HAND-COLLECTED AND WET-SIEVED ANIMAL BONE FROM PHASE 2 C257 CROSSRAIL CENTRAL – BROADGATE TICKET HALL EVALUATION, LONDON EC2, CITY OF LONDON (XSM10)

Alan Pipe

Osteology
Museum of London Archaeology

BON/REP/20/2011

first draft

word count 2098 words

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1. Introduction and methodology

This report quantifies, identifies and interprets the animal bone recovered from hand-collected context groups [339], [347], [372], [390], [399], [458], [507], [527], [533], [598], [651], [693], [697], [699], [700], [702], [703], [707], [714] and [715]; and wet-sieved bulk samples [708] {25}, [714] {27} and [715] {28} at XSM10. All recovered animal bones were washed, air-dried and then bagged and labelled as context and sample groups.

Animal bone from each context was then described and recorded directly onto the MOLA animal bone post-assessment Oracle database in terms of species, skeletal element, body side, age, epiphysial fusion, dental eruption and wear, sex, fragmentation, modification and measurement of complete bones. Species and skeletal element were determined using the MOLA animal bone reference collection together with Cannon 1987; and Schmid 1972. Evidence for age at death was derived from epiphysial fusion (Schmid 1972) and dental eruption and wear (Amorosi 1989; and Payne 1973). As far as possible, each bone fragment was assigned to species and skeletal element and recorded as an individual database entry. Unidentifiable vertebra, rib and long bone fragments were assigned to the approximate categories 'ox (cattle)-sized' or 'sheep-sized' as appropriate. The complete assemblage is held on Excel Tables 1 and 2 for future reference and analysis with respect to available stratigraphic data.

Table 1 shows the assemblage summary in terms of weight, fragment count, fragmentation, preservation, faunal representation and recovery of ageing and metrical evidence

Table 2 shows the assemblage catalogue in terms of species, skeletal element, age, fragment count and modification.

All data are available for consultation on request on the Museum of London Archaeology Oracle animal bone post-assessment database.

Table 2: Hand-collected and wet-sieved animal bone from XSM10 (phase 2)/summary

Table 3: Hand-collected and wet-sieved animal bone from XSM10 (phase 2)/detailed summary

2. Preservation and quantification (Table 1)

A total of 13.610 kg/352 fragments, seven standard archive boxes, of well-preserved animal bone were recorded from hand-collected and wet-sieved contexts. Maximum hand-collected fragment size generally exceeded 75mm, with most bone in very good surface condition, and all tool marks, gnawing evidence, tooth wear and fusion lines easily visible. Preliminary dating evidence available at time of writing indicates Roman dates for [697], [699], [700], [702], [703], [707], [708], [714] and [715]; [217], [258], [262] and [276]; 16th century dates for [250] and [251]; and probable post-medieval dates for the remainder.

3. The fauna (Table 2)

The identifiable faunal assemblage included mainly ox (cattle) *Bos taurus* and sheep/goat including sheep *Ovis aries* with occasional recovery of pig *Sus scrofa*

[399], [507], [533], [651], [714] and [715] and single examples of chicken *Gallus gallus* [347], goose *Anser anser* [507] and mallard or domestic duck *Anas platyrhynchos* [507]. Measurable cattle horn cores ranged between 220-360 mm on the outer curve and therefore indicated 'medium-horn' cattle (Armitage 1982, 43). Non-consumed domesticates included horse *Equus caballus* [702] and [714]; dog *Canis lupus familiaris* [699], [700], [708] and 714]; and cat *Felis catus* [399] and [533]. Wild 'game' species were extremely sparsely-represented; wild duck Anatidae [715], fallow deer *Dama dama* [507]; and rabbit *Oryctolagus cuniculus* [507] and [651]. The remainder of the assemblage comprised fragments of unidentifiable 'cattle-sized' and 'sheep-sized' long bone and rib from [104], [142], [150], [208], [211], [213], [214], [306] and [314]. There was no recovery of amphibians, scavengers or small mammals. A very small fish assemblage included fragmented bones of cod (family) Gadidae only [507].
Single examples of human adult rib and ulna (fore-arm) were recovered from [714].
The major domesticates were represented by all skeletal areas although cattle and sheep/goat showed a definite bias towards elements of the head and foot, although toe bones were very sparsely-recovered. In general, carcase-part representation suggests that the groups represent a combination of waste derived from primary carcase processing, butchery and consumption.
The major domesticate assemblage; cattle, sheep/goat and pig, derived from adults and juveniles with infant pig from [507] only and no recovery of foetal or neonate animals.
There was abundant, clear evidence of butchery on cattle with only occasional examples on sheep/goat and pig; all butchery involved use of cleavers only with no obvious use of knives or saws. Chop marks at the bases of cattle and sheep horn cores provided definite tool-mark evidence for preliminary horn removal in preparation for further horn-working. This was seen on 'medium-horn' cattle horn cores from [507] and [693]; and sheep horn cores from [507], [651] and [693]. A cattle metatarsal (hind foot) from [507] had been shaped into a pinner's bone, which had probably then been discarded at the end of its functional life. A cattle scapula (shoulder blade) from [714] showed a hole driven through the 'blade' from the medial ('inner') side, probably indicating suspension from a butcher's hook for display.
The remainder of the assemblage largely comprised fragments of unidentifiable 'cattle-sized' and 'sheep-sized' long bone and rib from the majority of hand-collected and wet-sieved context and sample groups.
There was no recovery of scavengers, commensal species or small wild vertebrates.
There was no evidence for canine or rodent gnawing, burning or pathological change.
Hand-collected context groups ranged between 0.010 kg-3.350 kg/fragment counts 1-225; wet-sieved sample groups ranged between 0.025-0.100 kg/fragment counts 8-9. Contexts [507], [651] and [714] produced the largest fragment counts, respectively 255, 25 and 25 fragments, with all other context/sample groups producing nine fragments or fewer.

3. The groups (Tables 1 and 2)

Context [339] produced a fragment of sheep-sized thoracic vertebra.

Context [347] produced 0.020 kg, single fragments of chicken rib and adult sheep/goat atlas vertebra.

Context [372] produced 0.050 kg, an adult cattle tibia (shin).

Context [390] produced 0.200 kg/five fragments of adult sheep/goat vertebra and upper fore- and hind-leg.

Context [399] produced 0.050 kg/five fragments derived from sheep/goat vertebra, upper fore-leg and lower hind-leg with a single humerus (upper fore-leg) of cat.

Context [458] produced 0.050 kg, a sheep/goat scapula (shoulder blade).

Context [507] produced 2.350 kg/225 fragments, by far the largest and most species-diverse bone group. The fragment count derived mainly from fish of the cod family; vertebrae, ribs, fin spines and fin rays; with adult 'medium-horn' cattle and sheep/goat skull, vertebra, upper and lower leg and hind-foot; pig infant scapula (shoulder blade) and infant and juvenile tibia (shin) with single fragments of goose metatarsal (foot), mallard/domestic duck ulna (wing), adult fallow deer radius, and adult rabbit femur and tibia (hind-leg). Dental evidence from cattle skull and sheep/goat mandible (lower jaw) indicates animals of at least five and the four years of age.

Context [527] produced 0.100 kg/four fragments comprised of single examples of cattle mandible and calf tibia (shin); and sheep/goat atlas and cervical (neck) vertebrae.

Context [533] produced 0.400 kg/seven fragments comprised of two adult cat humeri (upper fore-legs) with single fragments of cattle radius (lower fore-leg) and lumbar (lower back) vertebra; juvenile sheep/goat humerus (upper fore-leg); and juvenile pig thoracic and lumbar (upper and lower back) vertebrae.

Context [598] produced 0.040 kg/a fragment of adult sheep/goat mandible (lower jaw).

Context [651] produced 2.200 kg/25 fragments derived mainly from adult cattle and sheep/goat. They included four cattle mandibles, a calf and three adults in at least the fifth year, cattle atlas, axis and sacral vertebrae; sheep/goat horn core, skull, mandibles including two from adults between four and six years old, and radius. There were also single fragments of juvenile pig mandible and scapula (shoulder blade). Wild 'game' species were represented by an adult rabbit femur (thigh bone).

Context [693] produced 3.350 kg/eight fragments derived mainly from cattle horn core, skull and mandible with single fragments of adult sheep skull and male sheep/goat innominate (pelvis). Dental evidence from cattle skull and mandible indicates animals in at least the fifth year. All cattle horn cores derived from 'medium-horn' animals; three horn cores have had been chopped at the base as preparation for removal of the horn sheath.

Context [697] produced 0.350 kg/single fragments of adult cattle cervical (neck) vertebra, rib and tibia (shin).

Context [699] produced 0.300 kg/single examples of cattle tooth and cervical (neck) vertebra; and adult dog femur (thigh bone). Measurement of the dog femur allowed calculation of an estimated shoulder height of 0.647 metres.

Context [700] produced 0.040 kg/a mandible of an adult dog.

Context [702] produced 1.050 kg/two fragments of adult horse; a mandible (lower jaw) and a metacarpal (fore-foot).

Context [703] produced 0.075 kg/a fragment of cattle rib.

Context [707] produced 0.250 kg/four fragments; single examples of adult cattle radius and ulna (lower fore-leg) and two fragments of sheep/goat tibia (shin).

Context [708] {25} produced 0.025 kg/eight fragments derived from single examples of cattle tooth; adult sheep/goat maxilla (upper jaw) and dog mandibular tooth with fragments of sheep-sized rib.

Context [714] and sample {27} produced 2.4 kg/34 fragments derived from mainly from adult cattle with smaller groups of sheep/goat, pig, horse and dog. The cattle group included fragments of mandible (lower jaw), rib, scapula (shoulder blade) and radius (lower fore-leg) with single examples of skull, cervical and thoracic vertebra, innominate (pelvis), femur (thigh), metacarpal (fore-foot), metatarsal (hind-foot) and phalange (toe). Sheep/goat produced fragments of rib with an adult mandible with an adult metacarpal and two adult metatarsals (fore- and hind-foot); pig produced single fragments of skull, femur (thigh bone) and metapodial (foot). Dental evidence from the sheep/goat mandible indicated a third-year animal. Horse and dog produced single fragments of rib and metapodial (foot); dog produced single adult and juvenile mandibles.
The hand-collected group included single fragments of human rib and adult ulna (lower fore-arm).

Context [715] and sample {28} produced 0.300 kg/11 fragments including single examples of cattle rib, adult radius (lower fore-leg) and calf tibia (shin); and pig humerus (upper fore-leg). Wild 'game' species comprised a wild duck tibia (drumstick) only.

4. Interpretation

This small but very well-preserved assemblage includes waste from three sources; each of these components of the assemblage has some potential for further analysis and interpretation.

1. There is a substantial group of horn cores and foot elements derived from primary processing of cattle and sheep/goat carcases. Clear basal chop marks on 'medium-horn' cattle and sheep horn cores suggest that these elements were removed for primary horn-working elsewhere.

2. Butchery and post-consumption waste provide the bulk of the remainder of the hand-collected and wet-sieved assemblage. Cattle and sheep/goat head, vertebrae and limb long-bones provide the bulk of the assemblage indicating a meat-diet biased heavily towards beef and mutton from carcase areas of moderate and prime meat-bearing quality; head, vertebrae, rib, upper and lower fore- and hind-leg probably suggesting some degree of affluence. Evidence from dental eruption and wear and epiphysial fusion indicates definite selection of adult cattle, in many cases in at least the fifth year, and adult sheep, with no evidence for consumption of veal or lamb in addition to beef and mutton. By comparison, the very sparse recovery of juvenile and adult pig bones suggest only relatively occasional consumption of pork. Similarly, poultry (including chicken, goose and mallard or domestic duck) and wild 'game' (fallow deer and rabbit) provided only minor components of the meat diet. There were no groups of very young animals and no evidence for local stock-keeping.

3. Sparse recovery of horse, dog and cat bones indicates very limited disposal of non-consumed domesticates. Again, none of these species showed knife-cuts linked to hide removal and there is no evidence that they represent anything other than occasional carcase disposal.

Analysis of the assemblage with reference to full stratigraphic data and feature descriptions, would allow more detailed interpretation with particular respect to meat diet including selection of species, carcase-part, age-group and butchery tools and techniques.

5. Bibliography

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6. Table

Table 2: Hand-collected and wet-sieved animal bone from XSM10 (phase 2)/summary
Table 3: Hand-collected and wet-sieved animal bone from XSM10 (phase 2)/detailed summary