

The Animal Bones from the Wharram Excavations (Volume XIII, Chapters 11, 13, 19 and 20)

By Jane Richardson (January, 2009)

Introduction

Excavations at Wharram Percy have produced a significant multi-period animal bone assemblage of some 133,000 recorded elements. The village-wide assemblage can be grouped with relative ease into Iron Age/Roman, Roman, Anglo-Saxon, medieval and post-medieval phases, but unfortunately few well-dated discrete assemblages are available to allow finer temporal subtleties to be assessed. It is highly likely that the change in land tenure in the 15th century would have impacted on animal husbandry (literary sources indicate a rise in sheep rearing as larger units were established – with a concomitant human depopulation), but the temporal resolution of the medieval assemblages is not sufficiently refined to identify this archaeologically. To this must be added the inevitable mixing and redepositing of material that serves to temporally and spatially isolate the assemblages from their place of use. In addition, exporting animals to market on the hoof would remove any evidence of this section of the population from the retrievable assemblage and in doing so impact on the reconstruction of the village's livestock economy. Finally, given that various researchers have been involved with this long-term project, different methods of analysis have inevitably been used. Consequently, data are not always directly comparable and fluctuations may not necessarily be significant.

With these limitations in mind, four questions are to be asked of the faunal data:

- how does the assemblage of the Saxon South Manor compare to that of the post-Conquest South Manor;
- how do the assemblages of the medieval peasant households compare;
- how do the assemblages of the medieval peasant households compare to the higher status assemblages of the medieval manors;
- what was the economic importance of horses at medieval Wharram?

Compare Saxon South Manor to post-Conquest South Manor

The faunal remains from the South Manor Area have already been reported by Pinter-Bellows (2000), and this section represents a brief revisiting of the data in light of subsequent analyses. Of particular importance is whether there is any evidence for an intensification of sheep farming in the 11th century to satisfy a growing demand for textiles (Sawyer 1971, 174-5; Sykes 2006a, 58). This may be reflected in an increase in the proportion of sheep, a change in population dynamics as animals are kept to a greater age to maximise the number of fleeces obtained, or a change in body size as castrates are targeted for their superior fleeces. As a result, data assigned to the Middle Saxon, Late Saxon, and Norman to mid-13th-century periods are compared in order to investigate possible trends in animal husbandry over this critical period. Unfortunately the data were not always sub-divided thus, and on occasion a broader Norman to 15th-century period was used by Pinter-Bellows. The proportion of the main domestic animals, age data and metrical data are considered, with particular, but not exclusive, reference to sheep.

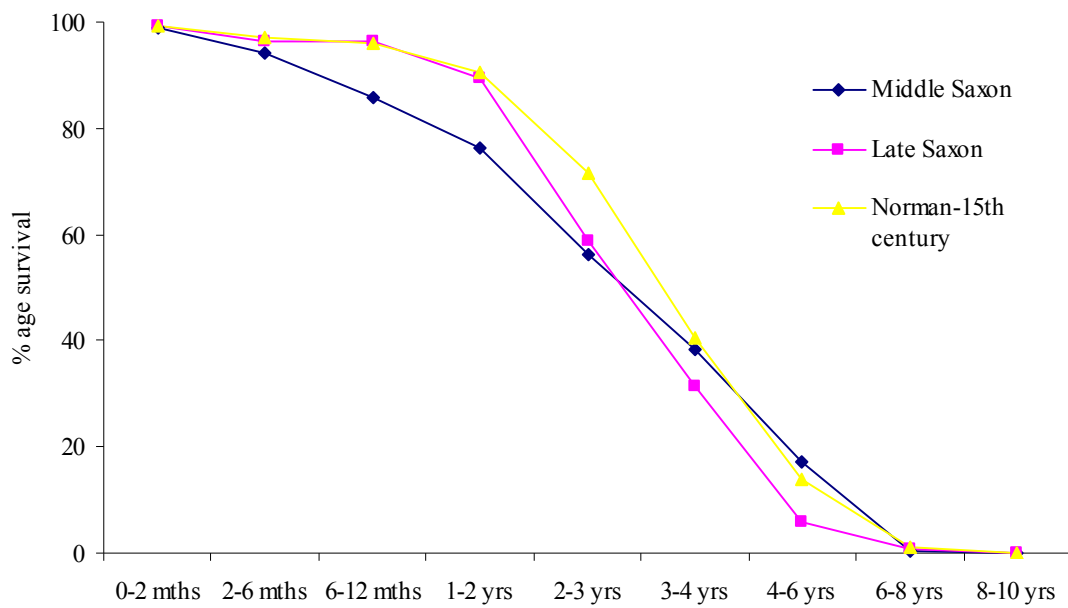
The proportion of the main domestic animals as a reflection of animal husbandry practices is a crude measure because factors such as the import/export of animals and differential disposal strategies can bias the recovered assemblage. Nevertheless, the data available highlight no significant increase in the proportion of sheep over time (Table 1); in fact the proportion of these four taxa show remarkable stability over nearly a millennia. If the earlier medieval inhabitants of Wharram Percy were part of the drive for raw materials to feed the burgeoning textile industry, then they chose a different method to achieve this (e.g. a selective breeding programme) than simply increasing the number of sheep.

Table 1. Proportion of the main domestic animals from the South Manor Area by period (numbers in parentheses are the total bone counts for these four taxa)

	Cattle	Sheep	Pig	Horse
Middle Saxon -buildings/smithy (6700)	34.6	55.2	8.6	1.7
Late Saxon - no structures (1773)	36.4	51.4	8.9	3.3
Earlier medieval - manorial (1609)	37.2	49.8	9.6	3.4
Later medieval - peasant (2194)	31.5	53.1	11.2	4.2

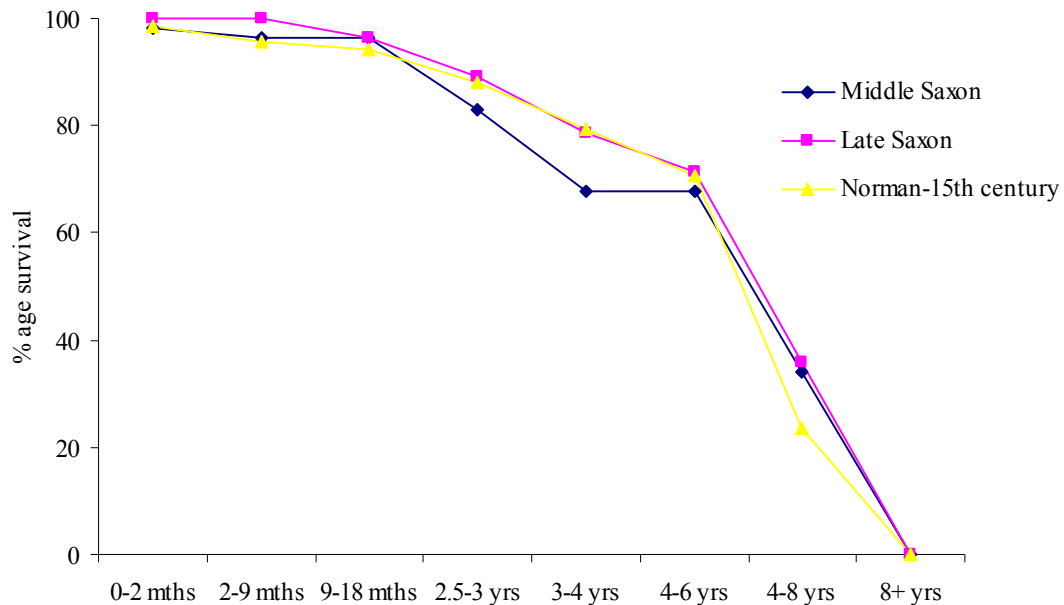
If sheep were not being maintained in greater numbers to supply the rapidly expanding wool trade, perhaps the flock was being targeted for fleeces more intensively (i.e. animals were kept to a greater age in order to recover a greater number of fleeces per individual). To test for such a change in the population dynamics, kill-off curves have been constructed by period. Following Payne's (1973) kill-off models based on sheep raised for meat, milk or wool, the slaughter curves for all periods fit most closely, but not precisely, with meat production (Fig. 1). Certainly in the absence of any significant neonatal/juvenile slaughter, intensive milk production is not indicated and a wether flock run for its wool should reflect a greater percentage survival through to old age. Instead, regardless of period, it is likely that the inhabitants of Wharram Percy raised sheep for meat, kept some for breeding and presumably took fleeces from all. Certainly the high proportion of mature sheep interpreted as evidence for fleece production at medieval North Elmham (Noddle 1980, 396) and other sites (Thomas 2007, 144) was not matched at Wharram. Instead a stable, multi-purpose, low-intensity strategy is indicated that offered relatively low returns but also relatively low risk.

Fig. 1. Kill-off curves for sheep by period



Similarly, the cattle kill-off curves highlight stable husbandry practices (Fig. 2). Some animals were clearly raised specifically for slaughter at prime meat age with the remainder maintained as a breeding herd, for low-intensity milk production (in the absence of neonatal slaughter) and for traction.

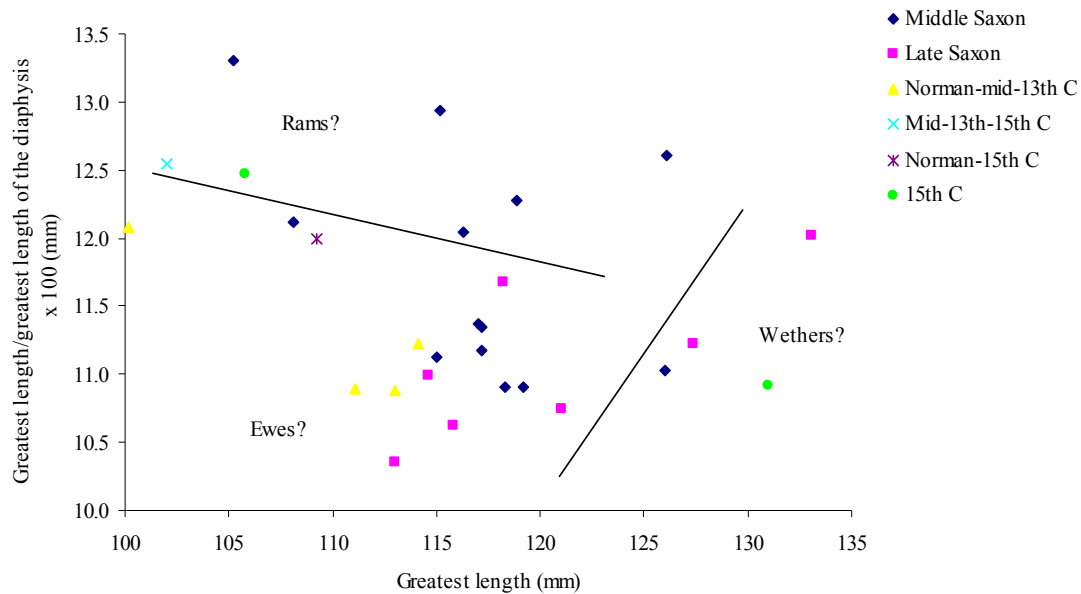
Fig. 2. Kill-off curves for cattle by period (using Pinter-Bellows age ranges)



The final opportunity to identify change in animal husbandry practices following the Norman Conquest, lies with a reassessment of the metrical data. Comprehensive data interrogation by Pinter-Bellows (2000, 178-181) for cattle and sheep showed no significant difference in the size and shape of cattle over time but a size decrease for sheep over the same period was indicated. A similar decrease in size has also been recognised from Anglo-Saxon to Anglo-Scandinavian/medieval Fishergate, York (O'Connor 1991, figure 38) and Flaxengate, Lincoln (Dobney *et al.* 1996, 40). Rather than revisit the evidence for changes in size, the metrical data for sheep is assessed here for evidence of sexual polymorphism: can ewes, wethers and rams be separated on size? Shape variation due to sex, however, can be swamped by factors such as breed (O'Connor 1982, 28) and while diversity caused by different breeds has been investigated, in particular with reference to variation in the shape and size of horncores (O'Connor 1982, 20), this bone is relatively rare from Wharram. While an assessment of breeds is not attempted, therefore, the potential for different breeds to influence shape is acknowledged.

The premise here is that metrical data from a particular bone may allow the short, slender female to be separated from the tall, slender castrate and the short, stocky male, although overlap between the three groups is highlighted by previous studies (e.g. Davis 2000, 378). The metacarpal has been chosen as it often survives intact, although Davis (2000, 384) indicates that the pelvis (specifically the pubis) provides the best separation between the three sex groups. As Davis notes, however, this bone is poorly represented in the archaeological record, as is the case here. As might be anticipated, a reading of the data is not straight forward. As the bones of castrated animals fuse later (Davis 2000, 382), it is possible that wethers are underrepresented in the graph below as only adult (fused) bones were measured. Further, there remains the possibility that the perceived groups might reflect different breeds rather than sexual polymorphism. With these caveats in mind, the available data do indicate the presence of different groups, although there is no evidence for an increase in the proportion of the proposed wethers group over time (Fig. 3).

Fig. 3. Scattergram of adult sheep metacarpals showing size variation by period (divisions are based loosely on data from Davis 2000, figure 8)



Comparing Saxon and post-Conquest South Manor, in light of the documented intensification of sheep farming from the 11th century, has highlighted interesting, if unexpected, results. Instead of evidence for intensive sheep husbandry (demonstrated by an increase in the proportion of sheep, an increase in the proportion of wethers and/or changes in the population dynamics), the farming regime established in the Saxon period (and probably already adopted by the Romano-British inhabitants – see Richardson 2004, 271) was deemed fit for purpose. It provided the Saxon and medieval inhabitants of Wharram with lamb/mutton, beef, milk, fleeces and traction cattle, in addition to manure, skins and horn. The diet was also supplemented by pork, chicken, goose, fish and shellfish. While sheep, so well suited to the free-draining, chalk Wolds, predominated and no doubt provided an annual trade in fleeces, they formed only one part of a board, multi-faceted economy. Given Wharram’s access to fresh water, which is relatively unusual for the Wolds, production of cattle with their high water requirements was also profitable. In this, Wharram’s farming economy was more like Wold-edge sites such as West Heslerton and Sherburn than those in the heart of the Wolds like Cowlam (Table 2; Fenton-Thomas 2005, 87).

Table 2. Proportion of the main domestic animals by area and period with comparison to nearby sites (numbers in parentheses are the total bone counts for these four taxa)

	Reference	Cattle	Sheep	Pig	Horse
Middle Saxon South Manor - buildings/smithy (6700)	Pinter-Bellows 2000	34.6	55.2	8.6	1.7
Late Saxon South Manor - no structures (1773)	Pinter-Bellows 2000	36.4	51.4	8.9	3.3
Anglo-Saxon Site 94+95 - abandonment (724)	Pinter-Bellows 1992	38.7	50.3	9.1	1.9
Earlier medieval South Manor - manorial (1609)	Pinter-Bellows 2000	37.2	49.8	9.6	3.4
Earlier medieval Site 30/71 - pond and dam (370)	Richardson 2005a	27.3	39.7	13.5	19.5
Medieval North Manor - manorial only (1177)	Richardson 2004	28.1	59.3	7.8	4.7

	Reference	Cattle	Sheep	Pig	Horse
Medieval North Manor - peasant only (756)	Richardson 2004	20.1	47.5	5.7	26.7
Medieval Site 9 - peasant (3250)	Richardson 2005b	27.0	50.5	14.0	8.6
Medieval Site 12 - peasant (5518)	Richardson 2005b	20.3	58.2	11.9	9.5
Medieval Vicarage area (740)	Richardson 2009	25.5	56.5	15.9	2.0
Later medieval South Manor - peasant (2194)	Pinter-Bellows 2000	31.5	53.1	11.2	4.2
Later medieval Site 30/71 - pond and dam (1313)	Richardson 2005a	21.8	33.7	10.1	34.4
Anglian West Heselton - village (24743)	Richardson 2001	42.3	45.2	8.5	4.0
Middle Saxon West Heselton - village (8277)	Richardson 2001	38.1	50.9	7.9	3.0
Medieval-early post-medieval - village (1207)	Rushe <i>et al.</i> 1988	17.4	60.6	16.6	5.4
Medieval Sherburn -manor (1144)	Rushe <i>et al.</i> 1994	35.5	43.2	7.3	14.0

Medieval peasant households

Animal bone deposits from various peasant sites are compared here: Site 9 in conjunction with Sites 59, 90, 85, 44, 76 (represented by Phase 5B-D of the South Manor Area); Site 12; Sites 82G, 82H, 82J and 82K (from the North Manor Area); and the late 13th to 14th-century deposits from Site 71 (Phase 4) which contained large quantities of domestic debris (Wrathmell and Marlow-Mann 2005, 227). In the following tables and figures within this section, these are simplified to ‘Sites 9, 12, 71 and North Manor’. The intention is to establish the farming practices and diet of a ‘typical’ medieval household. The assumption is that the deposits associated with these peasant properties relate directly to the animals bred, utilised and finally consumed by the local inhabitants. Of course, preservation bias will vary by context and area, and some mixing of deposits is inevitable. Also, in the absence of much of the raw data for the South Manor, it was not always possible to separate material associated with the manorial Norman to mid-13th-century occupation (Phase 5A), from post-manorial mid-13th to 15th-century activity (Phase 5B-D). Data could be separated for comparisons of the proportions of taxa, but not for the consideration of slaughter curves. As such, an unknown quantity of data associated with the manor are included in these curves under Site 9.

In comparing the proportion of the main ‘meat’ animals, the dominance of sheep from the peasant properties is clear (Table 3). With the exception of the deposit from Site 71, cattle also represent a significant economic component (particularly given their greater meat weight), while pigs appear to be of lesser importance. The high proportion of horse bones from the North Manor Area is probably the product of horse butchery in the vicinity. Certainly 77 bones from one such atypical deposit have been excluded from Table 3, but horse bones from the same process, most probably the reduction of horse carcasses for dog food, skins and/or glue manufacture, may still have been incorporated into neighbouring deposits. Despite this potential bias, the *c.* 50% fall in the proportion of pig bones from the ‘North Manor’ appears to be a real phenomenon. As pigs were seen as an animal of the poor by the 11th century (Albarella 2006, 79), perhaps this reflects the proximity of the nearby Manor and a mixing of manorial (with a lower proportion of pigs) and peasant deposits. Certainly a

consideration of the manorial assemblages from the North Manor, South Manor and Sherburn indicates a lower proportion of pigs from these contexts (Table 2). The starkest differences, however, are seen at Site 71 where the proportion of pig bones surpasses cattle. These suggest that the domestic dump here is either not from a ‘typical’ peasant property, or represents a mixed deposit derived from a number of different sources.

Table 3. Proportion of the main domestic animals from deposits associated with the medieval peasant households (numbers in parentheses are the total bone counts for these four taxa)

	Reference	Cattle	Sheep	Pig	Horse
Site 9 (5444)	Richardson 2005b/Pinter-Bellows 2000	28.8	51.5	12.8	6.8
Site 12 (5518)	Richardson 2005b	20.3	58.2	11.9	9.5
North Manor (679)*	Richardson 2004	22.4	52.9	6.3	18.4
Site 71 (306)	Richardson 2005a	16.7	58.8	19.9	4.6

* Total excludes 77 horse bones recovered from a single atypical butchery deposit (context 1103) – Richardson 2004, 268.

From all phases and areas of Wharram Percy, wild mammals and birds are scarce (Table 4). Social restrictions on hunting is likely and certainly the hunting of deer was jealously and judicially guarded by the nobility (MacGregor 1989, 108; Sykes 2006a, 166). Given the processes and costs involved in obtaining venison (e.g. deer parks, huntsmen, salting and transport), its conference of wealth and status is hardly surprising (Birrell 2006, 188). As such, the little venison represented at Wharram probably represents poaching, although a legitimate gift to a local person of some status is also possible (Birrell 2006, 177). Access to rabbits as a source of food was also restricted during the medieval period (O’Connor 2000, 169), although many of the rabbit bones recorded here may represent intrusive burrowers (some bones being translucent in colour and a minority, articulated). Hares, apparently, were rarely trapped or caught with dogs. While the catching and eating of wild birds is evident in England from at least the 8th century, it appears that peasant and urban communities had little access to these resources. Instead, wild birds were consumed by those of higher status (Serjeantson 2006, 147). Despite the manorial properties at Wharram, a peasant-style diet is clearly indicated by the dearth of wild resources.

Further variety to the diet, however, was provided by poultry and fish. The rearing of the former was probably a significant activity for many peasants (Stone 2006, 161): they were easy to keep, valuable for eggs, feathers and meat, and highly marketable. Although the numbers are not high (Table 4), bones from these smaller species are most likely to have been missed in the absence of routine sieving, and of course birds carried to market would not register in the death assemblages considered here. Also rarely recovered in the absence of regular sieving, were fish bones, although a reasonable assemblage was recovered from the area of the Pond and Dam (Barrett 2005). From the late 13th to 14th-century deposits from Site 71 (Phase 4) nine marine taxa were recovered: in rank order, herring, cod, haddock, plaice, conger eel, ling, hake, halibut and ray family. The only truly freshwater species was pike, although the eels were probably freshwater catches too (Barrett 2005, 170 and table 29). These suggest that a wide variety of fish was imported both whole (probably fresh) and cured. Important for the observance of certain Christian doctrines (e.g. the

consumption of fish during Lent), it is possible that dried cod (stockfish) was imported from Arctic Norway, with herring coming from East Anglia or the Baltic (Barrett 2005, 175). From Site 9, cod, haddock, ling and shark order were recovered and from Site 12, cod and haddock (Barrett 2005, table 29).

Table 4. Bone counts of other possible dietary sources from deposits associated with the medieval peasant households and the manorial properties

	Site 9	Site 12	North Manor-peasant	Site 71	South Manor-manorial	North Manor-manorial
Goat	9			1	14	
Red deer *		1			1	
Fallow deer*	5			1		
Roe deer*	4			1	1	
Hare	13	12		4	1	1
Rabbit	6	208	293	15		1
Domestic fowl**	66	52	5	17	22	17
Goose	29	17	3	26	9	15
Swan					1	
cf. Dom. duck		2				
cf. Mallard						1
Grey partridge		1				
Woodcock				1		
Wood pigeon		2		1		
Columba sp.	3	3		8		
Moorhen		1				
cf. Water rail						1
Golden plover				2		
cf. Song thrush/red wing				1		
Passerine						1
'Other identified bird'					160	1

* Where possible, deer antlers have been excluded from the counts. ** Domestic fowl includes bones identified as 'domestic fowl/pheasant' and 'galliforme' as no pheasants were identified. Of the birds identified, birds of prey and scavengers (e.g. crow) are excluded as these species are unlikely to have been eaten (see Serjeantson 2006, 133-4). Unfortunately the bird species identified by Pinter-Bellows were not fully reported.

In essence, therefore, the peasant properties, despite some variation, revealed sheep-dominated assemblages, typical of a medieval rural economy (Sykes 2006b, 61). Sykes (2006b, 63) raises the possibility, however, that this might be based in part on the preferential export of cattle, on the hoof, to supply the urban markets. Certainly, the export of medieval livestock was proposed for medieval North Manor given a dearth of 'market-age' cattle and sheep (Richardson 2004, 271) although this hypothesis was subsequently weakened by the identification of 'market-age' animals from Sites 30 and 71 and Sites 9 and 12 (Richardson 2005a, 168-9).

Unfortunately, age data were not always plentiful from the peasant sites and it is only possible to compare dental eruption and wear data from Sites 9 and 12 for cattle, and from Sites 9, 12 and the North Manor for sheep. In both cases, animals were maintained for longer at Site 9 compared to the other sites (Figs 4 and 5). For cattle in particular, where the difference is most striking, this might indicate the more ready

availability of prime beef at Site 12. Perhaps the inhabitants of Site 12 were of higher status than those at Site 9. Certainly, the wider range of wild birds at Site 12, although still narrow, would appear to support this notion (Table 4).

Fig. 4. Kill-off curves for cattle by peasant dwelling

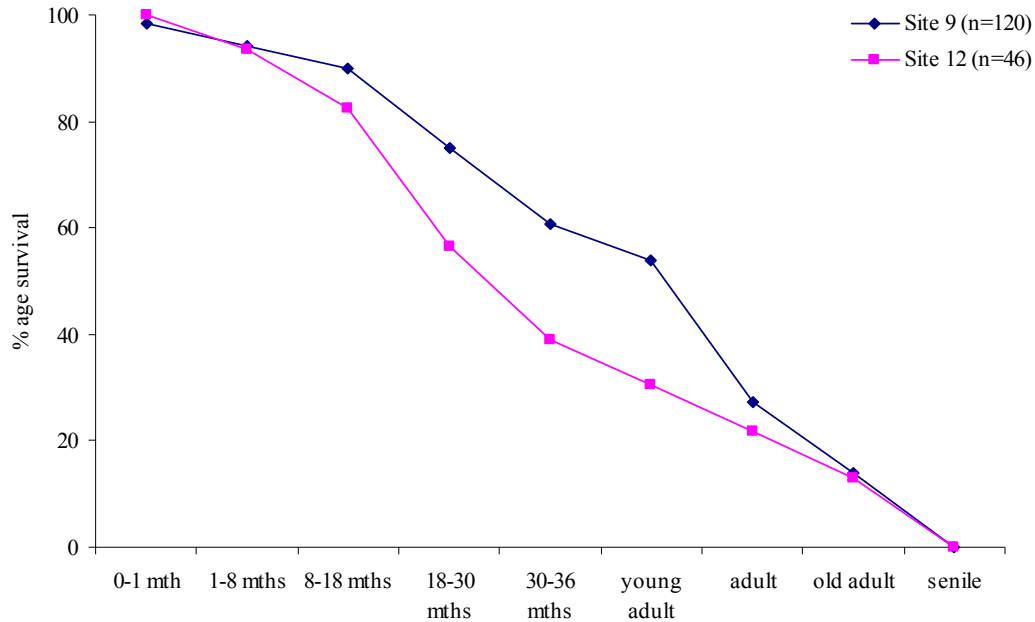
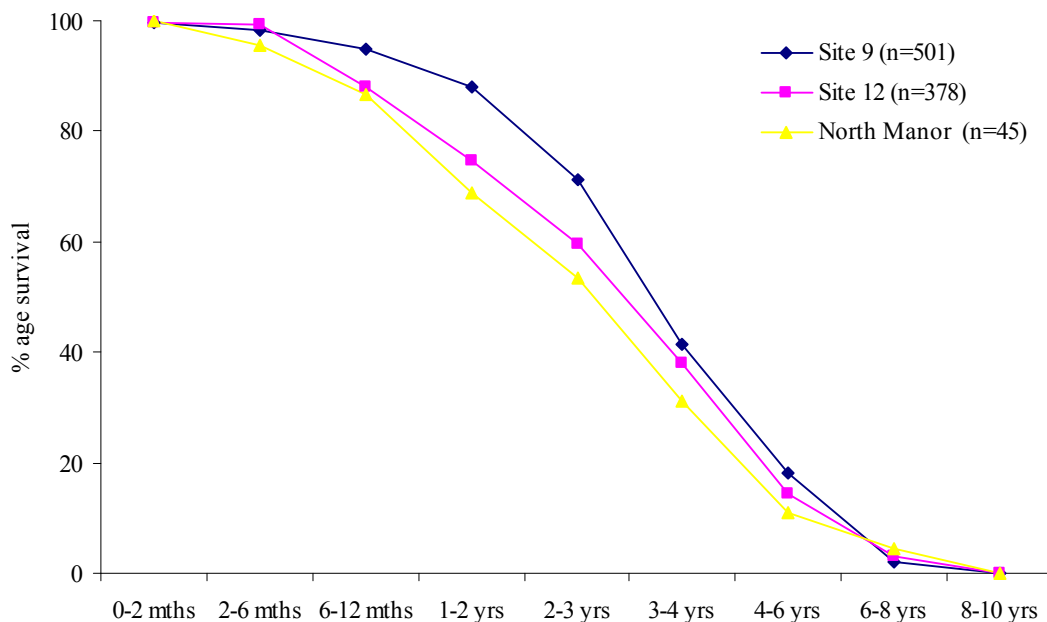


Fig. 5. Kill-off curves for sheep by peasant dwelling



Clearly, peasant households in medieval Wharram Percy farmed in response to both environmental and socio-cultural conditions. The hilly, chalk Wolds were best suited to sheep rearing, while the fortuitous availability of spring water made cattle husbandry favourable. In this, the peasant households were apparently equal. They

also conformed to the dietary norms of the time, reflecting closely the mutton-dominated diet of the medieval peasantry that lacked any great variety (Sykes 2006b, 61, 65). Nevertheless, some variation between properties was observed, perhaps most convincingly the greater proportion of prime beef available at Site 12 when compared to Site 9.

Comparing the medieval peasant households to the medieval North and South Manors

In comparing the peasant properties to the higher status North and South Manors, a variation in dietary intake as a result of socio-economic factors is anticipated. The inhabitants of the Manors should have had access to a wider range of foodstuffs and better-quality joints from younger, more tender animals. The identification of dietary differences, however, is based on the premise that food waste from the various properties was deposited in the close vicinity and that subsequent mixing of deposits was minimal. Further, assemblages produced in a single household can vary significantly (e.g. table waste versus kitchen waste), so the use of assemblage composition as a reflection of social status should be used cautiously (Driver 2004, 248).

The proportion of the main domestic animals from the North Manor reveals no significant differences, with the proportion of each animal at this medieval manor falling within the range identified at the peasant properties (Table 5). Compared with the medieval village of Cowlam, also situated on the Wolds, and the manor at Sherburn on the southern fringe of the Vale of Pickering, Wharram's North Manor confirms the sheep-dominated economy of the Wolds (regardless of status), although the relatively low proportion of pig from the North Manor and Sherburn might reflect a medieval tendency for pork to be associated with lower status consumption (Albarella 2006, 79). Other status indicators, such as the consumption of venison, are entirely absent from the North Manor, while the potential for dietary variability from wild birds (Table 4) and fish (only a few bones of ling was identified: Barrett 2009, table 27.2) was not realised. The proportions of the main domestic animals from the South Manor confirm the lower levels of pork from the higher status dwellings but in its proportions of cattle and sheep, the South Manor appears to have more in common with Sherburn Manor (Table 5). The higher proportion of beef from the South Manor compared to the medieval rural stable of lamb/mutton might suggest a higher status diet here. If so, the manorial deposits from the North Manor appear to reflect more closely a rural peasant diet, while the South Manor provides some evidence of higher status consumption.

Table 5. Proportion of the main domestic animals from medieval peasant and manorial households (numbers in parentheses are the total bone counts for these four taxa)

	Reference	Cattle	Sheep	Pig	Horse
North Manor - manorial (1177)	Richardson 2004	28.1	59.3	7.8	4.7
South Manor - manorial (1609)	Pinter-Bellows 2000	37.2	49.8	9.6	3.4
Site 9 (5444)	Richardson 2005b/Pinter-Bellows 2000	28.8	51.5	12.8	6.8
Site 12 (5518)	Richardson 2005b	20.3	58.2	11.9	9.5
North Manor - peasant (679)*	Richardson 2004	22.4	52.9	6.3	18.4
Site 71 (306)	Richardson 2005a	16.7	58.8	19.9	4.6
Medieval-early post-medieval	Rushe <i>et al.</i> 1988	17.4	60.6	16.6	5.4

	Reference	Cattle	Sheep	Pig	Horse
Cowlam - village (1207)					
Medieval Sherburn -manor (1144)	Rushe <i>et al.</i> 1994	35.5	43.2	7.3	14.0

* Total excludes 77 horse bones recovered from a single atypical butchery deposit (context 1103) – Richardson 2004, 268.

Age data based on dental eruption and wear are considered for cattle and sheep for Sites 9 and 12 and for manorial deposits from the North Manor Area. As age data from the manorial deposits associated with the South Manor (Phase 5A) are only reported in conjunction with the later peasant buildings (Phase 5B-D), they are not considered here.

As highlighted above, the pattern of cattle slaughter, regardless of property, represents some animals targeted specifically for their meat, with the remainder maintained for breeding, presumably for low-intensity milk production and for traction. Of significance here, however, is the group of animals falling in the 8-18 month category (Fig. 6). While the occupants of the peasant households had slaughtered between 10% (Site 9) and 17% (Site 12) of the cattle population by this age range, at the North Manor 33% had been killed. Prime beef, therefore, was more readily available at the latter. By 18-30 months, however, when the beef would still have been of high quality, the Site 12 inhabitants surpassed those of the North Manor in their prime beef consumption. More clear-cut are the slaughter patterns for sheep: here the availability of prime lamb was greatest from manorial deposits from 6-12 months onwards, and least from Site 9 (Fig. 7). While dietary variability by property was not a useful indicator of status, it appears that the availability of prime beef and lamb is.

Fig. 6. Kill-off curves for cattle by peasant and manorial dwellings

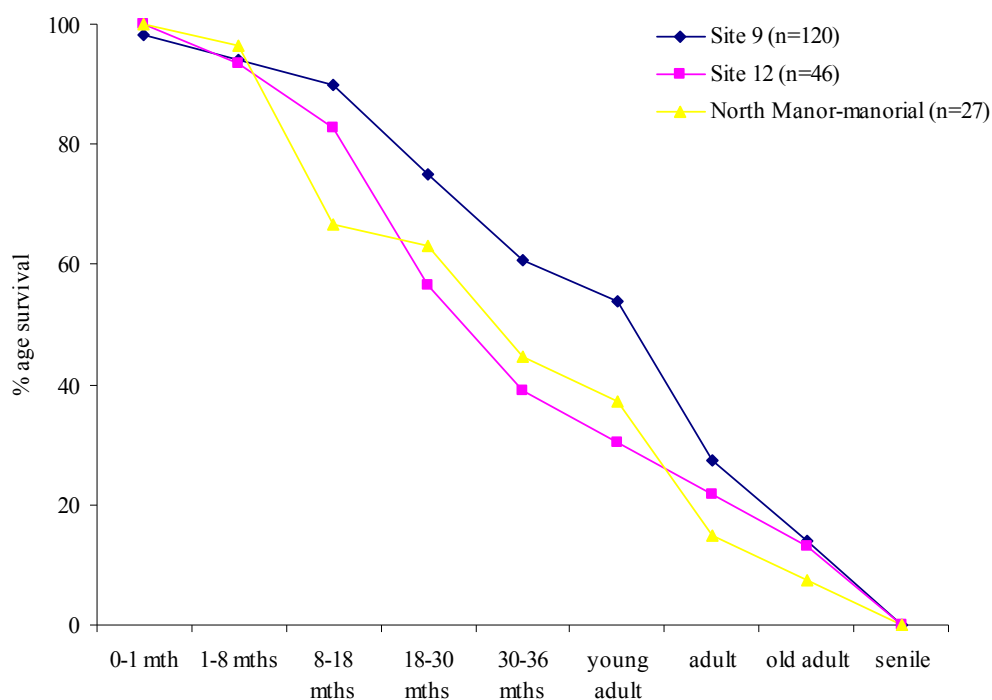
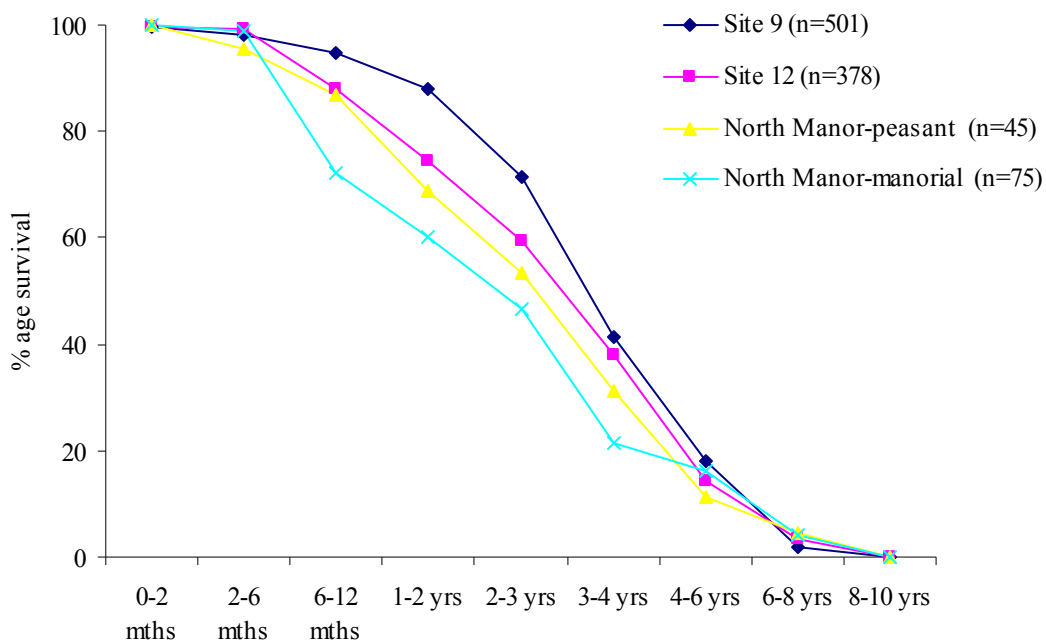


Fig. 7. Kill-off curves for sheep by peasant and manorial dwellings



A final measure of status may be the cuts of meat consumed by the different households. Here certain cuts of meat, such as the meat-rich shoulder and rump represent choice cuts, while poorer cuts such as heads and feet are traditionally seen as cheap fare (Davis 1987, 189) or even waste (Noddle 1980, 381). Unfortunately while a site producing an above average proportion of skulls, metapodials and foot bones may reflect the consumption of low-quality cuts by nearby inhabitants, it may also represent the disposal of primary butchery waste (i.e. the same low-utility parts) in the vicinity. As a result, caution is necessary when interpreting the available data. Sadly the data relating to body parts for the South Manor were not presented in a way that facilitates re-analysis, and hence only data from Site 9 (with no additional South Manor data), Site 12 and peasant and manorial deposits from the North Manor are compared.

To test the proportion of body parts present, five parts have been considered: head represented by mandibles and occipital condyles, shoulder by scapula and humerus, hip by pelvis and femur, lower limb by metacarpal and metatarsal, and foot by the first phalanx. From any one animal, each part has the potential to be represented by four bones with the exception of the first phalanx (x8). To standardise this potential, the counts for first phalanges have been halved. Only diagnostic zones are included.

Using data from cattle, sheep and pigs, a prevalence of shoulder and hip joints is anticipated from the manorial deposits, while the proportion of low-utility parts is expected to be greater from the peasant properties. For cattle, these trends are indeed indicated (Fig. 8), but for sheep the reverse is true (Fig. 9) with greater quantities of lower limbs and feet from the North Manor. The body parts from pig (Fig. 10), meanwhile, offer a mixed picture (e.g. a higher proportion of shoulder joints but a lower proportion of hip joints). Unambiguous evidence for the consumption of more high-status joints at the North Manor when compared to the peasant households, therefore, is not realised.

Fig. 8. Representation of body parts for cattle by property

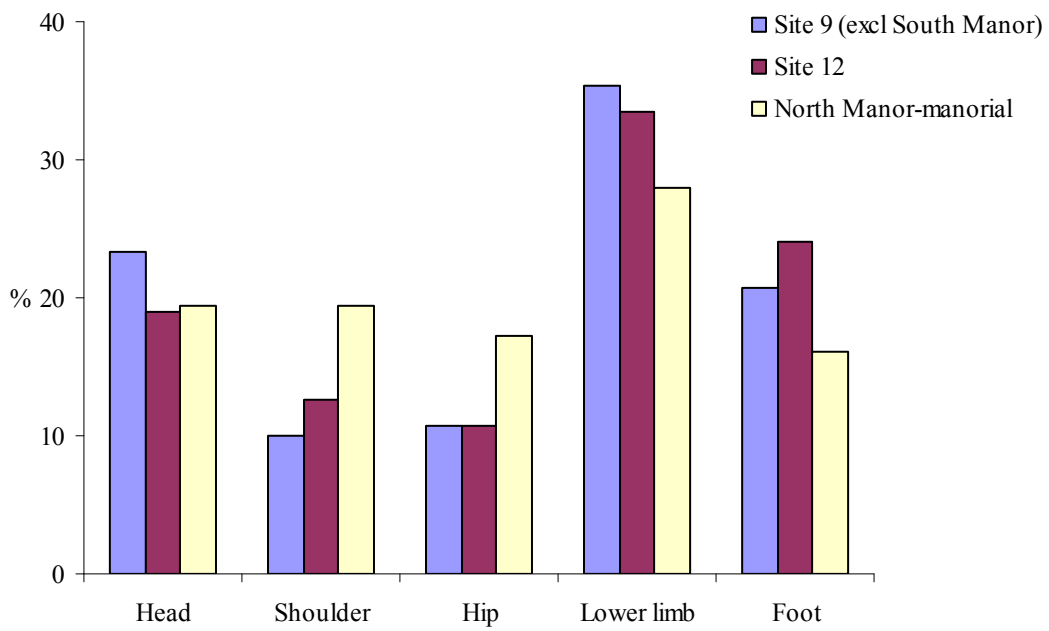


Fig. 9. Representation of body parts for sheep by property

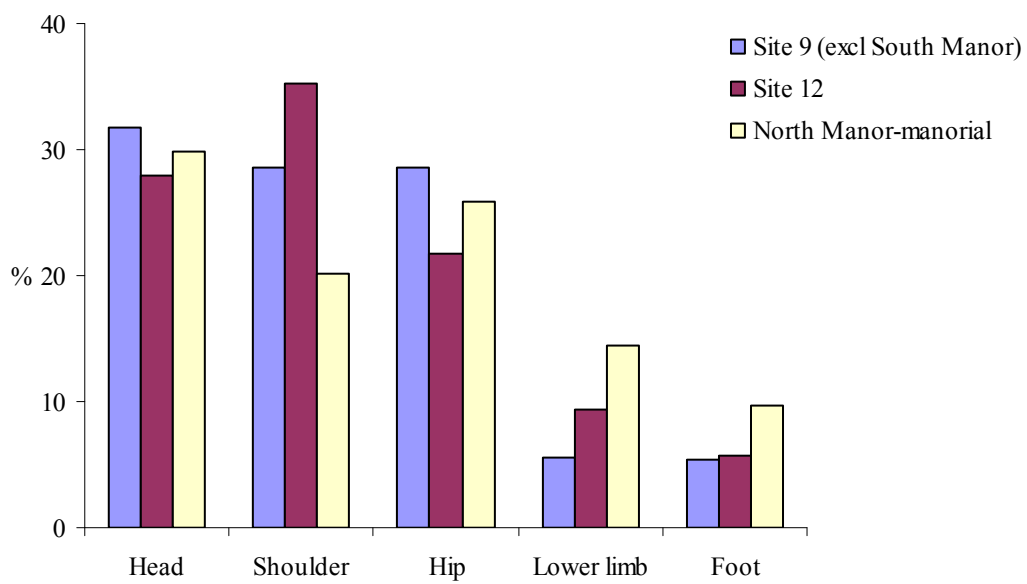


Fig. 10. Representation of body parts for pig by property



For the North Manor, therefore, the evidence for higher status consumption lies in the greater proportion of prime beef (at 8-18 months) and lamb (from 6-12 months onwards) compared with the peasant properties. While the availability of higher quality beef joints confirms the standing of the inhabitants of the North Manor, the same cannot be said of lamb. In addition, dietary variability and the availability of game do not set the North Manor apart from the lower status households. The relatively little information that can be gleaned from the South Manor suggests that the diet consumed here might have differed from peasant fare in having greater quantities of beef and less mutton.

The importance of horses to the medieval inhabitants of Wharram Percy

Of interest is whether the medieval inhabitants of Wharram Percy used oxen or horses (or a combination of both) for their plough teams. If they were using horses, were they raised locally and were they traded?

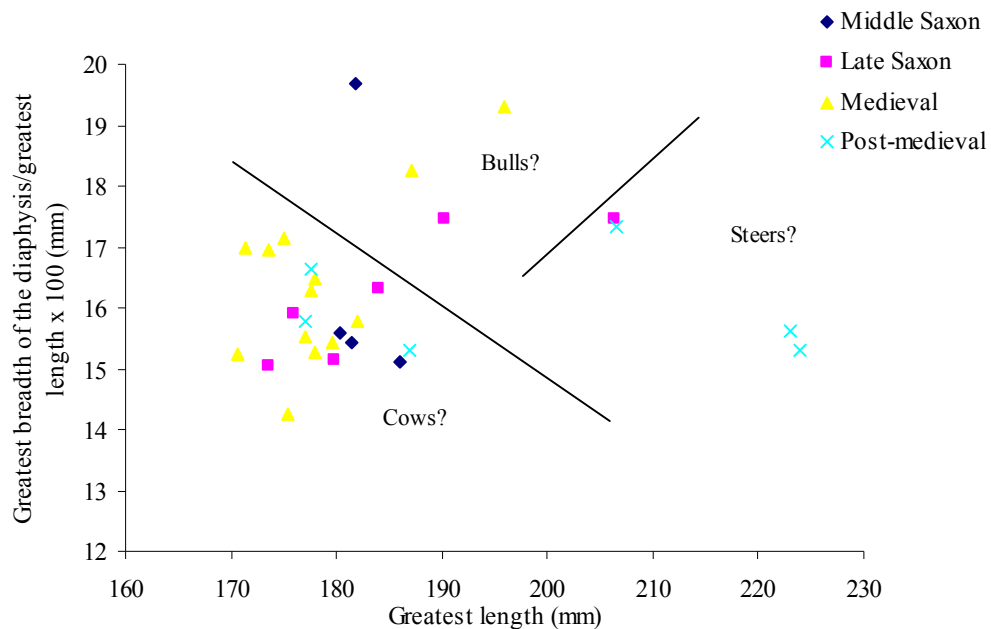
Certainly with the invention of a harness with a rigid collar around the 12th century (Langdon 1986, 9-10), the pulling power of the horse was increased four or fivefold (Williams 2002, 110). Prior to this, a 'throat-and-girth' harness would have been used, but this tended to slide up the horse's neck, virtually strangle the animal and prevent it from pulling its full weight (Langdon 1986, 7). This development, along with other improvements to the harness and factors such as horse-shoeing, has been used as an explanation for the increase in the use of horses after the Norman Conquest (Langdon 1989, 33). Interestingly Langdon (1989, 34) also notes a preference for horses on peasant holdings rather than the lord's demesnes as they were more versatile than oxen. As well as ploughing, horses were better able to pull a cart, could be ridden or used as a pack animal. Also, given its use in smaller teams, the horse was better suited for ploughing small patches of land or turning in awkward corners. The tendency would be for horses to produce straighter lines and not curves, especially the reversed S curve, indicative of the wide turning circle of the ox-drawn team (Rackham 1986, 168). The horse was faster, particularly on level ground and light soils (Langdon

1982, 40). The ox came into its own, however, on clay soils and on hilly ground, and was cheaper to keep and could be consumed on death (Fitzherbert 1543).

Mapping of the ridge and furrow in the fields surrounding Wharram Percy has revealed a level of uniformity indicative of the consistent use of one type of plough team, while the lack of curved lines points towards horse-drawn teams rather than oxen. Certainly on the shallow, light soils of the Chalk Wolds, the horse would have been a useful beast and this is confirmed by Langdon's (1989, 35) interrogation of the documentary evidence that indicates the dominance of horse-drawn vehicles in this region by the beginning of the 14th century.

Osteologically, however, the faunal data from Wharram can add relatively little to this horse versus oxen debate. Both cattle and horses are present, and of a mature age when they might have been trained as traction animals. Determining the presence of oxen, typically but not exclusively castrated males, through metrical data, however, has proved frustrating, largely because sexual polymorphism is not clear cut and can be masked by other factors such as differences between breeds (e.g. Albarella 1997; Davis 2000). Plotting length against shaft width for metacarpals in an attempt to separate the short, slender cows, from the short, stocky bulls and the taller, slender steers has defined some possible groups (Fig. 11), although as with the sheep (see Fig. 3 above), age and breed are likely to be contributing factors. If the data do represent sexual polymorphism, however, then the importance of oxen does not appear to be significant.

Fig. 11. Scattergram of adult cattle metacarpals showing size variation by period



Possible work-related injuries to various joints have also been considered for both horses and cattle (Table 6). These include spavin, a proliferation of new bone on the tarsals and proximal metatarsal, associated with traction and hard work (Baker and Brothwell 1980, 117-118); ring bone, bone exostoses to the first and/or second phalanges and principally a disease of heavy draught horses (Baker and Brothwell 1980, 120) and osteoarthritic-type changes (e.g. eburnation and exostoses/lipping).

These data suggest that either horses were more prone to foot injuries or that horses tended to be more commonly employed as work animals during the medieval period, compared to oxen. Cattle, meanwhile, were prone to hip injuries, while this joint on horses was apparently unaffected. Unfortunately any concomitant increase in the incidence of horse pathologies from the Anglo-Saxon to the medieval periods cannot be tested as pathologies were not reported for the largest Anglo-Saxon assemblage from the South Manor. An increase in the proportion of horses, however, is seen over these periods (Table 2) and this may relate to the increasing usefulness of horses in the agricultural arena, although large atypical dumps of horse bones, in particular from Site 82K (North Manor) and Site 30 (Pond and Dam), are influencing this proposed trend.

Table 6. Incidence of joint disease that might indicate work-related injuries to medieval horses and cattle (number of affected bones in parentheses)

	North Manor	Farmstead	Sites 9 and 12	Sites 30 and 71
Horse - spavin to metatarsal	20% (1)	100% (1)	14% (3)	14% (2)
Horse - ring bone to first phalanx	47% (8)	100% (1)	22% (11)	-
Cattle - eburnation and/or lipping to first phalanx	8% (2)	-	6% (8)	-
Cattle - eburnation and/or pitting to prox. femur	11% (1)	-	-	-
Cattle - eburnation and/or pitting to acetabulum	8% (1)	-	10% (3)	-

Identifying the rearing of any livestock locally is dependant on the presence of foetal/neonatal bones. Unfortunately these are typically the most fragile of the bones and also in the absence of routine sieving, are often missed. Nevertheless, a low-level scatter of foetal/neonatal bones suggests that cattle, sheep and pigs were raised locally over the Anglo-Saxon and medieval periods (with the possible exception of pigs in the earlier period), while the presence of horses too young to have been broken for the saddle or harness during the medieval period are indicative of horse breeding (Table 7). Unfortunately age data for horses was not reported for the South Manor. The only neonatal horse bone from the entire village came from a post-hole in the Churchyard area dated to the Anglo-Saxon period. Interestingly, Langdon (1989, 35) has found documentary evidence for a circular trade in horses during the medieval period whereby peasant holdings reared horses, sold them to demesnes at a reasonably high price (who bought horses in much greater numbers than they bred them themselves) and then bought them back cheaply when old but still capable of some work. The pattern at Wharram Percy, a minority of young animals but a surfeit of aged animals fourteen years or older, would support such a trade model.

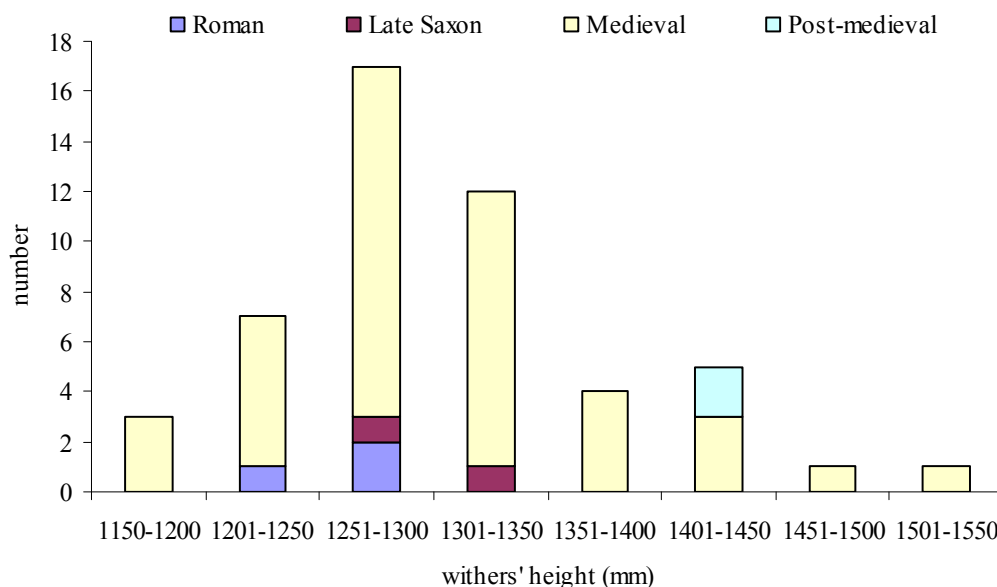
Table 7. Number of foetal/neonatal bones (< 2 months old) for cattle, sheep and pigs and the number of juvenile horses (< 2 years) by area and period

	Cattle	Sheep	Pig	Horse
Middle Saxon South Manor (buildings/smithy)	1	3	-	?
Late Saxon South Manor (no structures)		2	-	?
Medieval South Manor (manorial and peasant)	1	3	2	?
Medieval Site 30/71 (pond and dam)	2	-	-	1
Medieval North Manor (manorial)	2	-	1	1
Medieval Site 9 (peasant)	4	6	3	3
Medieval Site 12 (peasant)	7	22	8	9
Medieval Vicarage and Farmstead areas	2	3	2	1

Rather than selling directly to local demesnes, the inhabitants of Wharram Percy are more likely to have taken their young horses to market where they would have been accessible to a greater number of buyers. Situated on a main route between York (*c.* 28km westwards) and Bridlington (*c.* 32km eastwards), Wharram inhabitants also had access to horse markets at Malton (only 10km to the northwest) and Driffield (16km to the southeast). Horsefair Lane in Little Driffield and Horsemarket Road in Malton attest to the presence of accessible horse fairs. Dodsworth in 1620 describes Malton as a market for horses and other agricultural produce, with a specific horse fair held at Michaelmas (Robinson 1978, 17). Certainly, medieval Wharram Percy was far from isolated: regional contacts of the period are evident; pottery from York, Staxton, Scarborough ((Slowikowski 2000, 74; 2005, 109), from production sites in Beverley, the Hambleton Hills and along the Humber (Slowikowski 2000, 76, 80), jet from Whitby (Clark and Gaunt 2004, 214), and marine molluscs from the coast and/or Humber estuary (Richardson 2004, 272; 2009, 326). Links to national and international trade are also indicated with pottery from the Tees Valley, Bransby, Buckinghamshire, and south-west France (Slowikowski 2000, 78; 2005, 107), stockfish from Norway and herring from East Anglia or the Baltic (Barrett 2005, 175).

Finally, it is worth noting that the ‘horses’ raised by the medieval inhabitants of Wharram Percy were in fact ponies (with one exception), although the possibility of donkeys and/or mules cannot be entirely ruled out (Richardson 2004, 268, Pinter-Bellows 2000, table 28). The distribution of withers’ heights, based on the lateral length of metacarpals, radii, tibiae and metatarsals after Kieswalter (1888 cited in von den Driesch and Boessneck 1974, 334), indicate that the majority of animals falls between 1251-1300mm, that is between 12 hands 1 inch and 12 hands 3 inches (Fig. 12). Taking 14 hands 2 inches as the minimum height for a horse, only one animal from medieval deposits at Site 30 exceeded this threshold, standing just under 15 hands. Based on a mean height of 1308mm, the three measureable Roman horse bones were below average (ranging between 1244mm and 1298mm), the two bones from Late Saxon deposits straddled this mean (1291mm and 1326mm), while the two post-medieval bones were considerable larger (1439mm and 1447mm). A general trend towards larger animals is indicated, therefore, albeit based on limited data.

Fig. 12. The range of withers’ height based on various adult horse bones by period



In summary, the horse appears to have been a valuable asset for the farmers of medieval Wharram Percy. It is highly likely that the animal was bred by the villagers and also traded at the regional markets. Fluctuations in the proportion of horse bones across the village makes comparisons by period and site difficult, however, as differing disposal strategies are indicated. The very high proportion of horse bones from Sites 30/71, for example, probably represents a number of dump deposits on the periphery of the settlement, while many of the horse bones from Site 82K represent a single, atypical butchery event. Nevertheless, comparing the various areas at Wharram to other settlements within or on the edge of the Wolds does reveal some patterns (Table 2). Saxon deposits from both Wharram and West Heslerton have much lower proportions of horse bones when compared to medieval deposits, while manorial sites tended to have a greater proportion of horse bones when compared to peasant sites. As indicated above, the former may relate to the horse's increased usefulness with the advent of the rigid collar in the 12th century, while the later might have its basis in wealth of the occupant (contra Langdon 1989, 34).

Conclusions: the significance of the animal bone assemblage

The significance of the faunal assemblage from Wharram Percy lies in its size and its wide temporal and spatial distribution. For the medieval period, it was also possible to compare bone deposits by property, as a potential indicator of status and wealth.

Overall, the tendency appeared to be for economic stability in animal husbandry terms over the millennia despite invasion, a burgeoning wool trade, depopulation and changes in land tenure. Regardless of period or status, therefore, sheep-dominated husbandry is indicated, although the value of cattle rearing in spring-fed Wharram Percy should not be underestimated, in an otherwise dry landscape. Adopting a multi-purpose strategy of meat production (from cattle, sheep, pigs, poultry), fleeces, milk and traction (predominantly from locally-reared horses), the inhabitants of Roman to post-medieval Wharram Percy well able to market their farming surplus in order to procure building materials, pottery, metalwork, cloth and fish.

Nevertheless, subtler differences by property have been identified. The greater proportion of prime beef available at Site 12 when compared to Site 9 suggests higher

status occupants at the former. Similarly, evidence for higher status consumption at the North Manor lies in the greater proportion of prime beef (at 8-18 months) and lamb (from 6-12 months onwards) and the ready availability of high-quality beef joints when compared with the peasant properties. While a reassessment of the data from the South Manor was often problematic, the diet consumed at this manorial property might have differed from peasant fare in having greater quantities of beef and less mutton.

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