

**Evaluation of biological remains from excavations at  
D C Cook, Lawrence Street, York (site code: YORYM 2001.9444)**

by

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**Summary**

*An archaeological evaluation excavation was carried out by York Archaeological Trust at D C Cook, Lawrence Street, York, during February 2003. Five sediment samples and one box of hand-collected bone, recovered from deposits of 1st century to modern (19<sup>th</sup>/20<sup>th</sup> century), were submitted to PRS for an evaluation of their bioarchaeological potential.*

*Plant remains preserved by charring were present, often in considerable quantities and in a good state of preservation in three samples associated with an oven. The presence of grains showing sprouting in all three indicated the contexts all probably represented the same kind of activity, apparently malting. The two other samples gave useful assemblages of plant remains preserved mainly by anoxic waterlogging.*

*Two samples produced invertebrate remains which, although somewhat decayed and fragile, have the potential to provide a range of information about the features and their surroundings. This would be of very great value since little work has been carried out on biological remains of this date or from the Lawrence Street area of York.*

*The vertebrate assemblage recovered from this site was rather small, although quite well-preserved. Domestic mammals formed the bulk of the identified remains. Refuse representing both butchery and domestic waste was indicated, however, too few fragments were recovered for determining specific disposal patterns.*

*It is recommended that all the material is retained for the present, and that any deposits of a similar kind threatened with destruction during development at this site are sampled and investigated for their content of plant and animal remains in an appropriate way.*

**KEYWORDS:** DC COOK; LAWRENCE STREET, YORK; EVALUATION; CHARRED PLANT REMAINS; PLANT REMAINS; INVERTEBRATE REMAINS; VERTEBRATE REMAINS; MALTING

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## Evaluation of biological remains from excavations at D C Cook, Lawrence Street, York (site code: YORYM 2001.9444)

### Introduction

An archaeological evaluation excavation was carried out by York Archaeological Trust at D C Cook, Lawrence Street, York (SE 6158 5125), in February 2003.

Five sediment samples ('GBA'/'BS' *sensu* Dobney *et al.* 1992) and 1 box of hand-collected bone were submitted to PRS for an evaluation of their bioarchaeological potential. Three of the samples were associated with ?oven 11057, one was from the fills of a barrel well, and one from the fills of a ditch.

### Methods

#### *Sediment samples*

The sediment samples were inspected in the laboratory and their lithologies recorded, using a standard *pro forma*, prior to processing, following the procedures of Kenward *et al.* (1980; 1986), for the recovery of plant and invertebrate macrofossils.

The flots and washovers resulting from processing were examined for plant and invertebrate macrofossils. The residues were examined for larger plant macrofossils and other biological and artefactual remains.

#### *Hand-collected vertebrate remains*

For the hand-collected vertebrate remains that were recorded, data were entered directly into a series of tables using a purpose-built input system and *Paradox* software. Records were made concerning the state of preservation, colour of the fragments, and the appearance of broken surfaces ('angularity'). Other information, such as fragment size, dog gnawing, burning, butchery and fresh breaks,

was noted, where applicable.

Fragments were identified to species or species group using the PRS modern comparative reference collection. The bones which could not be identified to species were described as the 'unidentified' fraction. Within this fraction fragments were grouped into a number of categories: large mammal (assumed to be cattle, horse or large cervid), medium-sized mammal (assumed to be caprovid, pig or small cervid), and totally unidentifiable.

### Results

#### *Sediment samples*

The results for the samples are presented in context number order. Archaeological information, provided by the excavator, is given in square brackets. A brief summary of the processing method and an estimate of the remaining volume of unprocessed sediment follows (in round brackets) after the sample numbers.

**Context 11018** [backfill in ?oven 11057, 10<sup>th</sup> century] Sample 12/T (3 kg sieved to 300 microns with washover; approximately 6 litres of unprocessed sediment remain)

Moist, mid grey-brown to mid to dark grey-brown, crumbly and slightly sticky (working soft), sandy clay silt, with patches of mid reddish-brown silty sand. Very small, small and medium-sized stones (2 to 60 mm) were present, together with fragments of ?rotted mortar/plaster. Rotted charcoal was common.

The small to moderate-sized washover of about 200 cm<sup>3</sup> consisted mainly of charred material, though there were small amounts of fine modern rootlets. The charred remains largely comprised oak (*Quercus*) charcoal (to 25 mm in maximum dimension) with modest amounts of rather variably preserved cereal grains. The latter included barley (*Hordeum*), oats (*Avena*, some of it *A. sativa*, cultivated oat), and

bread/club wheat (*Triticum 'aestivo-compactum'*), with moderate numbers of brome (*Bromus*) grains, presumably as a crop weed. All the cereals showed signs of having begun to germinate (and there were some detached coleoptiles—shoots—amongst the grains); some barley grains had sprouts reaching almost to the full length of the grain. Perhaps the most likely explanation for this material is that it represents grain which became burnt whilst being dried during the malting process. A clue as to a possible fuel (other than wood) may lie in the remains of heather (*Calluna vulgaris* (L.) Hull) root/basal twig fragments, though these are perhaps most likely to have arrived with turves or peat, since remains of the upper parts of the plant were restricted to a trace of charred twig and there were some fragments of charred material (to 5 mm) which may have been peat or mor humus (highly humified peaty soil typically developing on heather-dominated heathland or moorland). The cereal crop must have been rather clean; there were only a very few weed seeds present. The few charred leguminous cotyledons which were tentatively assigned to lentil (*Lens culinaris* Medicus) require further examination to firm up the identification.

**Context 11023** [backfill in barrel well 11026, 14<sup>th</sup> century]

Sample 11/T (3 kg sieved to 300 microns with paraffin flotation; approximately 7 litres of unprocessed sediment remain)

Moist, light grey-brown to mid to dark grey-brown, crumbly (working soft), humic slightly sandy clay silt (lighter areas are clay sand), with medium and large-sized stones (20 to >60 mm). Fragments of wood, twigs and ?rotted mortar/plaster were present. Traces of vivianite were observed.

The rather large residue of about 500 cm<sup>3</sup> was about half by volume sand and gravel (to 35 mm), the rest being woody detritus, including twig fragments, and mainly quite strongly decayed wood, amongst which there seemed to be some wood chips. Some of this material carried traces of vivianite, no doubt reflecting a degree of decay.

Seeds were not abundant and rather lacking in diversity, but usually well preserved. They included a range of taxa typical of neglected waste ground and land marginal to woodland or scrub or the banks of rivers: tall perennial and biennial herbs requiring some soil enrichment. Most prominent were cow parsley (*Anthriscus sylvestris* (L.) Hoffm. and stinging nettle (*Urtica dioica* L.), but plants such as burdock (*Arctium*) and hogweed (*Heracleum sphondylium* L.) were also present. Other taxa suggested the presence of waterside or wetland habitats, perhaps just those obtaining along a shady ditchbank. Several taxa might have formed the

'woody' aspect to this community: elder (*Sambucus nigra* L.) and ash (*Fraxinus excelsior* L.), via seeds and seed epidermis fragments, respectively, as well as poplar/aspens (bud-scales) and willow (buds and twig fragments). Two taxa were certainly not part of this community: bread/club wheat (a single charred grain) and the dyeplant woad (*Isatis tinctoria* L., a single uncharred decayed pod fragment). This is one of very few records for this last plant from the post-Conquest medieval period in York, though it was quite frequent in Anglo-Scandinavian deposits at 16-22 Coppergate (Kenward and Hall 1995); it has formerly been noted from a 14<sup>th</sup> century well at 22 Piccadilly, from a pit fill of late 14<sup>th</sup> century date at 17-21 Piccadilly (Reynard's Garage site), and from a 12<sup>th</sup> century ash deposit at 41-9 Walmgate ('Time Team' site).

The flots were of moderate size and rather rich in invertebrate remains. Preservation was variable, from good to rather poor (E2.0-4.5, mode 3.0 weak; F 2.0-4.0, mode 2.5 weak, following the scheme of Kenward and Large 1998). The most abundant invertebrates were the resting eggs (ephippia) of water fleas, of which there were many hundreds, probably almost all being *Daphnia* species. There were also some hundreds of ostracods, mostly as well-preserved paired valves. These, some aquatic beetles (a *Limnebius* species being much the most numerous), and some planorbid snails, clearly indicate that the barrel well indeed held water (unless, as seems unlikely, it was a soak-away for waste water obtained elsewhere), and that the water was not too polluted. The aquatics had presumably become mixed into the backfill when the latter was dumped (in the way postulated for grain pests in the Roman well at Skeldergate, York, by Hall *et al.* (1980)).

A range of terrestrial insects was present, with species indicative of habitats ranging from damp-ground vegetation (e.g. *Aphrodes flavostriatus* (Donovan)) to drier semi-natural habitats (various weevils and ground beetles), and from litter such as might occur in or around houses (e.g. *Ptinus* sp., *Tipnus unicolor* (Piller and Mitterpacher) and *Mycetaea hirta* (Marshall)) to foul rotting matter and dung (at least three *Aphodius* species and *Onthophagus* sp.). Apparently this was an occupied area, but one in which semi-natural habitats had survived—therefore presumably not *intensively* occupied. There was no obvious segregation of groups (other than aquatics) by their decay state, so all of the remains may have entered simultaneously and by a similar route. The barrel well seems to have been well-protected at its mouth, at least by a complete raised rim, since it had not acted as a pitfall trap.

**Context 11040** [use deposit in ?oven 11057]

Sample 13/T (1 kg sieved to 300 microns with washover; approximately 1 litre of unprocessed sediment remains)

Moist, light brown to light to mid grey-brown, crumbly and unconsolidated, sandy silt (?ashy), with fragments of brick/tile and rotted charcoal. Modern roots and rootlets were noted.

The washover consisted of about 30 cm<sup>3</sup> of charcoal (to 10 mm), two charred cereal grains (one each of barley, and oats, the latter showing evidence of sprouting), uncharred rootlets (perhaps ancient) and fine (<2 mm) calcareous material in amorphous granules which may, for example, have been recrystallised lime. There were traces of charred ?heather root/twig fragments (to 5 mm).

**Context 11046** [use deposit in ?oven 11057]

Sample 14/T (3 kg sieved to 300 microns with washover; approximately 5 litres of unprocessed sediment remain)

Moist, mid reddish brown to mid to dark grey to mid to dark grey-brown, sticky to crumbly (working soft), clay silt, with very small stones (2 to 6 mm). Rotted charcoal was abundant. Modern roots and rootlets were noted.

The moderate-sized to large residue of about 300 cm<sup>3</sup> was mainly charred material: charcoal (to 15 mm, including hazel, oak and willow/poplar) with well-preserved cereal grains (mainly barley, with a few oats and a trace of bread/club wheat), again showing evidence of sprouting, though altogether at a much lower overall concentration compared with the grain in the sample from Context 11018. There were some quite substantial heather root/twig fragments (to 20 mm) and some other indicators that turves or peat may well have been present: charred root/rhizome fragments, sedge (*Carex*) nutlets and herbaceous detritus (cf. Hall 2003).

**Context 11095** [backfill in ditch 11098=11055=11064, 12<sup>th</sup> century]

Sample 15/T (3 kg sieved to 300 microns with paraffin flotation; approximately 5 litres of unprocessed sediment remain)

Moist, light to mid grey-brown to mid grey-brown, brittle to crumbly (working soft), sandy clay silt, with small and medium-sized stones (6 to 60 mm). Twigs and a few land snails were present. Modern roots and rootlets were noted.

This sample yielded a large residue of about 750 cm<sup>3</sup> of which about 275 cm<sup>3</sup> was sand and gravel (to 35 mm), the rest woody fragments, especially twigs. There were remains of some taxa likely to have served as food, notably well preserved seeds of fig (*Ficus carica* L.), but also endocarp ('core') fragments of apple (*Malus sylvestris* Miller) and rare fruitstones of 'cherry'

(*Prunus* Section *Cerasus*) and 'plum' (*P. domestica* ssp. *insititia* (L.) C. K. Schneider), suggesting food waste, perhaps faecal in origin, was deposited in the ditch (which pollution might account for the rarity of aquatic invertebrates). The moderate amounts of corncockle (*Agrostemma githago* L.) seed fragments, typically originating in milled cereal foods, may also have been part of a 'sewage' component, but cereal 'bran' was not observed. A single uncharred pea (*Pisum*) hilum (seed-scar)—material normally only recovered from the best -preserved waterlogged cess pit fills—probably also originated in this way. For the rest, the plant remains mainly represented tall herb communities of neglected waste places, riverbanks and hedgerows, and included cow parsley, hemlock (*Conium maculatum* L.), weld or dyer's rocket (*Reseda luteola* L., perhaps a dyeplant, but quite likely no more than a weed) and woundwort (*Stachys*, perhaps *S. sylvatica* L.). Seeds were rather sparse but mainly well preserved.

The flot was fairly small and contained moderately large numbers of insects and a few other invertebrates. Preservation was variable (E 2.0-4.0, mode 2.5 weak; F 2.0-3.5, mode 2.5 weak). There were some water beetles (mostly *Limnebius* sp.) and a few ostracods, but cladocerans were not observed. Waterside insects were present, but rare. The terrestrial fauna included species from weeds and more established vegetation (perhaps even trees or shrubs), dung, and perhaps from in or around buildings. This ditch may have only held water for part of the year, or have been overhung by trees and thus been too shaded for the development of a rich aquatic fauna.

### *Hand-collected vertebrate remains*

The entire hand-collected vertebrate assemblage, recovered from deposits of Roman, medieval and post-medieval date, amounted to 209 fragments (representing 31 contexts), of which 48 were identified to species. Most of the deposits yielded less than 10 fragments, with fresh breakage augmenting the size of some of the assemblages. Table 1 shows the number of fragments representing each species or group by period. All the material from the deposits dated to the Roman period have been amalgamated, although several assemblages could be more tightly dated to the 2<sup>nd</sup>/3<sup>rd</sup> and 4<sup>th</sup> centuries. Sixteen measurable fragments and 2 mandibles with teeth *in situ* were recovered.

Overall, the preservation was reasonable. 'Angularity' (the nature of the broken surfaces) was fairly consistent, with few fragments that were battered or eroded in appearance. Only the material from Contexts 11006 and 11042 was described as being of variable preservation. Typically, the bones of Roman date were fawn in colour, whilst most of the material dated to the later

periods was dark brown. Some of the assemblages were extremely fragmented, the result of much fresh breakage damage during excavation and post-excavation processes. This was particularly noticeable for the material recovered from deposits of Roman date.

A range of species was identified, which included the remains of the major domesticates – cattle, caprovid, and pig. The large proportion of fragments assigned to the ‘unidentified’ fraction was mostly composed of large mammal shaft, rib and vertebrae fragments. Skeletal element representation for the main domestic species suggested that all parts of the body were represented, but the assemblage was too small for the identification of specific disposal patterns by species or by period.

Dog remains included part of a skull from Context 11038, whilst one of the Roman ditch fills (Context 11049) produced five fragments identified as cat, all probably representing a single adult individual. A roe deer (*Capreolus capreolus* (L.)) radius was recovered from Context 11007, another Roman ditch fill. Fish remains were scarce, but included a gadid vertebra from Context 11018, together with several fish scale fragments from a sample from the same deposit.

## Discussion and statement of potential

Plant remains preserved by charring were present, often in considerable quantities and in a good state of preservation in the three samples associated with the ?oven. The presence of grains showing sprouting in all three indicated the contexts all probably represented the same kind of activity, apparently malting.

The two other samples gave useful assemblages of plant remains preserved mainly by anoxic waterlogging. Somewhat strangely, the assemblage from the barrel well fill was in some ways more reminiscent of a ditch fill, whilst the ditch deposit, in its small content of food (perhaps faecal) waste, was more typical of a well fill (cf. evidence from 16-22 Coppergate, Kenward and Hall 1995, or Worcester, Greig 1986). It must be assumed that the sample had not been confused at any stage since excavation.

The invertebrate assemblages—especially if amplified by material from further

subsamples—have the potential to provide a range of information about the features and their surroundings. This would be of very great value since little work has been carried out on biological remains of this date or from the Lawrence Street area of York.

The vertebrate assemblage recovered from these excavations was small, with few bones of use for providing biometrical and age-at-death information. However, preservation was mostly good, with little evidence of reworked or redeposited material and, additionally, most of the deposits could be fairly tightly dated. The bones suggested a mixture of refuse, with both butchery and domestic waste represented.

## Recommendations

It would be useful, in view of the relative rarity of the charred plant remains recovered from the ?oven fills, and especially in view of the early date, to make a proper record, perhaps using the existing processed sample, plus some more material from Context 11018 (via which the tentatively identified remains of lentil could be re-examined). The presence of so many oat grains amongst the barley may call for some further comment, too.

The insects from Context 11023 and 11095 should be recorded in full, preferably adding the remains from further subsamples to those already extracted. Recording will require careful examination of the remains in view of the fragmentation and decay of some, but almost all appeared identifiable. Any other samples from the features should also be analysed. A basic record of plant remains should be made from the same samples to provide a context for the insects and offer further evidence for environment, living conditions and human activity.

The small size of the animal bone assemblage renders this assemblage of limited interpretative value. Additionally, fragments providing age-at-death and biometrical

information are not numerous. The current assemblage does not warrant further analysis.

With regard to retention and any future interventions, it is recommended that all the material is retained for the present, and that any deposits of a similar kind threatened with destruction during development at this site are sampled and investigated for their content of plant and animal remains in an appropriate way.

## Retention and disposal

All of the current material should be retained for the present.

## Archive

All material is currently stored by Palaeoecology Research Services (Unit 8, Dabble Duck Industrial Estate, Shildon, County Durham), along with paper and electronic records pertaining to the work described here.

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Table 1. Hand-collected vertebrate remains from excavations at D C Cook, Lawrence Street, York.

Species		1st-4thC	10thC	12thC	13thC	14-16thC	18-20thC	Total
<i>Canis f. domestic</i>	dog	-	-	1	-	1	-	2
<i>Felis f. domestic</i>	cat	5	-	-	-	2	1	8
<i>Equus f. domestic</i>	horse	3	-	-	-	1	1	5
<i>Sus f. domestic</i>	pig	2	-	1	-	1	2	6
<i>Capreolus capreolus</i> (L.)	roe deer	1	-	-	-	-	-	1
<i>Bos f. domestic</i>	cattle	7	1	1	1	4	1	15
Caprovid	sheep/goat	3	1	1	1	2	1	9
<i>Gallus f. domestic</i>	chicken	-	-	1	-	-	-	1
fish	fish	-	1	-	-	-	-	1
Unidentified		80	2	58	7	7	7	161
<b>Total</b>		<b>101</b>	<b>5</b>	<b>63</b>	<b>9</b>	<b>18</b>	<b>13</b>	<b>209</b>