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**Assessment of vertebrate remains from Belton, North Lincolnshire
(sitecode: HGP99)**

by

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Summary

Excavations in a 'pipeline corridor' at Belton, North Lincolnshire uncovered the remains of several structures, a group of pits, and a number of ditch/gully features. Four boxes of vertebrate remains (and a small amount of bone from the sediment samples), recovered from deposits of mid Saxon date, were submitted to the EAU for assessment of their bioarchaeological and archaeological potential.

A moderate-sized assemblage of animal bone was recovered, mostly from the fills of Structure B (sunken featured building). Preservation was quite good throughout, but most deposits contained a small component of rather battered or eroded fragments which may represent reworked or redeposited material. Material from the pit and ditch fills showed better preservation and was, on the whole, less fragmented. The main domesticates were identified, but cattle remains clearly predominated in all deposits. Preliminary examination of skeletal element representation for cattle implies the presence mostly of primary butchery waste, but other evidence from the unidentified categories suggests that this interpretation may be biased by taphonomic factors. Further work on this aspect of the analysis is recommended.

A moderate-sized fish assemblage was recovered from sediment samples from Context 354, which included both freshwater and estuarine species. A more systematic sampling programme encompassing material from a larger selection of the deposits would perhaps have provided a more representative assemblage of both fish and vertebrate remains.

According to the Domesday Book, Belton was part of the wider estate of Flixborough, a large Saxon settlement from which a significant vertebrate assemblage has been recovered. In view of Belton's close proximity to, and possible associations with, Flixborough, a full programme of further analysis of the vertebrate remains from all well-dated deposits is recommended.

KEYWORDS: BELTON; NORTH LINCOLNSHIRE; HATFIELD GAS PIPELINE; MID SAXON; SUNKEN FEATURED BUILDINGS; VERTEBRATE REMAINS; FISH BONE

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Introduction

Excavations were undertaken by Northern Archaeological Associates at Belton, North Lincolnshire (SE785058) prior to the insertion of a gas pipe. The site, located within the pipeline corridor, produced evidence for three structures; two described as sunken featured buildings and one as a beam-slot structure. Additionally, a series of pits and ditches, possibly denoting an industrial area, was located 60m to the east of one of the structures.

Four boxes (approximately 44 litres per box) of vertebrate remains and a small amount of bone sieved from the sediment samples were recovered from deposits of mainly mid Anglo-Saxon date and were submitted to the EAU for assessment of their potential.

Methods

Residues (<10mm fractions) from the sediment samples were sorted for vertebrate remains at the EAU.

Data for the vertebrate remains were recorded electronically directly into a series of tables using a purpose-built input system and *Paradox* software. For each context (or sample) containing more than ten fragments, subjective records were made of the state of preservation, colour of the fragments, and the appearance of broken surfaces ('angularity'). Additionally, semi-quantitative information was recorded concerning fragment size, dog gnawing, burning, butchery and fresh breakage.

Where possible, fragments were identified to species or species group, using the reference

collection at the EAU. Fragments not identifiable to species ('B' bones) were grouped into categories: large mammal (assumed to be cattle, horse or large cervid), medium-sized mammal 1 (assumed to be caprovid, pig or small cervid), small mammal (rats, mice, voles etc), unidentified fish, unidentified bird, and completely unidentifiable.

Total numbers of fragments by species were recorded, together with the numbers of 'A' bones, i.e. mandibular teeth and mandibles (for age at death analysis), measurable fragments, and the number of unfused and juvenile fragments (Dobney *et al.* forthcoming). In addition to counts of fragments, total weights were recorded for all identified and unidentified categories.

Results

Vertebrate remains

The entire assemblage, recovered mainly from deposits of 8th century date, amounted to 2864 fragments (representing 28 contexts) of which 825 were recovered from the residues of the sediment samples. Details of the range of species, number of fragments, measurable bones, mandibles with teeth and isolated teeth (of use for providing age-at-death or sexing information) for the hand-collected material can be found in Table 1. Table 2 shows the species and fragment counts for the sieved remains.

On the basis of information supplied by the excavator, the vertebrate remains were grouped into four categories. These are as follows:

- Material associated with Structure A
- Material associated with Structure B
- Ditch/gully fills (industrial area)
- Pit fills (industrial area)

Material associated with structure A

Contexts 321 and 328 - fills of grubenhaus

Preservation of the vertebrate remains was rather variable, although most fragments were recorded as 'good' or 'fair'. A small component that was rather poorly preserved was apparent within the material from both deposits. A number of the fragments exhibited a battered appearance, whilst a few had rounded edges or were very eroded. Colour varied from dark brown to brown to fawn (the same was noted for both contexts). Bones from Context 321 (267 fragments) formed a moderate-sized assemblage, but preservation suggests that the material probably came from different sources or included a redeposited component. Context 328 (94 fragments) was similar and both contexts included a few fragments which may have been mineralised. These fragments had been leached and had a 'porcelain-like' appearance. In general, the assemblage was moderately fragmented, although bones from Context 328 showed extensive fresh breakage (20-50% of all bones within the deposit), as opposed to damage caused in antiquity.

Remains of cattle formed the bulk of the identified material, with pig, caprovid and horse remains also present. A single goose bone was identified.

Examination of the skeletal element representation for cattle shows that non-meat-bearing elements predominate, with metapodials, phalanges and isolated teeth being the most numerous. However, it must

be borne in mind that the unidentified large mammal fraction included many shaft fragments which may represent the remaining elements of the cattle skeleton.

Few bone fragments (20) were recovered from the 29 kg of sediment processed from Context 321 and most (16) were not identified to species. Two of the three fish bones identified were eel (*Anguilla anguilla* (L.)) vertebrae.

Contexts associated with Structure A

Context 329 - fill of pit 330

The material from this pit was mainly well-preserved, although rather battered in appearance. Colour was recorded as mostly dark brown. Fresh breakage was noted on 10-20% of the assemblage, whilst evidence for dog gnawing was negligible. Fifty-four fragments were recovered, mainly identified as the remains of cattle. A single horse metatarsal was also noted.

Context 355 - fill of pit or post-hole 356

There was no hand-collected material. Ten rather battered unidentified fragments were recovered from the sediment sample.

Context 359 - fill of pit 360 (pit cuts grubenhaus)

Only 9 fragments, freshly broken and probably representing a single large mammal rib, were recovered by hand-collection. Seven rather battered shaft fragments (large- and medium-sized mammal) were noted from the sediment sample.

Material associated with structure B

Context 301 - final fill of grubenhaus 302

Preservation of this assemblage was recorded as 'good', with most fragments having sharp edges, although the overall appearance of the bones was somewhat battered. Mostly dark brown or brown in colour, the fragments showed some fresh breakage and 10-20% of all fragments were <5mm in any dimension. A large proportion (74% or 114 fragments) of the assemblage was not identified to species, which is probably a consequence of the fragmented nature of the material. It was apparent that the bones had been broken in antiquity as well as during excavation.

Most of the identified fragments (19) were recorded as cattle, whilst horse (8), caprovid (6) and pig (4) remains were also noted. Single fragments of roe deer (*Capreolus capreolus* (L.)), goose (*Anser* sp.) and fowl were also recovered.

Skeletal element representation for cattle again shows that non-meat-bearing bones predominate, suggesting the presence of primary butchery waste. Caprovid and pig remains are too few for any meaningful interpretations to be made.

Contexts 323, 326, 327, 353 and 354 - fills of grubenhaus 302.

On the whole, most of the fragments from these deposits were reasonably well preserved, although they were rather battered in appearance. However, 90 bones from Context 354 (labelled SE quad) were very variable in preservation, and included battered and eroded fragments. Material from Context 353 (labelled NW quad), on the other hand, was better preserved and less fragmented than the rest of the bones from these deposits. Colour was described as dark brown, or brown, although Context 323 contained a few fawn fragments. Material

from Context 323 was also rather fragmented and dog gnawing was extensive on some of these bones. Much of the material from this context was unidentified, with many large and medium-sized mammal shaft and rib fragments.

Of the identified fragments, cattle were again most numerous, with caprovid, horse and pig also present. A large ram horncore was noted among the caprovid remains, whose base had been chopped and tip removed. A horse mandible fragment had been chopped, as well as having a series of knife marks along the bone.

The single dog bone (a mandible) from Context 323, was comparable in size to the greyhound reference specimen in the EAU comparative collection, although it was slightly more robust.

Birds were represented by the remains of goose and chicken. One goose humerus fragment represented a small wild goose, and was comparable in size to a barnacle goose (*Branta leucopsis* Bechstein).

The unidentified or 'B' bone (see Dobney *et al.* forthcoming) fraction formed 71% of the total assemblage. It was mainly composed of large mammal shaft, rib and vertebra fragments. Rib fragments from both large and medium-sized mammals predominated within the assemblage from Context 354, although large mammal shaft fragments were also numerous. A small number of the medium-sized mammal vertebrae had been chopped longitudinally. Cranial fragments were present but only in small numbers. Split cattle shaft fragments, radii and metapodials in particular, were recorded from Contexts 353 and 354, as were cattle horncores which had been deliberately chopped at their bases for removal of the cores from the skull.

A preliminary examination of the skeletal representation of cattle elements suggests that head and lower limb elements (i.e. non-meat-bearing bones) were prevalent. However, some of the many large mammal shaft fragments within the unidentified fraction could represent the rest of the cattle skeletons. Additionally, identified cattle fragments included many isolated teeth, phalanges and calcanei, all of which are robust and preserve well. Interpretation of this assemblage may well be skewed by taphonomic factors. Caprovid and pig remains were insufficiently numerous to provide any useful interpretative information.

A sediment sample (19.6 kg) from Context 354 yielded 676 fragments (Table 2), of which 475 were fish remains. Almost half (approximately 205 fragments) were vertebrae, most of which were identified as eel (*Anguilla anguilla* (L.)) and cyprinid remains, but included several pike (*Esox lucius* L.) and perch (*Perca fluviatilis* L.) vertebrae.

Material from deposits in the 'pit and ditch' group associated with the industrial area.

Pit fills - Contexts 401, 402, 404 and 409

A total of 246 fragments was recovered from these deposits (114 from Context 404). This assemblage was mostly well preserved, although Context 404 yielded a few slightly battered fragments. Additionally, material from this context showed a moderately high degree of fragmentation, modern as well as ancient damage. Bones from other contexts in this group were noted as being less fragmented than the material from the sunken featured buildings. Dog gnawing and butchery were recorded, but only at low frequencies. Colour was recorded as variable for fragments both within and between

contexts, ranging from dark brown to brown to gingery-brown to fawn.

Sixty-five percent (160 fragments) of the assemblage was unidentified, mostly composed of large-sized mammal shaft, mandible, cranial and vertebra fragments. The identified component was dominated by cattle, but also included pig, caprovid, horse and cat remains. Additionally, a single roe deer (*Capreolus capreolus* (L.)) mandible was identified.

As discussed previously for other contexts, cattle remains included mainly head and lower limb elements (non-meat-bearing) possibly indicative of primary butchery waste.

Context 408 - spread south of pit 409/410 - may consist of plough drag and not be securely dated

This deposit produced 21 fragments, of which eight were identified to species. Preservation was mainly recorded as good, although as with other contexts, there was a small component of 'battered' fragments. This suggests the presence of a small amount of residual or reworked material.

Ditch/gully fills - Contexts 411, 413, 417, 430 and 436

Overall, the assemblages recovered from the ditch/gully fills were well preserved and were, generally, less fragmented than those recovered from the sunken featured buildings. The total assemblage amounted to 172 fragments (Table 3), of which 63 were identified to species. These included the remains of the major domesticates: cow, horse caprovid and pig. A chopped horse humerus was noted from Context 413, and a large dog mandible was recorded from Context 417. An additional piece of the same

mandible was identified amongst the bones from Context 411.

The unidentified fraction was primarily composed of large-sized mammal remains which included shaft, cranial, vertebra and mandible fragments.

A brief examination of the occurrence of different parts of the skeleton for cattle shows that there were more meat-bearing elements than previously noted, but that total numbers of fragments were rather on the low side.

Sieved material from Context 417 added a further 111 fragments, of which 96 were unidentified and mostly <10 mm in maximum dimension. Twelve fish bones were identified, including a cyprinid vertebra.

Discussion and statement of potential

The vertebrate remains recovered from these deposits show some potential for providing useful zooarchaeological and archaeological information. Preservation of the material from the four different context groupings suggests that material from the pits and ditches was slightly better preserved than that from the sunken featured buildings. Variability of angularity and colour was observed within material from most deposits throughout the context types represented, possibly implying the presence of some redeposited or residual bone in varying amounts. Mostly this appeared to be only a small component of each assemblage. Material from the sunken featured buildings tended to be more fragmented than that from the pit and ditch fills, although this was not the case for material from Context 404 (fill of pit 405). Recent damage to the bones (i.e.

during excavation) was also quite extensive and occasionally prevented identification to species and inclusion within the total number of measurable fragments.

A preliminary examination of body part representation for the major domestic species was undertaken. Caprovid and pig remains were, on the whole, too few to be of any interpretative value. The skeletal elements for cattle appeared to suggest that primary butchery waste, i.e. isolated teeth and lower limb elements (metapodials, carpals, tarsals and phalanges) predominated. Little difference was discernable between the context groups, although perhaps the ditch fills contained slightly more meat-bearing elements (i.e. scapulae, humeri, radii, pelvis and femora). However, taking the large mammal fraction (assumed to be mainly cattle) into consideration, it can be seen that the deposits associated with the sunken featured buildings contained many large-sized mammal shaft fragments which could represent secondary butchery refuse and domestic waste. The remains of geese and chickens from the fills of Structure B are more likely to represent domestic/kitchen waste. Fewer shaft fragments were noted from the pit and ditch fills, which appeared to have larger concentrations of cranial and vertebra fragments.

Two horse fragments showed evidence of butchery. Horse flesh may have been an occasional part of the human diet but, equally, horse carcasses may have been skinned, chopped up and fed to dogs.

Therefore, the bulk of the material from the four context groups appears to be a mixture of waste from a number of activities being undertaken at the site, implying that all stages of production and consumption were being carried out there. More detailed examination of skeletal element

representation might throw further light on specific activities undertaken in the vicinity.

The sample residues produced a moderate-sized assemblage of bone, greatly enhanced by the large numbers of fish recovered from Context 354. Preliminary identifications suggest that most of the species present are found in freshwater or estuaries. No marine taxa have so far been identified. An interim report on the fish remains from Flixborough shows that almost 86% of the fish recorded so far are freshwater or from the anadromous, catadromous and estuarine group (Barrett 1999).

The sample from Context 354 clearly shows the potential that existed for the preservation of vertebrate remains in these deposits and highlights the bias that is created by hand-collection.

Recommendations

Although this assemblage is not large it is tightly dated to the middle Saxon period. In this region and nationally there are very few well-dated middle Saxon vertebrate assemblages. The site of Flixborough, North Lincolnshire (not far from Belton) has produced a vast assemblage of well-dated vertebrate remains and it represents a high status/manorial, or perhaps even a monastic centre supplied by rural estates in the region. According to the Domesday Book, Belton was part of the wider estate of Flixborough. Thus the significance of this small vertebrate assemblage from Belton is enhanced in the context of the economic and social dynamics of the Humber region during the middle Saxon period.

The small biometrical and age-at-death archive will, therefore, provide valuable data supplementary to those already recorded at

Flixborough.

It is recommended that funding be provided for a full programme of further analysis of vertebrate remains from all well-dated deposits at Belton. All relevant biometrical and age-at-death data should be recorded. A full archive of the fish remains is also recommended for comparison with those recovered from the extensive sampling programme undertaken at Flixborough.

Retention and disposal

All the bone should be retained for the present.

Archive

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

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Table 1. *The hand-collected vertebrate remains from Belton, North Lincolnshire (Hatfield Gas Pipeline). Key: meas = total number of measurable fragments; mand = total number of mandibles with teeth in situ; total frags = total number of fragments.*

| Species | | meas | mands | teeth | total frags |
|---------------------------------|------------|------------|-----------|-----------|-------------|
| <i>Canis</i> f. domestic | dog | - | 2 | - | 3 |
| <i>Felis</i> f. domestic | cat | - | - | - | 2 |
| <i>Equus</i> f. domestic | horse | 6 | 3 | 14 | 48 |
| <i>Sus</i> f. domestic | pig | 17 | 16 | 7 | 117 |
| <i>Capreolus capreolus</i> (L.) | roe deer | - | - | - | 2 |
| <i>Bos</i> f. domestic | cattle | 63 | 10 | 24 | 345 |
| Caprovid | sheep/goat | 23 | 12 | 6 | 77 |
| <i>Anser</i> sp. | goose | 8 | - | - | 16 |
| <i>Gallus</i> f. domestic | chicken | 3 | - | - | 11 |
| <i>Sub-total</i> | | 120 | 43 | 51 | 561 |
| Unidentified | | - | - | - | 1418 |
| <i>Sub-total</i> | | - | - | - | 1418 |
| Total | | 120 | 43 | 51 | 1979 |

Table 2. *Total number of fragments by context recovered from the samples from Belton, North Lincolnshire (Hatfield Gas Pipeline).*

| Species | | 321 | 354 | 355 | 359 | 417 | Total |
|--|-----------|-----------|------------|-----------|----------|------------|------------|
| <i>Mus</i> / <i>Apodemus</i> sp. | mouse | - | - | - | - | 1 | 1 |
| <i>Felis</i> f. domestic | cat | - | - | - | - | 1 | 1 |
| <i>Sus</i> f. domestic | pig | 1 | 2 | - | - | 1 | 4 |
| <i>Gallus</i> f. domestic | chicken | - | 1 | - | - | - | 1 |
| <i>Corvus corone</i> L./ <i>Corvus frugilegus</i> L. | crow/rook | - | - | - | 1 | - | 1 |
| Fish | | 3 | 475 | - | - | 12 | 490 |
| <i>Sub-total</i> | | 4 | 478 | 0 | 1 | 15 | 498 |
| Unidentified | | 16 | 198 | 10 | 7 | 96 | 327 |
| <i>Sub-total</i> | | 16 | 198 | 10 | 7 | 96 | 327 |
| Total | | 20 | 676 | 10 | 8 | 111 | 825 |

Table 3. Total fragment counts for the four context groupings from Belton, North Lincolnshire (Hatfield Gas Pipeline). Sieved material is excluded. Structure A includes Contexts 321 and 328 (and associated contexts 329 and 359); Structure B includes Contexts 301, 323, 326, 327, 353, 354; Pit fills includes Contexts 401, 402, 404 and 409; Ditch/gully fills includes 411, 413, 417, 430 and 436.

| Species | Struc A | Struc B | Pit fills | Ditch/gully fills |
|---------------------------------|----------------|----------------|------------------|--------------------------|
| <i>Canis f. domestic</i> | - | 1 | - | 2 |
| <i>Felis f. domestic</i> | - | - | 2 | - |
| <i>Equus f. domestic</i> | 8 | 21 | 5 | 13 |
| <i>Sus f. domestic</i> | 17 | 66 | 14 | 12 |
| <i>Capreolus capreolus</i> (L.) | - | 1 | 1 | - |
| <i>Bos f. domestic</i> | 89 | 161 | 53 | 34 |
| Caprovid | 9 | 53 | 11 | 2 |
| <i>Anser</i> sp. | 1 | 15 | - | - |
| <i>Gallus f. domestic</i> | - | 11 | - | - |
| <i>Sub-total</i> | <i>124</i> | <i>329</i> | <i>86</i> | <i>63</i> |
| Unidentified | 280 | 829 | 160 | 109 |
| <i>Sub-total</i> | <i>280</i> | <i>829</i> | <i>160</i> | <i>109</i> |
| Total | 404 | 1158 | 246 | 172 |