* L. | knot grass | - | - | - | 1 | - | - | - |
| *Fallopia convolvulus* (L.) Á. Löve | black bindweed | - | - | - | - | - | est. 8 | - |
| *Rumex sp.* L. | docks | - | 26 | 15 | 7 | 40 | est. 36 | 1 min |
| *Rumex acetosella* L. | sheeps sorrel | - | 1 | 1 | 1 | 2 | - | - |
| *Rumex* cf. c*rispus* L. | curled dock | - | 105 | 33 | 184 | 240 | est. 450 | - |
| *Malva* sp. L. | mallow | - | - | - | 6 | 6 | cf.1 | - |
| *Malva* sp. seedhead L. | mallow | seed head | - | - | 3 frgs | 1 frg | - | - |
| *Brassica* sp. L. | cabbage | - | - | - | 1 | - | - | - |
| *Raphanus raphanistrum L.* | runch | capsule | - | - | - | 1 | - | - |

| **Period** | | | 180-270 | 180-220 | 150-200 (350) | 150-200 | 80-150 | 370-400AD |
|---|---|---|---|---|---|---|---|---|
| **Feature** | | | Ditch | Ditch | Pit | Pit | Pit | Pit |
| **Cut** | | | 507 | 566 | 123 | 123 | 886 | 242 |
| **Context** | | | 508 | 559 | 124 | 125 | 891 | 250 |
| **Sample** | | | 1 | 4 | 46 | 47 | 67 | 50 |
| *Rubus* sp. L. | brambles | - | - | - | - | - | 1 | 160 w/min |
| *Crataegus monogyna* Jacq. | hawthorn | - | - | - | - | - | 1 | - |
| *Vicia* L./*Lathyrus* sp. L. | vetch/pea | - | 8 | 18 | 3 | 8 | est. 66 | - |
| *Trifolium* sp. L. | clover | - | 1 | 4 | 7 | 2 | est. 20 | - |
| *Aethusa cynapium* L. | fool's parsley | - | - | - | - | cf.1 | - | - |
| *Torilis* sp. Adans. | hedge parsley | - | - | - | 8 | 3 | - | - |
| *Stachys* sp. L. | woundwort | - | - | - | 1 | - | - | - |
| *Mentha* sp. L. | mint | - | - | - | - | 1 | - | - |
| *Plantago lanceolata L.* | ribwort plantain | - | - | 1 | - | 2 | est. 16 | - |
| *Veronica* sp. L. (flat) | speedwell | - | - | 1 | - | - | - | - |
| *Odontities vernus* (Bellardi) Dumort | red bartsia | - | - | 1 | - | 1 | - | - |
| *Galium aparine* L. | cleavers | - | - | - | - | - | est. 20 | - |
| *Sambucus nigra* L. | elder | - | - | - | - | - | - | 1 w/min |
| *Valerianella dentata* (L.) Pollich | narrow fruited corn salad | - | - | - | - | - | est. 4 | - |
| *Carduus* L./*Cirsium* sp. Mill. | thistle | - | 4 | - | 6 | 2 | 2 | - |
| *Centaurea* sp. L. | knapweed | - | - | - | 1 | 1 | est. 68 | - |
| *Lapsana communis* L. | nipplewort | - | - | - | 2 | - | - | - |
| *Tragopogon pratensis* L. | goat's beard | - | - | - | - | cf.1 | - | - |
| *Anthemis cotula L.* | stinking chamomile | - | - | - | 72 | 11 | est. 20 | - |
| *Anthemis cotula* L. | stinking chamomile | seed head | - | - | - | 1 frg | - | - |
| *Chrysanthemum segetum* L. | corn marigold | - | - | - | - | - | 1 | - |
| *Tripleurospermum inodorum* (L.) Sch. Bip. | scentless mayweed | - | 4 | 1 | 161 | 37 | est. 140 | - |
| Cyperaceae indet. | sedges | - | - | - | - | - | 1 | - |
| *Eleocharis cf. palustris* (L.) Roem. & Schult. | common spike-rush | - | - | - | - | - | est. 20 | - |
| *Carex* sp. L. lenticular | sedge | - | - | - | - | - | 1 | - |

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| **Cut** | | | 507 | 566 | 123 | 123 | 886 | 242 |
| **Context** | | | 508 | 559 | 124 | 125 | 891 | 250 |
| **Sample** | | | 1 | 4 | 46 | 47 | 67 | 50 |
| *Lolium* L. sp. | rye grass | - | 1 | - | cf.3 | 4 | est. 56 | - |
| *Poa/Phleum* sp. L. | meadow grass/cats'-tails | - | 4 | 19 | 40 | 16 | est. 20 | cf.1 min |
| *Avena* sp. L. | oat | - | 244 | 68 | 167 | 300 | est. 680 | - |
| *Avena* sp. L. | oat | AW | est. 100 | est. 300 | - | est. 50 | est. 1440 | - |
| *Avena* sp. L. | oat | FBW | - | 1 | - | - | - | - |
| *Avena* sp. L. | oat | SW | 1 | - | - | - | - | - |
| *Avena* L./*Bromus* L. sp. | oat/brome | - | 186 | 32 | est. 440 | est. 140 | est. 368 | - |
| *Avena* L./*Bromus* L. sp. | oat/brome | FBI | 18 | 9 | 17 | 108 | - | - |
| *Bromus* sp. L. | brome | - | 68 | 41 | 76 | 27 | - | - |
| Small indet. | | - | 1 | - | - | - | - | 3 min |
| *Spheroccocum* fungal spore | | | - | 3 | - | - | - | - |
| Goat droppings | | | - | - | - | - | - | 3 min |

**Key**

AW: awn; CN: culm node; FBI: floret base indet.; FBW: floret base wild; G: germinated grain; GB: glume base; IN: culm internode; L/BCN: lower/basal culm internode; NS: nutshell fragment; R: rachis fragment; RB: rachis basal fragment; S: stem; SB: spikelet base; SF: spikelet fork; SW: spikelet wild; TG: tail grain