Excavations at Southgate, Hartlepool, 1973 and 1981-82

An analysis of the vertebrate remains

by Alison Locker and James Rackham

Introduction

Three excavations were conducted at Southgate, one in 1972-3 directed by David Austin, and two in 1981-82 directed by Gordon Young. One of the latter excavations continued in the area originally opened up by Austin (Southgate B) and a second area was excavated to the north (Southgate A).

The early excavations in 1973 uncovered mediaeval and post-mediaeval deposits which had been heavily disturbed in the post-mediaeval and modern periods. The collection of bone from this excavation has therefore been analysed at a relatively superficial level (see below).

The bones from the disturbed deposits from the sites excavated in 1981 and 82 have not been studied. The analysis concentrated upon the sample from the well stratified early deposits only.

Southgate, Site A Excavations in 1981-82

Most of the material from the excavations on this site came from disturbed mediaeval and post-mediaeval deposits and for the reasons described in the section dealing with the 1973 excavations on Area B it has not been studied.

The early phases of occupation of the site did however produce deposits undisturbed by later activities and in a situation that had very good preservation. These were mainly those deposits that built up on the floor of, and within a 12th century dock. All the deposits are waterlain except for phase 2 which incorporated features that were laid down after the filling of the dock. The phase 1 deposits must have been subjected to repeated inundation by the sea and therefore be thoroughly mixed. Although it cannot be guaranteed that no earlier material has been washed into the deposits the finds are consistent with a 12th-13th century date and the material within the deposits may therefore be viewed as rubbish

disposed of during the period. A small scale sampling exercise was introduced largely to enhance the recovery of fish bones, for despite fishing having been a major industry in Hartlepool for centuries little systematic recovery has been carried out on archaeological excavations of the mediaeval period or few suitable deposits have been discovered, and therefore little can be reconstructed of the mediaeval fishing industry of the town.

Sampling

Preliminary sampling and analysis of the waterlain sands in the base of the dock indicated the potential of the layers and illustrated that fish, mammal, leather, seeds and other plant material all preserved very well. Since these layers could be closely dated and the evidence in them give an indication of the diet and economic activities of the 12th-13th century dockside area it was decided to bulk sieve a proportion of the sediments. 88 buckets of approximately 15 litres each, from six layers of 12th-13th century date were sieved through a 1mm mesh on site. No float was collected separately, all the material being kept in the sieve. The resulting residues were rinsed in the laboratory through sieves of mesh sizes 3, 3.5 1.7, 1.0 and 0.5mm. All fractions were then dried and those over 1.7mm hand sorted for vertebrate remains. During this sorting mollusc shells were noted and a proportion picked out and a small proportion of the plant seeds and macroscopic remains were picked out where noted but not methodically sorted for. Two fractions between 1.0 and 1.7mm were sorted as a check for fish bones passing through the 1.7mm sieve.

The exercise was specifically designed to generate a large enough sample of fish bones from this phase of the site for an attempt to be made at reconstructing the fishing industry of 12th-13th century Hartlepool. The fish bones are reported below by Mrs Alison Locker (Ancient Monuments Laboratory, DoE).

TABLE 1 SOUTHGATE Area A

Species and fragment numbers recovered from sieved and excavated material from phase 1 and 2.

	Sieved	Excavated
Horse	3	11
Cattle	46	35
Sheep or goat	61	17
Sheep		1
Pig	21	7
Dog	3	1
Cat	3	
Fallow deer		1
Chicken	8	
Goose	4	
Large animal	59	7
Large ingulate	38	13
Small ungulate	43	2
Indet. fragments	455	12
Indet. bird fragments	16	
TOTAL	760	107

TABLE 2 SOUTHGATE Area A

Proportion of bone types of all mammal species in the sieved and excavated material from phases 1 and 2.

	Sieved			Excavated		
		%	%		%	%
Jaw, scapula, pelvis	23	7.3	13.3	16	15.5	19.7
Long bones	38	12.2	22.0	27	26.2	33.3
Vertebrae	31	9.9	17.9	5	4.8	6.2
Teeth	34	10.9	19.6	13	12.6	16.0
Carpals/tarsals	15	4.8	8.7	6	5.8	7.4
Phalanges	16	5.1	9.2	8	7.8	9.9
Lat.metapods, pat. & ses.	5	1.6	2.9	2	1.9	2.5
Skull fragments	11	3.5	6.3	4	3.9	4.9
Long bone fragments, indet.	73	23.4		10	9.7	
Skull frags. indet.	4	1.3		2	1.9	
Ribs	63	20.2		10	9.7	
Fragments, indeterminate	421			4		

The Material

The sample derives from two phases of the deposit. Phase 1 is described above (p.), phase 2 is of 13th century date and comprises a group of ovens (p.), floors and subsequent abandonment overlying the filled in dock area. No material has been studied from the phase 3 (14th century) and post-mediaeval deposits.

In phase 1 the animal bone sample derives from the sampling described above and contains also the material recovered by hand during the excavation of the sampled layers and also those bones collected by hand from the unsampled deposits overlying these.

The phase 2 sample consists of a very few unsampled features from which bones were collected by hand during excavation.

Recovery

Comparison of the columns in Table 1 illustrates the differential recovery between excavated and sieved material. In fact, that resulting from the sieving exercise far exceeds in quantity the material from the excavated layers and this was more apparent with the fish bone. The increased occurrence of the smaller animals and the unidentifiable bone fragments is marked and an analysis of the bone elements in the two groups (Table 2) show that size is the characteristic responsible for most of the discrepancy between the two groups. Therefore in the analysis below the sieved material from phase 1 must be considered to be more representative of the layers than that excavated.

The Fish Bones (A. Locker)

The fish bones from both of the 1981-82 excavations are discussed together. The sieving resulted in the recovery of a considerable amount of fish bone, including loose teeth and tiny dermal denticles. Significantly the only context that was not sieved (597) only produced 1 fish bone.

Table 3 indicates the bones identified from Site A, phase 1, in

TABLE 3

	SITE A Phase 1	SITE B Phase 1	TOTAL
SPURDOG	3 spines	-	3
ROKER	32 dermal denticles	3 dermal denticles	35
RAY	1 dermal denticle 42 teeth	16 teeth	59
ELASMOBRANCH	70 dermal denticles 38 vertebrae	13 dermal denticles 1 vertebra	122
EEL	6 vertebrae	-	6
HERRING	1123 vertebrae 92 skull frags 12 dentaries	271 vertebrae 17 skull frags 1 dentary	1516
COD	311 vertebrae 58 skull frags 17 dentaries 37 premaxillae	16 vertebrae 19 skull frags 1 dentary 2 premaxillae 1 otolith	462
GADOID (lge)	301 vertebrae 184 skull frags 11 dentaries 2 premaxillae	17 vertebrae 6 skull frags 1 dentary	522
GADOID (sm)	69 vertebrae 4 skull frags 1 premaxilla 10 frags	30 vertebrae 32 skull frags	146
HADDOCK	189 vertebrae 87 skull frags 8 dentaries 18 premaxillae 3 otoliths	25 vertebrae 15 skull frags 4 dentaries 7 premaxillae 1 otolith	357
WHITING	180 vertebrae 21 skull frags 23 dentaries 17 premaxillae 1 otolith	34 vertebrae 9 skull frags 7 dentaries 11 premaxillae 3 otolith	306
SAITHE	7 vertebrae 27 skull frags 12 dentaries 16 premaxillae	1 premaxilla	63

LING	165 vertebrae 44 skull frags 10 dentaries 4 premaxillae	8 vertebrae 3 skull frags 1 premaxilla	235
GREY GURNARD	22 vertebrae 7 skull frags 2 fin rays 2 premaxillae	3 vertebrae 3 skull frags	39
GURNARD	5 skull frags 3 spines	1 vertebra 5 skull frags 1 spine	15
SCAD	1 vertebra 1 spine	_	2
BLACK SEA BREAM	3 vertebrae	_	3
BALLAN WRASSE	1 tooth	_	1
MACKEREL	11 vertebrae 2 premaxillae	3 vertebrae 1 premaxilla	17
PLAICE	2 skull frags 2 dentaries	_	4
PLAICE/ FLOUNDER	45 vertebrae 2 skull frags	13 vertebrae	60
UNIDENTIFIED	167 vertebrae 49 teeth	99 vertebrae 35 teeth	350
TOTAL	3583	740	4323

which contexts 626, 624, 609/651, and 605/560 (associated with the walls of the dock) contributed most of the bone. Also, the fish bone identified from site B, which although less plentiful than that from site A seems to reflect the same distribution of species with the most poorly represented species of Site A absent from B.

The contexts were grouped to keep the table to a manageable size, a detailed breakdown of each context is available from the author. The bones have been grouped into the following categories; skull fragments, dentaries, premaxillae (these are the most frequently measured bones), teeth, otoliths, vertebrae and dermal denticles. In addition to the bones identified to species broader groupings have been made such as elasmobranch to include cartilaginous fish whose dermal denticles and vertebrae are not specifically identifiable. In the gadoid group large gadoid bones are most likely to belong to cod or possibly saithe (this especially applies to the vertebrae) and the small gadoid bones are closest to whiting. Excluded from the table is a large amount of unidentifiable material (only unidentifiable vertebrae and teeth were counted) which has not been quantified, however it is unlikely that any additional species would be found in this material; it appears to be mainly very fragmented remains of fish already itemised in the table.

The following species were identified spurdog (Squalus acanthias), roker (Raja clavata), rays (Rajidae), eel (Anguilla anguilla), herring (Clupea harengus), cod (Gadus morhua), haddock (Melanogrammus aeglefinus), whiting (Merlangius merlangus), saithe (Pollachius virens), ling (Molva molva), grey gurnard (Eutrigla gurnardus), scad (Trachurus trachurus), black sea-bream (Spondyliosoma cantharus), ballan wrasse (Labrus bergylta), mackerel (Scomber scombrus), plaice (Pleuronectes platessa), and flounder (Platichthys flesus).

The size of the fish was estimated by comparing measurements taken

(see Appendix)

on the archaeological specimens against those of modern fish of known length. The measurements have been incorporated into the updated version of the computerised osteometric recording system of Jones et al (1980), and are based on the measurements taken by Morales and Rosenlund (1979), and Wheeler and Jones (1976) with some additions. The measurements used are as follows:-

Premaxilla: 2, Greatest height, Morales and Rosenlund.

4, Greatest length of the ascending process and articular process.

5, Length across base of the ascending process and articular process, Wheeler and Jones.

Dentary: 3, Inside length from most oval part to median incision, Morales and Rosenlund.

4, Anterior height. Morales and Rosenlund.

5, Depth across the proximal edge of the foramen. Wheeler and Jones.

Articular: 3, Greatest medio-lateral breadth of the articular surface, Morales and Rosenlund.

These measurements were chosen for comparison as they were the most frequently available. Three reference specimens from the British Museum Natural History) were similarly measured for each of the major species and these measurements plotted against their total length.* Although the correlations did not always produce a straight line average size ranges for each species have been calculated. The following discussion takes into account the biology (for more information see Wheeler 1978) of the fish in conjunction with their suggested sizes in postulating the type

* A larger number of modern specimens of different lengths would have been preferable but unfortunately were not available

The first group spurdog and roker are both found in shallow water, on soft bottoms from 10 - 200 metres and on muddy, sandy or gravelly bottoms up to 280 metres respectively. These were probably taken on lines, although roker can be taken in shore seines (Wheeler 1977, 405). Other elasmobranchs not specifically identifiable would have been caught in a similar manner.

Herring bones were present in substantial numbers (see table), herring form large shoals, and would have been caught in fine nets seasonally.

Cod are found from the shoreline to the continental shelf, the younger fish tend to move into shallower water during the winter. The number of measured dentaries and premaxillaries were too few to suggest size groupings as shown for cod at Kings Lynn (Wheeler 1977, 407), although the comparative ranges are broadly similar averaging at 70-120cms. Using only measurement 5 on the dentary a wide range of 60 - 140 cms was suggested but this was only based on 6 specimens. However, 21 articulars were measured and comparison against modern specimens suggested only four were from small fish between 60 - 80 cms total length, the rest were between 90 - 125 cms, which compared well with the broader group suggested for Kings Lynn. These larger fish may be the product of a deep water fishery from Hartlepool, the smaller ones being caught nearer inshore.

Haddock live close to the sea bed at depths of 40 - 300 metres, and in the south of its range which would include the coast around Hartlepool are found in deep water in summer and inshore shallow waters in winter. The most likely fishing method for this fish at this period is by baited hook. Measurements of 15 dentaries and 21 premaxillae were taken and the average of these measurements suggests a range of 23 - 63 cms, with no clear division into size groupings, although it is possible to see a grouping of larger fish beginning at 40 cms. All the haddock cleithra

were swollen as is common in this species.

Whiting prefer shallow inshore waters from 30 - 100 metres with the smaller fish found closer inshore, they are most commonly caught in nets but can be taken by hook. Although the small size of the premaxillae and dentaries can lead to exaggerated error in measurement an attempt was made to correlate them with modern specimens. Based on the measurements from 21 dentaries and 18 premaxillae it is tentatively suggested that the average size range is 26 - 56 cms, within this range a smaller (more inshore group?) appears to be under 35 cms.

Saithe: a schooling fish found near the surface and in midwater at 200 - 250 metres, caught in nets (seines) and on lines. Size comparisons using 12 dentaries and 13 premaxillae against three modern specimens indicated an average size range of 88 - 119 cms (maximum 130 cms). This is generally larger than the average size at which they are caught today of 70 - 80 cms (Wheeler 1978, 159).

Ling: a deep water fish, especially over rocky ground in 300 - 400 metres, and is certain to have been taken on lines. Few dentaries (2) and premaxillae (4) were available for measurement, but 15 articulars were plotted against the measurements for 2 modern specimens and on this basis a range of 82 - 155 cms is suggested, the latter being their top size range in inshore waters (Wheeler 1978, 167). Only 2 specimens were under 100 cms.

It might be postulated from the evidence of the size of the ling that the main fishery did not extend into very deep water possibly up to depths of about 300 metres and practised a variety of fishing methods seasonally to take advantage of fishes' inshore movements during certain times of the year.

The other species identified in small numbers were also all edible. The scad (a schooling fish either close inshore, or offshore near the surface up to 100 metres) and the mackerel (also found near the surface,

a highly migratory fish) would have been caught in nets, the latter also on lines. Both these species could have been a by-catch of the herring fishery (Wheeler pers comm).

Inshore bottom dwellers i.e. the plaice and flounder were often caught on lines and also in shoreline traps which caught them as the fish returned to deeper water after feeding at the shoreline at high tide.

The grey gurnard, usually found offshore at depths of 20 - 50 metres, on sandy bottoms, the black-sea-bream (probably a single individual), a summertime migrant in the area around rocky outcrops and the ballan wrasse (tentatively identified from a single tooth) on the edge of its range here, also common on rocks in depths of up to 20 metres, are all most likely to have been caught on lines.

The speciesdescribed above suggest one of two possibilities, either they are accidental inclusions from the inshore aspects of the main fishery. Alternatively, they are the result of a very small scale fishing operation such as one man setting shoreline traps, or operating a line from the shore or from a small boat.

The only possible non-marine species identified is the eel represented by 6 vertebrae, all of which were very small, and may be from a fish in its freshwater stage. Eels were kept in live storage in ponds both on monastic estates (Hickling 1971 -72. 118) and also in lay establishments mentioned in the Domesday book (Hickling 1962. 22). els were also trapped as they descended rivers on their downstream migration to the sea, as well as in estuaries and on the shoreline.

The association of the deposits with the dock suggests that debris from processing prior to distribution should be present. However, direct evidence of butchery is very limited, this is in part due to the friable nature of fish bone which breaks readily. Knifecuts were observed in a few instances; on the post temporals of cod and haddock, also on the

clavicles of haddock and on the dentary of a cod. These marks are likely to be associated with the removal of the head and in the case of the dentary the splitting of the fish. The bone from individual contexts did not suggest any discrepancy between the anatomies recovered for the most commonly occuring species.

However, unless fish were all to be marketed close to the harbour at which they were landed difficulties in ensuring speedy distribution inland meant some kind of preservation was necessary. In the medieval period fish were often dried, salted or pickled. A ready supply of fish was necessary to provide for the large number of compulsary 'fish days' i.e. Lent, all Fridays and Saturdays were fish days until late in the Middle Ages, also Wednesdays until the early fifteenth century (Wilson 1973, 31). Drying and salting large fish usually involved the removal of the head and backbone. Salting was often carried out in port immediately after the fish was landed (Wilson 1973, 33). Before the development of smoking herring in the late 13th century, and the fourteenth century practice of barrelling gutted herrings between layers of salt after they had been soaked in brine, these fish were usually salted ungutted in heaps on the shore. (Wilson 1973, 33).

The scad, mackerel, grey gurnard, black sea-bream, ballan wrasse, and flatfish may well have been eaten fresh, especially if they represent a very small scale fishing operation and were not marketed. Mackerel would have been difficult to preserve as they contain so much oil.

In summary it is suggested that most of the fish bone from the deposits in the dock represents the commerical debris from a 12th century fishing industry exploiting a variety of fish from the shoreline to about 300 metres depth. Also present were a few poorly represented species that may be the domestic debris from the catch of an individual fisherman.

TABLE 4 SOUTHGATE Areas A & B

Phase 1: Species and fragment numbers recovered from the phase 1 deposits, with percentages of identified, and unidentified fragments.

	Area A			Area B
Species	No. of frags.	% ident.	%unident.	No. of frags.
Horse	13	6.6		
Cattle	64	32.3		2
Sheep or goat	76	38.4		11
Pig	26	13.1		1
Dog	4	2.0		1
Cat	3	1.5		
Chicken	8	4.0		3
Goose, cf. domestic	4	2.0		
Large animal	65		10.2	21
Large ungulate	48		7.5	
Small ungulate	45		7.0	
Indet. fragments	466		72.8	109
Indet. bird fragments	16		2.5	2
TOTAL	838	24%	76%	150

TABLE 5 SOUTHGATE Area A

Phase 2: Species and fragment numbers recovered from the phase 2 deposits.

Species	No. of frags.
Horse	1
Cattle	15
Sheep or goat	2
Pig	2
Fallow deer	1
Large animal	1
Large ungulate	3
Indet. frag.	1
TOTAL	26

The Mammal and bird bones (J. Rackham)

Phase 1 (12th century)

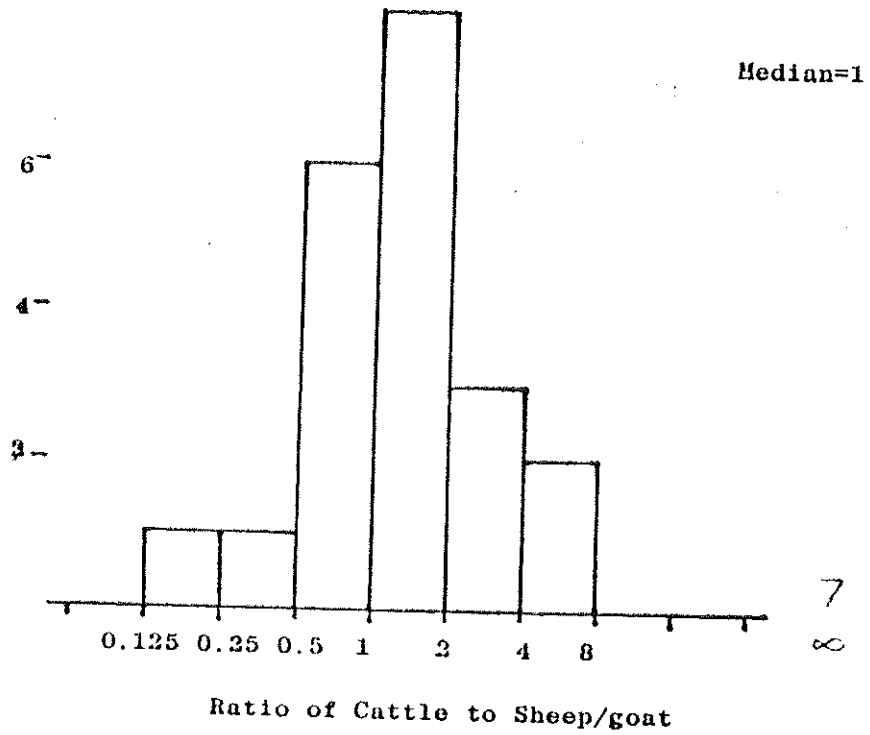
In contrast to fish bones, fragments of mammal and bird bone were not particularly numerous in the deposits. The contexts of phase 1 are essentially those likely to contain secondary rather than primary waste and must therefore reflect on the 'general' diet and economy rather than one specific to the 'site'. The layers and features are therefore not considered individually. The finds are listed in Table 4. Sheep (or goat) bones are predominant followed by those of cattle, then pig. Only 24% of the collection could be identified to species but this low figure is largely due to the results of the sieving which produced a collection in which 51% of the fragments were too small to be even categorised in terms of size of animal and bone element, let alone species.

The collection is too small to be studied for butchery or joint selectivity and because the deposits are likely to contain waste from a variety of sources any such joint distribution patterns may be obscurred.

The sample is also too small for detailed analysis of its age structure as indicated by the bones, but both juveniles and adults are present in all the major domestic species. Among the sheep (or goat) remains, which have the largest number of bones for which age at death of the individuals is determinable, the jaws and loose teeth indicate animals with a mature dentition in most cases, two jaws and two loose teeth being from juvenile animals while the other jaws (4) and teeth (20) are either adult or show the adult condition. Both juvenile and adult? conditions are present in the epiphyses of the long bones.

The relative proportions of cattle and sheep/goat have been estimated by plotting the ratios of the bones of each species on a bar diagram (fig.1). The median of the distribution is one which suggests an equal representation of the two species in terms of individuals.

FIG. 1



Bar diagram of the ratios of the individual bones of cattle to sheep or goat from the sieved and unsieved samples in Phase 1 of Southgate A.

Phase 2 (13th century)

The phase 2 deposits produced very few stratified bones and add little to the material already discussed from phase 1 (see Table 5). The only additional species, a fallow deer, is represented by an ilial fragment.

No fish bones were found in phase two but this can almost certainly be attributed to the small size of the sample and the lack of any sieving; but the deposits in phase 2 are of a completely different nature and must also have contributed to this absence.

Southgate, Site B- Excavations in 1973 and 1981-82.

For the purposes of the analysis of the animal bone, both the excavations conducted upon this site, in 1973 and 1981-82 will be considered together.

A large number of the contexts from this site are contaminated owing to extensive disturbances in the post-mediaeval period. There are at present insuperable problems in the recognition of derived and contaminant bones and the osteologist is forced to rely entirely on the archaeologist, pottery specialist and other members of the team involved in the analysis of the site material.

There would be little object in the analysis of the bone material from contexts spanning the late mediaeval into post-mediaeval and modern. Such a collection is unlikely to reveal under detailed analysis any more than a cursory assessment would permit, and even gross changes in disposal patterns or local husbandry may remain undetected in the absence of a sequential series of such groups.

The nature of the contamination at Southgate B is therefore such as to make a detailed analysis of the bone material an unprofitable exercise. Table 6 illustrates the problem very well and shows a wide date range and post-mediaeval contamination of many of the layers on the 1973 excavation. As a result of this high level of disturbance only a very few layers from the early levels at the 1981-82 excavations were studied.

TABLE 6 SOUTHGATE Area B

Southgate 1973 Excavations :

Time spans as represented by the pottery in each layer.

Centuries	Saxo-Norman	12	13	14	15	16	17	18	19	20
North west depression										
168					x x x x x x x					
195					x x x x x x x x x x x x x					
224				x x x x x x						
204					x x x x x x x					
210						x				
226				x x x x x x x x x x						
169					x x x				x x x x x	
Wharf wall robbing										
211				x x x x x x						
177			x		x x x					
Mid burgage cobbles and seals										
188					x x			x x x x x x		
192					x x					
156					x x x x x x x x x x x x x x x					
East burgage, mediaeval floors										
261	x x x				x x x x x x					
217	x x x									
251			x x x		x x x x x x					
North east rooms-walls and floors										
259					x x x			x x x x x		
199					x x x					
180					x x x				x x x	
181					x x x					
240			x x		x x x x					
167					x x x x x x x x x x x x x					
East burgage, seals & intrusions										
231					x x x x x x x x x					
238					x x x					
East burgage, south east rooms										
169					x x x			x x x		
203			x x x x x x x					x x x x x x x		
151		x x x x x x x x								
212			x x x							
160		x x x								
125							x x x x			
Burgage walls										
221					x x x x x x x x					
220	x x x	x x x x x x x x x x x x x x x x x x x x x x x								
West burgage floors										
218					x x x					
254					x x x		x x x x x x			
235					x x x					
Seals over burgage walls										
136						x x x x x x				
138					x x x x x x x x x x x					
206		x x x x x x x x x x x x x x x x x x x						x x		
207					x x x		x x x			
209					x x x x x x x x x x x x x					
208								x x x		
174					x x x x x x x x				x x	
189		x x x x x x x x x x x x x x x x x x x								

1973 excavations

The collections from the 1973 excavations, despite the high level of disturbance, were catalogued at a basic level of information, species, bone, part, and fused or infused condition. The exercise was designed to see if the collection could inform upon any aspects of the site economy despite the level of contamination, illustrated by Table 6. No surface layers were catalogued and no measurements, details of butchery or precise fragment descriptions were recorded. The fish bones, mainly from large fish of the gadid family were recorded in numbers only and a preliminary identification made of the wild bird species. The whole collection is summarised in terms of species and fragment numbers in Table 7.

The collection was then broken down into archaeological units and the proportion of cattle, sheep/goat, pig, chicken and fish tabulated (Table 8) in order to discover whether any spatial differences could be recognised. Changes in species ratios are present between these units, but half have samples too small to justify comment, only the larger layers all of which show a high level of disturbance need be considered. The larger groupings suggest a ratio of one cow to two sheep. However, the sample from the Burgage Walls (220 and 239) shows a more even ratio, but these deposits contain material from an extremely wide time span (see Table 6).

The pottery suggests that much of the material from the site is 15th century and the two largest groups from this period, although contaminated by both earlier and later material are similar with approximately 30% of the fragments noted in Table 8 cattle, and 53% sheep or goat, with very few remains of pig but between 6 - 11% fish. Despite the contamination it may be possible to use these figures as indicative of the proportions of the domestic species in the diet of the site in the 15th century, but the fish are almost certainly under-represented owing to the lack of more efficient recovery procedures on the excavation. The proportions of the

TABLE 7 SOUTHGATE Area B

Southgate 1973 excavations:

Species and fragment numbers from all deposits except topsoil and unstratified layers.

Species	No. frags.
Horse	3
Cattle	300
Sheep or goat	498
Pig	75
Fallow deer	1
Dog	4
Cat	16
Hare, cf. Brown	1
Rabbit	3
Seal, indet.	1
Dolphin/seal	2
Cetacean, indet.	2
Chicken	58
Goose, cf domestic	16
Duck, cf. domestic	1
Gulls	8
Cormorant	3
Diver, red throated	2
?Grebe	1
Bird, indet	10
Large animal	109
Large ungulate	142
Small ungulate	151
Indet. mammal frags.	81
Fish, mainly gadid	221
TOTAL	1,715

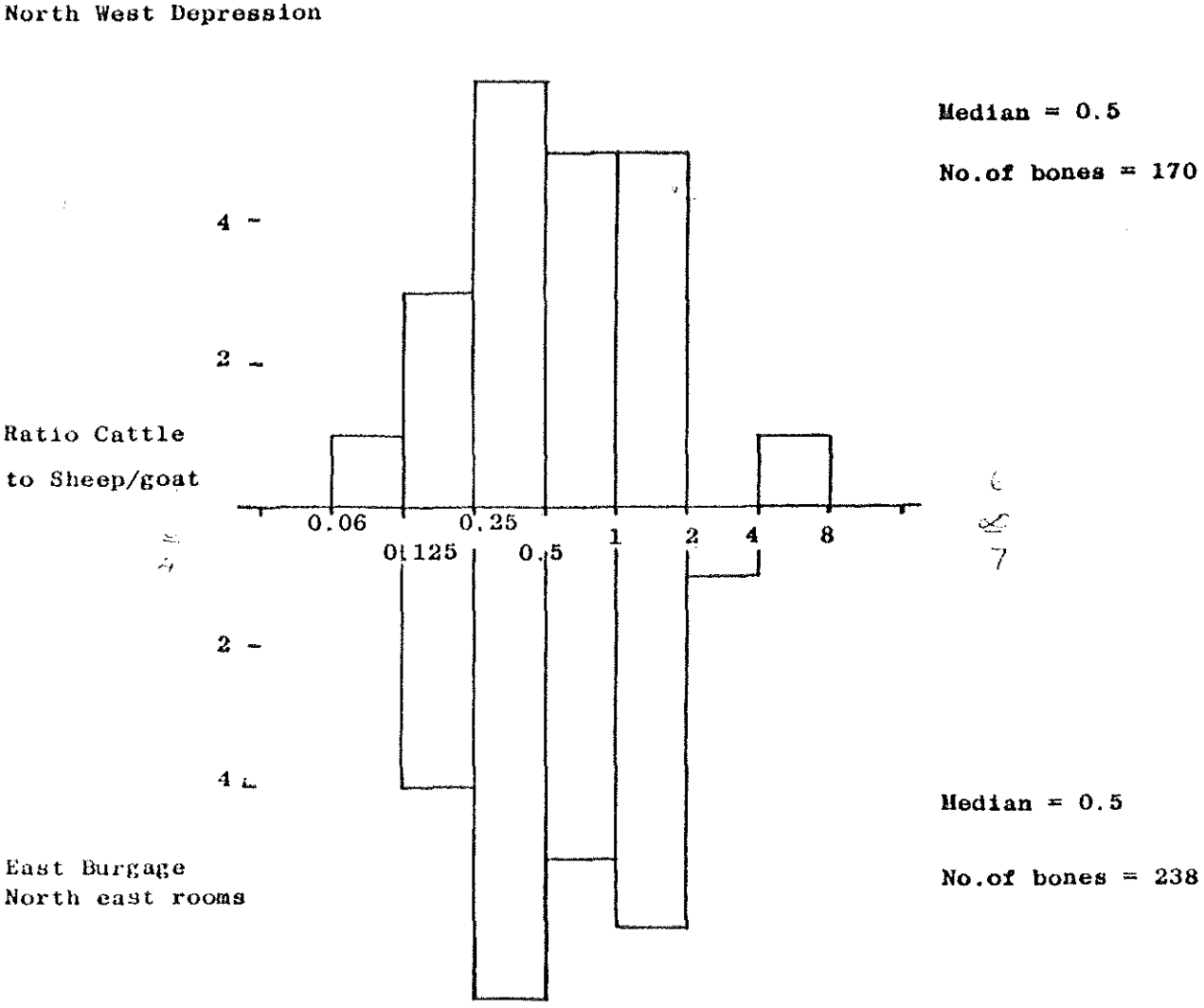
TABLE 8 SOUTHGATE Area B

Southgate 1973 Excavations:

Percentages of ox, sheep/goat, pig, chicken and fish bones in the different archaeological areas of the site.

	Ox	S/G	Pig	Chicken	Fish	N
West burgage floors C15th	36.4	45.4	9.1	9.1		11
Seals over burgage walls C15-16th	9.8	36.6	3.7	6.1	43.9	82
Mid-burgage cobbles & seals C15th	53.3	33.3	6.6	6.6		15
East burgage, NE rooms C15th	30.9	51.7	5.5	5.2	6.6	288
East burgage, seals & intrusions C15th	28.6	52.4		4.8	14.3	21
North west depression C14-15th	28.2	54.6	3.4	2.3	11.5	174
East burgage, SE rooms late C13-15th	30	40	5	10	15	20
Burgage walls Saxo-norman-C17th	32.8	38.7	8.8	4.4	15.2	204

FIG. 2



Bar diagram of the ratios of the individual bones of cattle to sheep or goat from two 15th century areas at Southgate B, 1973 excavations

additional bones of cattle and sheep/goat in the two larger groups are plotted below on a bar diagram in order to compare the relative proportions of the two species.

The distributions in Fig 2 are similar and the median in both is 0.5, i.e. one cow to 2 sheep/goat. Those bones represented by cattle and not sheep are all carpals, tarsals and phalanges and this absence can be attributed to recovery procedures since these bones of sheep are comparatively small.

The evidence suggests that at least for the 15th century we can estimate the proportions of the different species of domestic animals but the doubtful nature of the sample discredits the value of any more detailed analysis such as that of the age or sex structure of the sample. For these reasons therefore no further analysis is considered and no measurements have been taken on the materials.

1981-82 excavations

Very little material from these excavations was considered to be well stratified and only three contexts were studied, 0478, 0504 and 0506. All these deposits fall into phase 1 of the site and correspond with phase 1 of site A. Samples from layers 0478 and 0504 were sieved and produced a large number of fish bones which have been considered above in conjunction with those from Southgate A.

Few mammal and bird bones were identified from the deposits and most of the sample derived from the sieving exercise. The finds are listed in Table 4 (the fish bones in Table 3) but the sample is too small for comparison with the later material or that from Site A.

Conclusions

The sieving exercise has illustrated dramatically the need for sieving on these excavations since the information yielded by an analysis of the fish bones far exceeds that from the other vertebrate remains and indicates that fishing was understandably of major importance in the mediaeval period.

Inevitably the nature of the site will have produced a bias in favour of fish material but the fish from the 1973 excavations, where no sieving was carried out, while common, by no means match the superabundance recovered in the earlier levels of the 1981-82 excavations by sieving, reinforcing the need for such procedures on these sites.

The evidence indicates fishing on a commercial scale and certainly the abundance of marine fish at Barnard Castle (Donaldson et al 1980) in the 15th century would argue a wide market for the mediaeval fishing industry of the Durham Coast at this period. Whether the remains discussed above represent waste from processing for wider markets, or merely the dominance of fish in the local diet cannot be determined, but in all probability both are present.

The mammal and bird bones from the excavations allow few comments, they are likely to have been less important in the diet of the community than fish. There is some evidence for a change in the importance of sheep and cattle through the mediaeval period and a comparison of Figs. 1 and 2 does suggest an increase in the proportion of cattle to sheep/goat between the 12th century and the 15th century if not attributable to site specific differences.

Sea birds were certainly eaten, including gulls and cormorants and one bone of a red throated diver bore a chop mark showing that even this relatively uncommon bird was eaten.

A number of shell fish not discussed above were also found, some of the sampled layers contained many, among which mussels, limpets, periwinkles, whelks and crab remains were identified.

It is unfortunate that most of the remains, while well stratified, do not come from layers that can be associated with either domestic or commercial settlement and may be a mixture with a number of primary sources. Nevertheless, the material forms an important sample from early Hartlepool and gives us a previously unknown insight into the dietary and commercial aspects of mediaeval Hartlepool.

REFERENCES

A.M. Donaldson, A.K.G. Jones and D.J. Rackham 1980. Barnard Castle, Co. Durham. A Dinner in the Great Hall: Report on the contents of a fifteenth-century Drain. J. British Archaeological Association, 133, 86-96

C.F. Hickling 1962, Fish Culture, Faber and Faber

C.F. Hickling 1971-2, Prior More's Fishponds, Medieval Archaeology 15-16, 118-123.

R.T. Jones et al 1980, Computer Based Osteometry, Data Capture User Manual (1), Ancient Monuments Laboratory Report No. 2333.

A. Morales and K. Rosenlund. 1979. Fish Bone Measurements, Steenstrupia, Copenhagen.

A. Wheeler and A. Jones 1976. Fish Remains. In A. Rogerson, Excavations at Fuller's Hill, Great Yarmouth, East Anglian Archaeological Report No. 2, Norfolk Archaeological Unit, 208-239.

A. Wheeler 1977, Fish Bone. In H. Clarke and A. Carter, Excavations in King's Lynn 1963-1970. The Society for Medieval Archaeology. Monograph Series No. 7, 403-408.

A. Wheeler 1978, Key to the Fishes of Northern Europe, Warne.

C. Anne Wilson, 1973, Food and Drink in Britain, Constable.

Acknowledgements

We would like to thank Tony Hall and Graeme Milburn for sorting the soil sample residues. Mr. A. Wheeler (BMNH) kindly gave advice and the use of his reference material in connection with Mrs. Locker's study of the fish bones.