Assessment of biological remains from excavations on land adjacent to the railway station, King's Lynn, Norfolk (site code: B2583A)

by

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Summary

Two samples of sediment and two boxes of hand-collected bone from excavations on land adjacent to the railway station, King's Lynn, Norfolk, were submitted for an assessment of their bioarchaeological potential.

Useful assemblages of plant and invertebrate macrofossils were recovered from each of the samples. There is no doubt from the plant and invertebrate remains that the contents of this pit were not waste from tanning, but rather two very different kinds of backfill. The lower deposit appeared to be largely stable manure, a partly composted mixture of hay and straw with a diversity of insects consistent with imported cut vegetation and with wooden buildings. The upper had a much lower organic content and had either undergone much stronger decay at or after burial or had a lower organic input as it formed. Here there are indications of household debris, including perhaps floors sweepings, with a component from fires (coal, cinders) and perhaps demolition debris (mortar/plaster) and plant litter perhaps also from floors.

The deposits from King's Lynn yielded a small well-preserved assemblage of bone of post-medieval date. The bulk of the material represented the main domestic species (cattle and caprovid), whilst small quantities of goose, chicken and fish bones were also present. The assemblage from a pit in Trench 5 included a discrete dump of caprovid metapodials, possibly representing waste from the processing of skins. A small collection of horncores, mainly cattle, was also recovered from the same pit. Preliminary observations suggest that the assemblage included material of mixed origin, representing waste from butchery, food consumption and craft activities. Fish remains were reasonably well preserved and included gadids, herring, eel and flatfish.

Recovery and recording of additional remains from the remaining samples is recommended, and, for the bone, the production of a basic archive. Further study would provide useful comparanda for other material of this date and might help to elucidate aspects of diet and activity in this area of King's Lynn.

Keywords: Land Adjacent to the Railway Station, King's Lynn; King's Lynn; Norfolk; Assessment; Post-medieval to modern; Plant Remains; Charred Plant Remains; Invertebrate Remains; Parasite eggs; Shellfish; Vertebrate Remains; 'Stable Manure'; CRAFT Activities

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Introduction

An archaeological excavation was carried out by Gifford and Partners on land adjacent to King's Lynn railway station (centred on NGR TF 6230 2010), King's Lynn, Norfolk, between 19 and 23 February 2001.

Two sediment samples ('GBA'/'BS' *sensu* Dobney *et al.* 1992), and two boxes (each of approximately 25 litres) of hand-collected bone, were recovered from the deposits. Preliminary evidence from recovered pottery dated most of the deposits to the post-medieval period (mostly 16th-18th century).

All of the material was submitted to the EAU for an assessment of its bioarchaeological potential.

Methods

Sediment samples

The sediment samples were inspected in the laboratory and their lithologies were recorded using a standard *pro forma*. Both samples were selected for investigation, following the procedures of Kenward *et al*. (1980; 1986), for recovery of plant and invertebrate macrofossils. The flots, washover, and residues were examined for plant remains. The flots were also examined for invertebrate remains, and the residues were examined for other biological and artefactual remains.

Preservational condition of the invertebrate remains was recorded using the scheme of

Kenward and Large (1998). In summary, preservation is recorded as chemical erosion (E) and fragmentation (F), in each case on a scale from 0.5 (superb) to 5.5 (extremely decayed or fragmented).

The samples were also examined for the eggs of intestinal parasitic nematodes and other microfossils using the 'squash' technique of Dainton (1992).

Vertebrate remains

For the hand-collected vertebrate remains, data were recorded electronically directly into a series of tables using a purpose-built input system and *Paradox* software. Subjective records were made of the state of preservation, colour of the fragments, and the appearance of broken surfaces ('angularity'). Additionally. semiquantitative information was recorded for each context concerning fragment size, and evidence of dog gnawing, burning, butchery and fresh breakage.

Where possible, fragments were identified to species or species group, using the reference collection at the Environmental Archaeology Unit, University of York. Fragments not identifiable to species were described as the 'unidentified' fraction. As well as counts of fragments, total weights were recorded for all identifiable and unidentifiable categories.

Results

The results are presented in context number

order. Archaeological information, provided by the excavator, is presented in square brackets.

Sediment samples

Context 57 [Upper fill of a possible tanning pit – probably domestic rubbish. Pottery spot dated 16^{th} century]

Sample 1/T (1 kg sieved to 300 microns with paraffin flotation and washover)

Moist, mid to dark greyish-brown, crumbly (working more or less plastic and slightly sticky), rather humic, sandy clay silt with lumps of firmer, rather homogeneous, silt. Marine mollusc shell—oyster *Ostrea edulis* L. and cockle *Cerastoderma edule* (L.)—was common and brick/tile, ?mortar, wood ?chips, and mammal bone were present.

There was a large residue of about 350 cm³, consisting mainly of bone (to 55 mm), marine mollusc shell (including mussel (Mytilus edulis L.), oyster, cockle and common whelk (Buccinum undatum L.)), mortar/plaster (to 35 mm), cinders (to 20 mm) and grit. The washover was about 40 cm^3 in volume and comprised mostly coal with some charcoal, cinder, and fish bone; there were also some small 'platy' fragments (to 10 mm) of compressed fine plant (?) detritus containing some animal hairs. The material could not be identified but seems most likely to have been some kind of compressed fibrous material like felt, though perhaps mostly of vegetable origin. The rather abundant seeds in the washover were all rather worn; they included many sedge (Carex) nutlets, together with moderate numbers of brassica/charlock (Brassica sp./Sinapis arvensis L.), fat hen (Chenopodium album L.), long prickly-headed poppy (Papaver argemone L.) and rushes (various Juncus spp., which appeared to include both J. compressus Jacq. and J. gerardi Loisel.). With the exception of the sedge and rush remains, these, and some rather unusual taxa (wild mignonette, Reseda lutea L. and scotch thistle (Onopordon acanthium L.), may all have occupied waste places in the vicinity. The wetland plants perhaps represent the very last decayed remains of litter from roofs or floors. The tiny flot contained further seeds, in modest numbers, mainly poorly preserved rushes.

The flot also contained a moderate number of very decayed scraps of insect cuticle (E 4.5-5.5, mode 5.0 distinct; F 5.0-5.5, mode 5.0, distinct). Insect remains

were fairly numerous in the washover, recovery probably having failed during paraffin flotation because the fossils had lost their lipophilic surfaces.

Although restricted, the insect fauna suggested a very sterile area with a little filth (to allow a few flies to develop to puparia). Taxa such as *Tipnus unicolor* (Piller and Mitterpacher), *Anobium punctatum* (Degeer) and *Xestobium rufovillosum* (Degeer) would have been at home in building interiors of the sort which were normal until the middle of the 20th century - slightly damp and with a little detritus in cracks and corners.

A subsample of 3-5 kg of this sample would probably provide a rather clearer picture of conditions in the area where the deposit initially accumulated (almost certainly this layer consists of secondarily deposited material, perhaps including house sweepings and other domestic ejectamenta). The layer may have been deposited to seal the underlying, much fouler, waste.

The microfossil 'squash' was mostly inorganic material with some organic detritus and a few fungal spores and ?phytolith fragments. No eggs of intestinal parasitic nematodes were seen.

Vertebrate remains recovered from this sample amounted to 89 fragments. Overall the bones were well preserved and, although there were a number of larger fragments (to 60 mm), most were less than 30 mm in maximum dimension. Fifty-nine of the fragments represented fish remains, of which 33 could be identified to species or family group— these included gadid (cod family), ?three- or five-bearded rockling (cf. *Gaidropsarus vulgaris* (Cloquet)/*Ciliata mustela* (L.)), pleuronectid (flat fish), eel (*Anguilla anguilla* (L.)), herring (*Clupea harengus* L.) and stickleback (Gasterosteidae). Two of the mammal bones were identified as caprovid, whilst a single goose fibula was also noted.

Context 73 [Lower fill of a possible tanning pit. Pottery spot dated early 16th century] Sample 2/T (1 kg sieved to 300 microns with paraffin flotation)

Moist, mid to dark brown (oxidising to dark greybrown), firm, compressed, and layered/laminated, fine and coarse herbaceous detritus with some interworked silty sand. The very large residue of about 1000 cm³ was very largely 'strawy' fine and coarse herbaceous detritus with some sand (perhaps about 10-25% by volume), especially in the <2 mm fractions. There were also rather a lot of fragments (to about 10 mm) of amorphous peat (though examination of a small amount of one of these fragments on a microscope slide failed to reveal any identifiable microfossils). The identifiable plant remains were generally well preserved and the assemblage was dominated by taxa likely to have arrived in cereal straw and/or hay. Most abundant were achenes of buttercups (Ranunculus Section Ranunculus) with some sedge, fat-hen, spike-rush (Eleocharis palustris sensu lato), cat's ears (Hypochoeris sp(p).), field scabious (Knautia arvensis (L.) Coulter), grasses (Gramineae), various flower parts of small Leguminosae (peaflowers), wild radish (Raphanus raphanistrum), yellow-rattle (Rhinanthus sp(p).) and sheep's sorrel (Rumex acetosella agg.). Amongst the rarer taxa were single charred grains of wheat (Triticum) and barley (Hordeum) and a seed of the salt-marsh plant annual seablite (Suaeda maritima (L.) Dumort.), a plant likely to have grown along the coast nearby. There were also traces of charred monocotyledonous leaf material which may well have been saw-sedge (Cladium mariscus (L.) Pohl), perhaps from material used in roofing or fuel.

The flot was quite large (about 20 cm³), and consisted of plant detritus and quite large numbers of invertebrate remains. Preservation was generally good: E 1.0-3.5, mode 2.0, distinct; F 1.5-2.5, mode 2.5, distinct. The fauna was very distinctly typical of stable manure. Cercyon atricapillus (Marsham) and Anthicus floralis (Linnaeus) or formicarius (Goeze), almost always present in archaeological stable manure groups, were both numerous, and were accompanied by remains of, for example, Lithocharis ochraceus (Gravenhorst), Cercyon С. haemorrhoidalis (Fabricius), terminatus (Marsham), Monotoma longicollis (Gyllenhal) and M. spp., Acritus nigricornis (Hoffmann), Gyrohypnus sp. and Leptacinus sp. In addition to these were two other components typical of stable manure: grain pest, present in small numbers, and plant feeders likely to have been either grazed or imported in hay. The last group included Gymnetron and Apion spp., one individual of the latter being freshly emerged (and thus regarded as imported rather than of local or background origin, Kenward and Hall 1997). There were also some house fauna taxa, probably from the stable building (e.g. Blaps sp.). A final component likely to have come in dung (having been accidentally ingested in drinking water), or spilled water intended for livestock, was the aquatics: the water beetles *Agabus* sp. and *Ochthebius* sp., the water flea *Daphnia* sp. and the bryozoan *Lophopus crystallinus* (Pallas).

This group of insects should be recorded in detail, preferably using a somewhat larger subsample, to provide data for synthesis as well as to amplify the information obtained about local conditions and activity.

Consistent with the interpretation that this material was largely stable manure were the presence of some mineralised fragments of plant material and rare mineralised seeds.

The microfossil 'squash' was mostly organic detritus with a very small inorganic component. Many phytoliths and pollen grains/spores and some fungal hyphae were noted. A few well preserved eggs of both whipworm (*Trichuris*) and maw-worm (*Ascaris*) were recorded indicating a faecal component to the deposit.

The sample produced fourteen rather poorly preserved bones, all of which were less than 35 mm in size. Seven fragments were burnt, including a number of fish vertebrae. A goose furcula and a flat fish vertebra were the only identified fragments.

Hand-collected vertebrate remains

Deposits from this site produced two boxes (each box approximately 25 litres) of vertebrate remains. Most of the fragments were recovered from seven layers (51, 52, 53, 54, 55, 57 and 58) of postmedieval date (mainly 16th-18th century) associated with a single pit in Trench 5. Small assemblages of 17th and 18th century date were also recovered from layers and ditch fills within Trenches 1, 3 and 4. Material from two deposits (Contexts 60 and 62) was excluded on the basis of its modern date. Table 1 lists the bone-bearing contexts with their pottery spot dates, whilst Tables 2 and 3 show the species represented and the total number of fragments by context and by date group (respectively).

In total, the recorded hand-collected assemblage amounted to 425 fragments, of which 199 were identified. Fifty-eight measurable bones and nine mandibles with teeth *in situ*, of use for providing biometrical and age-at-death data, were noted (Table 4). Overall, the bones were well preserved, although it was noted that some of the deposits contained fragments that had a slightly battered appearance and the occasional bone with rounded edges. Three fragments, from Contexts 11 and 12, had very damaged and eroded surfaces. Colour of the fragments varied from fawn to brown to dark brown, with material from the higher levels in the pit (Trench 5) tending to be paler in colour.

Evidence of butchery was recorded on 20-50% of all fragments from Contexts 54, 57 and 58, but was less extensive for other assemblages. Examples of longitudinally split cattle vertebrae and heavily chopped shaft fragments were observed. Dog gnawing was noted but affected few bones. The assemblage was not particularly fragmented except for material from Context 52, which showed considerable damage attributable to fresh breakage.

The species present included the usual range of domestic animals, with cattle and caprovid remains predominating. Minor domesticates, such as cat and dog were quite scarce, whilst wild mammals were represented by a few rabbit bones and a single fallow deer (*Dama dama* (L.)) phalanx. Remains of geese, ducks and chickens were identified, along with a small number of fish bones. The latter included thornback ray (*Raja clavata* L.), Gadidae (cod family), ?turbot (cf. *Psetta maxima* (L.)) and Pleuronectidae (flat fish) fragments.

The assemblage included an accumulation of caprovid metapodials (ten metacarpals, nine metatarsals), some of which represented juvenile and neonatal individuals, recovered from Context 54. Context 58, a layer within the same pit, also produced four caprovid metapodials and several phalanges. Differentiation of the bones using modern reference specimens suggested that most of the animals represented were sheep. These remains probably represent the waste from tanning or from skin/hide preparation. Small numbers of horncores, both cattle (Contexts 57 and 58) and caprovid (Contexts 54, 55 and 58) were also recorded. All of the horncores showed evidence of their deliberate removal from the rest of the skull. Craft activities, such as horn working or tanning, are likely to be responsible for these fragments. However, a preliminary examination of the range of skeletal elements present show that the caprovid remains, particularly from 16th century deposits, include quantities of meat-bearing elements (scapulae, humerii and radii). Cattle fragments from the pit, although fewer in number, mainly represent heads and lower limb elements, i.e. primary butchery waste and possibly hornworking refuse. This suggests that the material from the pit is likely to be derived from a variety of activities, including butchery, food consumption and craft working. Insufficient fragments were recovered from other deposits (in Trenches 1, 3 and 4) for any meaningful interpretations to be made.

Discussion and statement of potential

There is no doubt from the plant and invertebrate remains that the contents of the pit containing contexts 57 and 73 were not waste from tanning, but rather two very different kinds of backfill. The lower deposit appeared to be largely stable manure, a partly composted mixture of hay and straw with a diversity of insects consistent with imported cut vegetation and with wooden buildings. The upper had a much lower organic content and had either undergone much stronger decay at or after burial or had a lower organic input as it formed. Here there are indications of household debris, including perhaps floors sweepings, with a component from fires (coal, cinders) and possibly demolition debris (mortar/plaster) and plant litter maybe also from floors.

Though well preserved, the remains of eggs of intestinal parasitic nematodes seen in Context 73 were few in number. It is unlikely that further work would yield sufficient eggs to allow a statistical determination to species (and so identify the host) without concentration of the remains. This level of additional work may be disproportionate to the information that could be obtained.

The vertebrate assemblage recovered from these deposits, although small, was well

preserved and set within a tight dating framework. Few contexts yielded bones that were eroded and battered in appearance and dog gnawing, though present, was not extensive. A single possible human tibia bone from Context 55 suggests some residuality, but, on the whole, it seems likely that most bones were fairly quickly incorporated into the deposits and that little reworking of the material occurred.

Many of the deposits producing bone were associated with a single pit. The accumulation of caprovid metapodials and cattle and sheep horncores in this pit clearly suggests waste from specialised activities. The presence of meat-bearing elements and bird remains suggests domestic or kitchen refuse, whilst some of the cattle elements are more likely to represent butchery waste.

Material from these deposits, on initial examination, suggests an assemblage of mixed origin; the remains representing rubbish from a range of activities, with the evidence pointing to the use of some of the area (though not necessarily the pit from which the samples were analysed) for minor industrial enterprises associated with the preparation of hides and possibly hornworking.

Small quantities of fish bone were recorded from both the hand-collected and the sieved assemblage; they, and the small quantities of edible shellfish, indicated that estuarine and marine resources were being utilised. Processing of larger subsamples might yield a more interpretatively useful assemblage of fish remains.

The investigation of post-medieval material has been somewhat neglected and the period is rather poorly understood in the archaeological record. This bone assemblage shows some potential for producing useful zooarchaeological and archaeological information, albeit somewhat limited by its size, and might be able to throw some light on activities in this area of King's Lynn during the post-medieval period.

Recommendations

The plant and invertebrate assemblages recovered from the samples or, preferably, remains from larger subsamples, should be recorded in detail, since they are characteristic and data will be useful in future synthesis. Given the quality and quantity of preserved plant and animal remains, other deposits in the vicinity should certainly be examined to explore human activity and environment in this relatively poorly known medieval town.

Although the bone assemblage is small, it is recommended that a basic archive, including biometrical and age-at-death, should be produced of all of the well-dated material. This would allow for the data to be used in conjunction with records from other excavations in King's Lynn, and may help to elucidate aspects of diet and activity in the town.

Any remaining sediment from the samples investigated during the assessment should be processed, along with any other samples from the pit in Trench 5, for the retrieval of plant and invertebrate macrofossils, and small bones (particularly fish remains).

Retention and disposal

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

Archive

All material is currently stored in the Environmental Archaeology Unit, University of York, along with paper and electronic records pertaining to the work described here.

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Context	Context type	Date				
11	ditch fill	17 th century				
12	ditch fill	18 th century				
13	?	18 th century				
14	layer	18 th century				
51	layer in pit	17 th century				
52	layer in pit	16 th /17 th century				
53	layer in pit	17 th century				
54	layer in pit	16 th century				
55	layer in pit	16 th century				
57	layer in pit	16 th century				
58	layer in pit	16 th century				
66	ditch fill	18 th century				
68	ditch fill	18 th century				
75	layer	18 th century				
76	layer	18 th century				

Table 1. Land adjacent to the railway station, King's Lynn, Norfolk: contexts from which hand-collected bone was recorded.

Reports from EAU, York, 2001/23

Taxon	, , , , , , , , , , , , , , , , , , ,	11	12	13	14	51	52	53	54	55	57	58	66	68	75	76	Total
Oryctolagus cuniculus (L.)	rabbit	-	-	-	-	-	3	1	-	2	-	-	-	-	-	-	6
Canid	dog family	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	1
Canis f. domestic	dog	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	1
Felis f. domestic	cat	-	-	-	-	-	-	-	1	-	1	-	-	-	-	-	2
Equus f. domestic	horse	-	-	-	1	-	-	-	-	-	-	-	2	-	-	-	3
Sus f. domestic	pig	-	-	-	1	-	3	-	1	3	-	1	-	-	-	-	9
Dama dama (L.)	fallow deer	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	1
Bos f. domestic	cattle	-	-	3	6	-	8	3	9	9	13	5	4	-	1	-	61
Caprovid	sheep/goat	1	-	1	2	-	5	2	30	14	14	8	3	3	2	2	87
Anser sp.	goose	-	-	-	-	-	-	-	1	3	4	-	-	1	-	-	9
Anas sp.	duck	-	-	-	-	1	-	-	1	2	-	-	-	-	-	-	4
Gallus f. domestic	chicken	-	-	-	-	1	2	1	-	2	1	-	-	-	-	-	7
cf. Gallus f. domestic	?fowl	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	2
Raja clavata L.	thornback ray	-	-	-	-	1	-	_	-	-	-	-	-	_	_	-	1
Gadidae	cod family	_	_	_	-	_	-	-	_	1	-	-	-	_	_	_	1
cf. Psetta maxima (L.)	?turbot	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1
Pleuronectidae	flat fish family	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	2
	21									1							
cf. Homo sapiens	?human	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	1
Sub-total		1	0	4	10	3	23	8	45	38	34	14	10	4	3	2	199
Unidentified	unidentified	-	2	-	5	2	59	5	50	44	47	5	1	2	2	2	226
Total		1	2	4	15	4	80	12	95	79	81	19	11	6	5	4	425

Table 2. Land adjacent to the railway station, King's Lynn, Norfolk: hand-collected vertebrate remains by context.

Species		16 th C	16 th /17 th C	17 th C	18 th C	Total
Oryctolagus cuniculus (L.)	rabbit	2	3	1	-	6
Canid	dog family	-	-	1	-	1
Canis f. domestic	dog	-	-	-	1	1
Felis f. domestic	cat	2	-	-	-	2
Equus f. domestic	horse	-	-	-	3	3
Sus f. domestic	pig	5	3	-	1	9
Dama dama (L.)	fallow deer	1	-	-	-	1
Bos f. domestic	cattle	36	8	3	14	61
Caprovid	sheep/goat	66	5	3	13	87
Anser sp.	goose	8	-	-	1	9
Anas sp.	duck	3	-	1	-	4
cf. Gallus f. domestic	?chicken	2	-	-	-	2
Gallus f. domestic	chicken	3	2	2	-	7
Raja clavata L.	thornback ray	-	-	1	-	1
Gadidae	cod family	1	-	-	-	1
cf. Psetta maxima (L.)	?turbot	1	-	-	-	1
Pleuronectidae	flat fish family	-	2	-	-	2
cf. Homo sapiens	?human	1	-	-	-	1
Sub-total		131	23	12	33	199
Unidentified		146	59	7	14	226
Total		277	80	17	47	425

Table 3. Land adjacent to the railway station, King's Lynn, Norfolk: hand-collected vertebrate remains by date.

Table 4. Land adjacent to the railway station, King's Lynn, Norfolk: total numbers of hand-collected vertebrate fragments, together with numbers of measurable bones and the number of mandibles with teeth in situ yielding ageing and sexing information by context. **Key**: Total frags = total number of fragments; No. meas = number of measurable fragments; No. mand = number of mandibles with teeth in situ.

Context	Total frags	No. mand	No. meas
11	1	0	0
12	2	0	0
13	4	0	2
14	15	0	1
51	5	0	1
52	82	4	5
53	13	0	2
54	95	1	15
55	82	0	9
57	81	2	10
58	19	1	7
66	11	0	4
68	6	0	1
75	5	0	0
76	4	1	1