

# Waterdale 5436

## Botanical Analysis of Cremation Deposits

Jennifer Miller

York Archaeological Trust Dickson Laboratory, August 2012

### 1.0 SUMMARY

Excavations at the area of the New Performance Venue (NPV) identified an early Roman (1<sup>st</sup>-2<sup>nd</sup> century AD) cremation cemetery with residual evidence of later Roman (3<sup>rd</sup>-4<sup>th</sup> century) funerary deposits was also discovered. The carbonised botanical assemblage was particularly significant in some samples and included charcoal undoubtedly relating to pyre fuel but also a variety of votive food offerings to the dead. Expensive and in some circumstances extremely rare (within the Roman UK record) food plants are well represented, with fragments or entire fruits of fig, grape and date found. Other imported and valuable foods included walnut, stone pine and lentils, whilst hazelnut and cereals were also recorded. The number and variety of exotic food types of Mediterranean and Eastern provenance present are strongly indicative of a sophisticated consumer community with strong affiliation to Rome and the military garrison. Some individuals especially are considered to have had significant wealth and status. This assemblage is of particular note as it bears strong resemblance to Roman cremation cemeteries in France, Belgium and Italy, emphasising the maintenance and expression of Roman cultural identity by the military community based in Britain

### 2.0 METHOD

Of the original 74 samples processed, a total of 44 had retained carbonised botanical material. Preliminary assessment indicated the potential of the botanical assemblages to add significant information pertaining to the cremation practices so full botanical analysis of those samples was undertaken. This included identification and interpretations of a representative percentage of charcoal fragments and all plant macrofossils. Sorting and identification of carbonised materials was undertaken using a Zeiss binocular microscope with independent cold light source at magnifications of X4-X45 and a Zenith Metam-P metallurgical reflecting microscope at magnifications of X10-X50. Charcoal weights were recorded and a single identified fragment isolated for AMS dating potential. Nutshell was weighed but seeds were recorded numerically.

### 3.0 RESULTS

Results of the botanical analysis of materials recovered by flotation are given in Table 1. The results are ordered within the table by groupings identified during excavation, denoted Complex A, B or C respectively and presented in sample order. Isolated features, one inhumation and a few individual cremations were also analysed and are grouped together in sample order.

#### Early Roman (1<sup>st</sup>-2<sup>nd</sup> Century) Deposits

Excavation revealed that the Romano-British cremation burials occurred both in isolation and in multiple complexes. Dating of the cemetery comes from material culture associated with the cremations including pottery and ceramic oil lamps. Pottery from a gully around Complex A is broadly contemporary with the use of the cemetery and may have defined it.

Complex A (fills 6213, 6247, 6248, 6252, 6251, 6249, 6272, 6252, 6253, 6266, 6302, 6334, 6258, 6294, 6257, 6304, 6322, 6255, 6256, 6329, 6328, 6322, 6335, 6261)

The Complex A fills examined were interpreted during excavation as either cremation deposits or associated redeposited natural. With rare exceptions, there was little difference between the

provenance suggested by the fills examined, although specific plant taxa and numbers of each varied somewhat, at least in part from preservation and differing subsequent disturbance. Together, the assemblages confirm the functionality of this area as a cremation cemetery. Oak (*Quercus*) charcoal was recurrent and dominant throughout, confirming it as the pyre fuel of choice. Oak was present in 22 of the 24 fills examined that contained charcoal and was dominant in 21 of those samples. Contexts (6253, 6328 and 6322) contained no oak but were otherwise unremarkable anyway, so the one exception to this was context (6294) which contained predominantly alder (*Alnus*) charcoal. However, there was little else within the sample examined (other than bone) to infer functionality, so it may have been different to the others in some way anyway, whether due to status of the individual or immediate availability of pyre fuels at the time required.

The properties of alder have made it acknowledged as a good substitute alternative to oak as pyre fuel in prehistory (Dickson & Dickson 2000). Oak gives the most heat for a sustained period (Tylecote 1962), but the slow growing wood also has significant structural value, making it a desirable, hence expensive, commodity. By contrast, alder grows rapidly in wet scrub woodland and has less commercial value so would be cheaper and relatively accessible on local marginal land. The lack of associated votive offerings other than a chip of possible walnut (*cf Juglans regia*) shell and one grain of rye (*Secale cereale*) would support the propositions that this person was either of different status or had no immediate access to high value foods and fuels at time of death. Cereals were recorded infrequently anyway within Complex A, but rye was only identified from one other context (6252), which was interpreted as redeposited. Rye did not become a common crop in its own right in Britain until the Saxon times (van der Veen 1992) and wheat (*Triticum* spp) was always favoured whenever possible. This suggests that the single grain recorded here could have come from an imported minor crop that had particular significance to the cremated individual or from processing waste from a more 'mainstream' wheat crop. The differences between this and the other cremations are considered real and of note, suggesting that this was either of an individual of low rank or that they died when resources were limited or when transport links and supplies were severely compromised, such as in a bad winter.

Fragments of bark within several samples examined reveal that pyre wood was from felled trees rather than dressed, perhaps reused demolition timbers. Although practically every fill that contained charcoal had oak as the predominant fuel wood, occasional other woods had also been burned. Ash (*Fraxinus*) and beech (*Fagus*) were recorded as rare fragments in one or two contexts and may have been supplementary pyre fuel. Alder was also recorded as a single fragment in redeposited cremation fill (6257) although again oak was predominant and in that situation alder may have been from additional fuel or evidence of intrusive materials. Hazel (*Corylus*) and either willow or poplar (*Salix/Populus*) were also identified as single fragments from two separate contexts each where they are likely to be residual kindling materials, whether to start the pyre or for votive offerings.

Within the Complex A samples there was strong evidence of votive offerings to the dead. High value, high status imported foodstuffs were recorded frequently and in many cases were almost entire, suggesting that, in some cases at least, the foods may have been burned separately on a shrine before being deposited subsequently with the cremation, rather than being placed fresh within the pyre itself or eaten as part of a ritual last feast. Nutshell of pine nut (*Pinus pinea*) and walnut were noted, with fragments of the pine nut kernel still present within some of the shell

fragments. Partial figs (*Ficus carica*), fragments of probable date (*Phoenix dactylifera*) and practically entire grapes (*Vitis vinifera*) were also recovered. Single lentils (*Lens culinaris*) were recovered occasionally (6256, 6328, 6261, 6302) and occasional cereals including bread wheat (*Triticum aestivum*), rye and a single 6-row barley (*Hordeum vulgare* s/l) were recorded. This is in stark contrast to the hundreds of lentils identified within Complex C fills, whether suggesting residuality in Complex A, more complete burning, fewer expressions of wealth or differing trends in ritual practices for individual cases.

Other plant remains recovered are suggestive of turf or grass. Whether the pyre was constructed over turf or the votive offerings were burned on a bed of grass is not possible to determine, although perhaps turf under the pyre is more likely. Rhizomes of onion couch (*Arrhenatherium elatius*) may have been deposited intentionally as a food item but could equally have come from the turf on which the pyre was laid. Nevertheless, onion couch rhizomes within cremation fills at Roman cemeteries have been interpreted previously as intentional offerings (Priess *et al* 2005) so this must be at least a consideration.

#### Complex B (fills 6343, 6388, 6362, 6349)

Pottery typology suggests the cremation deposits that comprised Complex B were broadly contemporary with those of Complex A, or extending slightly later. However, the botanical assemblage suggests some notable differences, primarily related to the numbers and types of associated food remains recorded. Although oak charcoal remained predominant, no nutshell or fruit remains of any kind were identified and the rare cereals found were indeterminate. Apple/rowan/hawthorn type (Maloideae) charcoal in two fills may be from kindling or a burnt fruitwood votive artefact.

Further differences relate to the presence of occasional seeds of lentils and lentil/ vetch (*Lens/Vicia*). Compared to the assemblage from Complex A this is a meagre votive assemblage. The scant finds may be in part an artefact of residuality, since carbonised remains were of small volume throughout. However, very few Complex A samples contained even scant evidence of lentil, so there is at least some real difference. Lentils are frequent components of the Mediterranean Roman diet and like grapes and figs, at this period in history are most prevalent in military and large urban sites within the UK (van der Veen *et al* 2008), increasing from occasional early Roman records to more regular occurrences by the middle Roman period. Although modern imported foods suggest a desire to maintain a cultural identity aligned with Rome or perceived status of the individuals concerned, the absence of both figs and grapes in Complex B could imply cremations of one or more lower classed individuals than some of those from Complex A.

The close proximity of the cremations means that a certain degree of admixing is highly probable. Closely associated cremation fills (6388, 6349) of cuts (6389, 6350) are practically identical in terms of botanical material which suggests that finds from these deposits at least may relate to the same cremation.

#### Complex C (fills 6434, 6435)

Initial cremation (6436) was dated by pottery association to the mid 1<sup>st</sup>-3<sup>rd</sup> Century. Overlying this, fill (6435) contained the most abundant and varied carbonised votive assemblage of any of the

cremation deposits analysed. As with almost every cremation examined, charcoal of oak predominated, but several large fragments of willow/poplar were also recorded, alongside smaller quantities of beech, hazel and alder. However, the large fragment size of the willow/poplar and hazel charcoal especially is more in keeping with a small domestic fire than the intense heat of a cremation pyre. Together with the great abundance of carbonised small seeds, primarily lentils or lentil/vetch within this fill, this suggests strongly that some of the food plants associated with this cremation were probably burned as a separate funerary ritual before being added to the cremation deposit rather than deposited on the pyre to be cremated with the body.

Other food plants associated with this cremation deposit included hazel and possible pine nuts, plus a good selection of fruits including partial figs, dates, grapes and the only incidence of probable apple (*Malus* sp) recovered from any of the cremations examined. Lentils were also recovered, in some abundance. Such a lavish offering of such a range of exotic, 'modern' imported foods implies strongly that this cremation was of an extremely high status individual and a high ranking Roman military officer is quite possible. Dates especially remained rare and expensive in Roman Britain (van der Veen *et al* 2008) with only two prior records of this period known, so a strong affiliation to Rome and a sophisticated palate is implied. The predominance of lentils suggest this cremation may have been slightly later than many of the Complex A deposits as lentil consumption increased most significantly into the 2<sup>nd</sup> century AD (van der Veen *et al* 2008).

Cremation deposit (6436/6435) was cut by shallower but broadly contemporary pit [6433]/(6434). From a stratigraphic point of view, fill (6434) is quite likely to contain a certain amount of redeposited materials from fill (6435) immediately below it, but the taxon assemblage of (6434) would suggest that any admixing has not been significant. Although upper cremation pit fill (6434) contained abundant lentils like (6435), the prolific variety of fruits and nuts present in the lower pit was present only as occasional grape seeds and a single piece of probable pine nut shell in the upper pit. However, pit fill (6434) also contained various types of wheat that were not recorded in the lower cremation and so there are at least some discrete differences to the stratigraphically earlier pit. Those differences may reflect the fact that (6434) was of slightly different period or more likely that it related to cremation of a lower ranking individual.

Single Features (fills 6135, 6127, 6131, 6152, 6187, 6190, 6210, 6170, 6122)

Of the single cremations and pit features examined, only fill (6127) of cremation [6126] contained an assemblage worthy of further discussion. Predating and cut by a mid 1<sup>st</sup> to 3<sup>rd</sup> century AD pit, the botanical assemblage was entirely in keeping with others within the cremation complexes and included possible walnut with fig, grapes and probable lentil/vetch seeds. However, charcoal in this fill was predominantly alder, whilst rare Maloideae may be from pyre kindling or fuel for the votive offering. Other single cremation related pit fills were largely barren, although (6131) and (6187) retained some evidence of the oak pyre fuel, the latter also with bark indicating trunks rather than timbers.

Late Roman (3<sup>rd</sup>-4<sup>th</sup> Century)

Poorly preserved inhumations relating to later Roman activity had cut through earlier cremations. Fill (6339) of inhumation 6337 was interpreted as including probable redeposited cremation material

but no environmental evidence to support this was recovered other than quantities of cinder that may be pyre fuel residue.

#### 4.0 DISCUSSION

The charcoal assemblages in the majority of samples examined were dominated by oak (*Quercus*) suggesting that this was the pyre fuel of choice. Coal and cinder were also notable in some samples, which would suggest that additional pyre fuel was sometimes required. The association of oak with cremation practice since antiquity is well documented (eg Dickson & Dickson 2000), due to specific properties that make oak wood burn at temperatures in excess of 1600°C for extended periods (Tylecote 1962). Pollen analysis of sites within the Doncaster area show a marked decline in oak pollen during the Roman period (Nelson 1976) which would concur with widespread depletion of mature oaks within the surrounding landscape, undoubtedly harvested both for construction and funerary pyres. The recurrence of bark within cremation fills suggests the use of trunks rather than dressed timbers for fuel. Hazel (*Corylus*) and willow (*Salix*) pollen also reduced somewhat over this period, highlighting the value of these taxa for domestic hearth fuel, small item turnery and wattle panelling to the increased population during the occupation period.

Beech (*Fagus*) and alder (*Alnus*) charcoal were not recorded frequently within the cremation deposits, although alder was the dominant fuel in one of the Complex A cremation deposits (6294). The pollen record for this period shows that beech may not have had a significant local presence within the area of the site (Nelson 1976) anyway. Alder was present though, but declined slightly over the period of Roman occupation, implying that resources were being utilised by the occupying forces. Although often a component of domestic hearth fuel, alder burns almost as well as oak and has a similarly long association with smelting, funerary and industrial practices (eg Tylecote 1962; Dickson & Dickson 2000; Edlin 1973). Indeed in many circumstances alder replaced oak as the ritual pyre fuel of choice in later prehistory as oak reserves became depleted (eg McGregor & Lelong 2008), a fact that is often used arbitrarily to imply a later provenance ahead of dating confirmation. However, in this particular situation the stratigraphy would suggest that this cremation is not of a later period but is otherwise different to the others within both this complex and elsewhere. The rarity of associated food remains may also be of relevance here, suggesting that this individual was different to others within this assemblage, reflecting individual circumstance such as lower status, lack of affiliation to Rome or environmental issues.

Within the Roman occupation period of c. AD 43-410, a wide variety of new and exotic food plants were introduced to Britain, including a large number of Mediterranean imports such as olive (*Olea europaea*), fig (*Ficus carica*), grape (*Vitis vinifera*), pine nut (*Pinus pinea*) and lentil (*Lens culinaris*). Following the Roman occupation, new consumer groups not directly related to agriculture emerged, including the military personnel, but also townspeople and craftsmen. As a result opportunities for trade and differentiation of social classes began to emerge. Imported items would have been expensive, but provided new and differing sources of vitamins, minerals, protein, essential oils and sugars to the 15-20% of the population of Britain encompassed by the military personnel and emergent townsfolk (van der Veen *et al* 2008). Within those groups, consumption of familiar Mediterranean import foods would have helped maintain some semblance of cultural identity to the Roman military personnel that could afford it, whilst novelty value would have instilled a sense of status and sophistication amongst wealthy Romano-British townspeople.

Mediterranean fruits have been recovered from Late Iron Age sites across Central Europe (eg Kreuz 2004; Schultze-Motel 1994) and studies of Roman latrines in the Netherlands have indicated that legionaries on campaign maintained at least some semblance of normality through consumption of a familiar diet (Kuijper & Turner 1992). However, before the advent of Romans to Britain the only record of Mediterranean fruits was of a single fig from Hengistbury Head, discovered as part of the Danebury Environs Project (Cunliffe 2000 pp 191-2). Seeds of opium poppy (*Papaver somniferum*) found within Early Iron Age sediments at Oakbank Crannog (Miller *et al* 1998) shows that the introduction of some exotic food plants had begun prior to the Roman occupation. Nevertheless, the available range of new foods, especially exotic luxury items such as fruits, accelerated dramatically as travel and trade improved and demand increased within the modern, sophisticated population.

Mediterranean imports in the Romano-British period remained primarily associated with major towns and military sites such as Lincoln, York, Leicester and London (eg Davis & de Moulins 2000; Hall & Kenward 1990; Schultze-Motel 1994; Kroll 1995; 1998; Reynolds 1996; van der Veen *et al* 2008; Wilcox 1977). The same is also true of exotics commonly associated with Roman civilisation, such as date (*Phoenix dactylifera*), which at this time was very rare and hence undoubtedly extremely expensive. Dates came originally from the North Africa but became a highly prized source of sugar in Mediterranean Europe in later prehistory, partly as a result of the Roman expansion. Date only has two previous Roman period records within the UK (Murphy 1984; Giorgi 2000) although only the latter is from a cemetery context. Consequently, the confirmed occurrence of date fruits in one cremation fill (6294) and two probable others (6248, 6251) suggests strongly that those cremation fills related to funerary rites for highly esteemed individuals with military connections.

The association of burnt remains of Mediterranean imported foods with the cremation deposits indicates votive offerings as part of the funerary rituals. It is feasible that food remains became incorporated by various means, all inextricably but separately linked to the funerary ritual. The state of preservation of almost entire grapes, fig fragments, date and pine nuts as well as many lentils suggests at least some of the votive food offerings had been burned on an altar with the remains added subsequently to cremation deposits. A probable grape pedestal (stalk) suggests a bunch of actual grapes rather than raisins in at least one circumstance must be considered possible. In other circumstances, nutshell fragments and single grape pips may be residual from ritual feasts whilst some food items may have been burned on the outer parts of the actual pyres.

Similar such votive depositions involving fruit, nuts, pulses and cereals have been recorded from Roman cemeteries in France, Belgium and Italy (Priess *et al* 2005; Cooremans 2008; Matterné & Derreumaux 2008), where lentils and grapes were most commonly encountered and entire fruits of fig and grape interpreted as being burned separately for the dead. The offering through burning of foods and other items to the dead in Roman contexts is well known, with good examples remaining especially for stone pine (Blackburn 1951; Kislev 1988; Robinson 2002; Zach 2002). Dates were received only by the wealthiest individuals at Faulquemont in northern France (Priess *et al* 2005), were similarly rare in the Porta Nocera necropolis in Pompeii (Matterné & Derreumaux 2008) but were not present at all within either Tienen or Tongeren (Cooremans 2008). The close similarities between the cremation deposits at Doncaster and those at Roman cemeteries in continental Europe are strongly suggestive of the Waterdale cemetery being associated with the garrison, where the

beliefs, customs and rituals of the population remained strongly tied to Rome. The presence of almost entire date fruit remains within at least one but potentially three cremations in the early Roman cemetery at Waterdale indicates that some extremely high ranking individuals are represented amongst the populace. Furthermore, the association of fig, grape, lentil, date and pine nut together within a cremation context is the first such assemblage to be recovered out with London (van der Veen *et al* 2008) and is only the second in Britain to include date.

## 5.0 REFERENCES

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