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Ancient Monuments Laboratory
Report 79/93

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Summary

This report describes the partial and semi-articulated remains of an aurochs (*Bos primigenius*), discovered in 1992 eroding out of the foreshore of the river Humber near North Ferriby. The remains are of an unknown date, but following comparative and biometrical analysis, appear to be those of an adult cow. Bones from an articulated fore-limb were recovered in excellent condition, whilst the cranium and horncore stumps, as well as several rib and vertebral fragments (showing excellent preservation), deriving from a separate individual and placed in position so as to appear to belong to the eroded skull. It is unclear whether these represent another aurochs (possibly a bull) or are the remains of a later domestic long-horned individual and whether they were placed there in antiquity or in more recent times. Of potential importance also is the identification of a pathological lesion on a proximal rib fragment which may be of infectious origin.

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The partial remains of an aurochs skeleton from North Ferriby, Humberside

During late August 1992 members of the East Riding Archaeological Society, whilst walking the stretch of foreshore between Melton and North Ferriby, noted some animal bones sticking up out of the mud to the east of the area where the now famous Ferriby boats were discovered and excavated in the 1940's and 1963. These remains proved to be skull, lower jaw and several rib fragments of a large bovid tentatively identified by staff in the Natural History Section of the Hull Museum as that of an aurochs (*Bos primigenius*) (Sitch 1992). These fragments were recovered as they were in imminent danger of being washed away and on a return visit numerous other fragments were recovered buried in the mud. These remains consisted of two major components; a large fragment of skull and loose horncores, found resting upside down in the river sediments, and a partially complete, but fully articulated left fore-limb, found several feet away in the same deposits. The bones were carefully excavated and brought back to the Hull museum where they were cleaned. Soon afterwards they were brought to the Environmental Archaeology Unit in York for identification and study.

1) Skull

This consisted of both entire frontal bones, bearing two horncore stumps (the ends of which had been heavily eroded), the dorsal half of the occipital region and eroded nasal bones. The fragments were visibly eroded (almost certainly due to physical rather than chemical processes). The skull was of a large bovid, and by the configuration of the horncores, concave appearance of both the frontal and occipital region and relative acuity of the intercornual ridge (Grigson 1978), is almost certainly that of a female aurochs (*Bos primigenius*). Analysis of the biometrical data supports this view (see table 2).

In association with the skull were two large and relatively complete mandibles, very probably from the same individual on the basis of position and size. These mandibles contained a number of teeth preserved in situ. These were, for the right mandible, the 4th premolar, 1st, 2nd and 3rd molars and for the left the 3rd and 4th premolars and all three molars. Both mandibles were similarly heavily eroded.

Two additional horncore tips, identical in length and from opposite sides, were located in direct association with the eroded ends of the skull horncores, as if representing their broken ends. However, closer examination revealed that as well as showing almost no signs of physical erosion (in fact they were in very good condition), they both appeared to have very jagged and 'fresh looking' breaks. This was in complete contrast to the horn-core stumps on the skull which had a very rounded and heavily abraded appearance. Further study showed the dimensions of the separate horn-cores to be too large to have originally derived from the skull and they are quite clearly from a separate single animal, possibly a larger bull. There is a possibility that these represent a domestic animal of much later date though, on the basis of the remains alone, this is impossible to verify.

2) Forelimb

The articulated forelimb consisted of a complete humerus, radius, ulna and metacarpal and a complete set of carpal bones (ulna, intermediate, radial, 3rd, 4th and accessory carpals). These again all derived from a very large bovid and, although probably from the same individual as the skull and mandibles, had in contrast preserved in pristine condition, buried deep within the mud. They were in fact positioned at right angles to the surface sediments and have obviously moved very little since deposition.

Additional fragments

Several other fragments were also recovered: Three large rib fragments (one almost complete and all in superb condition,) a thoracic vertebra (heavily eroded with the neural spine broken) and two heavily eroded skull fragments. All probably derived from the same animal.

Age at Death

Complete fusion of all major long bone epiphyses and the eruption of all of the permanent dentition, indicate that the remains are those of a mature individual. The state of occlusal wear of the three molars suggest a relatively aged individual (Grant mandible wear stage 44), although the lack of any evidence of age related dental disease or arthropathies, may suggest the animal was not excessively old.

Biometry

Excellent preservation of the fore-limb elements and frontal region of the skull allowed a number of measurements to be taken (table 1). The post-cranial measurements follow von den Driesch (1974) whilst those of the cranium (table 2) follow Grigson (1974).

All skull measurements fall well within the range of female *B. primigenius* specimens measured by Grigson (1978) and all except frontal length have values greater than the mean (table 2). When comparing measurements of domestic cattle for both sexes (Grigson 1974), although all values from the skull fall just within the range, the mean values are much less. This suggest that the skull recovered from North Ferriby derives from a relatively large female aurochs.

Pathology

Very little evidence of any pathological condition was found on the skeletal material, with the exception of a single proximal rib fragment. This exhibited a small patch of periosteal new bone on the medial aspect of the proximal end, almost directly adjacent to the head and tubercle. This is typical of a low grade infection, possibly associated with the adjacent vertebrae, although the articular surfaces appear not to be involved. The aetiology can only be speculative but could involve reaction to physical trauma, or represent an inflammatory rib lesion (similar to those described by Roberts et. al. 1992) and possibly attributable to tuberculosis. However due to the non-specific nature of the lesion, it is impossible in this instance to be certain.

Discussion

A number of interesting questions emerge from the brief study of these remains: The different degree of erosion between the skull and the long bone elements may suggest that either different taphonomic factors have been at work within a very small area or that they are possibly from different animals. The skull was found upside down and obviously nearer to the abrasive actions of the estuary bed. The presence of eroded horncore stumps on the skull strongly imply that it was originally right way up (with the horn cores possibly protruding through the sediments) and that at some stage it has been turned over. The fact that elements of the forelimb were in such good condition and apparently fully

articulated suggests that they are in a primary position. If so then it is probable that the other limbs were or remain nearby.

More intriguing is the presence and position of two additional horncore fragments, certainly from a separate individual of the same species, possibly a bull. These horncore tips have obviously at some time been deliberately placed in this position and we can postulate a number of possible explanations.

1) That this is a modern hoax or prank

2) That the horncores were placed in their position in antiquity on an already exposed skull or perhaps one that was deliberately placed/dumped on the foreshore for religious or symbolic reasons

3)That the horncores may have been in some way artificially attached to the skull in antiquity for religious or symbolic reasons and placed/dumped on the foreshore.

The fact that the skull and horns were dug out of the silt and were not easily accessible suggests that this is not a very recent occurrence. The rapidly shifting silts of the estuary may have exposed and then re-buried the skull any number of times in the past and may explain its eroded nature. It is curious that although the skull, and particularly the horncore stumps, are heavily eroded, the horn core tips have very spiky surfaces to their broken edges and are in remarkably good condition. This tends to support the view that they have been placed in their position relatively recently or that, if done in antiquity, the skull was already an eroded and perhaps much older specimen.

The fact that a fully articulated forelimb and other elements were found in the same spot suggests that there has been no re-deposition of material and that the animal died (possibly mired in the soft mud) or was killed (though there is no other evidence of human interference) in or near that spot. The additional horncores may indicate that the remains of a second individual may lie close by.

Recommendations for further analysis

A possible justification for a C14 date on the skull and additional horncore tips lies in the evidence of possible human interference. However, since this event could have occurred at any time up to the present day, a date from the material itself could not possibly date this event. It would be interesting to know if any chronological differences existed between the skull and the horncore tips and if the remains are related in date to the Bronze age boats found nearby. However until more material is found, with more direct evidence of human activity, there is little justification for a radio-carbon date at this stage.

The possible occurrence of a tuberculous lesion, manifested on a single rib fragment, is of note since this is an infection which has had a tremendous impact on past and more recent human populations. Almost nothing is known of its origins or antiquity or, from which animal species it spread to man (the present consensus is cattle). Recent biomolecular work on microbial DNA has indicated that it may be possible to isolate and specifically identify the mycobacteria in archaeological material (Spigelman and Lemma, 1993). There is certainly a very good case for attempting this on the Ferriby specimen and, if positive results are obtained, a radio-carbon date would be essential.

Humerus	GL 391.0	BT 97.0	Bd 108.0	HTC 44.0	SD 50.9	
Radius	GL 376.0	Ll 343.0	Bd 92.5	Bp 102.5	Bfp 94.2	SD 54.6
Ulna	GL 496.0	GLl 471.0				
Mcarpal	GL 258.0	Bp 80.3	Bd 72.0	Dp 44.9	Dd 40.8	SD 42.2
Mandible	6=293.4	8=102.2	12=172.2	13=160.8	15a=80.5	15c=46.8

Table 1. Post-cranial measurements (after von den Driesch 1976, HTC for humerus after Davis, 1992)

	Ferriby specimen	**B. primigenius (mean)**	**B. f domestic (mean)**
Frontal length (2)	262.0	276.4	215.5
Least frontal breadth (5)	192.0	186.8	170.6
Least occipital breadth (16)	163.0	155.9	138.7
Horncore basal circumference (23)	240.0	220.7	170.1

Table 2. Comparison of skull measurements (after Grigson 1974 and 1978). *Bos primigenius* values are means for females only and *Bos* f. domestic values are means for both sexes. (Numbers in parentheses are measurements codes used by Grigson).

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