APPENDIX 1

CONTEXT LIST

Context No.	Description
1001	10 YR 3/2, clay loam; modern ploughsoil
1002	10 YR 3/3, clay silt; subsoil
1003	10 YR 3/4, clay silt with lst frags.; fill of 1004
1004	Ditch segment cut
1005	Ditch segment cut
1006	10 YR 4/4, clay silt with lst frags; fill of 1005
1007	Ditch segment cut
1008	10 YR 4/2, clay sit with lst frags; fill of 1007
1009	Cut
1010	10 YR 4/4, clay silt with lst frags; fill of 1009
1011	Ditch segment cut
1012	10 YR 4/2, clay silt with lst frags; fill of 1011
1013	Ditch segment cut
1014	10 YR 4/4, clay silt with lst frags; fill of 1013
1015	Ditch segment cut
1016	10 YR 4/2, clay silt with lst frags; fill of 1015
1017	10 YR 4/4, clay silt with lst gravel; fill of 1005
1018	10 YR 4/4, clay silt with lst frags; fill of 1005
1019	10 YR 5/4, marly clay with gravel; fill of 1005
1020	10 YR 5/4, marl with lst blocks; basal fill of 1005
1021	Grave cut
1022	10 YR 4/4, silty clay with lst frags; fill of 1021
1023	10 YR 4/2, clay silt with lst frags; fill of 1004
1024	10 YR 4/2, clay silt with lst frags; fill of 1004
1025	10 YR 4/4, clay silt with lst gravel; upper fill of 1004
1026	10 YR 4/4, clay silt with lst gravel; fill of 1004
1027	10 YR 6/4, silty sand with lst gravel; fill of 1004
1028	10 YR 7/4, silty sand with lst gravel; fill of 1004
1029	Cleaning layers
1030	10 YR 4/4, clay silt with lst frags; surface fill of 1004
1031	10 YR 3/4, clay silt with lst gravel; fill of 1004
1032	10 YR 5/8, sandy silt with lst frags and gravel; fill of 1004
1033	10 YR 6/6, silty sand with lst gravel; fill of 1004
1034	Human skeleton
1035	10 YR 6/4, silty sand with large lst frags; fill of 1004
1036	10 YR 3/4, silty sand with small lst gravel; fill of 1004
1037	10 YR 3/4, clay silt with lst frags; upper fill of 1004
1038	10 YR 4/3, clay silt with infrequent lst gravel; fill of 1004
1039	10 YR 3/3, clay silt with lst frags and gravel; fill of 1015
1040	10 YR 4/4, silty gravel; primary fill of 1013
1041	10 YR 3/3, clay silt with lst frags; fill of 1004
1042	10 YR 5/4, fine clay silt with lst frags; fill of 1004
1043	10 YR 3/4, clay silt with silt with lst gravel; fill of 1007
1044	10 YR 5/8, sandy silt with lst frags; fill of 1007

1045	10 YR 6/6, silty sand with lst frags; primary fill of 1007
1046	10 YR 5/6, marl with lst frags and gravel; primary fill of 1004
1047	10 YR 4/4, clay silt with lst gravel; fill of 1011
1048	10 YR 4/3, clay silt with lst frags; fill of 1011
1049	10 YR 4/4, clay silt with lst gravel; upper fill of 1011
1050	10 YR 4/3, clay silt with lst frags and gravel; fill of 1011
1051	10 YR 4/4, silty clay with lst frags; upper fill of 1015
1052	10 YR 6/6, sandy silt with lst frags; fill of 1015
1053	10 YR 4/4, clay silt with lst frags; fill of 1007
1054	10 YR 3/4, clay silt with lst gravel; fill of 1007
1055	10 YR 5/8, sandy silt with lst frags; fill of 1007
1056	10 YR 6/6, silty sand with occas lst frags and gravel; fill of 1007
1057	10 YR 3/4, clay silt with lst frags; upper fill of 1004
1058	10 YR 4/6, silty clay with lst gravel; fill of 1004
1059	10 YR 5/6, sandy lst rubble; fill of 1004
1060	10 YR 5/6, coarse sandy lst rubble; fill of 1004
1061	10 YR 6/6, coarse sandy lst rubble; fill of 1004
1062	10 YR 2/1, silty clay with charcoal frags; fill of 1004
1063	10 YR 3/6, silty clay with sub-rounded lst frags; primary fill of 1011
1064	10 YR 4/3, silty clay with lst gravel; fill of 1079
1065	10 YR 5/8, marly clay with lst frags; fill of 1079
1066	10 YR 4/4, clay silt with frags; fill of 1073
1067	10 YR 5/4, clay silt with lst frags; fill of 1073
1068	10 YR 4/4, clay silt with lst frags; fill of 1069
1069	Cut
1070	10 YR 4/4, clay silt with lst frags; fill of 1071
1071	Cut
1072	10 YR 4/4, clay silt with lst frags; fill of 1011
1073	Ditch segment cut
1074	10 YR 5/6, fine silty clay with lst frags; basal fill of 1073
1075	Pit cut
1076	10 YR 5/8, silty clay with lst frags; upper fill of 1075
1077	10 YR 5/6, sandy silt with lst gravel; fill of 1075
1078	10 YR 6/6, silty sand with lst rubble; primary fill of 1075
1079	Ditch segment cut (continuation of 1015)
1080	10 YR 6/6, friable sandy silt with lst frags and gravel; fill of 1015
1081	Natural feature
1082	Fill of 1082
1083	10 YR 4/4, clay silt with lst frags and gravel; fill of 1084
1084	Pit cut
1085	Natural cut
1086/7/8/9	Fills of 1085
1090	Radio-carbon sample (rt fib/tib of 1034)
1091	Cut - central segment of 1011
1092	10 YR 4/4, clay silt with lst gravel; fill of 1011
1093	10 YR 4/4, clay silt with lst gravel; primary fill of 1011

APPENDIX 2

Finds Catalogue

Context	Description	Quantity	Weight (g)
1002	Flint	20	
	Pottery (fragments)	42	198g
	Bone	1	4g
	Brick	2	
1003	Bone	18	85g
	Flint	4	
	Pottery (fragments)	21	85g
	Pottery (fragments)	2	56g
1006	Flint	1	
	Pottery	10	56g
	Bone	8	28g
1008	Bone	14	60g
	Flint	2	
1012	Flint	2	
1014	Pottery	1	32g
1017	Burnt Stone/clay	3	
	Pottery	1	4g
1018	Pottery (fragments)	2	4g
1019	Bone	2	4g
	Pottery (fragments)	2	2g
1020	Bone	17	113g
1021	Pottery (fragments)	8	28g
	Burnt clay	3	
	Flint	1	
1022	Pottery (fragments)	3	3g
	Bone	1	2g
1023	Bone	5	28g
	Pottery	2	7g
	Flint	2	
	Snail shell	1	
1024	Bone	38	141g
	Pottery (fragments)	9	14g
	Flint	3	
1025	Flint	7	
	Pottery (fragments)	8	28g

1026	Pottery (fragments)	1	3g
	Flint	1	
	Bone	3	4g
1030	Bone	1	4g
	Flint	6	
	Pottery (fragments)	34	113g
1031	Bone	7	16g
	Pottery (fragments)	6	3g
1037	Bone	2	3g
	Pottery (fragments)	7	28g
	Flint	4	
1038	Pottery (fragments)	1	2g
1042	Bone	16	170g
	Pottery (fragments)	3	3g
1047	Bone	47	368g
	Flint	2	
	Pottery (fragments)	6	16g
1048	Bone	14	28g
	Flint	3	
	Snail shell	2	
	Pottery (fragments)	8	141g
1049	Pottery	31	113g
	Bone	1	4g
1051	Burnt stone	2	
	Bone	51	453
	Pottery (fragments)	73	425
	Flint	9	
1053	Pottery (fragments)	2	7g
	Flint	3	
1061	Bone	19	16
1064	Bone	5	28g
	Pottery	1	7g
1066	Pottery (fragments)	4	16g
1067	Pottery	2	7g
1068	Pottery (fragments)	46	190g
	Flint	13	
	Bone	13	7g
1070	Bone	21	56g
	Pottery	12	34g
	Flint	9	

1083	Flint	43	
	Bone	253	6533g
	Pottery (fragments)	124	793g
	Burnt bone	50	34g
2002	Flint	3	
	Pottery (fragments)	4	7g

NYS 8599.

APPENDIX 3

Reports from the Environmental Archaeology Unit, York, **2001/34**, *6 pp.*

Assessment of biological remains from excavations at Wath Quarry, Wath, North Yorkshire (site code 07-08-00)

by

Deborah Jaques, John Carrott, Allan Hall and Steve Rowland

Summary

A series of sediment samples and one box of hand-collected bone from deposits revealed by archaeological excavations at Wath Quarry, North Yorkshire were submitted for an evaluation of their bioarchaeological potential. Preliminary studies suggested a mid to late Neolithic date.

The three processed sediment samples each produced small amounts of charred plant remains and small land snail assemblages. The snail taxa were indicative of dry grassland and woodland/scrub habitats.

Vertebrate remains recovered from the deposits (mainly from ditch and pit fills) were very poorly preserved and most fragments could not be identified to species. Material from pitfill 1083 showed slightly better preservation and included a range of species. Cattle, pig, caprovid, red and roe deer remains were identified, along with beaver and ?bear.

Given the early date of this material, an attempt should be made to look for evidence of plant remains relating to human activity in as many of the primary deposits (pit and ditch fills) as possible. Any snail assemblages recovered during the processing of the samples for the recovery of plant remains should also be examined to assess their potential for environmental reconstruction. The scarcity of bone assemblages of this date highlights the importance of the material recovered from this site. Despite the exceedingly poor preservation an archive of the vertebrate remains should be made.

Keywords: WATH QUARRY; NORTH YORKSHIRE; ASSESSMENT; MID TO LATE NEOLITHIC; PLANT MACROFOSSILS; INVERTEBRATE REMAINS; VERTEBRATE REMAINS; PLANT MACROFOSSILS

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Assessment of biological remains from excavations at Wath Quarry, Wath, North Yorkshire (site code 07-08-00)

Introduction

An archaeological evaluation excavation was carried out by MAP Archaeological Consultancy Ltd at Wath Quarry, North Yorkshire, during August 2000.

A series of sediment samples ('GBA'/'BS' *sensu* Dobney *et al.* 1992) and 1 box of hand-collected bone (approximately 10 litres in total) were recovered from the deposits. Preliminary studies suggested a mid to late Neolithic date for the deposits.

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

Methods

Sediment sample

The sediment samples were inspected in the laboratory and their lithologies recorded using a standard *pro forma*. Three of the samples were selected for investigation and processed, following the procedures of Kenward *et al.* (1980; 1986), for recovery of plant and invertebrate macrofossils.

The washovers and residues were examined for plant remains. The washovers were also examined for invertebrate remains, and the residues were examined for other biological and artefactual remains.

Vertebrate remains

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

Where possible, fragments were identified to species or species group, using the reference collection at the EAU. Fragments not identifiable to species were grouped into categories: large mammal (assumed to be cattle, horse or large cervid), medium-sized mammal (assumed to be caprovid, pig or small cervid), small mammal (rats, mice, voles etc), and completely unidentifiable.

Results

The results are presented in context number order. Archaeological information, provided by the excavator, is presented in square brackets. No insect remains were recovered from the samples.

Context 1062 [primary fill of ditch 1004]
Sample 10/T (3 kg sieved to 300 microns with washover)

Moist, varicoloured (a jumbled mixture from light brown through to black in shades of grey-brown and grey), crumbly and slightly sticky (working soft and slightly plastic), very gritty, slightly ?ashy, clay silt with stones (2 to 60+ mm) and some charred material present.

This subsample yielded a small washover

comprising a few cm^3 of charcoal, including oak (*Quercus*), to 10 mm and some land snails (including *Cochlicopa lubrica* (Müller), *Vallonia* ?*excentrica* Sterki, *Trichia* sp. and ?*Oxychilus* sp.). The very large residue of about 900 cm^3 was of angular limestone gravel (to 50 mm) and limestone 'sand'.

Context 1068 [fill of pit 1069]
Sample 12/T (3 kg sieved to 300 microns with washover)

Just moist, light to mid slightly reddish-brown, brittle to crumbly (working soft), gritty, ?slightly sandy clay silt. Stones (2 to 60+ mm), charcoal and land snails were present in the sample.

There was a small washover of a few cm^3 of charcoal (to 10 mm, none of it, apparently, oak), and some snails. Many of the snail remains were of *Cecilioides acicula* (Müller), a modern burrowing species, and probably intrusive to the deposit. Other land snail taxa present included *Cochlicopa lubrica*, *Pupilla muscorum* (Linnaeus), *Discus rotundatus* (Müller), *Trichia* ?*hispida* (Linnaeus), ?*Oxychilus* sp., and *Vallonia* sp?p. (possibly two species, *V.* ?*excentrica* and *V.* ?*costata* (Müller)). A single fragment of charred hazel (*Corylus avellana* L.) nutshell was also noted.

The residue was large (about 750 cm^3), almost all being limestone sand and gravel (to 50 mm).

Context 1083 [fill of pit 1084]
Sample 14/BS (43 kg sieved to 300 microns with washover)

Just moist, mid grey-brown, crumbly (working soft and slightly sticky), clay silt (to silty clay). Stones (6 to 60 mm), fragments of bone and a few modern contaminant seedlings were present in the sample.

The small washover of about 200 cm^3 consisted of modern roots, snails (the same taxa as were recorded from Context 1068, Sample 12 were present and, in addition a few *Cepaea*/*Arianta* sp. and ?*Helicella itala* (Linnaeus) were noted), and a little charcoal (to 10 mm, none of which seemed to be oak); there was also a little very fragmentary bone, a trace of charred hazel nutshell (several fragments to about 10 mm) and some ?modern weed seeds. The very large residue of about 10 litres of angular limestone gravel (to 100 mm) and limestone sand, with a couple of fragments of ?pot, some charcoal and further charred hazel nutshell, as well as some bone (see below).

Vertebrate remains

Vertebrate remains were recovered from 23 deposits, eighteen of which represented fills from five ditches. The remaining bone-bearing contexts included several pit fills and a sub-soil deposit. Overall, the deposits produced a total of 695 (hand-collected) fragments, almost half of which came from pit fill 1083. Preservation of the vertebrate remains was extremely poor. The surface of many fragments had been entirely destroyed by the chemical action of the surrounding sediments. Tooth fragments, which typically survive in poor conditions, were equally badly preserved, with extremely pitted enamel surfaces.

Ditch 1004

Nine (Contexts 1003, 1023, 1024, 1026, 1030, 1031, 1037, 1042 and 1061) of the fills from this ditch produced bone, amounting to 117 fragments. Preservation of the material

was extremely poor and most bone surfaces were completely destroyed. The most damaged fragments were recovered from Contexts 1003, 1031 and 1042. Tooth enamel was also pitted and eroded, this being particularly noticeable on the teeth from Contexts 1023, 1024 and 1042. Fresh breakage was noted and was extensive within the material from Contexts 1042 and 1061. Most of the bones appeared to represent large mammal shaft fragments.

Ditch 1005

Bone from three fills (Contexts 1006, 1019 and 1020) amounted to just 28 fragments, all of which were very poorly preserved. Large mammal fragments, mainly pieces of shaft and possibly pelvis, were noted, but the poor condition of the bones made further identification impossible.

Ditch 1007

A single deposit, Context 1008, produced 18 fragments of long bone shaft (including humerus) and tooth enamel. All were very fragmented and poorly preserved, the tooth enamel being particularly eroded.

Ditch 1011

Sixty-one fragments of bone were recovered from three fills (Contexts 1047, 1048 and 1049). As for the previous ditch assemblages, preservation of the bone was exceedingly poor, with material from Context 1047 being particularly battered and eroded. Most fragments represented the remains of large mammals, and whilst a number could be identified as cattle (including humerus and metapodial fragments), most were barely recognisable.

Ditch 1015

Ditch fill 1051 produced 80 fragments of bone. Preservation was such that some teeth and a calcaneum could be identified as cattle, whilst a pig lower M3 was also recorded. However, preservation was not especially good and most fragments were recorded as 'large mammal' or remained unidentified. The large mammal fragments included fore limb elements such as scapulae, humeri and radii and probably represent cattle.

Pit 1069

A single fill, Context 1068, contained nine fragments of bone. Poor preservation again characterised the assemblage. Identified remains consisted entirely of maxillary pigs teeth, which were probably all that remained of a single maxilla. The bulk of the 'unidentified' fraction was medium-sized mammal shaft fragments.

Pit 1071

Vertebrate remains were recovered from one fill, Context 1070, amounting to 23 fragments. The bones were extremely eroded, with much surface damage. Tooth enamel fragments were only slightly better preserved. However, despite poor preservation, some teeth were identified to species. These included two cattle maxillary molars and a roe deer (*Capreolus capreolus* (L.)) maxillary premolar. A pig mandibular molar was also present, along with an upper canine representing a juvenile male. Seventeen fragments, mainly medium-sized mammal shafts, were noted, most too poorly preserved to identifiy further.

Pit 1084

Over half (352) of the total number of fragments from the entire site were recovered from the fill (Context 1083) of this pit. A further 600 fragments were recovered from a sediment sample taken from the same deposit. As with assemblages from elsewhere on the site, preservation was poor and even tooth enamel was damaged and pitted in appearance. However, it is worth noting that the preservation of the material from this pit fill was slightly better than that of most of the assemblages from the ditches. Fragmentation was quite high, with 20-50% of all fragments being less than 50 mm in maximum dimension, with fresh breakage the probable cause. All of the bone from the sample was less than 45 mm in maximum dimension, with most fragments being less than 20 mm.

The better preservation enabled a wider range of species to be identified, although many of the recorded fragments were teeth. Pig remains made up the bulk of the identified bones and included mandibles and maxillae representing juvenile and sub-adult individuals. Many of the limb bones identified as pig were shaft fragments only with no epiphyses surviving. Identification of caprovid and cervid remains was more problematic as their shafts are, on the whole, less easily identified from fragments than those of pig and, could only be assigned to the medium-sized mammal category. The identifiable caprovid remains were mandibular teeth, although a few upper teeth and some pelvis, ulna and tibia fragments were also recorded. Teeth were also the prevalent element for cattle. Roe deer (*Capreolus capreolus* (L.)) was represented by a mandible, several phalanges and a pelvis fragment, whilst a shed antler burr and beam tine fragment were tentatively identified as red deer (*Cervus elaphus* L.). Another wild species present was the beaver (*Castor fiber* L.), of which a single tooth was recorded. Additionally, two large phalanges were noted and have been tentatively identified as bear (cf. *Ursus arctos* L.). These fragments were very eroded and require further comparison with other reference specimens before identification can be confirmed.

Approximately 600 fragments were recovered from the sediment sample, of which 53 were identified to species or species group. Teeth again prevailed, most being deciduous and unworn permanent pig premolars. Roe deer were also represented by several teeth. Five small mammal fragments were recovered, of which three were voles; one almost certainly a bank vole (*Clethrionomys glareolus* (Schreber)).

Statement of potential

Given the early date of this material (probably mid to late Neolithic), an attempt should be made to look for evidence of plant remains relating to human activity in as many of the primary deposits (pit and ditch fills) as possible, though it appears that such material is very sparse.

The recovered land snail assemblages (excluding *C. acicula* as likely to be intrusive to the deposits) were indicative of dry, calcareous grassland with some woodland/scrub habitat (represented by *D. rotundatus*, *T. ?hispida* and *Oxychilus* sp.). The remains were rather sparse but, given reasonably tight dating for the deposits, might allow some investigation of changes in land use to be attempted (e.g. clearance of woodland).

The vertebrate remains recovered from this site were mostly very poorly preserved and fragmented— few were identifiable and none

were measurable. However, bone assemblages of this early date are highly unusual and rarely recovered. The assemblage from pit fill 1083 produced a substantial quantity of material, both by hand collection and from the sample. A diverse range of species were identified including beaver and ?bear. The remains of both species are seldom recovered from archaeological sites in this region. Beaver remains have been identified from Pleistocene through to medieval sites throughout Britain, but most records are from sites of Mesolithic and Neolithic date (Yalden 1999). Brown bear became increasingly scarce throughout the Neolithic period and there is little evidence for their continued existence in Britain after the Roman period. Later records of brown bear from the Anglo-Saxon and medieval periods are mainly restricted to finds of phalanges and claws which may represent the importation of skins rather than the presence of bears in the wild (Yalden op.cit.).

Recommendations

Both the existing unprocessed samples and any material which is threatened by development should be examined for plant remains. With so much coarse clastic limestone, it may be advisable to undertake very gentle disaggregation with constant flushing to remove delicate charred plant material before it is crushed by the gravel. Any snail assemblages recovered during the processing of the samples for the recovery of plant remains should certainly be examined to assess their potential for environmental reconstruction.

Few excavations of Neolithic sites have been undertaken and assemblages of bone of this date are exceedingly rare (Huntley and Stallibrass 1995). Consequently, this period represents a significant gap in our understanding of the exploitation of wild and domestic animals by early man. Although the current vertebrate assemblage is very poorly preserved, it should be recorded to archive level in order to enlarge the data set of vertebrate remains of Neolithic date recorded from this region.

Retention and disposal

All of the current material should be retained for the present.

Archive

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

Acknowledgements

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NYS 8600

APPENDIX 4
Report on the Human Skeletal Remains from Wath Quarry.

by Mary E. Lewis, PhD

Durham University

Introduction

Inhumation 1034 was discovered crouched in the centre of a Henge Barrow, in Wath limestone quarry, near Malton, North Yorkshire. The feature (context 1021) is believed to date to the mid-late Neolithic period. In addition to the inhumation, the fill of context 1021 contains bone fragments from at least one other individual in addition to bovine bone fragments (P. Rowley-Conwy pers. comm.). The following report summarises the results of a detailed study of the remains, the preservation, age and sex of the individual, metric and non-metric data and observations on the dental and skeletal pathology. A detailed catalogue of the skeleton is contained in the Appendix and the original recording form is archived at the Department of Archaeology, University of Durham.

1. Preservation

The level of preservation of the human remains will affect the amount of information that can be collected. Three grades of preservation are commonly assigned to human remains from archaeological contexts. Grade 1 refers to complete skeletons with excellent surface preservation, Grade 2 is assigned to skeletons with some degree of post-mortem damage, bone loss or fragmentation and Grade 3 skeletons are badly damaged, with extensive surface erosion and loss of around 50% of the skeletal elements. The skeleton from Wath Quarry was fragmentary and incomplete with severe surface erosion of all the bones stripping away the original surface of the bone (Grade 3). This limited the amount of information that could be gained on the pathology of the individual and hindered ageing and sexing methods and collection of metrical data.

2. Age and Sex Estimations

Sex estimations were attained using the methods described in Bass (1 987) and based on the morphology of the skull and pelvis, metrical data and general robusticity of the skeleton. Specific features on the skull and pelvis were considered in addition to measurements based

on the size of the humerus, femur and other bones, which have been found to be sexually dimorphic (Brothwell, 1989).

Methods used to determine age at death in adult human skeletal remains are based on dental attrition and the morphological changes seen on the pelvis and ribs during adulthood (Iscan and Loth, 1989). Specific pathological changes relating to old age, degenerative joint disease and osteoporosis (or 'brittle-bone disease') can also provide a rough age estimate in the adult skeleton. Methods used to derive an age estimate include, in order of preference, the pubic symphysis (from casts, see Brooke and Suchey, 1990), pelvic auricular surfaces (Lovejoy *et al.*, 1985), late epiphyseal fusion (Scheuer and Black, 2000), sternal rib ends (Iscan *et al.*, 1984, 1985) and molar attrition (Brothwell, 1989). These methods are used to place a skeleton within the following age categories: 17-25 years, 26-35 years, 36-45 years and 45+. After the age of 45 years degenerative changes become too subjective to provide more precise ageing.

The skeleton from Wath Quarry was a male aged between 26 and 35 years old based on the presence of mild degenerative Joint disease and dental wear. However, the techniques used are based on skeletal populations from much later periods in Britain history and on modem criteria. The eruption of the third molars suggests the individual was older than 21 years and wear on the molars suggested an age of 35-45 years. Severe attrition on the whole dentition may have resulted in the individual being over-aged. Poor preservation of the pelvis prevented more reliable techniques being used.

2. Metrical and non-metrical data

2.1 Adult Stature

Studies of adult stature in past populations have shown variability according to geographical location, genetic factors and socio-economic status. In particular, there is a strong relationship between growth suppression in childhood, due to under-nutrition and or disease and adult body size, hence growth retarded children make short-statured adults (Larsen, 1997). In the Neolithic period in Britain, the average male stature was 1.72 meters (Roberts and Manchester, 1995) and between 1.66 and 1.76 m in Denmark (Bennike, 1985). A stature estimate was derived from the formulae calculated by Trotter and Gleser (1958). The skeleton from Wath Quarry fell within previous values for this period at 1.73 meters tall.

2.2 Cranial and Postcranial metrics

The fragmentary nature of the cranium and mandible prevented any cranial metrics or indices being recorded and poor preservation of the femora and tibiae prevented the platymeric and platycnemic indices being calculated. The measurements that were taken are presented in the Appendix (Table 1).

2.3 Non-metric traits

Morphological variations on the bones and teeth, known as 'non-metric', 'epigenetic' or 'discontinuous' traits have been used in the past to measure genetic associations between populations and even, to suggest family relationships within cemetery populations (Tyrell, 2000). Whilst an unusually high appearance of certain traits may indicate a familial relationship, such biodistance analysis is complex and traits are influenced by intrinsic genetic, local and general epigenetic and environmental factors (Larsen, 1997). In addition, some features classed as non-metric traits are related to habitual mechanical stress, perhaps as the result of occupation (Kennedy, 1989). Here, non-metric traits were scored using the method of Berry and Berry (1967). The poor preservation of the skeleton limited the number of sites that could be examined for traits and only bilateral supra-orbital foramina were recorded.

3. Health and Disease

There are many conditions commonly found on the skeletons and teeth of past populations. Dental diseases, osteoarthritis, trauma and infections are the most common and these and other conditions can provide information on population adaptation, diet, activity, hygiene and exposure to disease. However, the factors resulting in disease can only be understood within the cultural and biological context of that population. For example, the skeleton at Wath Quarry probably experienced heath changes related to a transition to agriculture in this period and subsequent sedentism. In addition, for diseases to be recognised on the skeleton, the individual has to be immunologically compromised to develop the disease, but strong enough to survive the disease into its chronic stages (Ortner, 1991). One limiting factor of palaeopathological study is that acute infections, such as the plague, whooping cough, smallpox and typhus, were known to be major causes of death in the past, but killed the individual within days, before any skeletal lesions could develop.

3.1 Dental disease

All 32 adult teeth were available for observation. The anterior and posterior teeth were all heavily worn with loss of half of the crown surface throughout (Grade 5 for canines and incisors, Buikstra and Ubelaker, 1994). This type of wear suggests a coarse diet where grit and other abrasive substances may have been incorporated in the food. The absence of any dental caries, abscesses or tooth loss suggest a low sugar diet however, there were deposits of calculus (calcified plaque) and periodontal disease. The calculus (medium deposits, Brothwell, 1981) was evident on the mandibular and maxillary teeth from the third molars to the canines and suggest a high carbohydrate diet (Hillson, 1996).

3.2 Joint disease

Osteoarthritis is recognisable on the spinal column and joints as osteophytes or bony outgrowths along the margins of the joint, contour change, porosity and polishing (known as eburnation) of the joint surfaces. It may occur as the result of the ageing process (degenerative joint disease), secondary to a traumatic event or as the result of mechanical stress or habitual use of the joint (Resnick and Niwayama, 1988). There was no spine preserved meaning that the distribution and severity of any spondyloarthropathies (spinal joint disease) could not be recorded. However, there was slight osteophytic ripping on the left and right knee joints and elbows suggestive of degenerative joint disease.

4. Conclusions

The poor preservation of the bone surface and fragmentary nature of the skeleton limited the amount of metrical and pathological data that could be obtained from this skeleton. However, this 26-35 year old male was tall compared to the average height of Neolithic males recorded in Britain. His teeth suggested that his diet was coarse and high in carbohydrates, but poor dental hygiene had resulted in periodontal disease.

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Skeleton summary sheet

Catalogue of additional material

Post-cranial Metrical data

Inhumation 1034

Age: 26-35

Sex: Male

Stature: 1.73 m (femur)

Preservation: Grade 2

Bones Present: skull, arms, right metacarpals and phalanges, ftagmentary pelvis, left and right femora and left tibia and fibula, fragmentary bones of the right foot.

Additional Material: None

Non-Metric Traits: Highest nuchal line

Dentition:

8 7 6 5 4 3 2 1 | 1 2 3 4 5 6 7 8

8 7 6 5 4 3 2 - | - 2 3 4 5 6 7 8

Dental Pathology: severe dental wear, calculus, periodontal disease

Skeletal Pathology: Osteoarthritis.

Comments: There is slight osteophytic lipping on the left and right knee joint surfaces and at the elbows suggestive of mild degenerative joint disease. The teeth are extremely worn both on the anterior and buccal teeth, with half of the crown worn away in most cases. However, the right third maxillary molar is more worn than the left.

Additional material from context 1021

Bag 1.

Right mandibular posterior condyle

Maxillary molar

Right mandibular canine

Right hamate

Distal radius (stylus)

Right distal fragment of first metacarpal

Left lunate

4 x right rib fragments

Bag 2.

1 x right permanent incisor

Spinous process of L4 and L5

Right fragment of maxilla, with evidence of an old abscess

1 x non-human fragment (possibly bovine scapula, P.Rowley-Conwy pers. comm.)

1 x non-human (bovine) femur

right 1st and 2nd metatarsals right and left femora

Table 1. Post-cranial measurements (mm). Brothwell (1981).

Inhumation 1034

Statue	173.40
FeL1 ()	-
FeL2 (l)	-
FeD1 (l)	-
FeD2 (l)	-
FeD5 (l)	44.76
FeE1 (l)	-
FeL1 (r)	465.00
FeL2 (r)	-
FeD1 (r)	-
FeD2 (r)	-
FeD5 (r)	-
FeE1 (r)	-
TIL1 (l)	395.00
TiE1 (l)	-
TiD1 (l)	37.15
TiD2 (l)	20.02
TIL1 (r)	-
TiE1 (r)	-
TiD1 (r)	-
TiD2 (r)	-
FiL1 (l)	-
FiL1 (r)	-
HuL1 (l)	-
HuD5 (l)	-
HuL1 (r)	-
HuD5 (r)	454.94
RaL1 (l)	-
RaL1 (r)	-
U1L1 (l)	-
U1L1 (r)	284.00
C1L1 (l)	-
C1L1 (r)	-
GC1 (l)	-
GC2 (l)	-
GC1 (r)	41.76
GC2 (r)	-
AW	-
SL	-
ML	-
SacL	-
SacB	-

APPENDIX 5

Flint Catalogue

1002 Blade
Primary flakes
Hammer stones
Core frag. Peterborough type.

1003 Burnt fragments.

1006 SF 1: Side and End Scraper; has been in fire. Peterborough type.

1008 Core rejuvenation flake
Broad flake
Smaller flake. Grooved Ware/Peterborough type.

1012 SF 3: very fine double-edged saw, with use wear, possibly from wood-working. Peterborough type.

1022 Unused Piercer
Flake. Beaker type.

1023 Battered flake
Burnt chunk.

1024 Bladelet
Polished axe flake, not from finished axe but intentionally removed during polishing process, not from resharpening. Grooved Ware/Woodland type.

1025 Bladelet
1 Primary flake
2 Secondary flakes (burnt)
3 Tertiary flakes. Clacton-style Grooved Ware type.

1026 Crudely-knapped blade.

1030 Core frag.
3 flakes
Blade
Side and end Scraper, local flint, little use wear. Durrington Walls type Grooved Ware.

1037 SF 2: Convex End Scraper, perhaps waisted for hafting. Very early Neolithic.
2 chunks (1 burnt)
Flake.

1047 Blade with serrated edge, local red gravel flint. Grooved Ware.
Flake.

1048 Notched or Nose Scraper
2 flakes.

1051 SF 4: Scraper, retouched on all sides. Unusual flint with microfauna fossils. Early Neolithic or ?Beaker.
End/flake Scraper (burnt)
Broken edge-utilised flake with use wear. Neolithic.
Side or long End Scraper, heavy use wear. Peterborough type.
3 flakes
2 frags.

1053 3 burnt tertiary flakes.

1068 Retouched flake
12 flakes (1 of chert).

1070 Edge flake with miscellaneous retouch
3 blades
5 flakes (2 burnt), in uniform flint with some cortex, possibly from only 2 nodules.

1083 Fine blade with double dorsal crest, with use wear. Peterborough/Towthorpe type.
4 other blades
1 edge-utilised flake, with use wear not from cutting meat or bone.
35 flakes, 7 of which are burnt, both primary and secondary origin; 1 from arrowhead manufacture; primary knapping debitage.

Comments

The generally fresh and unabraded condition of the assemblage suggests that it has not been moved very far from the location of its use or manufacture, and has been deposited in mainly primary locations. There has been no reworking of earlier pieces in the Bronze Age.

The burnt condition of many of the pieces shows that they were deliberately placed in fire, presumably during domestic activity.

Primary knapping waste is represented by debitage from context 1083, with arrowhead manufacture being included here. The polished axe flake from context 1024 was intentionally removed during the polishing process, showing that finishing was being carried out at the site.

APPENDIX 6

Pottery Catalogue

Context	Description	Wt. (kg)
1002	36 plain body, 4 plain rim, 2 dec. rim, 6 dec. body sherds (Peterborough Ware. Gritty ware.)	0.220
1003	1 plain rim, 12 plain body sherds, 12 crumbs.	0.090
1006	1 dec. rim, 1 plain rim, 1 dec. body sherds, 5 crumbs	0.060
1017	1 crumb	<0.005
1019	2 crumbs	<0.005
1021	1 dec. rim, 3 dec. body, 1 plain body sherds, 6 crumbs	0.050
1022	3 crumbs	<0.005
1023	1 plain body sherd, 1 crumb	<0.005
1024	1 plain body, 1 plain rim, 2 plain base sherds, 8 crumbs (Peterborough Ware.)	0.060
1025	1 plain rim, 3 dec. body, 12 crumbs (Peterborough Ware sherds with incised dec.)	0.025
1026	1 crumb	<0.005
1030	3 dec. body, 11 plain body sherds, 33 crumbs	0.100
1031	2 plain body sherds, 3 crumbs	0.010
1037	1 plain body sherd, 8 crumbs	0.030
1038	1 plain body sherd	<0.005
1042	1 plain body sherd, 2 crumbs	<0.005
1047	1 dec. rim sherd, 5 crumbs (Peterborough Ware corded rim sherd)	0.020
1048	1 dec. rim, 2 dec. body, 2 plain body, 1 plain base sherds, 4 crumbs (1 Food Vessel base + 2 joining sherds, 1 Beaker neck sherd)	0.160
1049	2 dec. rim, 21 plain body sherds, 11 crumbs (Peterborough Ware, unusual Fengate-type rim with internal incised grooves)	0.120

1051	2 dec. rim, 1 plain rim, 2 plain base, 34 plain body, 66 crumbs (Peterborough Ware.)	0.520
1053	3 crumbs	<0.005
1064	1 dec. rim sherd (Peterborough Ware rim with corded, bevelled rim with incised dec.)	<0.005
1066	2 dec. body sherds, 2 crumbs (Beaker with incised criss-cross and corded dec.)	0.025
1067	1 dec. rim sherd, 1 crumb (Peterborough rim with incised dec.)	0.010
1068	(2 plain rim sherds, 4 plain body, 5 dec. body, 58 crumbs Peterborough Ware collared rim, Peterborough/Fengate rim with incised dec.)	0.200
1070	2 plain rim sherds, 7 plain body sherds, 4 crumbs	0.035
1083	9 dec. rim, 9 dec. body, 1 plain base, 57 plain body, 85 crumbs.	0.780

APPENDIX 7

SURRC

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RADIOCARBON DATING CERTIFICATE

22 October 2003

Laboratory Code	SUERC-1167(GU-11121)
Submitter	Charlie Morris MAP Archaeological Consultancy Ltd. Showfield Lane Malton North Yorkshire YO17 6BT
Site Reference	Wath Quarry, Hovingham
Sample Reference	Context 1034 Sample 9
Material	Bone : Adult Male
Delta ^{13}C rel. PDB	-21.7‰
Radiocarbon Age BP	3450 ± 55

N.B. 1. The above ^{14}C age is quoted in conventional years BP (before 1950 AD). The error, which is expressed at the one sigma level of confidence, includes components from the counting statistics on the sample, modern reference standard and blank and the random machine error.

2. The calibrated age ranges are determined from the University of Oxford Radiocarbon Accelerator Unit calibration programme (OxCal3).

3. Samples with a SUERC coding are measured at the Scottish Universities Environmental Research Centre AMS Facility and should be quoted as such in any reports within the scientific literature. Any questions directed to the Radiocarbon Laboratory should also quote the GU coding given in parentheses after the SUERC code.

Conventional age and calibration age ranges calculated by :- P. Naysmith Date :- 22-10-03

Checked and signed off by :- Gordon T Cook Date :- 22-10-03

Calibration Plot