

## **Technical Report: Biological remains from a site east of High Catton, East Riding of Yorkshire (site code: TSEP222)**

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### **Summary**

*A series of sediment samples, a very small quantity of hand-collected shell, and five boxes of hand-collected bone, from deposits revealed by excavations east of High Catton, were examined initially during an evaluation of their bioarchaeological potential. The sediment samples all yielded moderate or large numbers of plant and invertebrate macrofossils whose potential for landscape and land-use reconstruction was high; additional material was subsequently examined from two of the samples.*

*Three ditch fills yielded useful assemblages of plant and invertebrate remains preserved by anoxic waterlogging, but charred plant remains were limited to a few cereal grains and some ?heather twigs, perhaps originating in ash from burnt turves. Invertebrate remains were often poorly preserved, perhaps as a result of a recent fall in the water-table.*

*The wider surroundings of the ditches seem to have been primarily agricultural, with grazing land important at some stages but probably periods of arable cultivation. There was little to suggest human occupation, (as opposed to agricultural activity). There was at least some scrub growing near the ditches, perhaps along their margins or in field boundaries.*

*The hand-collected shell remains were of no interpretative value.*

*A moderate-sized assemblage of vertebrate remains was recovered, mainly from ditch, pit and gully fills of 2<sup>nd</sup>-3<sup>rd</sup> century and probable late Roman/post-Roman date. Only limited analysis of the vertebrate remains could be undertaken because the assemblage was small, variably preserved, and somewhat fragmented. The basic analysis undertaken showed that the economy of the local settlement was based on the major domestic mammals, with no evidence of exploitation of wild resources. Cattle remains appeared to dominate the Phase 1 assemblage and included a complete skeleton, which may represent a ritual deposit. This apparent dominance of cattle may be the result of preservational conditions, but could be hinting at a trend noted from other Roman-period sites, in which cattle are typically the most significant species within an assemblage. This has been more commonly observed in assemblages of a slightly later (3<sup>rd</sup>-4<sup>th</sup> century) date and usually from sites of a more urban or military nature (King 1978; 1984). However, the association of this site with a Roman road may have stimulated demand for certain products and may have influenced the local economy and husbandry practices.*

**Keywords:** HIGH CATTON; EAST RIDING OF YORKSHIRE; LATE IRON AGE; ROMANO-BRITISH; MACROFOSSIL PLANT REMAINS; INVERTEBRATES; INSECTS; VERTEBRATE REMAINS

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### Introduction

Numerous archaeological features, largely concentrated within Trench 2 and including ditches, gullies, pits and postholes, were revealed during excavations at this site. Stratigraphic and artefactual evidence has suggested that these features could be assigned to four phases of occupation:

Phase 1 Romano-British (2<sup>nd</sup>/3<sup>rd</sup> centuries AD)

Phase 2 presumed late Roman/post Roman

Phase 3 medieval/post-medieval

Phase 4 post-medieval/modern

A series of sediment samples ('GBA'/'BS' *sensu* Dobney *et al.* 1992), a very small quantity of hand-collected shell, and five boxes (each of approximately 20 litres) of hand-collected bone, were recovered from the deposits. The samples were confined to ditch fills of Phase 1 date, whilst Phases 1 and 2 produced all the shell and vertebrate remains under discussion in this report.

#### Phase 1

This phase is characterised by ditches, which cut across the northern end of Trench 2 and appeared to represent boundary ditches of a settlement adjacent to the Roman (Barmby Moor to Stamford Bridge) road. Evidence for the construction and use of a building and the redefinition of at least one of the enclosure ditches was identified.

#### Phase 2 – late Roman/post-Roman

A series of linear features, including multi-ditched enclosures, were excavated which no longer appeared to respect the line of the Roman road.

These were assigned to Phase 2 and probably represent a settlement of later Roman/post-Roman date.

### Methods

#### *Sediment samples*

The sediment samples were inspected in the laboratory. Three of the samples were selected for investigation during the evaluation and their lithologies were recorded, using a standard *pro forma*, prior to processing, following the procedures of Kenward *et al.* (1980; 1986), for recovery of plant and invertebrate macrofossils. The flots, washovers and residues were examined for plant remains. The flots and washovers were also examined for invertebrate remains, and the residues were examined for other biological and artefactual remains. Further subsamples from two of the original samples were used to provide additional plant and invertebrate remains during the subsequent post-assessment analysis.

Plant remains (and other components of the residues) were recorded using a semi-quantitative scale from 1 (one to five individuals per kg of sample, or one or a few fragments of material which could not easily be counted) to 4 (many hundreds of individuals per kg, or a major component of the sample). Adult beetles and bugs were recorded at the 'detailed' level of Kenward (1992), and other invertebrates were recorded using a semi-quantitative scale of 1, 2, 3, 'several' (translated as 6), 'many' (15), with estimates for very large numbers. Quality of preservation was recorded using the scales of Kenward and Large (1998). In summary, preservation was 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). Plant data

were recorded directly into a database using *Paradox* software and insect data recorded on a *pro forma* and subsequently transferred to *Paradox* tables.

The principal sources for beetle ecology were Friday (1988), Hansen (1987), Koch (1989-92), for bugs, Southwood and Leston (1959) and, for both groups, the Royal Entomological Society handbooks.

Table 1 gives a list of the examined samples and notes on their treatment.

#### *Hand-collected shell*

Brief notes were made on the preservational condition of the shell and the remains identified as closely as possible.

#### *Hand-collected vertebrate remains*

Data concerning the vertebrate remains were recorded electronically directly into a series of tables using a purpose-built graphical input system and *Paradox* software. Semi-subjective, non-quantitative data were recorded for the material from each context regarding the state of preservation, colour, and the appearance of broken surfaces ('angularity'). Additionally, semi-quantitative information was recorded for the bone from each context, concerning fragment size, dog gnawing, burning, butchery and fresh breakage.

Identification was carried out using the PRS comparative reference collection. Detailed recording of the assemblage followed the protocol outlined by Dobney *et al.* (forthcoming). Selected elements were recorded using the diagnostic zones method described by Dobney and Rielly (1988). Remaining elements which could be identified to species were merely counted. Other fragments, (classified as 'unidentified') were, where possible, grouped into categories: large mammal (assumed to be horse, cow or large cervid), medium-sized mammal 1 (assumed to be sheep, pig or small

cervid), medium-sized mammal 2 (assumed to be dog, cat, hare or equivalent sized mammal), and totally unidentified. Counts were made of all identified fragments (number of individual skeletal parts or NISP) for each species. Minimum numbers of individuals (MNI) were determined using the zone system devised by Dobney and Rielly (1988). Unidentified fragments were recorded and quantified separately. As well as counts of fragments, total weights were recorded for all identifiable and unidentifiable categories.

Caprovid tooth wear stages were recorded using those outlined by Payne (1973; 1987), and those for cattle and pig followed the scheme set out by Grant (1982). Cattle, caprovid and pig mandibles and isolated teeth were assigned to the general age categories outlined by O'Connor (1989) and Payne (1973; 1987).

Measurements followed von den Driesch (1976) unless otherwise specified. Additional measurements, not detailed by von den Driesch, followed those described by Dobney *et al.* (1996). Withers heights were estimated using calculations devised by Foch (1966) for cattle, and Kiesewalter (in von den Driesch and Boessneck 1974), for horses. Withers height for horses is expressed in hands (hh), where 1 h = 4 in = 101.6 mm.

## **Results**

A complete list of remains recorded is given in Table 2 and individual lists for plant remains and other components of residues and washovers from the sediment samples, recorded during analysis of plant material, in Table 3. Tables 4 and 5 provide data concerning invertebrate remains and information about vertebrates is given in Tables 7 and 8, with an archive for vertebrate data in the Appendix.

#### *Sediment samples*

The results are presented in context number order. Archaeological information, provided by the excavator, is given in square brackets; all the

material was dated to Phase 1 (2<sup>nd</sup>/3<sup>rd</sup> century AD).

**Context 2073** [primary fill of ditch 2047]

Sample 22/T (3kg sieved to 300 microns with washover and subsequent paraffin flotation of the <1 mm fraction of the washover)

Moist, mid grey-brown (locally lighter and darker), soft to crumbly (working slightly plastic), slightly humic, sandy clay silt with some flint gravel.

There was a small to moderate-sized residue of about 300 cm<sup>3</sup> of sand and gravel, with a washover of about 100 cm<sup>3</sup> of woody detritus. Seeds and fruits from the latter indicated a hedgebank or scrub with weedy vegetation in the vicinity and the few remains of possible foodplants—celery (*Apium graveolens*), apple (*Malus sylvestris*), raspberry (*Rubus idaeus*) and elder (*Sambucus nigra*)—if not part of the local flora, may point to some waste from human occupation. Wet ground with seasonally drying mud is also indicated.

The rather abundant insect remains were fairly well preserved (sometimes superbly), though often fragmented (E 1.0-3.5, mode 2.5, weak; F 1.5-4.0, mode 2,5, weak). Cladoceran ephippia (water flea resting eggs) were numerous (there were at least three kinds), and various aquatic beetles were present. Most of the assemblage was of terrestrial origin, however, with indicators of a generally open landscape, probably grazing land since five species of *Aphodius* and some other beetles able to exploit dung were noted. Indications of natural or structural dead wood came from *Anobium ?punctatum*.

Sample 22/T2 (5 kg sieved to 300 microns with paraffin flotation)

The small residue was about 375 cm<sup>3</sup> in volume, of which about 250 cm<sup>3</sup> comprised clean quartz sand and fine gravel. The washover consisted of herbaceous detritus with remains of seeds and fruits of a wide variety of plants. Most abundant were celery (*Apium graveolens*) and stinging nettle (*Urtica dioica*), with moderate numbers of other probable wetland taxa—sedges (*Carex*), toad rush (*Juncus bufonius*) and brooklime/water speedwells

(*Veronica beccabunga*-type)—as well as a species likely to have grown on drying mud, *Chenopodium* Section *Pseudoblitum*. The other more abundant remains indicated weedy vegetation of neglected waste ground or river banks, especially hemlock (*Conium maculatum*) and docks (*Rumex*). The remaining taxa, present in small numbers, include other representatives of these habitats, as well as weeds of more disturbed places and perhaps also some grassland plants. One component may indicate the presence of material originating in burnt turves or peat: charred heather (*Calluna vulgaris*) basal twig/root fragments (to 5 mm), whilst traces of charred cereal remains (wheat glumes and grains, not identified further) are the only other direct indicator of occupation debris amongst the plant remains.

The moderately large flot included abundant floating fibrous plant debris, and was consequently difficult to sort. Preservation of the invertebrate remains varied considerably, from good to very poor (E 2.0-5.0, mode 3.0 weak; F 1.0-4.0, mode 2.5 weak). Some of the remains showed patchy decay, conceivably an effect of an episode of drying or of the localised vigorous biological activity around roots. The numerous tiny and poorly preserved fragments of insect cuticle were in many cases beyond what could reasonably be identified, but there appeared not to be differential preservation so that the species list is probably representative of the initial input, at least for the adult beetles and bugs. In all, 131 adult individuals of 84 beetle and bug taxa were recorded.

Deposition was undoubtedly in fairly permanent water. Aquatics were abundant: there were some hundreds of *Daphnia ephippia* (water flea resting eggs), and a fifth of the adult beetles and bugs were in this category. Indeed, the three most numerous beetles were the weevil *Tanysphyrus lemnae* (eight individuals, associated with duckweeds, *Lemna*), a *Helophorus* species (7) and *Ochthebius minimus* (5). These, and the other aquatics, would be able to occupy fairly shallow water and would tolerate fairly high nutrient levels. It seems unlikely, however, that this was a deep and permanent water in which aquatic plants were

able to thrive. There was a little evidence of waterside vegetation, for example from the froghopper *Aphrodes flavostriatus* and the weevil *Notaris acridulus*. Much of the remaining fauna may have lived close to the water's edge, on mud, in naturally accumulated plant litter, or in adjacent herbaceous vegetation. There was a hint as to the nature of the vegetation in the wider surroundings, from a range of dung beetles. The true dung beetles included *Aphodius fimetarius* (at least four, quantification being made difficult by fragmentation), *A. contaminatus* (3), and single individuals of three other *Aphodius* species, but there were also several other beetles typical of (but not confined to) dung. Among these were *Cercyon haemorrhoidalis* (four individuals) and *Platystethus arenarius* and *Oxyomus sylvestris* (three of each). While these may have exploited small amounts of dung of wild animals, it is more likely that they indicate grazing land. Apart from this evidence of the impact of humans on the landscape, the insects gave no indication of human occupation: there were few synanthropes of the kind particularly typical of occupation sites.

**Context 2074** [primary fill of ditch 2061]

Sample 21/T (2 kg sieved to 300 microns with paraffin flotation)

Moist, crumbly, patchily dark brown humic sand, with patches of humified plant detritus, to light brown sand.

The moderate-sized residue of about 650 cm<sup>3</sup> consisted of undisaggregated humic silt and woody and herbaceous detritus (with many seeds floating), and some sand and grit and small gravel (the total mineral content was about 150 cm<sup>3</sup>). The coarser plant debris included some large (to 50 mm), uncharred heather basal twig/root fragments and much of the herbaceous material comprised large (to 10 mm) shoots of the moss *Leucobryum glaucum*. If these remains reached the deposit from the same source, they surely indicate material from heathland or bog, where the moss forms characteristic domed cushions. Given the nature of the sediment and the depositional context, it seems

improbable that they grew close by, so an origin in turves seems a very likely explanation. Most of the other more abundant remains were fruits and seeds, mostly quite well preserved, though often somewhat silt-coated, representing vegetation of tall-herb communities found today on riverbanks, roadsides and hedgebanks, and dominated by various umbellifers, notably hemlock (the bulk of the floating 'seeds'), rough chervil (*Chaerophyllum temulentum*) and hogweed (*Heracleum sphondylium*), with stinging nettle and a modest variety of taxa typical of a wide variety of lowland grassland habitats, scrub, waterside and standing water, with just a few plants indicating disturbance.

The flot contained modest numbers of beetle remains and a few bugs (132 individuals of 97 taxa), and a range of other invertebrates, among which only water fleas and mites were particularly numerous. Many of the remains were very decayed and it seemed likely that others had completely disappeared: some fossils were extremely fragile and fell apart when handled with forceps or a paintbrush, so doubtless others had fragmented and passed through the sieve during processing.

None of the beetles and bugs was particularly abundant (only three taxa were represented by as many as four individuals). The deposit formed in water, as there were several tens of *Daphnia* ephippia. However, the aquatic beetle fauna was weak and only *Haliphys* sp. (of which there were two) was represented by more than one individual. There was no clear evidence of waterside vegetation or of mud or naturally accumulated moist litter, either, and it seems possible that the ditch dried up at least annually. Local vegetation included nettles (indicated by *Liocoris tripustulatus*, *Brachypterus urticae* and *Cidnorhinus quadrimaculatus*, each with two individuals, and *Apion urticarium*, with one), and plantains (*Plantago*, from *Gymnetron ?labile*). There were only two dung beetles, so perhaps grazing land was not dominant as this deposit formed (though possibly the range of taxa which entered it was limited if there was no water surface to drown insects during the flight period of many

of them). There was no evidence of large artificial accumulations of decaying matter or of buildings from the insects.

**Context 2159** [primary fill of ditch 2156]

Sample 30/T (3 kg sieved to 300 microns with washover and subsequent paraffin flotation of the <1 mm fraction of the washover)

Moist, mid to dark grey-brown, crumbly (working plastic), slightly sandy clay silt with small patches of light brown sand. Fragments of wood (to 50 mm) were present.

This subsample yielded a very small residue of about 100 cm<sup>3</sup> of sand, ?iron pan and gravel (to 5 mm). The moderate-sized washover of about 300 cm<sup>3</sup> was of woody debris with many seeds floating and about another 50 cm<sup>3</sup> of sand. The abundant and mostly rather well preserved seeds and fruits of alder (*Alnus glutinosa*), hemlock, water-crowfoot (*Ranunculus* Subgenus *Batrachium*) with smaller amounts of various other fragments of alder (female cones and cone-scales), and propagules of sedges (*Carex*), henbane (*Hyoscyamus niger*), marsh yellow-cress (*Rorippa palustris*), docks and stinging nettle, all point to an area of disturbed land with alder trees overhanging a ditch. A modest variety of weeds probably indicates some disturbance but other indicators of human activity were lacking in the plant material. See below for an account of the invertebrate remains from this subsample.

Sample 30/T2 (5kg sieved to 300 microns with paraffin flotation)

There was a small to moderate-sized residue of about 500 cm<sup>3</sup> of which about 300 cm<sup>3</sup> comprised woody debris, the rest sand and a little gravel. The wood, which was generally rather decayed included alder and there were also small twigs of this tree as well as fruits, buds, female cones (and detached cone-scales, which were especially common) and male catkin fragments. There were also traces of willow bud and twig epidermis, suggesting alder/willow carr prevailed in the vicinity of the

ditch at this time.

Areas of open water or mud, as evidenced by the moderately common remains of toad rush, water-crowfoot (*Ranunculus* Subgenus *Batrachium*) and marsh yellow-cress, as well as disturbed areas (perhaps ditch banks) with hemlock and stinging nettles, elder and henbane, must also have been present. There were remains of some annual weeds likely to have originated in arable land or at least highly disturbed habitats, but very little direct indication of human activity, other than charred remains of heather twig/root fragments (to 5 mm) and charred root/rhizome material (to 2 mm), both of which may have arrived with burnt turves.

The combined flots amounted to perhaps 20 cm<sup>3</sup> of plant debris rich in invertebrate remains. Preservation was variable, from reasonably good to extremely poor (E 2.5-5.5, mode 4.0 weak; F 2.5-5.0, mode 4.0, weak). Many of the fossils were very decayed and fragmented, often fragile, crumbling when manipulated, and sometimes shrunken and distorted. Identification was frequently limited by the condition of the remains, but a substantial fauna was nevertheless recorded (including 267 individuals of 168 taxa of adult beetles and bugs). There were abundant water fleas, including of the order of 1000 *Daphnia* and smaller numbers of two other kinds of Cladocera, and some ostracods. These and quite large numbers of water beetles clearly point to aquatic deposition. The water may have been fairly permanent, with 18 species of water beetles, represented by 40 individuals. The most abundant were *Ochthebius minimus* (10 individuals), a *Helophorus* species and *Hydraena testacea* (6), *Tanysphyrus lemnae* (5), and a second *Hydraena* (2). There was evidence of emergent or marginal vegetation from *Notaris acridulus* (4), and several other taxa would have exploited marshy conditions. These insects suggest fairly shallow water with some aquatic vegetation and perhaps a muddy bottom. There were cruciferous plants (hosts of *Phyllotreta nemorum* group, with five individuals), nettles (from *Heterogaster urticae*, *Brachypterus glaber* and *Cidnorhinus quadrimaculatus*), docks or knotgrasses

(*Gastrophysa viridula*, *G. polygoni* and *Chaetocnema concinna*), plantains (indicated by *Gymnetron ?labile*), and clovers or vetches (*Hypera punctata*, and likely hosts of *Sitona* sp. and most of the *Apion* species). Grasses were indicated by *Aphrodes bicinctus*, *A. flavostriatus* (two of each) and two *Oulema* species. The chafers *Serica brunnea*, *Hoplia philanthus* and *Phyllopertha horticola* suggest rough grazing land. Grazing is also indicated by the dung beetles *Aphodius sphacelatus* (10), *A. prodromus* (4), *A. contaminatus* (2), single individuals of five other *Aphodius* species, *Geotrupes* sp., *Onthophagus* sp. and probably *Oxyomus sylvestris* (3). There were also modest numbers of a range of other species able to exploit dung but commonly found in other foul decaying matter.

Two bark beetles were recorded, both as single individuals: *Hylesinus oleiperda* and *?Leperisinus varius* (both principally associated with ash, *Fraxinus* - the tentative identification of *L. varius* was made on a small, decayed elytral fragment). The woodworm beetles *Grynobius planus* and *Anobium punctatum* may have bred in dead parts of nearby trees or shrubs, or in fence posts or other minor structures.

Clearly this was a landscape dominated by human activity through farming, although with little to suggest the presence of nearby structures (although these may not be very visible in deposits of the present kind, to judge from unpublished calculations by Carrott and Kenward). Although some of the decomposer beetles are typical of artificial accumulations of decaying matter in and around dwellings (e.g. *Lathridius minutus* group and *Carpelimus ?bilineatus*), all could have occupied naturally formed accumulations of litter, or dung.

#### *Hand-collected shell*

Three contexts each yielded a very small amount of hand-collected shell. Contexts 2008 and 2152 each gave remains of *Cepaea* sp. land snails. Those from Context 2008 consisted of many fragments probably all from one individual (much of the fragmentation presumably occurring during or

after excavation). Context 2152 gave two somewhat bleached but otherwise fairly well-preserved individuals.

Two oyster (*Ostrea edulis*) valves were recovered from Context 2009 (one left valve, which had separated into two fragments, and one right valve). Both valves were poorly preserved—neither being measurable or showing clear evidence of having been opened by humans.

#### *Hand-collected vertebrate remains*

A moderate sized assemblage of vertebrate remains, amounting to five boxes of hand-collected bone, was recovered from ditch, pit and gully fills assigned to Phases 1 and 2. The assessment (Jaques *et al.* 2000) acknowledged that the assemblage was small and extremely fragmented, but recommended, in view of the scarcity of vertebrate remains from rural settlements of this date, the preparation of a basic archive. The material (Table 7), representing 35 contexts, totalled 948 fragments, of which 535 were bones from an articulated cow skeleton (from Context 2080). The following account provides some general comments regarding the composition of the vertebrate remains; however, the small size and the variability of the preservation of the assemblage must be borne in mind.

Heavy fragmentation of the vertebrate remains was prevalent and characteristic of much of the assemblage. High scores for fresh breakage (>50% of fragments damaged) were given to material from three deposits (Contexts 2021, 2064 and 2091), and 20-50% of bones from seven other contexts (2046, 2048, 2056, 2060, 2080, 2154 and 2159) also showed recent damage. Preservation of the bones was, however, rather varied and it was clear that some bones, while appearing quite robust, were in fact somewhat fragile and brittle. A number of deposits produced very poorly preserved bones where the whole surface of each fragment was badly eroded. Some evidence of dog gnawing and butchery was noted. Knife marks were observed on the shaft of a horse humerus,

possibly the result of hide removal.

A typical range of common domestic species was represented, the remains of cattle and large mammal fragments (assumed to be mainly cattle) providing the bulk of the bones from Phase 1 (Table 8). Caprovid and pig remains from this phase were quite scarce, whilst horse remains were slightly more numerous. In Phase 2 deposits, cattle bones were still common, but caprovid fragments were more common, whilst pig and horse bones were less well-represented. Whether these frequencies reflect a true picture of the economic significance of each species is difficult to ascertain. Interpretation is based on an assumption that what the archaeologists recovered accurately represents the assemblage that was originally buried. It is clear from the preservation of the material that this may not be the case at this site. Taphonomic factors may be responsible for the under-representation of the smaller mammals, their bones being more delicate and more readily susceptible to decay under poor preservational conditions. Skeletal element representation for the large mammals mostly shows a bias towards those bones which are denser and more robust, and therefore those which generally survive better in unfavourable conditions, e.g. astragali, calcanea, distal humeri, and teeth.

The unidentified component was dominated in both phases by large mammal fragments, but, the fragile nature of the bones, resulting in extensive breakage and fragmentation during excavation, augmented this fraction of the assemblage considerably.

A cow skeleton was recovered from pit fill 2080, which the excavators suggested may have been a ritual interment. Although there was no clear evidence from the bones for the ritual disposal of the animal, no butchery marks were noted. The horncores were separate from the skull, but this appeared to be the result of damage during excavation rather than their deliberate removal in antiquity. Despite the highly fragmented condition of the bones, they were quite well preserved, which may suggest that this individual was fairly quickly (and specifically?) incorporated into the deposit.



Information regarding the age-at-death of the major domesticates was rather sparse, as few mandibles and isolated mandibular teeth were recovered (maxillary molars being of no use for providing age-at-death data). Wear stage records from two cattle mandibles (one each from Phases 1 and 2) placed them within the 'adult 3' category, as outlined by O'Connor (1989), indicating individuals aged approximately 8 years. Fusion data also pointed towards older individuals, with most elements from all phases being fused.

Evidence available from fusion and tooth wear data for caprovids was very limited, but suggested that both young and old individuals were present. Two mandibles, both from Phase 2 deposits, indicated age-at-death of approximately 1-2 years and 4-8 years, respectively. Most caprovid elements were unfused. Data for pigs were confined to a single mandible from Phase 2 representing an 'adult 3' individual (after O'Connor) and one M3 from Phase 1, which was also from an adult animal. No fusion data were recorded.

### **Biometrical data**

In spite of the fragility and fragmented nature of the bones, some biometrical data were collected; an archive of all measurements taken can be found in the Appendix to this report.

There were insufficient measurements for detailed analysis and discussion; however, it was possible to calculate estimates of the withers heights from the greatest length measurements of two complete cattle bones, both from Phase 1 deposits. These produced values of 1205.6 mm and 1178.2 mm. These figures, when compared with those from other sites of similar date, show that the individuals from the present site fall towards the upper end of the size-range for animals of this period. Cattle metapodials from 2<sup>nd</sup>-3<sup>rd</sup> century deposits from Tanner Row, York (O'Connor 1988), gave a mean height of 1114 mm, considerably smaller than the individuals from High Catton. Second century AD deposits at York

Minster (Jaques 1999) and at Newton Bewley, Hartlepool (ASUD 2001) produced several bones from which heights similar to those from High Catton were calculated.

Measurements from two horse bones (a humerus and a metacarpal) provided withers height estimations (Fock 1966) which indicated animals standing at 12.1 and 13.1 hands (one 'hand' = 4 inches), i.e. large ponies, not untypical of the period.

### **Discussion**

Plant remains preserved by anoxic waterlogging were generally well preserved in the three ditch fills examined. There were only very rare traces of charred cereal remains, but charred heather remains were present in most samples, suggesting ash from burnt turves or similar material was being deposited, through inwash, scatter or wind-blow. One of the samples yielded other, uncharred remains, consistent with an origin in imported turves from heathland or moorland. There were fairly low concentrations of invertebrate remains and they were often poorly preserved, so that they presented a challenge in identification. It seems possible that this decay had come about as a result of recent drainage since it is thought unlikely that such well-decayed remains would have survived in constantly unfavourable conditions and it can be argued that slow decay leading to poor preservation cannot be a common phenomenon (Kenward and Hall 2000 and forthcoming).

The high diversity of the insect assemblages suggests that they had multiple origins as the result of the presence of a substantial (and presumably largely naturally) transported component. This will reflect the wider surroundings which seem to have been primarily agricultural, with grazing land important at some stages on the evidence of the insects, but also with periods of disturbance, perhaps arable cultivation, to judge from the annual weeds amongst the plant remains. The ditches, or their immediate surroundings, seem to have supported semi-natural vegetation and

associated insects. Apart from the evidence for agriculture and burning, there was very little to indicate the presence of humans. There were few synanthropic insects and they occurred in almost constant proportions across the samples, representing 16% of the individuals for the amalgamated lists. Of this, 12% were 'facultative' synanthropes (Kenward 1997), common in natural habitats, and all but one individual of the remainder were 'typical' (this exception was *Typhaea stercorea*, which, although mostly found in artificial habitats, is certainly known in the wild).

There was at least some scrub in the vicinity of the ditches, including elder, alder and willow, and there were two bark beetles most likely to have originated in ash trees, again likely to have grown on ditch margins or field boundaries, but no evidence of woodland as such.

The basic analysis undertaken on the vertebrate remains shows that the economy of the local settlement was based on the major domestic mammals, with no evidence of exploitation of wild resources. Cattle remains appear to dominate the Phase 1 assemblage, whilst within the later, more broadly dated Phase 2 material, caprovids are more prevalent. This apparent dominance of cattle in Phase 1 may be the result of preservational conditions, but could be hinting at a trend noted from other Roman sites in the region (Hamshaw-Thomas and Jaques 2000; Gidney 1999), in which cattle are typically the most significant species within an assemblage. This has been more commonly observed from assemblages of a slightly later date (3-4<sup>th</sup> century) and usually from sites of a more urban or military nature (King 1978; 1984). As suggested for the site at Flat Lane, Barmby Moor (TSEP254, Jaques *et al.* 2002), the association of this site with the Roman road may have stimulated a demand for certain products and may have influenced the local economy and husbandry practices. Recent extensive survey and field work around Hayton, East Riding of Yorkshire, (Taylor 2001) has shown that the construction of the Roman road from Brough to York stimulated a major reorganisation of the rural

landscape in the 2<sup>nd</sup> century and shifted the focus of the settlement towards the road. Similar developments, although at a later date, were noted further south at Shiptonthorpe (Halkon and Millett 1999). The Roman road from Barmby Moor to Stamford Bridge may have had a similar impact upon settlements along its route and evidence from small rural settlements such as that at High Catton may be hinting at just such a trend.

## References

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**Table 1:** List of examined sediment samples from excavations east of High Catton, with notes on their treatment.

<b>Context</b>	<b>Sample</b>	<b>Notes</b>
2073	22	3 kg sieved to 300 microns with washover and subsequent paraffin flotation of < 1 mm fraction of the washover; an additional subsample of 5 kg processed subsequently
2074	21	2 kg sieved to 300 microns with paraffin flotation
2159	30	3 kg sieved to 300 microns with washover and subsequent paraffin flotation of < 1 mm fraction of the washover; an additional subsample of 5 kg processed subsequently

**Table 2:** Complete list of taxa recorded from deposits at TSEP site 222, east of High Catton. Taxonomic order and nomenclature follow Tutin *et al.* (1964-80) for vascular plants, Smith (1978) for mosses, and Kloet and Hincks (1964-77) for insects.

Tentative records for insects are not included if secure ones were also made. Plant material not specifically noted as being preserved by charring or mineral replacement can be taken to be uncharred and unmineralised (i.e. ‘waterlogged’, but sometimes denoted simply as ‘uncharred’). For invertebrates (all preserved by anoxic waterlogging), \* = not used in calculating assemblage statistics (Table 5); ecode—ecological code used in generating main statistics; Sp(p).—species not previously listed; Sp(p). indet.—may be a species already listed.

<b>Taxon</b>	<b>Vernacular name</b>	<b>Remains recorded</b>
<i>Salix</i> sp(p).	willow twig fragment(s)	bud(s), twig epidermis fragment(s),
<i>Populus</i> sp(p).	poplar/aspens	bud(s) and/or bud-scale(s)
<i>Alnus glutinosa</i> (L.) Gaertner	alder	bud(s) and/or bud-scale(s), female cone scale(s), female cone(s)/cone-axis(es), fruit(s), male catkin fragment(s), twig fragment(s), wood fragment(s),
<i>Urtica dioica</i> L.	stinging nettle	achene(s)
<i>U. urens</i> L.	annual nettle	achene(s)
<i>Polygonum aviculare</i> agg.	knotgrass	fruit(s)
<i>P. persicaria</i> L.	persicaria/red shank	fruit(s)
<i>P. lapathifolium</i> L.	pale persicaria	fruit(s)
<i>Rumex acetosella</i> agg.	sheep’s sorrel	fruit(s)
<i>Rumex</i> sp(p).	docks	fruit(s), charred fruit(s)
<i>Chenopodium</i> Section <i>Pseudoblitum</i>	red goosefoot, etc.	seed(s)
<i>C. murale</i> L.	nettle-leaved goosefoot	seed(s)
<i>C. ficifolium</i> Sm.	fig-leaved goosefoot	seed(s)
<i>C. album</i> L.	fat hen	seed(s)
<i>Atriplex</i> sp(p).		oraches seed(s)
<i>Stellaria media</i> (L.) Vill.	chickweed	seed(s)
<i>S. neglecta</i> Weihe in Bluff & Fingerh.	greater chickweed	seed(s)
<i>Ranunculus</i> Section <i>Ranunculus</i>	meadow/creeping/ bulbous buttercup	achene(s)
<i>R. parviflorus</i> L.	small-flowered buttercup	achene(s)
<i>R. flammula</i> L.	lesser spearwort	achene(s)
<i>R.</i> Subgenus <i>Batrachium</i>	water crowfoots	achene(s)
<i>Papaver rhoeas</i> L./ <i>P. dubium</i> L.	field/long-headed poppy	seed(s)
<i>P. argemone</i> L.	long prickly-headed poppy	seed(s)
<i>Fumaria</i> sp(p).	fumitories	seed(s)
<i>Rorippa palustris</i> (L.) Besser	marsh yellow-cress	seed(s)
<i>Thlaspi arvense</i> L.	field penny-cress	seed(s)
<i>Brassica rapa</i> L.	‘turnip’	seed(s)
<i>Raphanus raphanistrum</i> L.	wild radish	pod segments and/or fragment(s)
<i>Filipendula ulmaria</i> (L.) Maxim.	meadowsweet	achene(s)
<i>Rubus idaeus</i> L.	raspberry	seed(s)
<i>R. fruticosus</i> agg.	blackberry/bramble	seed(s)
<i>R. cf. caesius</i> L.	?dewberry	seed(s)
<i>Potentilla anserina</i> L.	silverweed	achene(s)
<i>P. cf. erecta</i> (L.) Rauschel	?tormentil	achene(s)
<i>Potentilla</i> sp(p).	cinquefoils, etc.	charred achene(s)

Pomoideae		
( <i>Crataegus/Malus/Pyrus/Sorbus</i> )	hawthorn/apple/pear/rowan	twig(s)
<i>Malus sylvestris</i> Miller	crab apple	endocarp
<i>Crataegus monogyna</i> Jacq.	hawthorn	pyrene(s)
<i>Crataegus</i> sp(p).	hawthorns	immature fruit(s)
cf. <i>Crataegus</i> sp(p).	?hawthorns	thorn(s)
<i>Prunus spinosa</i> L.	sloe	fruitstone fragment(s)
<i>Viola</i> sp(p).	violets/pansies, etc.	seed(s)
<i>Hydrocotyle vulgaris</i> L.	marsh pennywort	mericarp(s)
<i>Chaerophyllum temulentum</i> L.	rough chervil	mericarp(s)
<i>Anthriscus caucalis</i> Bieb.	bur chervil	mericarp(s)
<i>Aethusa cynapium</i> L.	fool's parsley	mericarp(s)
<i>Conium maculatum</i> L.	hemlock	mericarp(s)
<i>Apium graveolens</i> L.	wild celery	mericarp(s)
<i>Heracleum sphondylium</i> L.	hogweed	mericarp(s)
<i>Torilis japonica</i> (Houtt.) DC.	upright hedge-parsley	mericarp(s)
<i>Daucus carota</i> L.	wild carrot	mericarp(s)
<i>Erica tetralix</i> L.	cross-leaved heath	leaf/leaves
<i>Calluna vulgaris</i> (L.) Hull	heather, ling	root and/or basal twig fragment(s), shoot fragment(s)
cf. <i>C. vulgaris</i>		charred basal twig and/or root fragment(s)
<i>Menyanthes trifoliata</i> L.	bogbean	seed(s)
<i>Galium aparine</i> L.	goosegrass, cleavers	epicarp (fruit skin)
<i>Galeopsis/Stachys</i> sp(p).	hemp-nettles/woundworts	nutlet(s)
<i>Lamium</i> Section <i>Lamiopsis</i>	annual dead-nettles	nutlet(s)
<i>Stachys</i> sp(p).	woundworts	nutlet(s)
<i>Prunella vulgaris</i> L.	selfheal	nutlet(s)
<i>Hyoscyamus niger</i> L.	henbane	seed(s)
<i>Solanum nigrum</i> L.	black nightshade	seed(s)
<i>S.</i> cf. <i>dulcamara</i> L.	?woody nightshade	seed(s)
<i>Veronica beccabunga</i> -type	brooklime/water/ marsh speedwells	seed(s)
<i>Rhinanthus</i> sp(p).	yellow rattles	seed(s)
<i>Sambucus nigra</i> L.	elder	seed(s), twig fragment(s)
<i>Valerianella</i> cf. <i>locusta</i> (L.) Laterrade	lamb's lettuce, cornsalad	fruit(s)
<i>Arctium</i> sp(p).	burdocks	achene(s)
<i>Carduus/Cirsium</i> sp(p).	thistles	achene(s)
<i>Sonchus asper</i> (L.) Hill	prickly sow-thistle	achene(s)
<i>Lapsana communis</i> L.	nipplewort	achene(s)
<i>Baldellia ranunculoides</i> (L.) Parl.	lesser water-plantain	carpel(s)
<i>Iris pseudacorus</i> L.	yellow flag	seed(s)
<i>Juncus bufonius</i> L.	toad rush	seed(s)
<i>Juncus</i> sp(p).	rushes	seed(s)
Gramineae	grasses	waterlogged caryopsis/es
Cerealia indet.	cereals	charred caryopsis/es
<i>Bromus</i> sp(p).	bromes, etc.	charred caryopsis/es
<i>Triticum</i> sp(p).	wheats	charred caryopsis/es, glume-base(s)
cf. <i>Hordeum</i> sp(p).	?barley	charred caryopsis/es
<i>Danthonia decumbens</i> (L.) DC. in Lam. & DC.	heath grass	caryopsis/es
<i>Scirpus</i> cf. <i>lacustris sensu lato</i>	?bulrush	nutlet(s)
<i>Eleocharis palustris sensu lato</i>	common spike-rush	nutlet(s)
cf. <i>Cladium mariscus</i> (L.) Pohl	?great sedge/saw-sedge	nutlet(s)

*Carex* sp(p). sedges nutlet(s)

**Mosses** (all remains were leaf/leaves and/or shoot fragment(s))

*Sphagnum* sp(p).  
*Dicranum* sp(p).  
*Leucobryum glaucum* (Hedw.) Ångstr.  
*Thuidium cf. tamariscinum* (Hedw.) Br. Eur.  
*Cratoneuron commutatum* (Hedw.) Roth  
*Drepanocladus* sp(p).  
*Calliergon cuspidatum* (Hedw.) Kindb.

**Fungi**

*Rosellinia* sp(p). perithecia

ANNELIDA		LEPIDOPTERA	
OLIGOCHAETA		*Lepidoptera sp. (pupa)	u
*Oligochaeta sp. (egg capsule)	u	DIPTERA	
CRUSTACEA		* <i>Bibio</i> sp.	u
* <i>Daphnia</i> sp. (ephippium)	oa-w	*Bibionidae sp. indet.	u
*Cladocera spp. (ephippium)	oa-w	*Diptera sp. (adult)	u
*Ostracoda sp.	u	*Diptera sp. (larva)	u
INSECTA		*Diptera sp. (puparium)	u
DERMAPTERA		*Diptera sp. (pupa)	u
*Dermaptera sp.	u	COLEOPTERA	
HEMIPTERA		<i>Nebria brevicollis</i> (Fabricius)	oa
? <i>Heterogaster urticae</i> (Fabricius)	oa-p	<i>Dyschirius globosus</i> (Herbst)	oa
<i>Peritrechus lundii</i> (Gmelin)	oa-p	<i>Clivina fossor</i> (Linnaeus)	oa
<i>Stygnocoris</i> sp.	oa	<i>Trechus quadristriatus</i> (Schrank)	oa
<i>Scolopostethus</i> sp.	oa-p	<i>Trechus obtusus</i> or <i>quadristriatus</i>	oa
Cimicidae sp.	oa-p	<i>Bembidion (Philochthus)</i> sp.	oa
<i>Liocoris tripustulatus</i> (Fabricius)	oa-p	<i>Bembidion</i> spp.	oa
<i>Chartoscirta ?cocksii</i> (Curtis)	oa-w	<i>Pterostichus ?cupreus</i> (Linnaeus)	oa
<i>Chartoscirta</i> sp. indet.	oa-w	<i>Pterostichus</i> sp.	ob
Corixidae sp.	oa-w	<i>Calathus fuscipes</i> (Goeze)	oa
*Heteroptera sp. (nymph)	u	<i>Agonum moestum</i> (Duftschmid)	oa-d
<i>Philaenus spumarius</i> (Linnaeus)	oa-p	<i>Harpalus</i> sp.	oa
<i>Megophthalmus scanicus</i> (Fallen)	oa-p	<i>Dromius linearis</i> (Olivier)	oa
<i>Macropsis</i> sp.	oa-p	Carabidae spp. and spp. indet.	ob
<i>Agallia consobrina</i> Curtis	oa-p	<i>Haliplus</i> sp.	oa-w
<i>Aphrodes bicinctus</i> (Schrank)	oa-p	Hydroporinae spp.	oa-w
<i>Aphrodes flavostriatus</i> (Donovan)	oa-p-d	<i>Agabus bipustulatus</i> (Linnaeus)	oa-w
<i>Aphrodes</i> sp.	oa-p	<i>Colymbetes fuscus</i> (Linnaeus)	oa-w
Cicadellidae spp.	oa-p	Colymbetinae sp.	oa-w
Delphacidae spp.	oa-p	<i>Helophorus aquaticus</i> or <i>grandis</i>	oa-w
Psylloidea sp.	oa-p	<i>Helophorus (Empleurus)</i> sp.	oa
*Aphidoidea sp.	u	<i>Helophorus</i> spp.	oa-w
		<i>Sphaeridium ?bipustulatum</i> Fabricius	rf
		<i>Cercyon ?analis</i> (Paykull)	rt-sf
		<i>Cercyon atricapillus</i> (Marshall)	rf-st



<i>Cercyon haemorrhoidalis</i> (Fabricius)	rf-sf	Paederinae sp.	u
<i>Cercyon terminatus</i> (Marsham)	rf-st	<i>Leptacinus</i> sp.	rt-st
<i>Cercyon ?tristis</i> (Illiger)	oa-d	<i>Gyroyhypnus fracticornis</i> (Muller)	rt-st
<i>Cercyon</i> sp. indet.	u	<i>Xantholinus linearis</i> or <i>longiventris</i>	rt-sf
<i>Megasternum obscurum</i> (Marsham)	rt	<i>Philonthus</i> spp.	u
<i>Cryptopleurum minutum</i> (Fabricius)	rf-st	? <i>Gabrius</i> sp.	rt
<i>Hydrobius fuscipes</i> (Linnaeus)	oa-w	<i>Quedius boops</i> group	u
<i>Anacaena</i> sp.	oa-w	<i>Quedius</i> sp.	u
<i>Berosus</i> sp.	oa-w	<i>Tachyporus ?hypnorum</i> (Fabricius)	u
Hydrophilinae sp.	oa-w	<i>Tachyporus obtusus</i> (Linnaeus)	u
<i>Onthophilus striatus</i> (Forster)	rt-sf	<i>Tachyporus</i> spp. and spp. indet.	u
Histeridae sp.	u	<i>Tachinus laticollis</i> or <i>marginellus</i>	u
<i>Ochthebius minimus</i> (Fabricius)	oa-w	<i>Tachinus ?signatus</i> Gravenhorst	u
<i>Ochthebius</i> sp.	oa-w	<i>Cordalia obscura</i> (Gravenhorst)	rt-sf
<i>Hydraena testacea</i> Curtis	oa-w	<i>Falagria</i> sp.	rt-sf
<i>Hydraena</i> sp.	oa-w	Aleocharinae spp.	u
<i>Limnebius</i> sp.	oa-w	Pselaphidae sp.	u
<i>Ptenidium</i> sp.	rt	<i>Geotrupes</i> sp.	oa-rf
<i>Acrotichis</i> spp.	rt	<i>Aphodius ater</i> (Degeer)	oa-rf
Leiodidae sp.	u	<i>Aphodius contaminatus</i> (Herbst)	oa-rf
<i>Nargus</i> sp.	u	<i>Aphodius fimetarius</i> (Linnaeus)	oa-rf
<i>Catops</i> sp.	u	<i>Aphodius granarius</i> (Linnaeus)	ob-rf
? <i>Aclypea opaca</i> (Linnaeus)	ob-rt	<i>Aphodius prodromus</i> (Brahm)	ob-rf
<i>Micropeplus fulvus</i> Erichson	rt	<i>Aphodius rufipes</i> (Linnaeus)	oa-rf
<i>Micropeplus porcatus</i> (Paykull)	rt	<i>Aphodius sphaelatus</i> (Panzer)	oa-rf
<i>Metopsia retusa</i> (Stephens)	u	<i>Aphodius</i> spp. and spp. indet.	ob-rf
<i>Megarthus</i> sp.	rt	<i>Oxyomus sylvestris</i> (Scopoli)	rt-sf
<i>Lesteva longelytrata</i> (Goeze)	oa-d	<i>Onthophagus</i> sp.	oa-rf
<i>Omalium ?rivulare</i> (Paykull)	rt-sf	<i>Serica brunnea</i> (Linnaeus)	oa-p
<i>Omalium</i> sp.	rt	<i>Hoplia philanthus</i> Illiger	oa-p
Omalinae sp.	rt	<i>Phyllopertha horticola</i> (Linnaeus)	oa-p
<i>Bledius</i> sp.	oa-d	? <i>Cetonia aurata</i> (Linnaeus)	oa
<i>Carpelimus bilineatus</i> Stephens	rt-sf	<i>Cyphon</i> spp.	oa-d
<i>Carpelimus ?corticinus</i> (Gravenhorst)	oa-d	<i>Dryops</i> sp.	oa-d
<i>Carpelimus elongatulus</i> (Erichson)	oa-d	? <i>Melanotus</i> sp.	l
<i>Carpelimus rivularis</i> (Motschulsky)	ob-d	* <i>Athous haemorrhoidalis</i> (larva)	oa-p
<i>Carpelimus</i> sp. and spp. indet.	u	<i>Agriotes</i> sp.	oa-p
<i>Aploderus caelatus</i> (Gravenhorst)	rt	Elateridae spp. indet.	ob
<i>Platystethus alutaceus</i> Thomson	oa-d	*Elateridae sp. indet. (larva)	ob
<i>Platystethus arenarius</i> (Fourcroy)	rf	<i>Grynobius planus</i> (Fabricius)	l
<i>Platystethus degener</i> Mulsant & Rey	oa-d	<i>Anobium punctatum</i> (Degeer)	l-sf
<i>Platystethus nitens</i> (Sahlberg)	oa-d	<i>Kateretes</i> sp.	oa-p-d
<i>Anotylus complanatus</i> (Erichson)	rt-sf	<i>Brachypterus glaber</i> (Stephens)	oa-p
<i>Anotylus nitidulus</i> (Gravenhorst)	rt	<i>Brachypterus urticae</i> (Fabricius)	oa-p
<i>Anotylus rugosus</i> (Fabricius)	rt	<i>Meligethes</i> sp.	oa-p
<i>Anotylus sculpturatus</i> group	rt	<i>Monotoma</i> sp.	rt-sf
<i>Anotylus tetracarinated</i> (Block)	rt	<i>Cryptophagus</i> sp.	rd-sf
<i>Oxytelus sculptus</i> Gravenhorst	rt-st	<i>Atomaria</i> spp.	rd
<i>Stenus</i> spp.	u	<i>Ephistemus globulus</i> (Paykull)	rd-sf
<i>Euaesthetus</i> sp.	oa	Phalacridae sp.	oa-p
<i>Lathrobium</i> spp.	u	<i>Lathridius minutus</i> group	rd-st
<i>Rugilus orbiculatus</i> (Paykull)	rt-sf	<i>Enicmus</i> sp.	rt-sf
<i>Rugilus rufipes</i> Germar	rt-st	<i>Corticaria</i> spp.	rt-sf

<i>Corticarina</i> sp.	rt	Curculionidae spp.	oa
<i>Corticaria gibbosa</i> (Herbst)	rt	<i>Hylesinus oleiperda</i> (Fabricius)	u
<i>Typhaea stercorea</i> (Linnaeus)	rd-ss	? <i>Leperisinus varius</i> (Fabricius)	l
<i>Oulema ?lichenis</i> Voet	oa-p	*Coleoptera sp. (larva)	u
<i>Oulema ?melanopa</i> (Linnaeus)	oa-p		
? <i>Chrysolina</i> sp.	oa-p	HYMENOPTERA	
<i>Gastrophysa polygona</i> (Linnaeus)	oa-p	*Proctotrupoidea sp.	u
<i>Gastrophysa viridula</i> (Degeer)	oa-p	*Chalcidoidea sp.	u
<i>Phaedon</i> sp.	oa-p	*Hymenoptera Parasitica sp.	u
<i>Hydrothassa</i> sp.	oa-d-p	*Formicidae sp. B	u
Chrysomelinae sp.	oa-p	*Formicidae sp. A	u
<i>Phyllotreta nemorum</i> group	oa-p	*Formicidae sp.	u
<i>Phyllotreta</i> sp.	oa-p		
<i>Longitarsus</i> spp.	oa-p	*Insecta sp. (larva)	u
<i>Chaetocnema concinna</i> (Marsham)	oa-p		
Halticinae sp.	oa-p	ARACHNIDA	
<i>Apion (Taenapion) urticarium</i> (Herbst)	oa-p	*Pseudoscorpiones sp.	u
<i>Apion (Erythrapion) sp.</i>	oa-p	*Aranae sp.	u
<i>Apion</i> spp.	oa-p	*Acarina sp.	u
<i>Otiorhynchus ovatus</i> (Linnaeus)	oa-p		
<i>Phyllobius pomaceus</i> Gyllenhal	oa-p	*?Egg mass indet.	u
<i>Phyllobius</i> or <i>Polydrusus</i> sp.	oa-p		
<i>Sciaphilus asperatus</i> (Bonsdorff)	oa-p	MOLLUSCA	
<i>Sitona</i> sp.	oa-p	<i>Cepaea</i> sp.	
<i>Hypera punctata</i> (Fabricius)	oa-p	<i>Ostrea edulis</i> Linnaeus	
<i>Tanysphyrus lemnae</i> (Paykull)	oa-w-p		
<i>Notaris acridulus</i> (Linnaeus)	oa-d-p	VERTEBRATA	
<i>Cidnorhinus quadrimaculatus</i> (Linnaeus)	oa-p	<i>Canis</i> f. domestic	
<i>Ceutorhynchus</i> spp.	oa-p	<i>Equus</i> f. domestic	
<i>Rhinoncus</i> sp.	oa-p	<i>Sus</i> f. domestic	
Ceuthorhynchinae sp. and sp. indet.	oa-p	<i>Bos</i> f. domestic	
<i>Gymnetron ?labile</i> (Herbst)	oa-p	Caprovid	
		<i>Ovis</i> f. domestic	

**Table 3:** Complete lists of plant remains and other components of samples recorded during examination of plant material from site TSEP222, east of High Catton. Samples are presented in context and sample order and within each list components are listed by decreasing abundance, using a semi-quantitative four-point scale.

Abbreviations: ab—abscission; b—, bud(s); b/bs—buds/bud-scales; caps—capsules; ch—charred; dec—decayed; endo—endocarp; fca—female cone axes; fcs—female cone scales; fgts—fragments; fr—fruits; glb—glume, glume-base; imm—immature; inc—including; lf—leaf; lvs—leaves; max—maximum dimension; mc—male catkin; n&p—nutlets and perianth segments both present; rt-tw—basal twig/root; segs—segments; sht—shoots; spec—specimen; tef—twig epidermis fragments; tw—twig; v—very; for twig fragments, measurements are length x diameter in mm.

<b>Context 2073, Sample 22/T</b>		Urtica urens	1
Urtica dioica	3	beetles	1
Carex sp(p).	2	chalk	1 max 5 mm
Conium maculatum	2 inc fgts	coal	1 max 5 mm
Juncus bufonius	2	earthworm egg caps	1
Rorippa palustris	2	fly puparia	1
Rumex sp(p). (inc per)	2	gravel	1 max 15 mm
Sambucus nigra	2 inc fgts	herbaceous detritus	1
Stellaria media	2	snails	1
sand	2	twig fgts	1 max 10 mm
?peat fgts	1 max 5 mm	wood fgts	1 max 10 mm
Alnus glutinosa	1		
Anthriscus caucalis	1		
Apium graveolens	1		
Arctium sp(p).	1		
Atriplex sp(p).	1		
Baldellia ranunculoides	1		
Carduus/Cirsium sp(p).	1		
Chaerophyllum temulentum	1		
Chenopodium Sect. Pseudoblitum	1		
Chenopodium album	1		
Chenopodium murale	1		
cf. Cladium mariscus	1 single spec		
Daphnia (ephippia)	1		
Drepanocladus sp(p).	1		
Eleocharis palustris sl	1		
Gramineae	1		
Hyoscyamus niger	1		
Lapsana communis	1		
Malus sylvestris (endo)	1		
Papaver argemone	1		
Polygonum aviculare agg.	1		
Polygonum persicaria	1		
Potentilla sp(p). (ch)	1		
cf. Prunus spinosa	1 fgts only		
Ranunculus Section Ranunculus	1		
Rubus idaeus	1		
Solanum nigrum	1		
Sonchus asper	1		
Thuidium cf. tamariscinum	1		
		<b>Context 2073, Sample 22/T2</b>	
		Apium graveolens	3
		Urtica dioica	3
		Carex sp(p).	2
		Chenopodium Sect. Pseudoblitum	2
		Conium maculatum	2 inc fgts
		Heterodera (cysts)	2
		Juncus bufonius	2
		Rumex sp(p).	2 n&p
		Stellaria media	2
		Veronica beccabunga-type	2
		gravel	2 max 15 mm
		herbaceous detritus	2
		sand	2
		Aethusa cynapium	1
		Alnus glutinosa	1
		Alnus sp(p). (wood)	1 max 10 mm
		Atriplex sp(p).	1
		cf. Calluna vulgaris (ch rt-tw fgts)	1 max 5 mm
		Carduus/Cirsium sp(p).	1
		Cenococcum (sclerotia)	1
		Chaerophyllum temulentum	1
		Chenopodium album	1
		cf. Crataegus sp(p). (thorns)	1
		Danthonia decumbens	1
		Daphnia (ephippia)	1
		Eleocharis palustris sl	1

		<b>Context 2074, Sample 21/T</b>	
cf. Glechoma hederacea	1	Conium maculatum	3 inc fgts
Gramineae	1	Urtica dioica	3
Hyoscyamus niger	1	Calluna vulgaris (rt-tw fgts)	2 max 50 mm
Lamium Section Lamiopsis	1	Chaerophyllum temulentum	2
Papaver argemone	1	Chenopodium ficifolium	2
Polygonum aviculare agg.	1	Filipendula ulmaria	2
Polygonum lapathifolium	1	Heracleum sphondylium	2 inc fgts
Polygonum persicaria	1	Leucobryum glaucum	2
Pomoideae (twigs)	1 max 10 x 5 mm	Salix sp(p). (b)	2
Potentilla erecta/anglica	1	herbaceous detritus	2
Prunella vulgaris	1	prickles	2
Ranunculus Section Ranunculus	1	root/rootlet fgts	2
Ranunculus Subgenus Batrachium	1	sand	2
Ranunculus flammula	1	unwashed sediment	2
Ranunculus parviflorus	1	Anthriscus caucalis	1
Raphanus raphanistrum (pod segs/fgts)	1	Arctium sp(p).	1
Rubus fruticosus agg.	1	Brassica rapa	1
Rumex acetosella agg.	1	Calliargon cuspidatum	1
Sambucus nigra	1 inc fgts	Calluna vulgaris (sht fgts)	1
Sambucus nigra (tw fgts)	1 max 10 x 5 mm	Carduus/Cirsium sp(p).	1
Scirpus cf. lacustris sl	1	Carex sp(p).	1
Solanum nigrum	1	cf. Cerealia indet.	1 single spec
Sphagnum sp(p). (lvs)	1 single spec	Chenopodium album	1
Stachys sp(p).	1	Cratoneuron commutatum	1
Stellaria neglecta	1	Daphnia (ephippia)	1
Thlaspi arvense	1	Daucus carota	1
Triticum sp(p).	1	Dicranum sp(p).	1
Triticum sp(p). (glb)	1	Eleocharis palustris sl	1
Valerianella cf. locusta	1	Erica tetralix (lvs)	1 v dec
Viola sp(p).	1	Galium aparine (epicarp)	1
amphibian bone	1	Gramineae	1
bark fgts	1 max 5 mm	Hydrocotyle vulgaris	1
beetles	1	Iris pseudacorus	1 single v dec
bone fgts	1 max 15 mm	fgt	
catkin fgts	1	Juncus sp(p).	1
chalk gravel	1 max 15 mm	Polygonum aviculare agg.	1
charcoal	1 max 5 mm	Polygonum lapathifolium	1
coal	1 max 5 mm	Potentilla anserina	1
dicot lf fgts	1	Potentilla cf. erecta	1
earthworm egg caps	1	Prunella vulgaris	1
flask-shaped galls	1	Ranunculus Section Ranunculus	1
flint gravel	1 max 15 mm	Ranunculus Subgenus Batrachium	1
fly puparia	1	cf. Rosellinia sp(p).	1
moss	1	Rubus fruticosus agg.	1
oolitic limestone gravel	1 max 5 mm	Rumex acetosella agg.	1
snails	1	Rumex sp(p).	1
twig fgts	1 max 20 x 5	Salix sp(p). (tw fgts)	1 max 10 mm
wood fgts	1 v dec, max 10 mm	Sambucus nigra	1
		Sonchus asper	1
		Stellaria media	1
		beetles	1
		charcoal	1 max 10 mm



Rhinanthus sp(p).	1		charcoal	1	max 5 mm
Rubus cf. caesius	1		coal	1	max 2 mm
Rubus fruticosus agg.	1		dicot lf fgts	1	
Rumex sp(p).	1		earthworm egg caps	1	
Salix sp(p). (b)	1		fly puparia	1	
Salix sp(p). (tef)	1		gravel	1	max 15 mm
Solanum cf. dulcamara	1		herbaceous detritus	1	
Sonchus asper	1		leaf ab pads	1	
Stachys sp(p).	1		root bark/epidermis fgts	1	
Torilis japonica	1		root/rhizome fgts (ch)	1	max 2 mm
Urtica urens	1		root/rootlet fgts	1	
bone fgts	1	max 10 mm	twig fgts	1	max 20 x 5
caddis larva cases	1		mm		
cancellous bone fgts	1	max 5 mm	unwashed sediment	1	max 5 mm
			woody root fgts	1	

**Table 4:** Insects and other macro-invertebrates from a site east of High Catton (TSEP222): species lists by sample. Taxa are listed in descending order of abundance.

Key: n - minimum number of individuals; q - quantification (s - semi-quantitative ‘several’, m - semi-quantitative ‘many’, both sensu Kenward *et al.* (1986), e - estimate); ecodes - ecological codes (see Table 6 for explanation); \* - not used in calculation of statistics in Table 5.

**Context: 2073 Sample: 22/T2 ReM: D**  
 Weight: 5.00 E: 3.00 F: 2.50

Notes: Entered HK 19/3/02. Flot 1 cm in jar, abundant floating fibrous plant debris and vary hard to sort. Recorded in flot and (for most remains) on filter paper. Preservation varied: E2.0-5.0, mode 3.0 weak; F 1.0-4.0, mode 2.5 weak. Some rather patchily rotted fragments. AH tube contained rather a lot of large fragments from residue, contributing 2-3 extra individuals. One modern contaminant *Forficula*.

	n	q	ecodes			
Tanysphyrus lemnae	8	-	oa-w-p	Agabus bipustulatus	1	oa-w
Helophorus sp. A	7	-	oa-w	Helophorus aquaticus or grandis	1	oa-w
Ochthebius minimus	5	-	oa-w	Helophorus (Empleurus) sp.	1	oa
Anotylus nitidulus	5	-	rt	Helophorus sp. B	1	oa-w
Cercyon haemorrhoidalis	4	-	rf-sf	Sphaeridium ?bipustulatum	1	rf
Carpelimus bilineatus	4	-	rt-sf	Cercyon terminatus	1	rf-st
Anotylus rugosus	4	-	rt	Hydrobius fuscipes	1	oa-w
Aphodius fimetarius	4	-	oa-rf	Onthophilus striatus	1	rt-sf
Megasternum obscurum	3	-	rt	Limnebius sp.	1	oa-w
Platystethus arenarius	3	-	rf	Bledius sp.	1	oa-d
Aphodius contaminatus	3	-	oa-rf	Carpelimus rivularis	1	ob-d
Oxyomus sylvestris	3	-	rt-sf	Apoderus caelatus	1	rt
Clivina fossor	2	-	oa	Anotylus sculpturatus group	1	rt
Bembidion (Philochthus) sp.	2	-	oa	Anotylus tetracarinated	1	rt
Lesteva longoelytrata	2	-	oa-d	Stenus sp. A	1	u
Platystethus degener	2	-	oa-d	Stenus sp. B	1	u
Xantholinus linearis or longiventris	2	-	rt-sf	Lathrobium sp. A	1	u
Falagria sp.	2	-	rt-sf	Lathrobium sp. B	1	u
Peritrechus lundii	1	-	oa-p	Rugilus ?rufipes	1	rt-st
Scolopostethus sp.	1	-	oa-p	Gyrophypnus fracticornis	1	rt-st
Corixidae sp.	1	-	oa-w	Quedius sp.	1	u
Megophthalmus scanicus	1	-	oa-p	Tachyporus ?hypnorum	1	u
Macropsis sp.	1	-	oa-p	Tachyporus obtusus	1	u
Agallia consobrina	1	-	oa-p	Aleocharinae sp. A	1	u
Aphrodes flavostriatus	1	-	oa-p-d	Aleocharinae sp. B	1	u
Aphrodes sp.	1	-	oa-p	Aleocharinae sp. C	1	u
Cicadellidae sp. A	1	-	oa-p	Aleocharinae sp. D	1	u
Cicadellidae sp. B	1	-	oa-p	Aleocharinae sp. E	1	u
Trechus obtusus or quadristriatus	1	-	oa	Aphodius granarius	1	ob-rf
Pterostichus sp.	1	-	ob	Aphodius sp. A	1	ob-rf
Calathus fuscipes	1	-	oa	Aphodius sp. B	1	ob-rf
				Phyllopertha horticola	1	oa-p
				?Cetonia aurata	1	oa
				?Melanotus sp.	1	l
				Agriotes sp.	1	oa-p
				Meligethes sp.	1	oa-p
				Atomaria sp.	1	rd
				Phalacridae sp.	1	oa-p
				Lathridius minutus group	1	rd-st
				Enicmus sp.	1	rt-sf
				Corticaria sp.	1	rt-sf
				Corticarina sp.	1	rt
				Typhaea stercorea	1	rd-ss
				Gastrophysa viridula	1	oa-p

Chrysomelinae sp.	1	-	oa-p	Lesteva longoelytrata	2	-	oa-d
Phyllotreta nemorum group	1	-	oa-p	Carpelimus sp. A	2	-	u
Longitarsus sp.	1	-	oa-p	Stenus sp. A	2	-	u
Chaetocnema concinna	1	-	oa-p	Philonthus sp.	2	-	u
Apion sp.	1	-	oa-p	Quedius boops group	2	-	u
Notaris acridulus	1	-	oa-d-p	Falagria sp.	2	-	rt-sf
Cidnorhinus quadrimaculatus	1	-	oa-p	Aleocharinae sp. D	2	-	u
Ceutorhynchus sp.	1	-	oa-p	Cyphon sp.	2	-	oa-d
Rhinoncus sp.	1	-	oa-p	Brachypterus urticae	2	-	oa-p
				Meligethes sp.	2	-	oa-p
*Daphnia sp. (ephippium)	500	e	oa-w	Atomaria sp. A	2	-	rd
*Cladocera sp. F (ephippium)	6	s	oa-w	Phyllotreta sp.	2	-	oa-p
*Diptera sp. (adult)	6	s	u	Apion sp. C	2	-	oa-p
*Coleoptera sp. (larva)	6	s	u	Cidnorhinus quadrimaculatus	2	-	oa-p
*Acarina sp.	6	s	u	Scolopostethus sp.	1	-	oa-p
*Aphidoidea sp.	3	-	u	Chartoscirta sp.	1	-	oa-w
*Aranae sp.	2	-	u	Cicadellidae sp. A	1	-	oa-p
*Diptera sp. (larva)	1	-	u	Cicadellidae sp. C	1	-	oa-p
*Bibionidae sp.	1	-	u	Cicadellidae sp. D	1	-	oa-p
*Athous haemorrhoidalis (larva)	1	-	oa-p	Psylloidea sp.	1	-	oa-p
*Chalcidoidea sp.	1	-	u	Trechus quadristriatus	1	-	oa
*Formicidae sp.	1	-	u	Pterostichus sp.	1	-	ob
*Hymenoptera Parasitica sp.	1	-	u	Harpalus sp.	1	-	oa
*Hymenoptera sp.	1	-	u	Dromius linearis	1	-	oa
*Insecta sp. (larva)	1	-	u	Carabidae sp. A	1	-	ob
*Pseudoscorpiones sp.	1	-	u	Hydroporinae sp. A	1	-	oa-w
				Hydroporinae sp. B	1	-	oa-w
				Hydroporinae sp. C	1	-	oa-w
				Agabus ?bipustulatus	1	-	oa-w
				Colymbetinae sp.	1	-	oa-w
				Helophorus aquaticus or grandis	1	-	oa-w
				Helophorus sp. A	1	-	oa-w
				Helophorus sp. B	1	-	oa-w
				Cercyon ?nalis	1	-	rt-sf
				Hydrobius fuscipes	1	-	oa-w
				Anacaena sp.	1	-	oa-w
				Berosus sp.	1	-	oa-w
				Onthophilus striatus	1	-	rt-sf
				Ochthebius sp.	1	-	oa-w
				Limnebius sp.	1	-	oa-w
				Ptenidium sp.	1	-	rt
				Catops sp.	1	-	u
				Micropeplus fulvus	1	-	rt
				Megarthus sp.	1	-	rt
				Omalium ?rivulare	1	-	rt-sf
				Omalium sp.	1	-	rt
				Carpelimus sp. B	1	-	u
				Aploderus caelatus	1	-	rt
				Anotylus rugosus	1	-	rt
				Stenus sp. B	1	-	u
				Euaesthetus sp.	1	-	oa
				Rugilus orbiculatus	1	-	rt-sf
				Leptacinus sp.	1	-	rt-st
	n	q	ecodes				
Xantholinus linearis or longiventris	4	-	rt-sf				
Aleocharinae sp. A	4	-	u				
Lathridius minutus group	4	-	rd-st				
Megasternum obscurum	3	-	rt				
Acrotichis sp. B	3	-	rt				
Apion sp. A	3	-	oa-p				
Liocoris tripustulatus	2	-	oa-p				
Cicadellidae sp. B	2	-	oa-p				
Delphacidae sp.	2	-	oa-p				
Haliplus sp.	2	-	oa-w				
Acrotichis sp. A	2	-	rt				
Acrotichis sp. C	2	-	rt				

**Context: 2074 Sample: 21/T ReM: D**

Weight: 2.00 E: 3.00 F: 2.50

Notes: Entered HK 19/3/02. Recorded in flot and (mostly) on filter paper. Many remains very decayed, some patchily; other remains clearly have completely rotted away. Some fossils very crumbly, falling apart when touched with forceps. E 1.5-4.5, mode 3.0 weak; F 1.0-5.5, mode 2.5 weak. Trend to pale: 0-4, mode 2 weak. Identification often severely limited by preservation. Primary fill of 2-3rd century RB ditch. *Apion* A appeared to be freshly emerged.



Tachinus laticollis or marginellus	1	-	u	Notes: Entered HK 5/3/02. Flots from /T and /T2			
Tachinus ?signatus	1	-	u	combined, giving about 8mm in jar. Fossils very			
Cordalia obscura	1	-	rt-sf	decayed and fragmented in many cases; /T better			
Aleocharinae sp. B	1	-	u	preserved, richer, but often rotted (E2.5-5.5, mode 4.0			
Aleocharinae sp. C	1	-	u	weak; F 2.5-5.0, mode 4.0 weak). Many remains very			
Aleocharinae sp. E	1	-	u	fragile in a 'soft' way (i.e. tending to crumble when			
Aleocharinae sp. F	1	-	u	handled). Some shrunken and distorted. AH tube with			
Aleocharinae sp. G	1	-	u	mostly large remains from residue, including a lot of			
Aleocharinae sp. H	1	-	u	the big weevils. Mostly recorded on filter paper and			
Aleocharinae sp. I	1	-	u	frequently difficult to identify; many fossils borderline			
Pselaphidae sp.	1	-	u	for identification (hence many '?' or 'sp.' records),			
Aphodius sp. A	1	-	ob-rf	others impossible.			
Aphodius sp. B	1	-	ob-rf		n	q	ecodes
Oxyomus sylvestris	1	-	rt-sf	Aphodius sphacelatus	10	-	oa-rf
Hoplia philanthus	1	-	oa-p	Ochthebius minimus	8	-	oa-w
Elateridae sp.	1	-	ob	Lathridius minutus group	8	-	rd-st
Anobium ?punctatum	1	-	l-sf	Helophorus sp. A	6	-	oa-w
?Kateretes sp.	1	-	oa-p-d	Hydraena testacea	6	-	oa-w
Monotoma sp.	1	-	rt-sf	Carpelimus ?bilineatus	6	-	rt-sf
Cryptophagus sp.	1	-	rd-sf	Aleocharinae sp. C	5	-	u
Atomaria sp. B	1	-	rd	Phyllotreta nemorum group	5	-	oa-p
Corticaria sp. A	1	-	rt-sf	Tanysphyrus lemnae	5	-	oa-w-p
Corticaria sp. B	1	-	rt-sf	Lesteva longoelytrata	4	-	oa-d
Corticaria gibbosa	1	-	rt	Aphodius prodromus	4	-	ob-rf
Longitarsus sp. A	1	-	oa-p	Notaris acridulus	4	-	oa-d-p
Longitarsus sp. B	1	-	oa-p	Megasternum obscurum	3	-	rt
Halticinae sp.	1	-	oa-p	Megarthus sp.	3	-	rt
Apion (Taenapion) urticarium	1	-	oa-p	Gyrohypnus fracticornis	3	-	rt-st
Apion sp. B	1	-	oa-p	Oxyomus sylvestris	3	-	rt-sf
Phyllobius or Polydrusus sp.	1	-	oa-p	Enicmus sp.	3	-	rt-sf
Gymnetron ?labile	1	-	oa-p	Apion (Erythrapion) sp.	3	-	oa-p
Curculionidae sp.	1	-	oa	Apion sp. F	3	-	oa-p
*Daphnia sp. (ephippium)	50	e	oa-w	Gymnetron ?labile	3	-	oa-p
*Acarina sp.	15	m	u	Aphrodes bicinctus	2	-	oa-p
*Diptera sp. (puparium)	6	s	u	Aphrodes flavostriatus	2	-	oa-p-d
*Diptera sp. (adult)	3	-	u	Agonum moestum	2	-	oa-d
*Coleoptera sp. (larva)	3	-	u	Hydraena sp.	2	-	oa-w
*Heteroptera sp. (nymph)	2	-	u	Omalium ?rivulare	2	-	rt-sf
*Aphidoidea sp.	2	-	u	Omalium sp.	2	-	rt
*Diptera sp. (pupa)	2	-	u	Platystethus arenarius	2	-	rf
*Chalcidoidea sp.	2	-	u	Anotylus nitidulus	2	-	rt
*Hymenoptera sp.	2	-	u	Anotylus rugosus	2	-	rt
*Lepidoptera sp. (pupa)	1	-	u	Anotylus sculpturatus group	2	-	rt
*Formicidae sp. A	1	-	u	Stenus sp. A	2	-	u
*Formicidae sp. B	1	-	u	Quedius sp.	2	-	u
*Hymenoptera Parasitica sp.	1	-	u	Cordalia obscura	2	-	rt-sf
*Proctotrupoidea sp.	1	-	u	Aleocharinae sp. B	2	-	u
*?Egg mass indet.	1	-	u	Aleocharinae sp. D	2	-	u
*Aranae sp.	1	-	u	Aphodius contaminatus	2	-	oa-rf
				Cyphon sp. A	2	-	oa-d
				Dryops sp.	2	-	oa-d
				Meligethes sp.	2	-	oa-p
				Cryptophagus sp.	2	-	rd-sf

Context: 2159 Sample: 30/T+T2 ReM: D  
Weight: 8.00 E: 4.00 F: 4.00

Corticarina or Cortinicara sp.	2	-	rt	Metopsia retusa	1	-	u
Gastrophysa viridula	2	-	oa-p	Omaliinae sp.	1	-	rt
Otiorhynchus ovatus	2	-	oa-p	Carpelimus ?corticinus	1	-	oa-d
Sitona sp.	2	-	oa-p	Carpelimus elongatulus	1	-	oa-d
?Heterogaster urticae	1	-	oa-p	Aploderus caelatus	1	-	rt
Stygnocoris sp.	1	-	oa	Platystethus alutaceus	1	-	oa-d
Cimicidae sp.	1	-	oa-p	Platystethus nitens	1	-	oa-d
Chartoscirta ?cocksii	1	-	oa-w	Anotylus complanatus	1	-	rt-sf
Philaenus spumarius	1	-	oa-p	Oxytelus sculptus	1	-	rt-st
?Macropsis sp.	1	-	oa-p	Stenus sp. B	1	-	u
Cicadellidae sp. A	1	-	oa-p	Rugilus orbiculatus	1	-	rt-sf
Cicadellidae sp. B	1	-	oa-p	Rugilus rufipes	1	-	rt-st
Cicadellidae sp. C	1	-	oa-p	Paederinae sp.	1	-	u
Cicadellidae sp. D	1	-	oa-p	Philonthus sp. A	1	-	u
Delphacidae sp. A	1	-	oa-p	Philonthus sp. B	1	-	u
Delphacidae sp. B	1	-	oa-p	Philonthus sp. C	1	-	u
Delphacidae sp. C	1	-	oa-p	Philonthus sp. D	1	-	u
Nebria brevicollis	1	-	oa	?Gabrius sp.	1	-	rt
Dyschirius globosus	1	-	oa	Tachyporus ?obtusus	1	-	u
Trechus obtusus or quadristriatus	1	-	oa	Tachyporus sp. A	1	-	u
Bembidion (Philochthus) sp.	1	-	oa	Tachyporus sp. B	1	-	u
Bembidion sp. A	1	-	oa	Tachinus laticollis or marginellus	1	-	u
Bembidion sp. B	1	-	oa	Aleocharinae sp. A	1	-	u
Pterostichus ?cupreus	1	-	oa	Aleocharinae sp. E	1	-	u
Pterostichus sp.	1	-	ob	Geotrupes sp.	1	-	oa-rf
Harpalus sp.	1	-	oa	Aphodius ater	1	-	oa-rf
Dromius linearis	1	-	oa	Aphodius granarius	1	-	ob-rf
Carabidae sp. A	1	-	ob	Aphodius rufipes	1	-	oa-rf
Carabidae sp. B	1	-	ob	Aphodius sp. A	1	-	ob-rf
Haliplus sp.	1	-	oa-w	Aphodius sp. B	1	-	ob-rf
Hydroporinae sp. A	1	-	oa-w	Onthophagus sp.	1	-	oa-rf
Hydroporinae sp. B	1	-	oa-w	Serica brunnea	1	-	oa-p
Agabus bipustulatus	1	-	oa-w	Hoplia philanthus	1	-	oa-p
Colymbetes fuscus	1	-	oa-w	Phyllopertha horticola	1	-	oa-p
Helophorus aquaticus or grandis	1	-	oa-w	Cyphon sp. B	1	-	oa-d
Helophorus sp. B	1	-	oa-w	Elateridae sp. A	1	-	ob
Cercyon ?nalis	1	-	rt-sf	Elateridae sp. B	1	-	ob
Cercyon atricapillus	1	-	rf-st	Grynobius planus	1	-	l
Cercyon ?tristis	1	-	oa-d	Anobium punctatum	1	-	l-sf
Cercyon sp. A	1	-	u	Kateretes sp.	1	-	oa-p-d
Cryptopleurum minutum	1	-	rf-st	Brachypterus glaber	1	-	oa-p
Hydrobius fuscipes	1	-	oa-w	Monotoma sp.	1	-	rt-sf
Anacaena sp.	1	-	oa-w	Atomaria sp. A	1	-	rd
Hydrophilinae sp.	1	-	oa-w	Atomaria sp. B	1	-	rd
Onthophilus striatus	1	-	rt-sf	Atomaria sp. C	1	-	rd
Histeridae sp.	1	-	u	Ephistemus globulus	1	-	rd-sf
Ochthebius sp.	1	-	oa-w	Corticaria sp. A	1	-	rt-sf
Limnebius sp.	1	-	oa-w	Corticaria sp. B	1	-	rt-sf
Leiodidae sp.	1	-	u	Oulema ?lichenis	1	-	oa-p
Nargus sp.	1	-	u	Oulema ?melanopa	1	-	oa-p
?Aclypea opaca	1	-	ob-rt	?Chrysolina sp.	1	-	oa-p
Micropeplus fulvus	1	-	rt	Gastrophysa polygona	1	-	oa-p
Micropeplus porcatus	1	-	rt	Phaedon sp.	1	-	oa-p

Hydrothassa sp.	1	-	oa-d-p	Hylesinus oleiperda	1	-	u
Phyllotreta sp.	1	-	oa-p	?Leperisinus varius	1	-	l
Longitarsus sp. A	1	-	oa-p				
Longitarsus sp. B	1	-	oa-p	*Daphnia sp. (ephippium)	1000	e	oa-w
Chaetocnema concinna	1	-	oa-p	*Cladocera sp. F (ephippium)	6	s	oa-w
Apion sp. A	1	-	oa-p	*Acarina sp.	6	s	u
Apion sp. B	1	-	oa-p	*Ostracoda sp.	3	-	u
Apion sp. C	1	-	oa-p	*Diptera sp. (puparium)	3	-	u
Apion sp. D	1	-	oa-p	*Oligochaeta sp. (egg capsule)	2	-	u
Apion sp. E	1	-	oa-p	*Coleoptera sp. (larva)	2	-	u
Phyllobius pomaceus	1	-	oa-p	*Aranae sp.	2	-	u
Phyllobius or Polydrusus sp.	1	-	oa-p	*Dermaptera sp.	1	-	u
Sciaphilus asperatus	1	-	oa-p	*Cladocera sp. S (ephippium)	1	-	oa-w
Hypera punctata	1	-	oa-p	*Diptera sp. (adult)	1	-	u
Cidnorhinus quadrimaculatus	1	-	oa-p	*Diptera sp. (pupa)	1	-	u
Ceutorhynchus sp. A	1	-	oa-p	*Bibio sp.	1	-	oa
Ceutorhynchus sp. B	1	-	oa-p	*Elateridae sp. (larva)	1	-	ob
Ceuthorhynchinae sp.	1	-	oa-p	*Formicidae sp.	1	-	u
Curculionidae sp. A	1	-	oa	*Insecta sp. (larva)	1	-	u
Curculionidae sp. B	1	-	oa				

**Table 5:** Main statistics for the assemblages of adult Coleoptera and Hemiptera (excluding Aphidoidea and Coccidoidea) from a site east of High Catton (TSEP222). For explanation of codes see Table 6.

Context	2073	2074	2159	Whole site
<b>Sample</b>	<b>22</b>	<b>21</b>	<b>30</b>	
<b>Ext</b>	<b>/T2</b>	<b>/T</b>	<b>/T+T2</b>	
S	84	97	168	242
N	131	132	267	530
ALPHA	101	164	194	172
SEALPHA	17	31	22	12
SOB	48	50	106	145
PSOB	57	52	63	60
NOB	74	63	166	303
PNOB	56	48	62	57
ALPHAOB	59	111	126	109
SEALPHAOB	13	33	19	11
SW	9	15	18	24
PSW	11	15	11	10
NW	26	16	40	82
PNW	20	12	15	15
ALPHAW	5	0	13	12
SEALPHAW	2	0	3	2
SD	6	3	14	19
PSD	7	3	8	8
ND	8	5	24	37
PND	6	4	9	7
ALPHAD	0	0	14	16
SEALPHAD	0	0	5	5
SP	24	23	51	71
PSP	29	24	30	29
NP	31	33	74	138
PNP	24	25	28	26
ALPHAP	50	34	72	59
SEALPHAP	21	13	17	9
SM	0	0	0	0
PSM	0	0	0	0
NM	0	0	0	0
PNM	0	0	0	0
ALPHAM	0	0	0	0
SEALPHAM	0	0	0	0
SL	1	1	3	5
PSL	1	1	2	2
NL	1	1	3	5
PNL	1	1	1	1

<b>Context</b>	<b>2073</b>	<b>2074</b>	<b>2159</b>	<b>Whole site</b>
ALPHAL	0	0	0	0
SEALPHAL	0	0	0	0
SRT	28	29	47	86
PSRT	33	30	28	36
NRT	54	43	91	188
PNRT	41	33	34	35
ALPHART	24	40	39	61
SEALPHART	6	12	7	7
SRD	3	4	6	13
PSRD	4	4	4	5
NRD	3	8	14	25
PNRD	2	6	5	5
ALPHARD	0	0	0	11
SEALPHARD	0	0	0	4
SRF	9	2	13	24
PSRF	11	2	8	10
NRF	19	2	27	48
PNRF	15	2	10	9
ALPHARF	0	0	10	19
SEALPHARF	0	0	3	5
SSA	13	15	21	31
PSSA	15	15	13	13
NSA	23	22	42	87
PNSA	18	17	16	16
ALPHASA	13	21	17	17
SEALPHASA	5	9	5	3
SSF	8	13	15	21
PSSF	10	13	9	9
NSF	18	17	27	62
PNSF	14	13	10	12
ALPHASF	0	0	14	11
SEALPHASF	0	0	5	2
SST	4	2	6	9
PSST	5	2	4	4
NST	4	5	15	24
PNST	3	4	6	5
ALPHAST	0	0	0	5
SEALPHAST	0	0	0	2
SSS	1	0	0	1
PSSS	1	0	0	0
NSS	1	0	0	1
PNSS	1	0	0	0
ALPHASS	0	0	0	0
SEALPHASS	0	0	0	0
SG	0	0	0	0
PSG	0	0	0	0

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<b>Context</b>	<b>2073</b>	<b>2074</b>	<b>2159</b>	<b>Whole site</b>
NG	0	0	0	0
PNG	0	0	0	0
ALPHAG	0	0	0	0
SEALPHAG	0	0	0	0

**Table 6:** Abbreviations for ecological codes and statistics used for interpretation of insect remains in text and tables. Lower case codes in parentheses are those assigned to taxa and used to calculate the group values (the codes in capitals). See Table 2 for codes assigned to taxa from the present site. Alpha - the index of diversity alpha (Fisher *et al.* 1943); Indivs - individuals (based on MNI); No - number.

No taxa	S	Percentage of indivs of grain pests	PNG
Estimated number of indivs (MNI)	N	No decomposer taxa (rt + rd + rf)	SRT
Index of diversity (α)	alpha	Percentage of RT taxa	PSRT
Standard error of alpha	SE alpha	No RT indivs	NRT
No 'certain' outdoor taxa (oa)	SOA	Percentage of RT indivs	PNRT
Percentage of 'certain' outdoor taxa	PSOA	Index of diversity of RT component	alpha RT
No 'certain' outdoor indivs	NOA	Standard error	SEalphaRT
Percentage of 'certain' outdoor indivs	PNOA	No 'dry' decomposer taxa (rd)	SRD
No OA and probable outdoor taxa (oa+ob)	SOB	Percentage of RD taxa	PSRD
Percentage of OB taxa	PSOB	No RD indivs	NRD
No OB indivs	NOB	Percentage of RD indivs	PNRD
Percentage OB indivs	PNOB	Index of diversity of the RD component	alphaRD
Index of diversity of the OB component	alphaOB	Standard error	SEalphaRD
Standard error	SEalphaOB	No 'foul' decomposer taxa (rf)	SRF
No aquatic taxa (w)	SW	Percentage of RF taxa	PSRF
Percentage of aquatic taxa	PSW	No RF indivs	NRF
No aquatic indivs	NW	Percentage of RF indivs	PNRF
Percentage of W indivs	PNW	Index of diversity of the RF component	alphaRF
Index of diversity of the W component	alphaW	Standard error	SEalphaRF
Standard error	SEalphaW	No synanthropic taxa (sf+st+ss)	SSA
No damp ground/waterside taxa (d)	SD	Percentage of synanthropic taxa	PSSA
Percentage D taxa	PSD	No synanthropic indivs	NSA
No damp D indivs	ND	Percentage of SA indivs	PNSA
Percentage of D indivs	PND	Index of diversity of SA component	ALPHASA
Index of diversity of the D component	alphaD	Standard error	SEALPHASA
Standard error	SEalphaD	No facultatively synanthropic taxa (sf)	SSF
No strongly plant-associated taxa (p)	SP	Percentage of SF taxa	PSSF
Percentage of P taxa	PSP	No SF indivs	NSF
No strongly P indivs	NP	Percentage of SF indivs	PNSF
Percentage of P indivs	PNP	Index of diversity of SF component	ALPHASF
Index of diversity of the P component	alphaP	Standard error	SEALPHASF
Standard error	SEalphaP	No typical synanthropic taxa (st)	SST
No heathland/moorland taxa (m)	SM	Percentage of ST taxa	PSST
Percentage of M taxa	PSM	No ST indivs	NST
No M indivs	NM	Percentage of ST indivs	PNST
Percentage of M indivs	PNM	Index of diversity of ST component	ALPHAST
Index of diversity of the M component	alphaM	Standard error	SEALPHAST
Standard error	SEalphaM	No strongly synanthropic taxa (ss)	SSS
No wood-associated taxa (l)	SL	Percentage of SS taxa	PSSS
Percentage of L taxa	PSL	No SS indivs	NSS
No L indivs	NL	Percentage of SS indivs	PNSS
Percentage of L indivs	PNL	Index of diversity of SS component	ALPHASS
Index of diversity of the L component	alphaL	Standard error	SEALPHASS
Standard error	SEalphaL	No uncoded taxa (u)	SU
No indivs of grain pests (g)	NG	Percentage of uncoded indivs	PNU

**Table 7:** Number of identified and unidentified animal bone fragments from deposits at a site east of High Catton (TSEP222).

**Key:** No. id. frags = total number of identified fragments; No. unid. frags = total number of unidentified fragments.

<b>Phase</b>	<b>Context</b>	<b>No. id. frags</b>	<b>No. unid. frags</b>	<b>Notes</b>
1	2048	3	49	secondary fill of ditch 2047
1	2050	0	1	fill of ditch 2049
1	2051	0	1	lower fill of pit 2020
1	2056	4	35	secondary fill of ditch 2054
1	2060	7	25	upper fill of ditch 2059 - ?disturbed by ploughing
1	2062	0	5	fill of ditch 2061
1	2064	4	32	secondary fill of ditch 2063 - post 350 AD
1	2065	1	0	primary fill of ditch 2063 - post 350 AD
1	2072	3	2	secondary fill of ditch 2070
1	2080	62	473	cow burial
1	2084	2	4	secondary fill of ditch 2059, beneath 2060
1	2094	0	1	primary fill of ditch 2059
1	2102	0	2	fill of post-hole 2102
1	2104	1	0	fill of post-hole 2103
1	2113	2	1	fill of ditch 2114, cut by later recut ditch 2063
1	2118	4	8	?floor surface within stone building 2085
1	2124	0	1	fill of very shallow ditch 2123
1	2159	4	3	primary fill of ditch 2156
1	2165	1	0	?floor surface/fill of room within stone building 2085
2	2009	17	39	subsoil sealing RB features
2	2045	0	26	ditch
2	2046	1	58	fill of ditch 2045, RB boundary ditch



Phase	Context	No. id. frags	No. unid. frags	Notes
2	2067	0	2	fill of ditch 2066
2	2075	2	5	layer of mixed stone, ?demolition rubble
2	2078	1	2	matrix of soil around and below stone spread 2075
2	2090	1	6	primary fill of ditch 2089
2	2091	3	13	secondary fill of ditch 2089
2	2106	1	2	fill of pit 2105
2	2131	0	4	fill of ditch 2130
2	2140	0	2	fill of ditch 2139
2	2142	0	1	fill of ditch 2141
2	2152	3	0	secondary fill of ditch 2151
2	2154	2	5	secondary fill of large boundary ditch 2153
2	2167	1	9	fill of ditch 2166
3	2150	1	0	fill of shallow ditch 2149
	<b>35</b>	<b>131</b>	<b>817</b>	

**Table 8:** Hand-collected vertebrate remains (excluding cattle skeleton) from deposits at a site east of High Catton (TSEP222).

	<b>Phase</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>Total</b>
<b>Species</b>					
<i>Canis</i> f. domestic	dog	-	1	-	1
cf. <i>Canis</i> f. domestic	?dog	-	-	1	1
<i>Equus</i> f. domestic	horse	12	3	-	15
<i>Sus</i> f. domestic	pig	3	2	-	5
<i>Bos</i> f. domestic	cattle	15	11	-	26
Caprovid	sheep/goat	5	15	-	20
<i>Ovis</i> f. domestic	sheep	1	-	-	1
<i>Sub-total</i>		36	32	1	69
Large-sized mammal		109	106	-	215
Medium-sized mammal		12	42	-	54
Medium-sized mammal 2		-	3	-	3
Unidentified		49	23	-	72
<i>Sub-total</i>		170	174	-	344
<b>Total</b>		<b>206</b>	<b>206</b>	<b>1</b>	<b>413</b>

## Appendix: bone archive

### *Archive of identified bone fragments*

Selected elements were recorded using the diagnostic zones method described by Dobney and Rielly (1988). Remaining elements which could be identified to species were counted and have been included in the 'unidentified' fragment archive table. Other fragments, (also classified as 'unidentified') were grouped into the following categories: large mammal (assumed to be horse, cow or large cervid), medium-sized mammal 1 (assumed to be sheep, pig or small cervid), medium-sized mammal 2 (assumed to be dog, cat, hare or equivalent sized mammal), and totally unidentified.

Key: Ct = context number; Id. No. = unique identification number for each bone; No. frags = number of fragments; LT50 = less than 50% of the zone represented; GT50 = greater than 50% of the zone represented; KW = keywords; P/F = proximal fusion data; D/F = distal fusion data; df = distal fused; du = distal unfused; pf = proximal fused; a = adult; j = juvenile; sh/g = sheep/goat; l = left; r = right; b = both.

Phase	Ct	Id. No.	Species	Element	No. frags	Side	LT50	GT50	P/F	D/F	NOTES
2	2009	86	cattle	mandible	1	r		1			
2	2009	87	cattle	phalanx 1	1	l		123	pf		
2	2009	88	cattle	pelvis	1	r		12456			adult individual represented
2	2009	89	cattle	humerus	1	r		789X			
2	2046	94	cattle	radius	1	l	1	2567	pf		eroded; gnawed and fresh breakage damage
1	2048	91	cattle	humerus	1	l		3456789XY		df	fragile bone surface - brittle and splitting into layers
1	2056	97	cattle	calcaneum	1	l	5	234	pu		
1	2060	99	cattle	humerus	1	l		3456789X		df	

Phase	Ct	Id. No.	Species	Element	No. frags	Side	LT50	GT50	P/F	D/F	NOTES
1	2060	100	cattle	horncore	1	l		1	a		short and stubby horncore
1	2060	101	cattle	mandible	1	r	6	345			
1	2060	102	cattle	astragalus	1	l		1234	a		
1	2060	105	cattle	horncore	1	i					
1	2064	69	cattle	femur	1	r			pu	du	Lots of fresh breakage damage
1	2064	70	cattle	calcaneum	1	l		2345			probably adult
1	2064	71	cattle	tibia	1	r	7	123	pf		
1	2072	27	cattle	astragalus	1	l		1234	a		
1	2072	28	cattle	radius	1	r		125			a bit battered and edges slightly eroded
2	2075	67	cattle	ulna	1	r		ABCDE	pf		
1	2080	1	cattle	mandible	1	l	3	456			fragmented part of left mandible of cow skeleton
1	2080	2	cattle	mandible	1	r	3	156			fragmented part of right mandible of cow skeleton
1	2080	3	cattle	mandible	1	b		27			front part of mandibles of cow skeleton
1	2080	4	cattle	P4	1	l					part of cow skeleton
1	2080	5	cattle	scapula	1	l		123457		df	eroded around glenoid and down side of bone – part of cow skeleton
1	2080	6	cattle	scapula	1	r	7	12345		df	very fragile - better preservation than left scapula - part of cow skeleton
1	2080	7	cattle	M1/M2	1	l					part of cow skeleton

Phase	Ct	Id. No.	Species	Element	No. frags	Side	LT50	GT50	P/F	D/F	NOTES
1	2080	8	cattle	M1/M2	1	r					part of cow skeleton
1	2080	9	cattle	pelvis	1	r	7X	12345689	a		part of cow skeleton
1	2080	10	cattle	pelvis	1	l	4	1235689			part of cow skeleton
1	2080	11	cattle	humerus	1	l		345678X		df	part of cow skeleton
1	2080	12	cattle	humerus	1	r	9X	345678		df	part of cow skeleton
1	2080	13	cattle	radius	1	r		123456789X	pf	df	part of cow skeleton
1	2080	14	cattle	radius	1	l		12345679X	pf		part of cow skeleton - proximal end not attached to distal articulation but same bone
1	2080	36	cattle	patella	2	b					part of cow skeleton - right complete, left damaged
1	2080	37	cattle	femur	1	l	178	23456	pf		part of cow skeleton
1	2080	38	cattle	femur	1	r		245	pf		part of cow skeleton - rather eroded
1	2080	39	cattle	femur	1	l	78	X		df	part of cow skeleton - probably distal articulation for bone id 37
1	2080	40	cattle	femur	3	i		9XY			part of cow skeleton - three distal femur fragments - don't join
1	2080	41	cattle	ulna	1	r		BCDEF			part of cow skeleton
1	2080	42	cattle	ulna	1	l		BCDE			part of cow skeleton
1	2080	43	cattle	cuboid	2	b					part of cow skeleton
1	2080	44	cattle	tibia	1	r	8	12347	pf		part of cow skeleton
1	2080	45	cattle	tibia	1	r		56X		df	part of cow skeleton - probably distal articulation for bone id

Phase	Ct	Id. No.	Species	Element	No. frags	Side	LT50	GT50	P/F	D/F	NOTES
											44
1	2080	46	cattle	tibia	1	l		56X		df	part of cow skeleton
1	2080	47	cattle	tibia	1	l		34	pf		part of cow skeleton
1	2080	48	cattle	metacarpal	1	r		12345678		df	part of cow skeleton
1	2080	49	cattle	astragalus	1	l		1234	a		part of cow skeleton
1	2080	50	cattle	astragalus	1	r	3	124			part of cow skeleton
1	2080	51	cattle	metatarsal	1	r		1256			part of cow skeleton
1	2080	52	cattle	metacarpal	1	l		1256			part of cow skeleton
1	2080	53	cattle	metatarsal	1	l		3478		df	part of cow skeleton
1	2080	54	cattle	metatarsal	1	r	78	34		df	part of cow skeleton
1	2080	55	cattle	metacarpal	1	l		3478		df	part of cow skeleton
1	2080	56	cattle	calcaneum	1	l		123	pf		part of cow skeleton
1	2080	57	cattle	phalanx 1	2	l		123	pf		part of cow skeleton
1	2080	58	cattle	phalanx 1	3	r		123	pf		part of cow skeleton
1	2080	59	cattle	phalanx 2	3	r		123	pf		part of cow skeleton
1	2080	60	cattle	phalanx 2	3	l		123	pf		part of cow skeleton
1	2080	61	cattle	carpals/ tarsals	7						part of cow skeleton

Phase	Ct	Id. No.	Species	Element	No. frags	Side	LT50	GT50	P/F	D/F	NOTES
1	2080	62	cattle	phalanx 3	2	b		12	a		
1	2080	63	cattle	homcore	1	r		1			part of cow skeleton
1	2080	64	cattle	homcore	1	l					part of cow skeleton
1	2080	65	cattle	cranium	1	b					part of cow skeleton - back half of skull
1	2084	17	cattle	homcore	1	l		1			
1	2084	18	cattle	calcaneum	1	l	5	234			heavily gnawed, black staining
2	2091	19	cattle	humerus	1	r	3478	56		df	
2	2091	20	cattle	humerus	1	r		79XY			
2	2091	21	cattle	calcaneum	1	l	5	234			proximal articulation absent - gnawed away by dogs?
2	2152	23	cattle	mandible	1	r	3	126			
1	2159	109	cattle	radius	1	l		12567			very poorly preserved - damaged by fresh breakage.
2	2167	112	cattle	phalanx 1	1	r		123	pf		eroded and rounded edges
2	2075	66	dog	humerus	1	l	3	4		df	almost as large as greyhound in EAU reference collection
2	2009	73	sh/g	scapula	1	l	7	123456		df	
2	2009	74	sh/g	humerus	1	r		3456789XY		du	
2	2009	75	sh/g	radius	1	r		89X		du	juvenile
2	2009	76	sh/g	femur	1	r		2356	pu		juvenile
2	2009	77	sh/g	femur	1	r		789XY		du	distal epiphysis unfused but present; sub-adult

Phase	Ct	Id. No.	Species	Element	No. frags	Side	LT50	GT50	P/F	D/F	NOTES
2	2009	78	sh/g	calcaneum	1	r		2345	pu		
2	2009	79	sh/g	cuboid	1						
2	2009	80	sh/g	pelvis	1	r	X	123456789			
2	2009	81	sh/g	metatarsal	1	l		125678		du	shaft quite porous
2	2009	82	sh/g	metatarsal	1	l		125678			shaft quite porous
2	2009	83	sh/g	mandible	1	r	13				teeth present
2	2009	84	sh/g	incisor	1						
2	2009	85	sh/g	mandible	1	r		27			
1	2060	103	sh/g	mandible	1	l		345			
1	2064	72	sh/g	metacarpal	1	r		125678			may be sub-adult
1	2065	90	sh/g	tibia	1	l		12347	pf		
2	2078	68	sh/g	M1/M2	1	l					
1	2113	34	sh/g	metapodial	1	i	7	3		df	
2	2152	24	sh/g	mandible	1	l		127			
1	2165	111	sh/g	radius	1	r		125	pf		rather eroded
3	2150	15	?dog	metapodial	1						fresh breakage, black staining, eroded proximal articulation
1	2048	92	horse	isolated teeth	1						fragment of mandibular tooth - freshly broken



Phase	Ct	Id. No.	Species	Element	No. frags	Side	LT50	GT50	P/F	D/F	NOTES
1	2056	95	horse	pelvis	1	l		12456Y	a		eroded and root etched plus fresh breakage; probably represents same individual as id. 96
1	2056	96	horse	pelvis	1	r		12567Y	a		eroded and root etched plus fresh breakage; probably represents same individual as id. 95
1	2072	26	horse	tibia	1	l		56789X	pu	df	bone freshly broken in middle - doesn't join but almost certainly same bone
1	2113	35	horse	pelvis	1			57X			quite a few fragments - lots of fresh breakage, rather fragile.
1	2118	30	horse	humerus	1	r		345678		df	
1	2118	31	horse	phalanx 1	1			123	pf		
1	2118	32	horse	navicular	1						complete
1	2118	33	horse	carpal	1						complete
2	2152	22	horse	metacarpal	1	l		12345678		df	
2	2154	107	horse	humerus	1	l		123456789XY	pf	df	very approximate measurements taken for GLC and GLI.
2	2154	108	horse	femur	1	l	X	123456789Y	pf	df	fresh damage has shattered distal articulation. Zones reflect what is present.
1	2159	110	horse	isolated teeth	3						three upper teeth representing two individuals (2 upper M3's from same side)
1	2060	104	sheep	calcaneum	1	l		12345	pf		
1	2048	93	pig	humerus	1	r		789X			
1	2056	98	pig	M3	1						unworn

Phase	Ct	Id. No.	Species	Element	No. frags	Side	LT50	GT50	P/F	D/F	NOTES
2	2090	25	pig	mandible	1	r		123567			
1	2104	29	pig	scapula	1	l		2345			dog gnawed and battered
2	2106	16	pig	M3	1						

*Archive of unidentified bone fragments*

Phase	Context	Species	Element	No. frags	Notes
2	2009	Large mammal	mandible	1	
2	2009	Large mammal	shaft	4	including metapodial shaft
2	2009	Large mammal	thoracic vertebrae	2	1 fused
2	2009	Medium mammal 1	cranium	3	occipital condyles x 2, orbit fragments
2	2009	Medium mammal 1	isolated upper teeth	1	upper molar
2	2009	Medium mammal 1	lumbar vertebrae	10	includes 3 unfused epiphyses; probably from same individual.
2	2009	Medium mammal 1	maxilla + teeth	1	
2	2009	Medium mammal 1	rib	11	
2	2009	Medium mammal 1	sacrum	1	unfused
2	2009	Medium mammal 1	scapula	1	
2	2009	Medium mammal 1	shaft	4	1 femur and 2 x tibia
2	2045	Large mammal	vertebrae	26	

Phase	Context	Species	Element	No. frags	Notes
2	2046	Large mammal	cranium	2	
2	2046	Large mammal	pelvis	3	
2	2046	Large mammal	shaft	32	very eroded and fragile; much fresh breakage
2	2046	Large mammal	vertebrae	4	1 unfused
2	2046	Unidentifiable	unidentified	17	
1	2048	Large mammal	scapula	11	probably mostly same scapula; much fresh breakage.
1	2048	Large mammal	shaft	13	very fragmented
1	2048	Unidentifiable	unidentified	25	much fragmentation caused by modern damage
1	2050	Large mammal	shaft	1	
1	2051	Large mammal	sacrum	1	fresh breakage damage
1	2056	Large mammal	pelvis	18	horse pelvis fragments – too fragmented to rejoin
1	2056	Unidentifiable	unidentified	17	
1	2060	Large mammal	cranium	3	
1	2060	Large mammal	homcore	10	cow
1	2060	Large mammal	rib	3	
1	2060	Large mammal	shaft	2	
1	2060	Medium mammal 1	pelvis	1	
1	2060	Medium mammal 1	shaft	6	
1	2062	Unidentifiable	unidentified	5	

Phase	Context	Species	Element	No. frags	Notes
1	2064	Large mammal	mandible	1	
1	2064	Large mammal	rib	7	
1	2064	Large mammal	scapula	12	freshly broken, most fragments from same bone
1	2064	Large mammal	shaft	10	
1	2064	Medium mammal 1	vertebrae	2	cervical unfused; lumbar fused
2	2067	Large mammal	rib	2	
1	2072	Large mammal	rib	1	
1	2072	Large mammal	unidentified	1	possibly a fragment from proximal articulation of horse tibia
2	2075	dog	shaft	3	humerus shaft fragments
2	2075	Large mammal	rib	1	
2	2075	Large mammal	shaft	1	
2	2078	Large mammal	shaft	1	burnt shaft fragment
2	2078	Unidentifiable	unidentified	1	
1	2080	Large mammal	atlas	1	fragment only
1	2080	Large mammal	axis	1	almost complete - fused
1	2080	Large mammal	cervical vertebrae	5	all fused
1	2080	Large mammal	cranium	4	2 lower orbit fragments
1	2080	Large mammal	hyoid	2	
1	2080	Large mammal	isolated upper teeth	26	broken tooth fragments, both mandibular and maxillary

Phase	Context	Species	Element	No. frags	Notes
1	2080	Large mammal	lumbar vertebrae	1	fused
1	2080	Large mammal	mandible	13	mandible fragments - all with fresh breakage damage
1	2080	Large mammal	maxilla	3	1 with tooth
1	2080	Large mammal	rib	73	few articular ends
1	2080	Large mammal	sacrum	1	fused
1	2080	Large mammal	sternum	8	
1	2080	Large mammal	thoracic vertebrae	14	mostly centrum fragments - all fused
1	2080	Large mammal	vertebrae	21	
1	2080	Unidentifiable	unidentified	300	many broken fragments associated with the cow skeleton
1	2084	Large mammal	cranium	2	
1	2084	Large mammal	metatarsal	1	proximal articulation fragment
1	2084	Medium mammal 1	shaft	1	
2	2090	Large mammal	cranium	2	
2	2090	Large mammal	shaft	2	
2	2090	Large mammal	vertebrae	2	1 unfused epiphysis, 1 lumbar spine
2	2091	Large mammal	shaft	13	at least ten fragments belong to humerus shaft bone id 20
1	2094	Large mammal	shaft	1	humerus fragment - distal articulation gnawed away.
1	2102	Unidentifiable	unidentified	2	
2	2106	Large mammal	shaft	1	

Phase	Context	Species	Element	No. frags	Notes
2	2106	Medium mammal 1	mandible	1	
1	2113	Large mammal	rib	1	
1	2118	Large mammal	rib	2	
1	2118	Large mammal	shaft	2	
1	2118	Large mammal	sternum	1	
1	2118	Large mammal	vertebrae	1	
1	2118	Medium mammal 1	shaft	2	
1	2124	Large mammal	cranium	1	
2	2131	Large mammal	rib	2	
2	2131	Medium mammal 1	shaft	2	
2	2140	Large mammal	rib	1	
2	2140	Large mammal	unidentified	1	
2	2142	Medium mammal 1	rib	1	
2	2154	Large mammal	scapula	1	
2	2154	Large mammal	shaft	2	
2	2154	Unidentifiable	unidentified	2	
1	2159	Large mammal	scapula	1	
1	2159	Large mammal	shaft	2	
2	2167	Medium mammal 1	shaft	6	

<b>Phase</b>	<b>Context</b>	<b>Species</b>	<b>Element</b>	<b>No. frags</b>	<b>Notes</b>
2	2167	Unidentifiable	unidentified	3	

*Butchery records*

Key: sh/g = sheep/goat; kns = knife marks; ch = chop mark; zones follow those outlined by Dobney and Rielly (1988).

Phase	Context	Id. No.	Species	Element	Type of butchery	Zone	Notes
1	2084	17	cow	horncore	ch	cranium	deliberately removed from rest of skull
1	2084	18	cow	calcaneum	kn	2	
2	2152	23	cow	mandible	ch	2	chopped through zone 2
2	2152	23	cow	mandible	ch	36	ramus chopped off
1	2104	29	pig	scapula	ch	23	
1	2118	30	horse	humerus	kns	78	possible knifemarks on posterior aspect of shaft
2	2009	81	sh/g	metatarsal	kns	56	knifemarks just below proximal articulation - series around the shaft
1	2060	101	cow	mandible	ch	5	side of zone 5 chopped off
1	2060	101	cow	mandible	chs	5	across top of ramus
1	2060	103	sh/g	mandible	ch	35	chopped across these two zones



*Mandible and teeth records*

\*After O'Connor (1988); \*\*After Payne (1973; 1987).

Phase	Context	Bone id	Species	Element	P4	M1	M2	M3	General age category*	Detailed age category**
2	2009	86	cow	mandible	ERP	J	F	-		
2	2009	83	sh/g	mandible	-	-	3C	ERP	sub-adult	D (1-2 yrs)
1	2080	2	cow	mandible	-	-	-	G	adult 3	
2	2090	25	pig	mandible	-	N	J	E	adult 3	
2	2152	23	cow	mandible	-	L	-	G	adult 3	
2	2152	24	sh/g	mandible	14S	15A	12A	-		has to be at least G (4-6yrs) but possibly H (6-8yrs)

*Mandible and teeth records, continued*

Phase	Context	Bone id	Species	Tooth	Wear stage	Age category*
1	2080	4	cow	P4	G	
1	2080	7	cow	M1/M2	K	
1	2080	8	cow	M1/M2	K	
2	2106	16	pig	M3	C	adult 2
2	2078	68	sh/g	M1/M2	6A	
1	2056	98	pig	M3	A	adult

*Measurements*

Measurements (in mm) follow those outlined by von den Driesch (1976) and Dobney *et al.* (1996).

**Astragalus**

Phase	Context	Bone id	Species	Element	Bd	DI	GLI
1	2060	102	cow	astragalus	42.72	36.99	66.39
1	2072	27	cow	astragalus	40.21	32.88	59.79
1	2080	49	cow	astragalus	38.94	35.75	64.11
1	2080	50	cow	astragalus	-	36.25	64.11

**Calcaneum**

Phase	Context	Bone id	Species	Element	C	DS
1	2060	104	sheep	calcaneum	12.5	15.9

**Femur**

Phase	Context	Bone id	Species	Element	Bp
2	2154	108	horse	femur	103.61

**Horncore**

Phase	Context	Bone id	Species	Element	45	46	BC
1	2060	100	cow	horncore	43.42	27.84	-
1	2080	63	cow	horncore	36.66	29.09	110
1	2080	64	cow	horncore	36.64	27.79	111
1	2084	17	cow	horncore	45.86	36.83	136

**Humerus**

Phase	Context	Bone id	Species	Element	BT	HT	HTC	GLC	GLL
1	2060	99	cow	humerus	79.66	44.95	33.78	-	-
1	2080	11	cow	humerus	68.25	39.26	31.28	-	-
1	2080	12	cow	humerus	68.36	40.41	31.05	-	-
2	2091	19	cow	humerus	64.78	38.83	28.08	-	-
1	2118	30	horse	humerus	75.64	50.68	38.15	-	-
2	2154	107	horse	humerus	70.44	47.74	35.95	257	276
2	2075	66	dog	humerus	35.05	-	-	-	-

**Metacarpal**

Phase	Context	Bone id	Species	Element	GL	SD	BFp	DFp	BFd	Dd	Dem	Dim	LI	GLI
1	2080	48	cow	metacarpal	197	32	54.19	33.78	54.47	29.34	23.59	27.01	-	-
1	2080	52	cow	metacarpal	-	-	51.37	-	-	-	-	-	-	-
2	2152	22	horse	metacarpal	198.9	28.08	44.05	28.4	43.97	30.2	-	-	192.7	197.3

**Metatarsal**

Phase	Context	Bone id	Species	Element	BFp	BFd
1	2080	51	cow	metatarsal	46.6	-
1	2080	53	cow	metatarsal	-	51.23

**Radius**

Phase	Context	Bone id	Species	Element	GL	BFp	Bp	Bd	BFd
1	2072	28	cow	radius	-	74.18	80.76	-	-
1	2080	13	cow	radius	274	68.09	74.1	65.51	58.37
1	2080	14	cow	radius	-	68.28	73.89	-	-
1	2159	109	cow	radius	-	82.64	87.09	-	-
1	2165	111	sh/g	radius	-	-	24.66	-	-

**Scapula**

Phase	Context	Bone id	Species	Element	GLP	SLC
1	2080	5	cow	scapula	61.85	-
1	2080	6	cow	scapula	63.03	-
2	2009	73	sh/g	scapula	30.09	16.69

**Tibia**

<b>Phase</b>	<b>Context</b>	<b>Bone id</b>	<b>Species</b>	<b>Element</b>	<b>Bd</b>	<b>Dd</b>
1	2072	26	horse	tibia	64.48	38.51
1	2080	45	cow	tibia	57.79	43.41
1	2080	46	cow	tibia	56.41	46.99

**Teeth measurements**

<b>Phase</b>	<b>Context</b>	<b>Bone id</b>	<b>Species</b>	<b>Element</b>	<b>P6</b>	<b>P7</b>	<b>L</b>
2	2090	25	pig	mandible	14.07	14	33.04
2	2106	16	pig	M3	12.96	12.98	28.81