

Animal Bones and Shells

by Bob Wilson with Enid Allison and Mike Wilkinson⁴⁷⁵

Over 15,000 bones and shells consisting largely of 13th- to 15th-century dietary, household and farmyard refuse were recovered. Most mammal bones were of domesticated and farm animals, with bones of pig unusually well represented and occurring more commonly than cattle, sheep and horse. Bones of fallow deer and rabbit were also relatively common. The small mammals present included black rat, house mouse and stoat.

Domestic fowl, goose and pigeon were abundant, as well as probable occurrences of domestic duck; a bone of peafowl was also present. Modest numbers of wild bird bones included grey heron, mute swan, teal, tufted duck, buzzard, partridge, moorhen, lapwing, golden plover, snipe, woodcock, barn owl, redwing and jackdaw, as well as quail - previously unrecorded in Oxfordshire.

Freshwater fish bones included tench, roach, chub and perch. Eel and salmon or trout were present. Seafish included spurdog, conger eel, cod, haddock, gurnard, herring and new County records of bass and scad.

Nearly all of the molluscan shells were marine in origin, with oyster shells very abundant and lesser numbers of mussel, whelk and cockle. Remains of the edible crab were also found.

Site Distribution of Coarse and Fine Debris

Although bones and shells were found in approximately equal quantities in internal and external contexts, the bones of medium and small-sized animals, e.g. sheep, pig, rabbit, birds and fish, were more abundant among deposits inside buildings. External deposits produced an abundance of bones from the largest mammals, particularly cattle. Bone debris tended, therefore, to be coarser in composition in the courtyard and farm areas and also in overlying destruction levels.

Within the buildings most of the bones, and especially the finer debris, were found in the rooms which comprise Building A and in particular A1, A5, A9 and A12. Deposits in nearby buildings, namely B, F, W and T, form an intermediate group with less abundant and coarser debris, whilst those further away from the main building, i.e. G, H, J and K, yielded a small quantity of bones approaching the coarseness of those in the adjacent yards.

Where allowance was made for the area of deposition within the buildings, bones and shells were most densely concentrated in A5, A9 and A12, and noticeably less so in A1, the hall, and elsewhere. The finest debris was associated with floor or occupation levels. Detailed examination also suggested that rooms A5 and A12 contained intrusive coarse debris from the demolition phase. Deposits in A9 therefore appeared to be all the more significant in terms of their bone density, homogeneity and fineness.

Amongst the spread of finer debris there was a background scatter of coarse debris and more unusual material, including a pelvis and an os penis of dog. Articulated

bones occurred, e.g. a skeleton of black rat in A1, limb bones and relatively intact crania of larger mammals and a goose skeleton in A5. Other skeletons were found outside buildings, for example two of cat. Most of these articulated and relatively intact bones appear to be associated with demolition material. Skeletal material which was almost certainly later and intrusive included bones of rodents, especially of field vole and *Apodemus* sp., the field or wood mouse.

Bone Degradation and Bone Distribution

Bones were relatively well preserved, and leaching is not important in explaining the distribution of coarse and fine debris. Bones were, of course, fragmented by butchery, scavenging, and presumably by trampling. An approximate index of degradation obtained using data for sheep bones suggested that bones from outside the buildings were more degraded than those in floor layers and other internal features. Similar effects were noted within the different rooms and buildings, corresponding to the pattern discussed above for the distribution of coarse and fine debris. The distribution of the different species and the degree of bone degradation appear to be correlated, but it is thought that although differential preservation exaggerates the patterns observed it does not explain them.

At Mingies Ditch, Oxon., 476 species information used similarly for intrasite analysis was derived from highly degraded bones, but although this factor had a significant effect on the representation of skeletal elements and bone epiphyses, species data appeared to provide reliable indications of mainly cultural processes. The results from Hardings Field indicate that the cooking and consumption of meat took place in or near the principal building. Bones were subsequently dispersed by refuse clearance and disposal and scavenging. Refuse removal from the house, particularly of larger bones, contributed to the distribution of coarse debris in the farm and courtyards, with finer debris being more likely to be left behind and become incorporated into floor deposits.

Butchery, Consumption of Carcass Products and Disposal of Waste

The differential distribution of the bones of smaller and larger species was paralleled by that of the skeletal elements of small and medium sized species, though not of cattle. The differential rubbish disposal of differently sized elements of a species may, however, be masked by butchery practices which render the bones smaller. Examination of the distribution of carcass parts of individual species suggests that butchery practices differed in form and location according to species size, and that this factor predetermined the distribution of small and large bones prior to cooking, rubbish removal and scavenging from domestic buildings.

Cranial and foot elements of sheep were least abundant in A9, which otherwise had the highest concentration of fine bone debris. Body elements, particularly vertebrae, were most common here. These findings suggest that most of the sheep bones there were derived from carcasses whose head and feet had been removed and dumped elsewhere.

For pig, foot bones were exceptionally well represented in A9 and bones from the head occurred more commonly than was the case for sheep. These parts of the pig

have more edible tissues than those of sheep, and thus heads and trotters appear to have been retained for cooking relatively whole after butchery.

The distribution of carcass parts of rabbit and hare is comparable to that of sheep. Only the larger elements of the main carcass were present among 23 bones from A9, but cranial elements and the small bones of the feet were found in other contexts. This contrasts with the distribution of species bones of bird and fish, indicating that bone size alone cannot explain the pattern observed. The scarcity of head and foot elements of rabbit, hare and also domestic fowl in A9 suggests, therefore, that these parts of the body were cut off and dumped elsewhere, whilst the main carcass was retained for cooking. Full representation of fish elements indicates that they were scarcely butchered before cooking.

These observations suggest that the small, fine debris from Building A largely represents the remains of meals taken at the table; that is, of meat joints of medium-sized carcasses and the carcasses of the small mammals and of birds cooked relatively entire, but frequently without their feet and heads. Fish were served whole, or sometimes filleted. The major bones of rabbit and hare, the meat joints of mutton and pork, and the head and feet of pig are those which are least likely to be boned before cooking.

Sheep heads were probably split for the brains and the crania discarded with other butchery waste from small animals. Some body parts of pig and cattle may have been boned out prior to salting of the meat. As well as being precipitated by differential disposal practices, the relative absence of cattle bones from internal deposits indicates that nearly all beef was separated from the bones prior to cooking. The bones could have been cooked for marrow or boiled up for fat.

It is improbable that the bones in A9 and the other rooms are leftovers from such fat extraction since it would be preferable to boil up as many large bones as possible rather than debris which was liable to have been cooked already. The boiling process could have been unpleasantly smelly and the greasy remains would probably have been dumped outside rather than on the floors.

The debris in the floor layers is interpreted therefore as the slow and incidental accumulation of meal table debris throughout several phases of continual use of rooms such as A9. This spread of debris is viewed as extending over rooms A1, A10, A12, and even as far as A5 and a few parts of the courtyard, and at Phase 4/2.

Some or all of the butchery could have taken place in the kitchen, with the refuse subsequently dumped outside. However, it seems more likely that slaughtering and the initial stages of butchering, especially of medium and large animals, took place in another building or even outside, since this would prove more convenient in dealing with large carcasses and would avoid unnecessary mess and the hindrance of other kitchen activities.

Skeletal elements which could be indicative of the butchery of large carcasses appear to be dispersed rather than concentrated in particular locations. This again suggests that butchery refuse was used for the further extraction of animal products, or was thoroughly scattered by scavengers from where it was dumped after butchery

or extraction. The few complete long bones confirm that such extractive processes took place. The scarcity of horn cores of cattle and the absence of antler from this site where other fallow deer bones were common also suggest that animal products were intensively used, in these cases at an undiscovered location.

In order to test the hypothesis that rubbish from butchery and the extraction of animal products was dumped outside, and that differential degradation did not unduly affect the overall percentages of identified fragments, a comparison was made between mandible frequencies in external and internal deposits. Once again mandibles of sheep and cattle were less frequent in internal contexts. The comparison suggests that the distribution of mandibles can be explained by cultural factors rather than differential degradation.

Food Processing And The Function Of Site Areas

Identification of the numerous smaller fragments and bones within Building A as meal table debris is confirmed by the independent architectural and historical interpretation of the rooms as domestic, rather than farmyard, buildings⁴⁷⁷. Room A9, with the highest concentration of surviving table refuse, is interpreted as part of the service area between the main hall (A1) and rooms A12 and W, which are interpreted as kitchens. Rooms A9 and A10, on either side of the connecting passage between hall and kitchen, are interpreted as the buttery and pantry.

Probably there were meal tables in the main hall or adjoining rooms, the waste from which tended to accumulate mostly in A9. Dirty platters may have been cleared from the tables and stacked temporarily in A9. Much of the waste may then have been tipped into buckets and taken outside for dumping or feeding to the pigs or poultry, whilst some bones fell onto the ground and became incorporated into successive floor layers.

The lower density of bones in the hall suggests that it was largely kept clean of refuse, despite the probability that much of the food waste was generated here at the meal table. The parlour (A3) was probably also kept clean, as were adjacent rooms in this domestic area.

The garderobe (A5) appears to have been less well kept, although some of the medium and large-sized mammal refuse probably accumulated here after the abandonment of this area.

Bone debris was moderately dense in A/12, perhaps representing an overspill of hall table refuse. Since refuse was probably dumped in the yard or further afield, butchered remains were unlikely to be found in the kitchen floor, although a few pig and sheep mandibles did occur there. Larger carcasses were presumably butchered elsewhere, while the smaller ones would have been prepared here for cooking. Rabbit heads and paws, chicken feet and other scraps may have been thrown to the dogs and cats.

Sheep may have been slaughtered and butchered in the vicinity of Building H, where a scatter of head and foot bones remained. If so, the other bones were either

dispersed, well rendered by further processing, or dumped outside the area of excavation.

The location of the cattle slaughtering site is problematical, though it was presumably not too far from the kitchens. The dump levels of F573 which contained the highest proportions of head and foot bones of cattle on the site were adjacent to buildings E and A, an area of higher social status. Thus these bones may represent boiled up bones brought from elsewhere, perhaps the kitchen courtyard area.

Diet

Although relatively more pork was eaten here than was usual at medieval sites, especially urban ones, the amount of beef consumed would still be much greater than pork. Less mutton was consumed than usual, whilst the consumption of venison, rabbit and domestic birds including pigeon squabs is better attested here than at many sites. Marine and freshwater fish, wild fowl and fowl eggs were also eaten.

Marine shellfish were commonly eaten, especially oyster, but also mussel, whelk and cockle. Fragments of edible crab are of interest, as is a butchered pelvis of dog, though fat extraction may have been the intention of the butchery. No butchery marks were seen on horse or cat bones, but they were noted on a black rat ulna found in the floor of the kitchen. At times food may have been in short supply, either for the servants or for the entire household. The quantity of meat consumed relative to dairy products and to the arable harvest is difficult to determine, but a consideration of animal husbandry (see below) suggests that both cereal and dairy produce were important.

The diversity of species that were eaten is not unusual for the medieval period but implies an increased level of exploitation of animal resources than in previous periods. The greater consumption of pork, ham or bacon, venison and rabbit and the diversity of birds and fish imply a diet of high quality compared to most urban households in Oxford, or at least a greater degree of access to less common food sources.

Abundance and Slaughtering Pattern of Common Species

Pig was the most abundant mammal represented in terms of MNI estimates, although many did not live very long. A few of the pig bones are considerably larger than those in medieval Oxford. Wild boar or large domestic pigs may be present; their slaughtering pattern is, however, similar to that found elsewhere in the medieval period. A few minor traumata were evident on the bones.

Cattle were the second most abundant mammal species, but may be under-represented if dumps of bone extended much outside the excavated area. The cattle were slaughtered mainly as mature or old individuals, but about a quarter of them, particularly from the late period, were killed as calves. Few cattle of intermediate age were evident in the kill-off pattern.

Cattle bones are large compared to bone measurements from medieval Oxford, although not as large as some mid 16th-century Oxford bones.⁴⁷⁸ In part the

difference between the bones from this site and those from Oxford is due to the presence of some robust bones which are probably those of castrated males and are thought to be of draught oxen. Bones of cows may be less abundant than of oxen.

Pathological features were not common; abnormalities were usually slight and appeared for the most part to be related to long term mechanical stresses in draught oxen, or to the effects of ageing.

Unusually, sheep were less common than cattle or pig. Individuals were small and were generally slaughtered as mature or old individuals. Wether and ewe sheep appeared equally abundant. Some pathology, particularly of the mouth, was more evident than among sheep bones at Church Street, Oxford.

Small and large dogs were present. The cat bones indicate small to medium-sized animals.

Domestic fowl of bantam size, geese and ducks were abundant and tended to be killed off as mature or old birds. Domestic pigeons were killed immature.

Animal Husbandry and Use

Management of cattle was the most important element of animal husbandry at the site. Although their meat yield was the largest of all the animal species, cattle were more important for other purposes. There is little evidence of steers or bulls being raised and killed at optimal ages for meat production, although some individuals may have been sent to market. Keeping cattle until they were mature or old indicates that husbandry was directed toward the maintenance of the herd for dairy production and the keeping of draught oxen. It appears that draught oxen were more abundant than cows and also horses (see below). The economy appears, therefore, to have centred on arable farming rather than pastoralism. However, the abundance of calves slaughtered during the final phase may indicate some change away from arable production to a greater emphasis on dairying.

Ewes and wethers appeared to be present in approximately equal numbers, and were kept until maturity or old age. This suggests that sheep were mainly kept for wool production. Occasionally lambs were slaughtered but the kill-off is not comparable to that of young calves, and dairying of sheep would appear insignificant beside the productivity of cows. The kill-off pattern also indicates that some younger sheep were marketed.

Certainly the rearing of pigs for meat was more important than at other sites, though the kill-off pattern indicates that less pork, ham or bacon was eaten than the abundance of bones might at first suggest. Pigs may well have been kept at the manor, although no pigsties have been identified. The abundance of pig need not necessarily imply that they were kept in woodland, since rough wet land would suit their feeding, though the presence of fallow deer suggests the exploitation of some woodland terrain.

Horse comprises a low percentage of the identified bones, indicating that it figured less prominently as a beast of burden and transport at medieval Chalgrove than

elsewhere - for example at the 1st - 5th century A.D. villa at Barton Court Farm, Abingdon, which yielded a several fold higher percentage of horse.⁴⁷⁹

A butchered pelvis provides the only evidence for the role of dog in the site economy.

The rabbit bones are thought to represent primary rather than intrusive deposition, and the rabbits were probably obtained from locally kept warrens. A comparable find is of 52 well stratified bones recovered from a 12th century garderobe at Middleton Stoney, Oxon.⁴⁸⁰ The historical consensus is that rabbits were commonly associated with the post-conquest houses and estates of the nobility.⁴⁸¹

Modestly abundant remains of fallow deer and the scarcity of red and roe deer strongly suggest that most venison was obtained from emparked herds of fallow deer, and that red and roe deer were rarely kept in any local parks. Deer may occasionally have strayed over greater distances. In order to keep and hunt deer, or to receive venison, substantial connections with royalty were required.⁴⁸²

In general both red and roe deer become very scarce in urban Oxford deposits after the 12th to 13th centuries, while bones of fallow persist in low numbers.⁴⁸³ Red deer did survive in some abundance up to around the 12th century in the vicinity of Ascot D'Oilly near Wychwood, Oxon., and at Middleton Stoney. Documentary evidence indicates that emparkment protected and conserved this species at Wychwood, Woodstock and (to a lesser extent because it had to be restocked) at Middleton Stoney.⁴⁸⁴

Hare was almost certainly hunted for sport and food.

Domestic fowl, geese, pigeon and duck were probably common farmyard animals. Although hens appear less common than cockerels or capons among the dietary refuse, eggshell indicates the importance of egg-laying by hens. The presence of a dovecote is probable since nearly all of the pigeons or doves were eaten as squabs. The latter would most conveniently be taken from the pigeonholes.

At least one black rat contributed to the site economy. Cut marks on an ulna indicate skinning, perhaps for the fur alone but possibly also for the fat or meat. House mice infested the farm along with black rats and other rodents but their numbers must have been kept low by cats and dogs.

Freshwater fish like roach, chub, perch and tench were fished, presumably from the moat, stream and local fishponds, but probably most of the fish eaten were imported as marine or migratory species.

Change of Husbandry and Economy

There appears to have been some modification of the arable economy towards a greater emphasis on the dairying of cattle. Also, pig was partially replaced by sheep, a trend which is evident in urban Oxford, although there it occurs earlier.⁴⁸⁵ This change reflects an increased interest in wool production.

The general trend towards a deterioration in the level of subsistence identified for the medieval period⁴⁸⁶ does not seem to be in evidence at this site.

Site and Environmental Ecology

The abundance of pig and deer indicates a greater degree of exploitation of woodland, coppice or scrub than is usual for the Thames Valley, although a variety of cultural factors may, of course, determine species presence and abundance. Some of this woodland probably took the form of deer parks, and was perhaps much altered by management. Woodland species are not abundantly represented among the bird bones so these parks may not have been large and could have been some distance away from the site. The extent of any 'woodland' associated with pig keeping may have been reduced by its conversion to pasture when sheep replaced pigs in the later medieval period.

Wet or dampland grazing appears to have been prominent, to judge from the abundance of cattle, pig and the wetland birds, and this may help to explain why sheep played a smaller part in the economy. A similar pattern of medieval environment and land use is evident further north at Sadlers Wood, Lewknor, and Tetsworth,⁴⁸⁷ and seems to have been related there to the presence of heavier ground. Such environmental factors probably influenced the type of husbandry practised when such marginal sites were first occupied. However, the changing relative frequencies of sheep and pig, noted above, indicate that social and economic factors influenced land use and animal husbandry, so that environmental factors did not wholly prevail.

In general, the indications from evidence of animal bone size, diet, and social and environmental conditions are somewhat more favourable for Chalgrove than for urban Oxford and elsewhere during the medieval period.

Besides being a pest and carrier of disease, the black rat seems to have had the further ecological effect of virtually excluding water vole from the vicinity of this low-lying site. Water vole is relatively common on rural sites of earlier periods. As the buildings on the site were abandoned or demolished, field voles and field mice appear associated with the reversion of the settlement to a field. House mouse occurred less commonly and most probably dispersed to other human habitation. Bones of small passerines, barn owl, buzzard and jackdaw also occurred in the last deposits and such birds may have roosted or nested in the abandoned and possibly overgrown buildings before their final demolition.

Trade and Marketing

The best evidence for trade is provided by the marine fish, shellfish and crab imported deep into the centre of England. They may have been the only meat purchased since other exotic items, such as venison, might have been brought in by other forms of exchange, e.g. as gifts.

Some live animals or animal products were probably exported, but this is difficult to demonstrate. Immature animals might have been sent to other manor farms, or sold to butchers along with older animals. There is some evidence that more immature cattle and sheep were slaughtered at medieval sites in Oxford than at Chalgrove, and

this indicates a regional trend of selling animals to towns. However, the emphasis of the manor animal economy seems to have been on the production of secondary and arable products, and the export of surplus animals was probably limited. The small size of flocks and herds would also tend to limit the surplus of dairy products, wool and other items, though the emphasis on arable farming would have provided the manor with a substantial income. The relative increase in the abundance of sheep suggests that wool increased in value and implies the production of a larger wool clip in the later period.

A virtual absence of cattle horn cores indicates that these were set aside, probably with the skins, and were sold for leather and horn working. An absence of antler indicates similarly that such material was not worked here. Some or most of this material would be sold to craftsmen in towns like Oxford where antler fragments are found. However, the owners, keepers, or other people associated with the deer herds who benefited from the sale of antler may not have lived at the manor.

Status And Prosperity

The relative abundance of pig and deer bones is related not only to a varied meat diet and some prosperity in marketing farm produce, but also to the relative abundance of these species at regional sites of high social status⁴⁸⁸, despite the general impression that the medieval period is not a prosperous one for English society as a whole⁴⁸⁹.

Comparison With The Documentary Evidence

Having summarised the conclusions arising from the examination of the faunal data, both may now be compared with the historical information available. The manor is the first with documented acreages of land use to be excavated in the region: in 1231, 311 acres of arable, 30 of meadow and 30 of pasture.⁴⁹⁰

With an allowance of 1-3 acres per head of cattle, the 60 acres of grass and hay feeding would support a stock of between 20 and 60 cattle; however, the higher estimate must be reduced since some of the fodder would be required for feeding other animals. The extent of arable land indicates that perhaps two plough teams of eight animals would be required. Thus around a third to over half of the cattle kept would be draught oxen. The remainder would consist mainly of cows for breeding and dairy stock, and less commonly of bulls or steers.

The numbers of cattle required to support an arable farm economy and the limited acreage of pasture available would restrict the numbers of sheep and pigs which could be kept, even with the availability of additional browsing. Grass and hay requirements for the ruminants would largely preclude pigs from using and disrupting these resources, and suggest that they were kept in sties and/or on woodland or rough pasture.

Evidence from the wild bird bones suggests that they were being culled from a wide landscape and that the environment was open and not much wooded. Damp or wetland birds predominate, though they may be over-represented in comparison with those of the relatively uniform and sparse arable habitat. While wetland indications

are appreciable, the acreage of arable land shows that any wetness or heaviness of ground was not sufficient to preclude an emphasis on cereal cropping.

The nearby manor of Cuxham is an excellently documented and described parallel for the 13th and 14th centuries, 491 of which the following evidence is worth noting:

1. An arable economy predominated, producing five to eight times as much income from corn as from sales of livestock and animal products such as wool, cheese and hides. The activities of the villagers and their livestock were incorporated into it, as well as those of the manor household.

2. There was a larger acreage of arable land than at Chalgrove. A quarter of the estate consisted of pasture or meadow and this was greater than the one fifth at Chalgrove, yet extra hay was purchased, oats were fed to the horses and cattle, and livestock was also taken elsewhere to stubble feed or pannage.

3. Two to three plough teams sometimes included horses and even a bull, as well as oxen. One to four other horses were used as cart animals. Most oxen and horses were bought elsewhere. Cows retained were usually fully grown and less numerous than oxen. Calves were often sold in their first year. Sheep numbers fluctuated greatly from none to around 150. They were used to produce cheese and wool, but sometimes the entire flock appears to have been sold when it is absent from the manor records. At least once it suffered badly from murrain. A variety of economic and environmental factors seem, therefore, to have determined the presence of sheep.

4. Some pigs were always present, mainly as porkers bred from a few sows and sold between one and three years of age. Domestic fowl, geese, ducks, and pigeons were kept. There was a dovecote which provided many squabs. Fish such as roach and bream were used to stock the 'vivarium'.

Such documentation yields many enlightening details and provides a more reliable socio-economic context for discussion of the faunal remains. Economic factors appear to have been more important than environmental ones in the management of the manors, although this emphasis depends on the level at which the organisation of medieval society is examined.

We may conclude that the orientation of animal husbandry at Chalgrove, especially that of cattle, was directed towards cereal production. Pasture left over from this process was used largely for producing secondary products from cattle, sheep and birds and this livestock was sold or slaughtered after their usefulness was diminished. Only the rearing of pigs, pigeon squabs and perhaps rabbits was undertaken primarily for meat production, and much of this was probably destined for home consumption.

These factors, the fecundity of pigs and their killing at early age stages, should explain the high percentages of their bones at the manor. It is ironic that the abundance of pig at the site must be interpreted within the context of an arable economy, rather than as evidence primarily for the exploitation of woodland or wetland resources, though the latter were used where possible. More flexible

explanatory principles are required in the interpretation of bones where history stays silent.

Environmental Evidence From The Moats by M. Robinson

Organic material only survived in the very bottom of the moats. Insect preservation was poor but included evidence of *Xestobium rufovillosum*, the death watch beetle. Seeds from 31 species of plants and trees were identified, among which were walnuts, plums and grapes. Fifteen species of land and freshwater mollusca were present in the moat sample, among which were *Bithynia* spp and *Valvata piscinalis*. These latter suggest that the moats were fed from a diverted stream.

The Charcoal by M. Robinson

Forty-one fragments of charcoal were examined from selected contexts. The vast majority of them were of beech. Oak, elm, ash and another unidentified species were also represented. Most of the charcoal found represents wood from small twisted branches brought to the site as firewood.