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**Evaluation of biological remains from excavations at Blanket Row
(Stakis Casino), Hull (site code STK98)**

by

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Summary

Samples of sediment and a small assemblage of hand-collected bone recovered from deposits of early post-medieval to modern date excavations at the Stakis Casino site, Blanket Row, Hull, have been evaluated for their bioarchaeological potential.

The plant and insect remains in some of the samples were extremely well preserved and, together, would provide a useful reconstruction of conditions, and to an extent activity, at the site. In particular, there was strong evidence for the presence of litter and dung from the keeping of livestock. The material in hand warrants further analysis and any future development at this site should be accompanied by a full programme of excavation, sampling and analysis.

The vertebrate remains recovered from this site do not appear to include domestic or kitchen waste, but more likely represent the refuse from a number of industrial/craft activities, such as the primary butchery and possibly tanning. Evidence from the Phase 2 vertebrate assemblage also suggests the presence of refuse associated with skin and fur preparation.

It is clear that the deposits show potential for producing a large and well-preserved vertebrate assemblage should further excavation be undertaken. A basic archive should be made of the current material, which should include biometrical and age-at-death data.

KEYWORDS: STAKIS CASINO SITE; BLANKET ROW; HULL; EVALUATION; POST-MEDIEVAL; VICTORIAN; BONE; PLANT REMAINS; INSECT REMAINS; INTESTINAL PARASITE EGGS

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Introduction

An archaeological excavation was carried out by Humber Field Archaeology at Blanket Row, Hull, in December 1998. Twenty-five sediment samples ('GBA' *sensu* Dobney *et al.* 1992) and four boxes (each box approximately 16 litres) of bone were recovered from deposits of early post-medieval to modern date. Contexts were provisionally assigned to the following four phases;

Phase 1 - natural alluvial clay

Phase 2 - late 15/16th Century

Phase 3 - 17/18th Century

Phase 4 - Victorian onwards

This material was submitted to the EAU for evaluation of its bioarchaeological potential.

Methods

Sediment samples

All 25 sediment samples (representing 14 contexts) were inspected in the laboratory and on the basis of this inspection and information supplied by the excavator, six were chosen for further work. A description of the lithology of these samples was recorded using a standard *pro forma* and then subsamples of 2 kg were taken for extraction of macrofossil remains, following procedures of Kenward *et al.* (1980; 1986).

Plant macrofossils were examined from the residues and flots resulting from processing. All invertebrate macrofossils were recorded semi-quantitatively using the scale described by Kenward *et al.* (1986) and Kenward (1992). Records were made on a paper *pro forma* for later transfer to a computer database (using *Paradox* software) for analysis and long-term storage.

Six of the samples were examined for the eggs of parasitic nematodes using the methods outlined by Dainton (1992).

Vertebrate remains

All of the bone was recorded in detail; subjective records were made of preservation, angularity (i.e. the nature of the broken surfaces) and colour, whilst quantities and identifications were noted where appropriate. Additionally, semi-quantitative information was recorded for each context concerning fragment size, dog gnawing, burning, butchery and fresh breaks. Fragments not identified to species were, where possible, grouped into the categories of large mammal (assumed to be horse, cow or large cervid), medium mammal (assumed to be sheep, pig or small cervid) and unidentifiable.

Results

Sediment samples

The results of the investigations are presented in phase order. Archaeological information and/or archaeological questions

to be addressed (provided by the excavator) are given in square brackets.

Phase 2, late 15th/16th century

Context 126 [accumulated fill of gully or ditch - is the material water deposited? Running or stagnant? Refuse deposition]

Sample 13/T (2 kg processed)

Moist, mid to dark grey-brown, crumbly (slightly plastic, sandy, clay silt, with mid brown clay silt inclusions. Fragments of mortar/plaster, brick/tile, pieces of partly burnt coal, charcoal, wood and mammal bone were present. Abundant concretions were noted.

There was a moderate-sized residue of about 650 cm³ of which almost all was mineral material: mainly cinders, bone, gravel, mortar and sand; the washover, which made up rather less than a third of the whole residue, was of cinders with some charcoal. Traces of root 'bark' were the only other plant remains observed. The deposit appeared to have accumulated from occupation debris with only a low organic content, unless organic matter within the original sediment had decayed.

The small flot consisted mostly of charcoal and cinder (to 10 mm), with a few plant fragments. The only invertebrate remains present were several *Heterodera* sp. (soil nematode) cysts and three ephippia (resting eggs) of *Daphnia* (water fleas), indicating little more than the presence of soil, and at least temporary water, in the ditch.

The microfossil 'squash' revealed approximately equal parts organic detritus and inorganic material. A few fungal spores, fragments of plant silica, spores/pollen grains, diatoms (one form), and a single live soil nematode were noted. No parasite eggs were seen.

Context 144 [lower part of pit fill - evidence of domestic/industrial activity? Evidence for pit function?]

Sample 4 (2 kg processed)

Moist, black, but internally olive brown, compressed herbaceous detritus in a matrix of humic silt, with

pellets of light grey clay. Small (6-20 mm) stones and fragments of brick/tile were present.

The large residue of about 1 litre comprised about 70% by volume organic material, of which a very large part was 'strawy' detritus, with rather little woody material; the inorganic fraction was mainly brick/tile (a large clast) with sand and gravel. Waterlogged preservation was extremely good, with both the monocotyledonous and dicotyledonous plant stem fragments pale and firm, and many of the fruits and seeds in almost pristine condition. There was a little evidence for mineralisation. Notable amongst the well-preserved plant remains were the numerous involucres (flower heads) of knapweed or hardheads, *Centaurea nigra* L. and fruits of carrot, *Daucus carota* L. which still bore their delicate spines. These and a substantial list of taxa of grassland and cornfield habitats, undoubtedly representing hay and straw, indicate that the organic material was stable manure or similar.

The very large flot produced a mixed assemblage of beetles and bugs most of which probably originated in a stable floor, where conditions appear to have been quite foul before clearance. There are also hints of hay from a range of species including *Hypera* sp. (cf. Kenward and Hall 1997).

The microfossil 'squash' produced mostly organic detritus, with some inorganic material (including a few fungal spores and hyphae, and a few diatoms (one or perhaps two kinds). A single *Trichuris* and two ?*Ascaris* eggs were seen.

Context 147 [primary fill of pit 148 - evidence of domestic/industrial activity. Evidence for pit function?]

Sample 19 (2 kg processed)

Wet-moist, mid slightly orange-brown to very dark grey/black, soft and slightly thixotropic (working plastic), ?humic, slightly sandy, clay silt. Land snails were present.

The small residue of about 500 cm³ consisted of about 70% mineral clasts (mainly sand with some gravel, coal and cinder). The rest comprised less dense organic and inorganic debris, mainly pale-coloured 'strawy' debris, leather and further charcoal and cinders. There were moderate numbers of mostly rather well preserved seeds and other plant fragments, and the material as a whole had an

appearance perhaps characteristic of sweepings, from a floor, with animal hairs, fragments of very decayed leather, tree leaves, with a component probably derived from hay and straw. There was also small but distinct aquatic component.

The insect assemblage from this sample showed mixed states of preservation which could possibly be a result of in-ground decay, but more likely reflects the mixed pathways by which the fauna entered the deposit. The aquatic insects such as *Hydrobius fuscipes* (Linnaeus), *Hydraena testacea* Curtis and *Ochthebius* sp. may have come from water used for livestock, but could equally have fallen into the pit. Some of the other species (*Harpalus rufipes* (Degeer), *Harpalus* sp., *Meligethes* sp., *Aphrophora* sp., *Neophilaenus* sp.) may also have entered the deposit as strays, having lived in the immediate surroundings. Most of the assemblage, however, reflected dumped stable manure. The stable may have been cleared quickly as no really foul indicators are present.

The microfossil 'squash' was mostly inorganic material with a trace of organic detritus. No parasite eggs were seen.

Two land snail fragments were recovered, neither of which could be identified.

Context 146 [secondary fill of pit 148 - evidence of domestic/industrial activity. Evidence for pit function?]

Sample 1 (2 kg processed)

Moist, dark brown (locally greyish), slightly brittle and slightly compressed (working crumbly to plastic), sandy, humic silt, with flecks of mortar, brick/tile and twigs.

There was a moderate-sized residue of about 600 cm³ of which about 75% by volume was brick/tile, cinders, and sand, the washover consisting of twiggy woody detritus, mostly rather poorly preserved. Seeds were quite frequent and mostly fairly well preserved: for the most part they were from weeds of cornfields and probably arrived with straw. A few plants are more typical of biennial and perennial weed communities found close to habitation were present, notably greater celandine (*Chelidonium majus* L.) and feverfew (*Tanacetum parthenium* (L.) Schultz Bip.); it may not be a coincidence that both

have been widely used for their supposed or actual medicinal properties.

The modest-sized beetle assemblage again suggested stable manure but with no clear indicators of hay. The most abundant beetle was the dung beetle *Aphodius granarius* (Linnaeus), and several other species also pointed to the existence of very foul conditions.

The microfossil 'squash' was mostly organic detritus with some inorganic grains. A few fragments of plant silica and fungal hyphae, and a single *Trichuris* egg were noted.

Two land snails were recovered; these were identified as *Pupilla/Lauria* sp.

Context 174 [pit fill - evidence of domestic/industrial activity? Evidence for pit function?]

Sample 16 (2 kg processed)

Moist, mid to dark olive-grey brown (locally darker with charcoal or organics, stiff to crumbly (working plastic), slightly sandy, silty clay. The sediment included patches of hardened clay pellets (possibly dried out in the past) and some lumps of nearly pure clay.

There was a moderately large residue of about 600 cm³ of which almost all comprised brick/tile fragments and olive silty concretions (the latter with *Trichuris* eggs); the tiny washover consisted of a few cm³ of fine plant detritus, probably mostly very decayed wood, but with some rather poorly preserved blackberry (*Rubus fruticosus* agg.) seeds and a few well preserved fig (*Ficus carica* L.) seeds. There seems little doubt that the contents of this pit originally included faecal material, of which only a trace now remains.

A few very poorly preserved insects were present in this sample and probably represent individuals attracted to foul matter, together with some background fauna.

The microfossil 'squash' was mostly inorganic material, with much organic detritus and a few fungal hyphae. Three *Trichuris* eggs (two of which were sufficiently well-preserved as to be measurable) were seen.

Phase 3, 17th/18th century

Context 143 [open ground/general build-up - is there evidence of cultivation or waste ground?]
Sample 10 (2 kg processed)

Moist, dark brown, crumbly to compressed, humic silt, with amorphous organic sediment and herbaceous detritus. Burnt coal, wood, mammal bone (some possibly burnt), land snails and ?marine mollusc fragments were present.

The rather large residue (of about 800 cm³) consisted of about 33% by volume organic detritus (mainly wood fragments to 30 mm), the rest sand with some brown concretions, gravel and cinders; through both fractions there were many clasts (to 10 mm) of brown undisaggregated slightly humic silt matrix. There concentration of identifiable plant remains was low, but preservation usually good, though many specimens still carried some silt. Most of the taxa recorded are likely to have been weeds growing in cornfields (especially corncockle, *Agrostemma githago* and wild radish, *Raphanus raphanistrum*), probably remnants of a component of straw in the deposit, with only very small traces of taxa likely to have arrived in peat, hay or other debris. It is possible that this deposit contains very decayed stable manure, the degree of decomposition consistent with accumulation in the open in a surface-laid deposit.

A modest-sized flot was produced, consisting largely of 'twiggy' plant fragments. The insect remains were rather poorly preserved, reflecting their origins on open ground. At least half of the beetle species noted would have lived in rather foul conditions and the presence of grain beetles suggests that stable manure or horse dung was in the vicinity. Many of the remaining beetles would have arrived as background fauna or might have become incorporated in the deposit through trampling.

The microfossil 'squash' showed mostly organic detritus with some inorganic material. A few fungal spores and hyphae, fragments of plant silica, and spores/pollen grains were recorded. No parasite eggs were seen.

A single land snail *Oxychilus cellarius* (Müller) was identified.

Vertebrate remains

Preservation of the vertebrate remains from all represented phases was mainly recorded as 'good' (24 contexts) or fair (11 contexts). Whilst the broken surfaces of many fragments were sharp, a few bones in four contexts (50, 51, 54 and 55) were battered in appearance. A single extremely rounded fragment was noted from Context 77. Fragments from most deposits were brown or fawn in colour and showed little intra-context variation. Material from a small number of contexts (5, 9, 29 and 30) was slightly more variable, and some bones from Contexts 144 and 146 were stained black.

Fresh breakage and dog gnawing was observed in most contexts, but few bones were affected. Only Contexts 44, 50 and 51 contained burnt fragments. Evidence of butchery was mostly not extensive, with the exception of Context 134 (Phase 2), where butchered fragments represented 20-50% of the assemblage. Bones from this deposit included sheep crania which had been chopped longitudinally, presumably for removal of the brain; this butchery practice was also noted from Context 50 (Phase 2) and Context 77 (Phase 4). Split cattle vertebra were noted throughout the assemblage (Contexts 5, 28, 57 and 126) and from all phases, indicating the chopping of carcasses into 'sides'.

Three cattle metatarsals from Contexts 44, 82 (Phase 3) and 5 (Phase 4) were sawn across the base of the shaft, with only the distal articulation remaining. These fragments possibly suggest bone-working, the shaft being taken elsewhere for manufacture into artefacts. Alternatively, they may represent the butchering of carcasses by removing the distal limb elements using a saw rather than a cleaver.

A pathological condition known as *osteochondritis dissecans* was noted on almost all the cattle metacarpals from all phases represented. The lesions were mainly noted on the medial portion of the proximal articular surfaces. Although the aetiology of this condition is not fully understood, it is believed that the lesions result from sudden physical stress or trauma to the joint.

Phase 2

The vertebrate assemblage from Phase 2 amounted to 110 identified and 78 unidentified fragments.

Twenty-six fragments were measurable, whilst seven were mandibles with teeth *in situ* (Table 1).

Cattle and caprovid remains predominated, with the next most numerous species being cat. A single context (79) produced 13 of the 16 cat fragments and represented at least two animals, whilst part of a skull was recovered from Context 134. Knife marks, probably associated with skinning, were noted on two cat bones (pelvis and tibia) from Context 50, and a possible chop mark was recorded on a dog humerus (Context 146).

A large carnivore baculum (penis bone), identified from Context 134, may represent a big dog or may perhaps be something larger such as wolf or bear. As yet it has not been definitely identified.

Only three horse fragments were noted, but one (tibia) from Context 134 appeared to have been chopped. Context 134 also produced a single, somewhat flattened antler tine which could not be identified to species because of its rather eroded surface.

A range of skeletal elements was present for cattle, but maxilla and mandible fragments, isolated teeth and metapodials predominated. Caprovid fragments showed a similar pattern, although metapodials (mainly from Context 134) accounted for 23 of the 43 fragments recorded.

It is clear that some aspects of this assemblage (particularly material from the fills, 134, 146 of pit 148) suggest waste associated with the preparation of skins and possibly furs.

Phase 3

Phase 3 deposits produced a small assemblage amounting to only 93 fragments, of which 49 were identified to species, 22 were measurable and six were mandibles with teeth *in situ* (Table 2).

The limited range of species included cattle, caprovid and pig, with single fragments of chicken and goose. As observed for the previous period, an examination of the representation of body parts present shows that cattle head and distal limb elements were most numerous; metapodials accounted for almost half of the cattle fragments. No clear pattern was apparent for the caprovid remains because too few fragments were recovered.

Phase 4

Deposits from Phase 4 could only be dated to the Victorian period onwards, so are, therefore, rather broadly dated. Two-hundred and thirty-three fragments of bone were recovered, of which 98 were identifiable, 18 were measurable and 14 were mandibles with teeth *in situ* of use for providing age-at-death data (Table 3).

The bones recovered from these deposits show a similar preponderance of cattle and caprovids to the previous phases. Skeletal element representation for cattle is again dominated by metapodials, with some mandible fragments and isolated teeth. Caprovids, on the other hand, are clearly represented mainly by mandibles, and, to a lesser extent, by horncores, maxilla and isolated teeth. Metapodials (particularly metatarsals) were still present, along with a small number of meat-bearing fragments.

Part of a dog skeleton was also recovered from this phase (Context 48), although only the two femora and a quantity of rib and vertebra fragments were present.

Discussion and recommendations

Sediment samples

Most of the samples produced assemblages of plant and invertebrate macrofossils which indicated that further analysis would provide a substantial amount of archaeological information. Larger subsamples would be required in order to recover sufficient insect remains, however. Preservation varied between, and sometimes within, samples but was in some cases exceptionally good. Context 144, in particular, yielded plant material which might serve as a 'type' example, *and it and the accompanying insect remains should certainly be properly analysed and reported. Indeed, the deposits from which these samples were taken should not be destroyed without a properly designed programme of excavation and*

post-excavation analysis, including investigations of plant and invertebrate macrofossils.

The presence of the eggs of parasitic intestinal nematodes in three of the samples indicated that faecal material was a component of these deposits. However, the concentration of eggs was very low, showing only 'background' levels, and not necessarily indicative of primarily faecal material. *No further work on the eggs of intestinal parasitic nematodes, or other microfossils, is recommended.*

Vertebrate remains

The vertebrate assemblages from all phases were dominated by cattle and caprovid remains, particularly metapodials. Bones representing 'heads' were also more numerous than meat-bearing elements (such as scapulae, humeri, pelvis and femora) which were mostly quite scarce. Assemblages with a high proportion of heads and distal limb elements are generally interpretable as primary butchery waste. However, concentrations of metapodials can also be interpreted as tanners' waste, the skins having been delivered to the tannery with the lower limbs still attached. The Phase 2 assemblage strongly suggested the inclusion of waste from specialist activities, possibly associated with the preparation of skins and furs. The vertebrate remains from the later phases pointed to continued dumping of specialist waste, although the increase in caprovid 'head' remains in Phase 4 may represent a larger component of primary butchery refuse.

The vertebrate remains recovered from this site do not appear to include domestic or kitchen waste, but more likely represent the refuse from a number of industrial/craft

activities. The evidence from plants and insects for litter and dung *may* indicate that the cattle and sheep were kept nearby prior to slaughter, although the remains may equally have originated in the stabling of horses.

It is clear that the deposits show potential for producing a large and well-preserved vertebrate assemblage. Together with information from other sites in Hull, particularly from the excavations nearby in a different area of Blanket Row, this material could provide important data for comparison and synthesis. A basic archive should be made of the well-dated material from the current assemblage, which should include biometrical and age-at-death data.

This excavation in Blanket Row has provided a further opportunity to examine late-medieval and post-medieval deposits in this part of Hull, where there is clearly considerable evidence from plant and animal remains for past human activity and living conditions. Some extremely well preserved and interpretatively useful remains have been recovered and merit further consideration; if the deposits are to be destroyed they must certainly be excavated, recorded and analysed; if they are to be preserved *in situ*, they should be afforded protection which takes account of the instability of the organic materials.

Storage requirements

The remaining sediment, residues, flots and extracted invertebrate remains and bone should all be retained to permit further study.

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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Table 1. Hand-collected vertebrate remains from Phase 2, Blanket Row (Stakis Casino site), Hull. Key: No. frags = total number of fragments; No. meas = number of measurable fragments; No. mand = number of mandibles with teeth in situ; No. teeth = number of isolated teeth of use for providing age-at-death.

Species		No. meas	No. mand	No. teeth	No. frags
Carnivora	carnivore	-	-	-	1
<i>Canis</i> f. domestic	dog	-	-	-	3
<i>Felis</i> f. domestic	cat	6	-	-	16
<i>Equus</i> f. domestic	horse	-	-	-	3
<i>Sus</i> f. domestic	pig	-	-	-	3
Cervid	deer	-	-	-	1
<i>Bos</i> f. domestic	cattle	5	2	2	35
Caprovid	sheep/goat	12	5		43
<i>Anser</i> sp.	goose	1	-	-	2
<i>Anas</i> sp.	duck	1	-	-	1
<i>Gallus</i> f. domestic	chicken	1	-	-	1
<i>Corvus corax</i> L.	raven	-	-	-	1
<i>Sub-total</i>		26	7	2	110
Unidentified bird		-	-	-	1
Unidentified fish		-	-	-	2
Unidentifiable		-	-	-	75
<i>Sub-total</i>		-	-	-	78
Total		26	7	2	188

Table 2. Hand-collected vertebrate remains from Phase 3, Blanket Row (Stakis Casino site), Hull. Key: No. frags = total number of fragments; No. meas = number of measurable fragments; No. mand = number of mandibles with teeth in situ.

Species		No. meas	No. mand	No. frags
<i>Sus</i> f. domestic	pig	-	1	3
<i>Bos</i> f. domestic	cattle	14	3	29
Caprovid	sheep/goat	8	2	15
<i>Anser</i> sp.	goose	-	-	1
<i>Gallus</i> f. domestic	chicken	-	-	1
<i>Sub-total</i>		22	6	49
Unidentifiable		-	-	44
Total		22	6	93

Table 3. Hand-collected vertebrate remains from Phase 4, Blanket Row (Stakis Casino site), Hull. Key: No. frags = total number of fragments; No. meas = number of measurable fragments; No. mand = number of mandibles with teeth in situ; No. teeth = number of isolated teeth of use for providing age-at-death.

Species		No. meas	No. mand	No. teeth	No. frags
<i>Oryctolagus cuniculus</i> (L.)	rabbit	-	-	-	1
<i>Canis</i> f. domestic	dog	3	1	-	19
<i>Felis</i> f. domestic	cat	1	-	-	1
<i>Sus</i> f. domestic	pig	-	-	-	1
<i>Bos</i> f. domestic	cattle	9	2	1	28
Caprovid	sheep/goat	4	11	-	45
<i>Anser</i> sp.	goose	1	-	-	3
<i>Sub-total</i>		18	14	1	98
Unidentified fish		-	-	-	2
Unidentified		-	-	-	133
<i>Sub-total</i>		-	-	-	135
Total		18	14	1	233