

**Evaluation of biological remains from excavations
at 148 Lawrence Street, York (site code 1993.11)**

by

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Summary

Plant and invertebrate remains from a series of medieval deposits, mostly associated with an aisled hall thought to be part of the leper hospital of St Nicholas, from Lawrence Street, York, N. Yorkshire, have been examined, together with an assemblage of hand-collected and bulk sieved bone, to evaluate their bioarchaeological potential.

No useful invertebrate remains were found. A small amount of charred plant material was recovered and a limited programme of analysis is suggested.

The bone assemblage, although small, has considerable potential as a source of archaeological information. It includes numerous remains of fish and birds, while a single pit provided what appears to be tanning waste. Recovery of further bone from selected BS and GBA samples is recommended, to elucidate aspects of diet and activity at the hospital.

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Introduction

Ten samples of sediment (eight 'GBAs' and two 'BSs', *sensu* Dobney *et al.* 1992) from excavations of medieval date behind 148 Lawrence Street, York were supplied by York Archaeological Trust for an evaluation of their content of biological remains. Also supplied for investigation were six standard-sized boxes of hand-collected bone.

Methods

GBA samples

All of the eight GBA samples were described (using a *pro forma*) and subsamples of 1 kg were then processed for biological remains following techniques of Kenward *et al.* (1980; 1986). 'Flots' or 'washovers' were taken from these as appropriate and the residues were dried prior to examination. Six of the eight GBA samples were selected for examination for the eggs of parasitic nematodes using the 'squash' method of Dainton (1992). Other microfossils (e.g. phytoliths, diatoms, pollen and fungal spores) were also sought.

Invertebrate and plant macrofossil remains were examined in the flots or washovers from the GBA subsamples and any plant remains and other components were recorded from the residues.

BS samples

The two BS samples were described (using a *pro forma*). Subsamples of 3 kg were retained as vouchers and the remainder weighed and processed for biological remains (primarily small bone) and small finds, the latter being returned to the excavator.

Results

Results of the analyses of biological remains are given in Appendix 1.

Discussion and statement of potential

GBA samples

Preservation of biological remains in these samples was very poor; there were at most a few scraps of arthropod cuticle and some plant detritus preserved by anoxic 'waterlogging'. Charred plant material other than wood charcoal was very rare. None of the samples examined contained parasitic nematode eggs or other microfossils. Two of the GBA samples yielded small amounts of fish bone (see below).

BS samples

The two BS samples processed yielded modest amounts of small bone (mostly fish). These assemblages are discussed below, together with the other bone remains from the site. The data are presented in Tables 3 and 5 of appendix 1.

Bone

A total of 6 standard-sized boxes of hand-collected animal bone was presented for assessment, in addition to material from two bulk samples and eight GBAs. All material from the hand-collected assemblage was initially scanned and a total of 45 contexts selected for more detailed recording. Nineteen additional contexts were selected on the basis that they contained bird and fish remains of interest.

Preservation of the material overall was rather poor, and it was relatively fragmented and eroded, although some contexts showed fair preservation. Evidence of dog gnawing was readily apparent, being observable on approximately 10-20% of the bones.

Table 1 shows the total numbers of identifiable fragments from the hand collected assemblage. It is clear from these figures that the assemblage is of very limited size and is dominated by the remains of caprovids, birds and fish, followed by cattle and pig, with other species present in smaller numbers. The remains of deer (Cervidae) from the site include both red deer (*Cervus elaphus* Linnaeus) represented only by antler fragments, roe deer (*Capreolus capreolus* Linnaeus) represented by a single tibia shaft fragment and fallow deer (*Dama dama* (Linnaeus)) represented by several metapodials and a femur fragment.

Table 2 shows the fragment counts of different species for each of the major periods represented. It is apparent that the vast majority of the assemblage originated from 13th-14th century deposits, with moderate amounts from the 12th-13th and 15th-16th centuries. Material from the high medieval to late medieval period is mostly from contexts described as occupation

deposits, whilst that from later medieval and post medieval periods is associated with the disuse and demolition of the hospital.

A very distinctive assemblage was recovered from a 12/13th century circular cut (Context 1594) which was apparently entirely filled with the lower limb elements of sheep (24 distal tibiae and 52 metapodials). Interestingly, no phalanges or tarsal bones were present in the assemblage. This almost certainly represents primary waste from hide preparation/tanning, occurring somewhere in the vicinity of the hospital.

The remaining assemblage of common domesticates is, however, of little interpretative value because of the limited number of identifiable fragments, measurable elements and mandibles with teeth *in situ*.

Bird bones were identified in relatively large numbers from all periods in the hand collected assemblage (Table 3) and appear mostly to represent the remains of domestic chicken, with some geese (*Anser* sp.) and ducks (*Anas* sp.) also present. Numbers of very juvenile birds (almost certainly chickens) were also represented in the assemblage from 13th-15th century deposits, suggesting that these were being kept and bred within or around the hospital complex. The remains of wild birds were also present throughout the assemblage, but were most common in 13/14th and 15th century deposits. A very distinctive and diverse assemblage was identified from a single 13/14th century context (1339) interpreted as an occupation deposit. This contained an assemblage of wild birds which included teal (*Anas crecca*), partridge (*Perdix perdix*), woodcock (*Scolopax rusticola*), common gull (*Larus canus*), pigeon (Columbidae), jackdaw (*Corvus monedula*) and a number

of small passerines. Additional species from other contexts included, golden plover (*Pluvialis apricaria*), snipe (*Gallinago gallinago*) and other unidentified passeriforme and corvid fragments.

Fish bones, showing a wide range of preservation states, were also rather common from the hand collected assemblage, as well as from the two bulk-sieved samples which were processed. A surprisingly wide range of species was present in the hand collected material, most, again, from 13/14th century deposits (Table 4). These remains include marine, migratory and freshwater species, suggesting a wide trade pattern, with marine species probably coming from the Yorkshire coast and the others perhaps being taken from local rivers. The two bulk sieved samples, one dated to 11th and the other from 12/13th century contexts, produced species additional to those identified from the hand collected material (Table 5). All of the material appears uncooked and some bones show very clear butchery marks, not previously identified from medieval material. However, numbers are too low to indicate any clear patterns of exploitation and preparation.

Recommendations

GBA samples

A modest programme of further work on two samples with charred plant remains - from contexts 1617 and 1621 - is recommended, and selected additional samples should be processed in order to recover any further charred material.

Bone

The bone assemblage from Lawrence Street provides a unique opportunity within York to gain some insight into the diet of the inhabitants of a medieval leper hospital, from the high medieval period through to the Dissolution. Few such institutions have been excavated in England, Chichester being the most recent large excavation, although this was confined to the cemetery (Magilton and Lee 1989). Thus, comparative assemblages are rare. Within York, useful ecclesiastical comparanda exist in the form of the material from phase 4-7 at Fishergate (O'Connor 1991) and 13th to 15th century material from the Vicars Choral or Bedern (Hamshaw-Thomas, in preparation), whilst evidence of hide preparation known for the high medieval period at North Street (Dobney and Jaques 1993) and in later medieval and post-medieval assemblages, for example those from Walmgate (O'Connor 1984), Bedern (*op. cit.*), and St Andrewgate (Carrott *et al.* 1993a).

Unfortunately, as a result of the limited time for excavation and the complexity of the archaeology encountered, the assemblage from Lawrence Street is very small and of somewhat limited value in providing detailed zooarchaeological information. However, the proportion and diversity of both fish and bird remains, and the possible presence of 12th-13th century sheep skin preparation, make it worthy of some further, more detailed, recording.

Recommendations for further work on the bone assemblage are as follows:

- 1) All remaining BS and GBA samples (from well-dated contexts) should be wet-sieved to 1mm (sub-samples sieved to 500um) and sorted.

2) All fish and bird bones should be more closely identified. Standard biometrical data should be recorded from all domestic chicken and goose elements.

3) A detailed biometrical record should be made of all sheep metapodials and distal tibiae from context 1594.

4) All evidence of butchery on fish bones should also be recorded in some detail.

Resource requirements for further work

Estimates of the resource implications for the further work recommended (above) are given in Appendix 2.

Retention/disposal

All the material should be retained until the programme of work recommended here has been carried out. Subsequently, any remaining sediment could be sieved to recover artefacts where this was appropriate.

The bones should be retained.

Archive

All biological remains, samples of processed and unprocessed sediment and paper and electronic archives relating to the work discussed here are currently stored at the Environmental Archaeology Unit, University of York.

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Appendix 1

GBA samples

The samples are discussed in context number order. Archaeological information, including dating, provided by the excavator is presented in brackets.

Context 1166 [fill of deep pit]

Sample 22 Brick rubble with small amount of mid brown, sticky working plastic, sandy silty clay matrix. Very small and small stones (2-20 mm), mortar/plaster and charcoal were present as inclusions in the sample.

The flot was barren but the small washover gave a little charcoal to 10 mm and a trace of fish bone to 10 mm. The small residue was of sand with modest amounts of brick/tile to 30 mm, and traces of mortar to 15 mm, with a little more charcoal <5 mm. No microfossils were seen in the 'squash'.

Context 1268 [occupation-derived deposit and levelling, associated with aisled hall, C12th]

Sample 39 Just moist, layered and crumbly working plastic, sandy silty clay with black and light to mid grey-brown intercalating silts. Charcoal was abundant (mostly very fine) and mortar/plaster and flecks of brick/tile were present in the sample.

The washover of about 30 cm³ was almost all charcoal to 5 mm with a single uncharred twig fragment about 30 x 10 mm. There were also some traces of uncharred plant detritus. Amongst the charcoal were a few charred seeds of a legume, probably *Vicia* sp. and perhaps including *V. sepium* Linnaeus (bush vetch), the presence of which seems unexpected in this kind of context and deserves further investigation by means of a further, larger subsample. A single snail, *Trichia hispida* (Linnaeus), was also present in the flot. The very small residue was mostly sand with a trace of bone to 30 mm, brick/tile to 10 mm and more charcoal (to 5 mm). No microfossils were seen in the 'squash'.

Context 1500 [occupation deposit in leper hospital, C12th]

Sample 57 Just moist, considerably heterogeneous mixture of lumps of red-brown clay in a matrix of mid to dark grey, grey-brown and

black, sand and silt. The sample's texture was brittle and crumbly working plastic or more crumbly depending on the component handled. Charcoal was common and very small, small and medium-sized stones (2-60 mm) were present in the sample.

There was a single snail, *Trichia hispida*, in the flot from this subsample, whilst the washover of about 30 cm³ consisted largely of charcoal to 10 mm with a little root bark and traces of fish bone and scale to 10 mm. A trace of (?mammal) bone was present in the residue, which otherwise comprised sand with a little brick/tile (to 30 mm), charcoal (to 5 mm), and mortar (to 10 mm). No microfossils were seen in the 'squash'.

Context 1575 [backfill from base of large circular pit, C11th]

Sample 64 Waterlogged, dark grey, unconsolidated silt with lumps of buff sandy silt. Very small stones (2-6 mm), mortar/plaster, pot, fine charcoal and fragments of large mammal bone were present in the sample.

The flot from the 1 kg subsample from this sample yielded only a few tiny fragments of plant detritus and some arthropod cuticle including one beetle sclerite (probably a small staphylinid) and one ?modern springtail, though there were modest amounts of waterlogged wood fragments (to 30 mm, making up about 30% by volume) in the small washover of about 30 cm³. The latter also contained charcoal to 10 mm and there were traces of root/rootlet fragments and a few poorly preserved toad-rush (*Juncus bufonius* Linnaeus) seeds of no interpretative significance. The residue was mostly of sand with more charcoal, including oak (*Quercus*) and traces of brick/tile, pot, stone and fish bone. Other than the possibility that ash was part of the backfill, there is nothing in these remains to offer an indication of the nature of any biological component of the material in this pit. No microfossils were seen in the 'squash'.

Context 1599 [charcoal/ash associated with hearth, C12th; layer with tiny fish/bird bones]

Sample 66 Moist, mid grey-brown slightly sandy silty clay with flecks of light to mid grey-brown and reddish clays. Charcoal was common in the sample.

The flot was barren, the washover of about 30 cm³ being mostly charcoal to 10 mm, with a trace of fish bone to 10 mm. Sand and charcoal (to 10 mm) were the major components of the small residue, with traces of stone (to 30 mm), fish bone (some ribs to 40 mm) and eggshell (to 5 mm). No microfossils were seen in the 'squash'.

Context 1617 [pre-occupation; ?natural C11th/12th]
Sample 71 Moist, light to mid grey brown (with slight lighter and darker mottling on a 10-mm scale), crumbly working soft, clay sand. Medium-sized stones (20-60 mm), mortar/plaster and charcoal were present in the sample.

The small washover contained modest amounts of charcoal (including oak) and a trace of plant detritus. The small residue was mostly of sand with traces of limestone to 60 mm and mortar to 10 mm. The presence of mortar perhaps argues against this deposit being wholly 'natural'.

Context 1621 [basal (?use) fill of ditch C13th]
Sample 73 Waterlogged, dark grey, unconsolidated slightly sandy clay silt. Very small and small stones (2-20 mm), fragment of brick/tile and charcoal were present in the sample.

The washover of about 25 cm³ was mostly charred herbaceous detritus, including fragments of trigonous stem which were probably sedge (*Carex* sp.) or some other member of the Cyperaceae. This material would be worth pursuing since it is rather unusual, though its closer identification would certainly be time-consuming and perhaps, in the end, impossible. A single charred fragment of a carabid beetle and some earthworm egg capsules were also present in the flot. No microfossils were seen in the 'squash'.

There was a small residue from this subsample, most of it charcoal to 20 mm (including oak), with some sand and a little brick/tile and stone.

Context 1667 [?natural sand]
Sample 89 Moist, light to mid yellow to mid buff, crumbly and unconsolidated sand with flattened lenses of silt and very small, small and medium-sized stones (2-60 mm) present.

There were only a few root/rootlet fragments in the washover and residue, the latter consisting almost entirely of pale yellow sand with a few stone fragments to 15 mm.

BS samples

Context 1376 [occupation-derived deposit related to 1st use of rectangular aisled buildings interpreted as St Nicholas' leper hospital, C12th]

Sample 46 Just moist, mid to dark grey-brown, crumbly working plastic, sandy silty clay with very small and small stones (2-20 mm) and fragments of charcoal present.

The small residue (from 29 kg) was mostly gravel, charcoal and fish bone (almost all from marine species) with some brick/tile fragments, small amounts of sand and mortar/plaster and a few fragments of snail and metal (?nails). Details of the recovered bone are presented in Tables 3 and 5 (below) and discussed in the text. Small finds were returned to the excavator.

Context 1496 [extensive occupation-derived deposit, N. aisle of hall, C12th]

Sample 68 Moist, dark grey-brown, crumbly working plastic, sandy silty clay with small stones (6-20 mm) present.

The small residue (from 44 kg) was mostly stone with large amounts of fish and bird bone, fragments of pot, lead and copper alloy objects, several iron nails, a few nutshells, small amount of brick/tile, mortar and charcoal, one fragment of glass and a single small piece of leather. Details of the recovered bone are presented in Tables 3 and 5 (below) and discussed in the text. Small finds were returned to the excavator.

Bone

Species	Total fragment count	Measurable	Mandible with teeth
Cattle	85	9	2
Caprovid	189*	73*	7
Pig	80	3	8
Horse	4		
Cervid	15		
Hare	2		
Small mammal	1		
Bird	265	60	
Fish	164		
Amphibian	3		

Table 1. Total fragment counts from selected hand-collected contexts (*mostly sheep distal limb elements from pit).

Species	Period				
	11-12	12-13	13-14	14-15	15-16
Cattle	6	22	33	7	17
Caprovid	2	102	44	12	28
Pig	8	14	26	13	19
Horse	1	1	1		1
Cervid			1	6	8
Hare			1	1	
Small mammal				1	
Bird	6	39	117	46	57
Fish		9	62	47	46
Amphibian			1		2
Unidentified	57	322	551	130	284

Table 2. Total number of fragments by species and period from selected hand-collected contexts.

Species	Period				
	11-12	12-13	13-14	14-15	15-16
<i>Anser</i> sp. (domestic goose)		+	+	+	+
<i>Anas</i> sp. (duck)	+		+	+	+
<i>Anas crecca</i> Linnaeus (teal)			+		
<i>Gallus gallus</i> (domestic fowl)	+	+	+	+	+
<i>Perdix perdix</i> (Linnaeus) (grey partridge)			+		+
<i>Pluvialis apricaria</i> (Linnaeus) (golden plover)			+		+
<i>Vanellus vanellus</i> (Linnaeus) (lapwing)				+	
<i>Scolopax rusticola</i> Linnaeus (woodcock)			+	+	+
<i>Gallinago gallinago</i> (Latham) (snipe)			+		
<i>Larus canus</i> Linnaeus (common gull)			+		
<i>Columba livia</i> Gmelin (pigeon)					+
<i>Sturnus vulgaris</i> Linnaeus (starling)			+		
<i>Corvus</i> sp. (crow)				+	
<i>Corvus monedula</i> Linnaeus (jackdaw)			+		
<i>Erithacus rubecula</i> (Linnaeus) (robin)			+		
<i>Turdus</i> sp. (thrush)			+		
<i>Passer domesticus</i> (Linnaeus) (house sparrow)			+		
Passeriformes (perching birds)		+	+		
Unidentified bird	+	+	+	+	+

Table 3. Bird remains.

Species	Period				
	11-12	12-13	13-14	14-15	15-16
Marine					
Gadidae (cod family)	1	1	9		
<i>Gadus morhua</i> Linnaeus (cod)			1		1
<i>Molva molva</i> (Linnaeus) (ling)				1	
<i>Pollachius pollachius</i> (Linnaeus) (pollack)					1
<i>Melanogrammus aeglefinus</i> (Linnaeus) (haddock)		1	2		1
<i>Clupea harengus</i> Linnaeus (herring)					1
Pleuronectidae (flatfish)			1		
<i>Hippoglossus hippoglossus</i> (Linnaeus) (halibut)			1		
Migratory					
<i>Salmo salar</i> Linnaeus (atlantic salmon)			6		
Freshwater					
<i>Esox lucius</i> Linnaeus (pike)			5	2	
Cyprinidae (carp family)	1			1	
Unidentified	11	7	113	43	42

Table 4. Fish remains from hand collected assemblages.

Species	Period	
	11-12	12-13
Marine		
<i>Raja clavata</i> Linnaeus (thornback ray)	+	+
<i>Conger conger</i> (Linnaeus) (conger)	+	+
Gadidae (cod family)		+
<i>Merlangius merlangus</i> (Linnaeus) (whiting)	+	
<i>Clupea harengus</i> Linnaeus (herring)	+	+
<i>Scophthalmus maximus</i> (Linnaeus) (turbot)		+
Pleuronectidae (flatfish)	+	
Migratory		
<i>Osmerus eperlanus</i> (Linnaeus) (smelt)		+
<i>Anguilla anguilla</i> (Linnaeus) (eel)	+	+
Freshwater		
Cyprinidae (carp family)	+	
<i>Blicca bjoerkna</i> (Linnaeus) (silver bream)	+	

Table 5. Fish remains from two BS samples (contexts 1376 and 1496)

Appendix 2

Resource implications of recommended programme of work

Work	Resource	Cost
Process and sort 15 BS samples	8 days technician	
Process and sort 15 GBA samples	6 days technician	
Record charred plant material	2 days research fellow	
Record fish bone assemblage	14 days research assistant	
Record bird bone assemblage	2 days research fellow 5 days technician	
Record mammal bone assemblage	3 days technician	
Analyses and technical report	4 days research fellow 10 days research assistant 6 days technician	
Production of publication report	1 day research fellow 2 days research assistant	

Consumables required

Item	[Cost]
Reagents	
Glass specimen tubes	
Microscope slides and cover slips	
Computer consumables	
Beatson jars	
Stationery, postage, telephones/fax	
Polyethylene bags	
Labels and markers	
Miscellaneous	
Total	