TABLE 6. ANIMAL BONE FROM THE LATER GRANGE, SITE D, BY DATE

	Cattle		Sheep (goat)		Pig		Other mammal	Bird		Ident.	Total
	z	BN	z	BN	z	BN	BN	f	g		
pre-1300	4	7			3	4			1	12	24
14th–mid 15th C.	27	53	7	10	10	12	hare 2	4	5	87	204
								r/s dove 1			
14th–16th C.	11	13	5	8	3	4	horse 3	2		35	68
							cat 4	r/s dove 1			
later 15th–16th	9	21	4	5	3	5	horse 3			38	81
							dog 1	r/s dove 1			
post-1620	111	177	89	128	42	52	horse 7	6		379	593
							dog 1	duck 3			
							rabbit 1	r/s dove 1			
							h/rab. 1				
Total Site D										551	970

z – more complete bones; BN – number of bones.
f – fowl; g – goose; r/s – rock or stock; h/rab. – hare or rabbit.

TABLE 7. THE MAIN GROUPS OF ANIMAL BONES FROM THE LATER GRANGE, SITE D, BY BUILDING

	Cattle		Sheep (goat)		Pig		Other mammal	Bird		Ident.	Total
	z	BN	z	BN	z	BN	BN	f	g		
Kitchen											
pre-1300	3	6			3	4			1	11	23
14th–mid 15th	24	44	3	7	9	11	hare 2	4	5	74	170
								r/s dove 1			
later 15th–16th	5	10	1	2		1			2	16	39
								r/s dove 1			
post-1620	88	158	66	96	28	38	horse 5		2	300	447
								duck 1			
Building XI	1	3	13	19	7	7	rabbit 1	6		40	96
W. rooms post-1620							h/rab. 1	duck 2			
								r/s dove 1			
Dovecote	4	9	3	3	2	2	horse 3			18	36
post-1620							dog 1				
Boundary wall	10	10	3	3		1	horse 3			21	30
14th–16th							cat 4				
Building XV	6	9	3	4	6	6	horse 2			21	28
post-1620											
Total, these groups										501	869

z – more complete bones; BN – number of bones.
f – fowl; g – goose; r/s – rock or stock; h/rab. – hare or rabbit.

which were excavated, produced too few bones of 14th- to 16th-century date for useful comment. The floors of the E. part of the Hall (Trenches 1–2 and 5–6) contained numerous fish bones and other small bones, but very little of this was excavated, and the floors of the other buildings had been kept relatively clean. A few bones were found associated with the boundary wall adjacent to the moat; they included more cattle than sheep, more horse than pig, and four cat bones – a group more suggestive of peripheral waste than domestic occupation.[90] Apart from

[90] R. Wilson, 'Degraded bones, feature type and spatial patterning on an Iron Age occupation site in Oxfordshire, England', in N.R.I. Fieller, D.D. Gilbertson and N.G.A. Ralph (eds.), *Palaeobotanical Investigations* ii (BAR International Series ccvi, 1985), 81–93; R. Wilson, 'Animal bones and shells' in P. Page with S. Smithson and H.D. Baker, *Excavations at the medieval moated manor at Hardings Field, Chalgrove, Oxon.* (forthcoming).

TABLE 8. CATTLE: AGE STAGES OF MANDIBLES

stage:	A	B	C	D	E	5A	5B	p.d.
Late 12th–13th century						2	1	0/2
14th century		1	2					–
15th–16th century		1					1	0/1
post-1620		1		1	1	2	1	0/4

Stages: A – dp_4 unworn; B – dp_4 in wear, M_1 unworn; C – M_1, in wear, M_2 unworn; D – M_2 in wear, M_3 unworn; E – M_3 in wear, posterior cusp unworn (S. Payne, 'Kill off patterns in sheep and goats: the mandibles from Asvan Kale', *Anatolian Studies* 23 (1973), 281–303); 5A – M_3 in wear all cusps at wear-stage g (A. Grant, 'The Use of Tooth Wear as a Guide to the Age of Domestic Ungulates', in R. Wilson, C. Grigson, and S. Payne, *Ageing and Sexing Animal Bones from Archaeological Sites* (BAR British Series cix, 1982), 91–108), 5B – M_3 beyond g; p.d. – periodontal disease.

some very limited salvage the surrounding moat, which may have received most bone waste, was not excavated. This contrasts with Site C (see above); i.e. the small quantity of bone found is not relevant in discovering how much meat was eaten.

The largest group of bone from Site D was from post-destruction deposits within the medieval kitchen (Table 7 and Fig. 97). The deposits originated from the 17th-century farmhouse, the kitchen of which was immediately adjacent to the medieval one. Cattle bones continued to dominate, but sheep were more numerous than pig. As at the other sites, most parts of the skeleton were found, with, again, the exception of horncores. Bone was in a better state of preservation, with relatively more mandibles than loose teeth and a higher percentage of bone identified (67%). For the cattle, sheep and pigs, more than half the bones were from the head, suggesting that the bones derived from the preparation and not the consumption of food. Cattle mandible pieces, in particular, were much chopped, and nearly all the sheep mandibles were chopped through the diaphysis. One cattle lumbar vertebra was roughly sawn, transversely.

Building XIII, interpreted as a dovecote, was quite fully excavated. Of the few bones found, most were of post-1620 date (see Table 7) and none of them were from birds.

Building XV, to the east of Site D, included a few bones of 17th/18th-century date. Of these, a cattle lumbar vertebra was sawn through sagitally and a sheep pelvis and proximal femur were sawn, probably having formed a small joint. The sawing was fairly irregular (i.e., not band-sawn).

Data on age at death of the cattle was very limited. The post-1620 group shown on Table 8 are all from the Site D kitchen, and suggest the slaughter of some cattle as calves, but the majority as adults.

Some of the sheep from the post-1620 groups were hornless (two specimens from polled sheep and one skull frontal piece with the base of the horn core present from a sheep or goat). No definite evidence for goat was found at Site D: metapodials were all thought to be from sheep and two mandibles with deciduous teeth were sheep according to Payne's morphological differences.[91] (On the four sites a total of five such specimens were identified as sheep). The mandible stages are shown on Table 9. In the larger, post-1620 group, four mandibles had M_3 unerupted, which suggests that surplus young sheep were only infrequently available. There were no very elderly sheep (stage I).[92]

Absence of the anterior premolar occurred four times in 19 mandibles (age stages E, F, F, G); in one mandible P^2 was rotated by nearly 90°; slight periodontal disease occurred in one case where there was interdental attention at P^4/M_1 and some bone recession (all the post-1620 group). The only pathological long bone was a sheep ulna (14th to 16th century, context 1357/5) with extra growth of bone on the lateral side of the proximal joint.

As at the other sites, pig mandibles were generally at stage D (*c.* 12–18 months old) (Table 10), and wear on loose teeth confirmed this pattern. There were no piglet bones from the Phase 4 Kitchen group. Overcrowding of teeth was not observed on any of the sites except in one Site D post-1620 maxilla (P^2 rotated).

Horse bones were occasional finds at Site D. A robust and fairly large metatarsal from the 14th century (Phase 2)

[91] S. Payne, 'Morphological distinctions between the mandibular teeth of young sheep, *Ovis*, and young goats, *Capra*', *Journal of Archaeological Science* xii (1985), 139–47.

[92] The numerical value of the post-1620 jaws with complete molar rows (Grant 'Tooth Wear' Wilson, Grigson and Payne, *Ageing and Sexing Animal Bones* (BAR British Series cix, 1982), 91–108) were as follows: 24, 24, 31, 32, 34, 35, 36, 38, 38, 40, 41, 43, 43, 43.

TABLE 9. SHEEP: AGE STAGES OF MANDIBLES

Age stages:	A	B	C	D	D/E	E	F	G	G/H	H	H/I	I	Total	p.d.
Site A, late 12th–13th C.	–	–	–	3	1	–	4	6	1	2	1	–	18	2/9
Site B, Phase 2, 14th C.	–	–	–	–		–	2	2		–		–	4	0/3
Site C, 14th C.	–	–	1	–		–	1	1		–		1	4	0/5
Site B, Phases 3–5, 15–16th C	–	–	–	–		2	3	5		1		2	13	1/11
Site D, Phase 2/3, 14–16th C	–	–	–	–		1	–	1		1		–	3	0/3
Site D, Kitchen, post-1620	–	–	–	4		3	7	8		3		–	25	1/22

Stages: A – dp_4 unworn; B – dp_4 in wear, M_1 unworn; C – M_1, in wear, M_2 unworn; D – M_2 in wear, M_3 unworn; E – M_3 in wear, posterior cusp unworn; F – M_3 in wear on all cusps, pre 'dentine continuous' stage; G – M_2, M_3 dentine continuous; H – some erasure of M_2 infundibula; I – some erasure of M_3 infundibula (S. Payne, 'Kill off patterns in sheep and goats: the mandibles from Asvan Kale', *Anatolian Studies* 23 (1973), 281–303).
p.d. – incidence of periodontal disease around P_4/M_1 in mandibles at stages F – I.

TABLE 10. PIG: AGE STAGES OF MANDIBLES

stage:	A	B	C	D	E
Late 12th–13th century				2	
14th century				1	
15th–16th century				3	
post-1620				2	1

Stages: A – dp_4 unworn; B – dp_4 in wear, M_1 unworn; C – M_1, in wear, M_2 unworn; D – M_2 in wear, M_3 unworn; E – M_3 in wear, posterior cusp unworn (S. Payne, 'Kill off patterns in sheep and goats: the mandibles from Asvan Kale', *Anatolian Studies* 23 (1973), 281–303); wear – wear visible on the enamel.

gives a height estimate of over $14^1/_2$ hands. A deciduous ('milk') tooth from Phase 3 showed no root resorption and so was not a shed tooth, but from a lost foal; a metacarpal from Phase 3 bore probable skinning marks.

Remains of venison were not found at Site D. Fallow deer was present at Site C (14th-century) and Site B (Phase 6, post-1620). The species appears therefore to have been present in the area but rare or unavailable. Woodland would have been of greater importance for pigs and firewood, etc.

Bird bones consisted mostly of fowl and goose. Duck (*Anas platyrhynchos*), either wild mallard or domestic, was present only in Phase 4. Rock/stock dove (*Columba livia/oenas*) was represented by three bones. Given their occurrence in bone samples with few wild bird bones, and the presence of a dovecote (Building XIII), they are probably all rock dove/domestic pigeon (*Columba livia*).

Size of the Cattle, Sheep, Pigs and Horses

Measurements of bones were few. Medieval cattle measurements were all within the range of other sites of the period. Two bones of post-1620 date were large (metatarsal: breadth proximal (Bp) 52 mm., shaft diameter (SD) 29.6; third phalanx: diagonal length of sole (DLS) 84.5).

There were rather more sheep than cattle measurements. They were within the expected range for medieval sheep, e.g., five humeri 14th to 16th century, breadth of trochlea (BT) 26.1–30.5 mm., mean 28.0, and there was no evidence for larger sheep in the post-1620 period.

Pig measurements were even fewer, but the six post-1620 measurements were larger than is typical of medieval pigs,[93] viz.:– M_1/M_2 width posterior cusp (WP) 11.1/14.2 (female), 11.8/14.6 (male); M_3 width anterior cusp (WA)/Length 19.9/30.6; radius Bp 31.5, ulna depth across the processus anconaeus (DPA) 38.3, astragalus greatest length of lateral half (GLl) 45.

Five complete horse bones give the following height estimates: late 12th to 13th century, 12½, 13 and 13 hands: 1.27 m., 1.30 m. and 1.33 m.; 14th century, 14½ hands/1.49 m.; 15th to 16th century, 14 hands/1.40 m.[94]

Discussion

The bone samples from Dean Court were small but they represent an interesting example of a rural site owned by Abingdon Abbey, initially farmed directly and, by the later 14th century, let for rent.

For the medieval period, sheep bones were commoner than cattle, which is typical of village sites.[95] Sheep bones were particularly common from the early grange (Site A). Evidence from pottery at Site A – large numbers of shallow pans – suggests dairying, for which ewe's milk would have been important, with the main product being cheese. Age at death of the sheep suggests that few young sheep were slaughtered at the site. Some young may have been sold off to Oxford,[96] but it is thought that most lambs of both sexes were being kept into adulthood, the wethers primarily for the wool clip. Wool, sheep dairy products and the use of the flock in fertilising the arable land would all have been of importance. There is some evidence that the intensity of this pattern was greatest in the 14th to 16th centuries, with fewer slaughtered young and more kept to a greater age (ages stages H and I) in comparison with the 12th–13th century and post-1620 groups. A similar pattern has been found at other sites, including towns.[97]

For the 14th- to 16th-century material, sheep bones continued to be commoner than cattle at both Sites B and C, though in the Site D sample of this date, cattle bones predominated. Sample sizes were larger for Sites B and C; Site C was the most fully excavated and therefore is most reliable, and the overall percentage for the three sites combined is higher for sheep than cattle.

As expected, amongst the cattle bones those from adult cattle predominated at all periods, with no immature bones at all from the early grange, but some present in the later medieval groups. A mandible and other bones from calves were present in the post-1620 group, and a few calf bones were found in 16th-century contexts at Site B – a pattern also seen at Oxford and other sites,[98] which indicates dairying and veal production.[99]

The proportion of pig bones found was lowest in the earlier groups, which is similar to many medieval rural sites, such as Great Linford, Bucks.[100] There was evidence for an increase during the 13th century at Site A and the proportion was higher in the 14th- to 16th-century groups, particularly so at Site B (15th to 16th century).

[93] E.g. T. O'Connor, 'Animal Bones from Flaxengate, Lincoln', in *The Archaeology of Lincoln* Vol. 8.1 (Council for British Archaeology, 1982), Appendix II; G.G. Jones, 'Animal Bones from Shrewsbury Abbey' (forthcoming).

[94] Method of Kiesewalter in A. von den Driesch and J.A. Boessneck, 'Kritische anmerkungen zur Widerristhohenberechnung aus Langenmassen vor- und fruhgeschichterlicher Tierknochen', *Saugtierkundliche Mitteilungen* xxii (1974), 325–48.

[95] A. Grant, 'Animal Resources', in G. Astill and A. Grant (eds.), *The Countryside of Medieval England* (1988), Fig. 8.2.

[96] R. Wilson, 'Medieval animal bones and marine shells from Church Street and other sites in St. Ebbe's, Oxford', in T.G. Hassall, C.E. Halpin, and M. Mellor, 'Excavations in St. Ebbe's, Oxford', *Oxoniensia*, liv (1989), 258–68.

[97] Grant 'Animal Resources' in *Countryside of Medieval England*, 154.

[98] Wilson, 'Medieval animal bones and marine shells' in Hassall, Halpin, and Mellor, 'St. Ebbe's', *Oxoniensia*, liv (1989), 262.

[99] J.M. Maltby, *Faunal Studies on Urban Sites: the Animal Bones from Exeter 1971–75* (University of Sheffield, 1979), 32.

[100] D.P. Burnett, 'Animal bone, Great Linford Village', in D.C. Mynard, and R.J. Zeepvat, *Excavations at Great Linford, 1974–80* (Buckinghamshire Archaeological Society, Monograph Series iii, 1992), 231–39.

The 14th- to 16th-century bones from Site D were nearly all from the kitchen, and, although not very numerous, may reflect directly those bones which were discarded there. There were four times as many cattle as sheep bones, and more pig bones than sheep. Generally, high numbers of pig bones, with other finds such as deer and game birds, indicate a high status diet, see, for example, discussion by Grant[101] and bone samples from the moated site at Chalgrove and the castle at Middleton Stoney.[102] Evidence at Dean Court is however equivocal; deer bones were rare and game birds absent, and the representation of pig was also high on Site B in the late medieval period.

The generally scattered occurrence of bones at Dean Court Farm was similar to that commented on at Great Linford,[103] and appears to be characteristic of medieval rural sites, where unlike urban tenement sites rubbish pits were not common and waste accumulated in middens outside or in ditches.

Horse bones were particularly frequent from the early grange. At this period, use of horses in the plough team was rare, and, with only one bone from an immature animal, there is little evidence for horse breeding. Perhaps the bones originate from pack horses, used in transporting produce between the Abingdon estates.

4.2 FISH REMAINS, by ANDREW K.G. JONES

Summary

The assemblage of fish bones, mainly collected by sieving deposits dated from the 13th to the 15th centuries, was dominated by remains of herring (*Clupea harengus*) (Table 11). Eel (*Anguilla anguilla*) bones were also relatively common in the deposits. Other marine species present included conger eel (*Conger conger*), whiting (*Merlangius merlangus*), and plaice (*Pleuronectes platessa*). In addition, fragments of bones of large marine gadid fishes were present but none could be identified to species. Freshwater fishes were represented by pike (*Esox lucius*), roach (*Rutilus rutilus*), and stickleback (*Gasterosteus aculeatus*).

Species identified

The fish remains discussed in this report comprise a group of 192 bones and scales collected from archaeological deposits excavated between 1984 and 1986 (Table 11). Samples of sediment were sieved on 1 mm. meshed sieves to collect most of the remains. A few conger eel (*Conger conger*) bones were collected by hand from the excavated deposits. These bones were from a very large fish, measuring in the region of 1500 mm. total length. In addition, a small number of unidentifiable fragments were present.

The majority of the bones are from a single context – an occupation deposit from the Hall – dated to the 15th century. This layer was dominated by herring (*Clupea harengus*) vertebrae with smaller numbers of eel (*Anguilla anguilla*), pike (*Esox lucius*), roach (*Rutilus rutilus*), whiting (*Merlangius merlangus*), and stickleback (*Gasterosteus aculeatus*) bones. The bones recovered from earlier deposits were broadly similar in species composition, although conger eel and plaice (*Pleuronectes platessa*) were also represented.

Discussion

The kinds of skeletal element present and the condition of the bones suggests that the recovered remains were but a small proportion of the bones originally deposited at the site. Several of the bones were burnt and the absence of delicate elements suggests that many bones were lost from the

[101] Grant, 'Animal Resources', in *Countryside of Medieval England*, 159.

[102] Wilson, 'Animal bones and shells' in Page and others *Hardings Field Chalgrove* (forthcoming); B. Levitan, 'The vertebrate remains', in S. Rahtz and T. Rowley, *Middleton Stoney; Excavation and Survey in a North Oxfordshire Parish 1970–1982* (Oxford University Department for External Studies, 1984), 108–27.

[103] Burnett, 'Animal bone', in Mynard and Zeepvat, *Excavations at Great Linford*, 231–39.

TABLE 11. FISH REMAINS

Context	No. and kind of bone	Identification
Site A, Early Grange (mid 13th century)		
211/2	1 vertebra	Pleuronectidae (flatfish)
Site B, Ancillary domestic area (late 13th century)		
576	1 fin ray fragment	Gadidae (large fish)
Site D, Kitchen (later 14th century)		
411/6	13 vertebrae	*Clupea harengus* (herring)
	1 maxilla	herring
	2 vertebrae	*Anguilla anguilla* (eel)
	1 vomer	eel
	1 pterygiophore	Gadidae (large fish)
	1 pelvic spine	*Gasterosteus aculaeatus* (stickleback)
	Unidentifiable fragments	
1501	3 vertebrae	herring
	1 ceratohyal	eel
	2 dentaries	eel
	1 vertebra	*Merlangius merlangus* (whiting)
	1 posttemporal	*Pleuronectes platessa* (plaice)
1512*	1 parasphenoid	*Conger conger* (conger eel)
1513*	1 vertebra	*Esox lucius* (pike)
	1 vertebra	whiting
1537*	1 articular	conger eel
	1 dentary	conger eel
Site D, Hall, occupation layer on floor (15th century)		
1014	136 vertebrae	herring
	11 vertebrae	eel
	2 cleithra	eel
	1 hyomandibular	eel
	2 scales	Cyprinidae
	1 vertebra	Cyprinidae, possibly *Rutilus rutilus* (roach)
	3 pharyngeal bones	roach
	1 dentary	?roach
	1 vertebra	pike
	1 vertebra	whiting
	1 spine	stickleback

All bones were collected by sieving except those from contexts marked with an asterisk (*).

archaeological record as bones fragmented and dissolved as a result of the action of natural agents including scavengers.

Nevertheless, it is clear that marine fishes were imported to the site from the mid 13th century onwards. The presence of head bones (dentary and articular bones of the lower jaw) of a large conger eel suggest that whole fresh fish were imported. This is at first sight surprising given the distance of the site from the coast, but there is a growing body of evidence to show that fish, both freshwater and marine, were traded considerable distances overland during the medieval period.[104] It is unlikely, however, that all the marine fish were imported fresh. Vast quantities of herring were pickled in barrels.[105]

[104] P. Heath, 'North Sea fishing in the fifteenth century: the Scarborough fleet', *Northern History*, 3 (1968), 51–69; S.F. Hockey, *Quarr Abbey and its lands 1132–1631* (Leicester University Press, 1970).
[105] W.C. Hodgson, *Herring and the herring fisheries* (1957).

The presence of bones of freshwater fishes is hardly surprising, given the presence of 'fish tanks' in the Kitchen and the proximity of the moat and ponds to the buildings. However, most of the bones of freshwater fishes were from small individuals. Two of the roach pharyngeal bones were from individuals measuring roughly 100 mm. total length, while one of the pike vertebrae was from a fish approximately 200 mm. long (not from a stickleback since they do not exceed 100 mm. total length). One pike vertebra and a roach pharyngeal bone were from animals of a size which today might be considered acceptable for human consumption.

The presence of bones of small fishes in floor deposits of the hall and the kitchen area strongly suggests that small freshwater fishes were eaten by the occupants of the site. It is, of course, possible that these remains arrived at the site in the gut-contents of large fishes such as pike.

4.3 CHARRED PLANT REMAINS, by LISA MOFFETT

Soil samples for charred plant remains were taken during excavation from various promising contexts from each of the four sites. Contexts with clearly visible charred material were sampled, such as the spreads of charred material from the kitchen at Site D. Other contexts were also sampled, but some contained only a small amount of material. The samples were processed using bucket flotation, and the collected charred material was sorted by a biotechnician. Material was identified using a binocular microscope and a comparative collection of modern material. The results are presented in Tables 12–15.

The material consisted chiefly of cereal grains with a few legumes, occasional other food plants and an assortment of mainly arable weeds. Cereal chaff remains were few, suggesting either that there was an extreme difference between the preservation of chaff remains and cereal grains, or that the cereals had already been processed, i.e. threshed and winnowed, before they became charred. The material from all the sites was broadly similar, varying chiefly in abundance of material in the samples rather than in the character of the assemblages. The change from the early to later phases of the grange was not detectable in the plant remains. For this reason all four sites will be discussed together, although the sites are listed separately in Tables 12–15.

With one exception, none of the charred material was *in situ* in the sense that it was not found in the features where it became charred. In Building IX from Site D the charred material was from the floor of a building containing 14th-century ovens and a 15th-century malting kiln. The latest charred sample from this building, however, may pre-date the use of the malting kiln. Site C had a structure which may also have been a malting kiln, but, although this was the one sample where the charred material might have been *in situ*, there was only a small amount of charred material present. Other samples represent disposal of charred material from unknown sources. Some of the material, especially from the samples with few remains, probably represents residual material that may have been reworked around the site an unknown number of times, and may not necessarily be contemporary with the features in which it was found.

Cultivated plants

Wheat

The most commonly found cereal was wheat. There were two species of wheat, a rivet or macaroni wheat (*Triticum turgidum/durum*) and a bread/club wheat (*Triticum aestivum* s.l.). The cereal grains were in a poor state of preservation and no attempt was made to identify the wheat grains to species. There were, however, a very few rachis nodes (the nodes where the spikelets containing the grains attach to the ear). Rachises are much more diagnostic than the grains and some were well-preserved enough to identify. Using the criteria described by Hillman[106] it was possible to separate the rachis nodes of the *T. turgidum* type from those of the *T. aestivum* type.

[106] Pers. comm. and given in a paper presented to IWGP in 1983.