

Alternate fortunes? The role of domestic ducks and geese from Roman to Medieval times in Britain

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Abstract / Zusammenfassung

Zooarchaeological evidence indicates that birds played a smaller role in the economy of Roman than medieval Britain. Ducks are more common than geese in Roman sites while the opposite is the case for the medieval period, the change occurring soon after the end of the Roman period (i.e. the Anglo-Saxon period in England). Documentary, iconographic and archaeological evidence from inside and outside Britain indicates that while the goose was probably already domesticated by the 3rd millennium BC, a proper system of duck husbandry was only developed rather late and was not yet fully in place by Roman times. Bearing in mind the higher frequency of duck bones in Roman Britain, we must conclude that in this country goose husbandry was also little developed and that all anatid bones found in British Roman sites probably derive from wild rather than domestic birds. Goose husbandry increased in importance in medieval times but most duck bones found in this period may also be wild, particularly in the earlier part of the Middle Ages.

Archäozoologische Daten belegen, dass zur Römerzeit in Britannien Vögel eine geringere wirtschaftliche Bedeutung besaßen als im Mittelalter. In römischen Fundplätzen sind Enten häufiger als Gänse nachgewiesen, während im Mittelalter das Umgekehrte zutrifft, wobei diese Veränderung kurz nach dem Ende der Römerzeit (d.h. in der angelsächsischen Periode in England) erfolgte. Urkundliche, bildliche und archäologische Belege in England und außerhalb deuten darauf hin, dass während die Gans bereits im 3. vorchristlichen Jahrtausend domestiziert gewesen sein könnte, die Entenhaltung sich deutlich später entwickelte und zur Römerzeit kaum etabliert war. In Anbetracht der größeren Häufigkeit von Entenknochen im römischen Britannien ist davon auszugehen, dass in diesem Land die Gänsehaltung ebenfalls kaum entwickelt war und dass alle Knochen von Entenartigen in Britisch-Römischen Fundstellen am Ehesten den Wild- statt den Haustierformen zuzuordnen sind. Die Gänsehaltung nimmt im Laufe des Mittelalters an Bedeutung zu, die meisten Entenknochen aus dieser Periode stammen jedoch weiterhin von Wildenten, insbesondere in der frühen Phase des Mittelalters.

Keywords Goose, duck, Britain, Roman, medieval, husbandry, fowling
Gans, Ente, Britannien, römisch, mittelalterlich, Tierhaltung, Vogeljagd

Introduction

Ducks and geese have been hunted by people for millennia and husbanded for centuries. Though they only rarely reached the economic importance of the domestic fowl, the domestic forms of these birds have represented for many societies a useful and occasionally important source of meat, eggs, feathers and companionship. The story of their relationship with people is, however, still very incompletely understood, partly because these 'minor' domesticates are rarely mentioned in historical documents, and partly because it is very difficult to attribute goose and duck bones found in archaeological sites to their domestic or wild forms.

In this paper the relative frequency of duck and goose bones found in archaeological sites of Roman and medieval times in Britain will be discussed. No attempt is made to discriminate between different wild species of ducks and geese or between wild and domestic forms of these birds. This might be attempted on the basis of biometrical and genetic evidence (Reichstein & Pieper 1986; Barnes *et al.* 1998), but it would require a major re-analysis of a large number of archaeological assemblages, which is beyond the aims of this research. The evidence concerning the abundance of these birds in animal bone assemblages will rather be interpreted on the basis of what we know about the status of wildfowl hunting and husbandry from the onset of domestication up to the period discussed in this article.

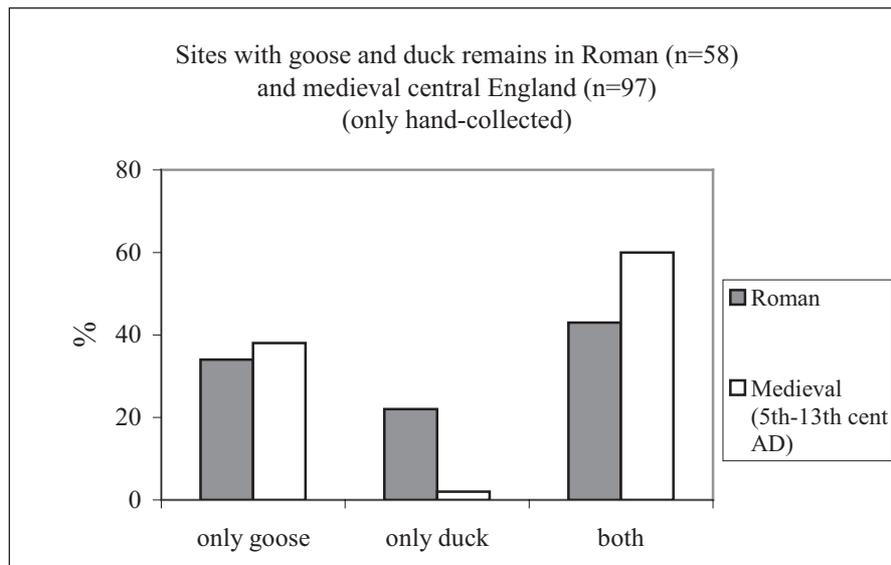


Fig. 1: Sites with goose and duck remains in Roman (n=58) and medieval central England (n=97) (only hand-collected).

The archaeological evidence for Roman and medieval Britain

In comparison to the medieval period, bird bones from Roman sites in Britain are infrequent. It is difficult to provide quantitative data in support of such assumption, due to the problem of comparing relative frequencies of bird and mammal bones between assemblages that may have had very different taphonomic histories. Differences in the rate of recovery of bone remains from archaeological sites can in particular bias our view of the relative abundance of mammals and birds. Despite this problem it is still of interest to note that in a selection of 45 Roman assemblages (1st to 5th cent. AD) from central England with a total number of identified specimens (NISP) greater than 500, bird bones represent on average 3.6% of the total of mammal and bird bones, whereas this figure raises to 7.1% in an equivalent sample of medieval assemblages (5th to 13th cent. AD). To reduce the effect of differential recovery only hand-collected assemblages have been considered.

Having seen that birds may have therefore been more important for the medieval than the Roman economy, we must now investigate what was the role of geese and ducks in these two main periods. For this analysis sites of the late medieval period have been excluded, as they are regarded as less comparable to Roman sites due to the major changes in agriculture and husbandry that occurred after the 13th century (Langdon 1986; Dyer 1989; Albarella 1997; Davis 1997; Davis & Beckett 1999). The analysis focuses mainly on central England as a case study. It is assumed that this area may be representative for the whole country, though regional differences cannot be ruled out without undertaking a full analysis of the evidence from other parts of the country. Since the

information was collated from many different reports we must interpret the use of the terms “ducks” and “geese” very broadly. No attempt was made to discriminate between wild and domestic forms as in site reports these are generally rather arbitrarily identified, with little or no backing of morphological or genetic evidence. Whenever bones of goose species of the genus *Branta*, duck species of the genus *Aythya* or other less common genera had been identified, these were excluded from the quantifications. This is because they can be morphologically distinguished – though not always easily – from the main genera *Anser* (goose) and *Anas* (duck), which include the domestic forms. The teal (*Anas crecca*), being rather common, and easily identifiable on the basis of its small size, has also been excluded.

In Fig. 1 the proportion of Roman and medieval sites from central England where duck and goose bones have been identified has been plotted. Most assemblages have produced remains of both taxa, though assemblages with duck but no goose bones are almost exclusively found in the Roman period – geese therefore seem to be ubiquitous in medieval, but not in Roman times.

In Fig. 2 the assemblages that produced bones of both genera are analysed in greater detail by looking at the relative proportion of the two taxa according to the number of identified specimens (NISP). For a few sites (right side of the diagram) quantifications were not available from the original reports. In some assemblages geese and ducks are equally common, but in most one or the other of the two taxa is predominant. The duck-dominated assemblages are almost exclusively Roman, whereas the goose-dominated assemblages are almost exclusively medieval, with a striking difference between

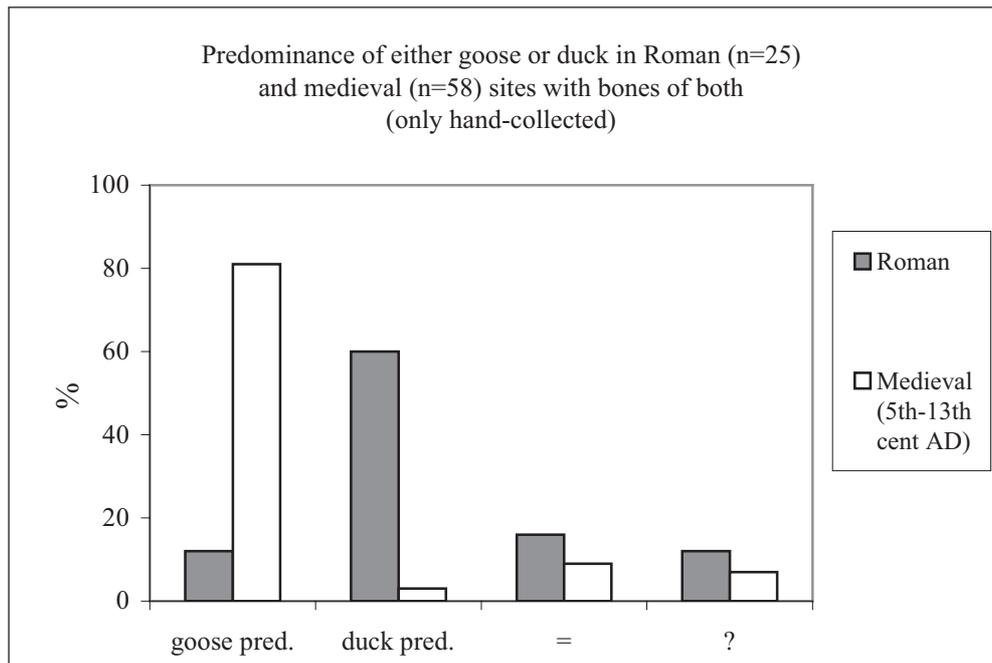


Fig. 2: Predominance of either goose or duck in Roman (n=25) and medieval (n=58) sites with bones of both (only hand-collected).

the two periods. As only hand-collected assemblages have been selected some under-representation of the bones of the duck compared to the larger goose should consequently be expected. It is, however, worth mentioning that in the four Roman bone assemblages recovered through sieving duck was always predominant. Conversely, the only four medieval assemblages that were collected by sieving were all goose-dominated. Therefore the evidence from sieved samples confirms that from the hand-collected material, though the number of sites involved is much smaller.

Since a difference between Roman and medieval periods has been highlighted we must wonder when such a switch in attitude towards bird exploitation occurred. The 'medieval' period, as considered here, encompasses as many as nine centuries, and the evidence produced so far cannot tell us whether the change occurred soon after the end of the Roman period or later. The evidence for Anglo-Saxon sites (5-6th to the first half of the 11th century) is rather scanty, but it indicates (Table 1 & Fig. 3; from various areas in the country, not just central England) consistently that geese were far predominant over ducks already at the onset of this period, as is evident at early Saxon West Stow.

We can therefore conclude that:

- Bird bones – including those of geese and ducks – are uncommon in Roman sites from Britain.
- When present, ducks tend to be predominant in Roman sites.
- From Anglo-Saxon times onwards goose bones be-

come much more common and they are far predominant over ducks.

We must now wonder what is the nature and significance of this variation between periods. Two main hypotheses can be raised:

1. In Roman times there was a preference for duck breeding and in medieval times for goose breeding.
2. Most (or all) ducks and geese from Roman sites are in fact wild, i.e. breeding of these birds was not practised.

In the rest of this article I will discuss which of these two hypotheses provides the most likely explanation. In order to do so, we must however take a broader look at the general issue of the origins and development of goose and duck domestication and husbandry.

Domestic goose: early history

The Egyptian goose (*Alopochen aegyptiacus*) was tamed and possibly domesticated in Egypt in the 3rd millennium BC, but no domestic specimens of this species seem to have survived to modern days (Boessneck 1960; MacDonald & Bench 2000). Kear (1990, 23) suggests that the disappearance of the Egyptian goose as a farm bird coincides with the Persian conquest of Egypt in the 6th century BC.

The common domestic goose, nowadays found across the world, derives from the greylag goose (*Anser ans-*

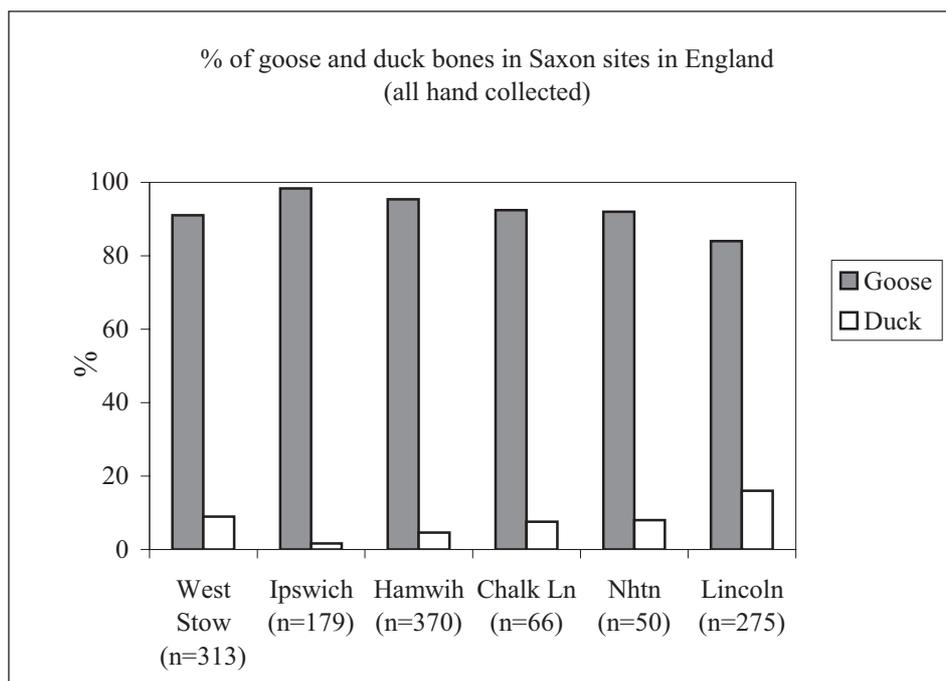


Fig. 3: Percentage of goose and duck bones in Saxon sites in England (all hand collected).

Site	Period	Goose n	Duck n	Total n	Goose %	Duck %	Reference
West Stow (Suffolk)	Early Saxon	285	28	313	91,1	8,9	Crabtree 1989
Ipswich (Suffolk)	Mid Saxon	176	3	179	98,3	1,7	Jones & Serjeantson 1983
Hamwih (Southampton)	Mid Saxon	353	17	370	95,4	4,6	Bourdillon & Coy 1980
Chalk Ln (Northampton)	Late Saxon	61	5	66	92,4	7,6	Coy 1981
St Peters St (Northampton)	Late Saxon	46	4	50	92,0	8,0	Harman 1979
Flaxengate (Lincoln)	Late Saxon	231	44	275	84,0	16,0	O'Connor 1982

Table 1: Number and relative proportion of goose and duck bones at a number of Anglo-Saxon sites in Britain.

er), and, due to its pink beak, more likely from its eastern (*A.a.rubirostris*) than western (*A.a.anser*) subspecies (Harper 1972; Crawford 1984; Kear 1990).

We are not sure about where and when the first domestication of the goose occurred, but Old Dynastic Egypt seems to be a likely candidate. An Old Kingdom bas-relief from the 5th dynasty (2723-2300 BC) shows some anatids – probably geese – being force-fed by humans (Houlihan 1997, fig. 98). This in itself does not prove domestication because a crane – a wild bird – is also represented in the same depiction as being stuffed. The Egyptians are known to have force-fed hyenas too (Boessneck 1960; Zeuner 1963) and seem to have experimented with the domestication of a variety of species today regarded as exclusively wild. More persuasive evidence of the domestication of the goose in the Old Kingdom derives from a number of representations illustrating a diversification in goose colourations – a phenomenon typical of the domestication process. In addition, some of these birds are depicted as being confined in poultry yards, kept in cages, being

herded (Boessneck 1988) and laying eggs (Kear 1990). By the 18th Dynasty (1450-1341 BC) such evidence is so abundant that there can be no doubt that the goose was by that time fully domesticated (MacDonald & Bench 2000).

Zeuner (1963) reports that in ancient Mesopotamia geese were kept in herds and were used for sacrifices and food, but this does not necessarily prove domestication and in any case he does not provide any specific dates for these activities. The existence of pottery models of geese (and ducks) in Shan China (3rd-2nd millennium BC) led Watson (1969) to suggest that domestication in that region was almost beyond question, but this is plainly not the case as the models are equally likely to represent wild birds.

Crawford (1984) thinks that goose domestication probably originated in southeastern Europe around 3000 BC, but provides no data in support of such hypothesis. The earliest reliable evidence of domestic geese in Europe derives from the Odyssey (MacDonald & Bench

2000) and is therefore much later, dating back to the first half of the 8th century BC (Powell 1991). In the Odyssey Penelope refers to twenty geese about the house that ate mash out of a trough, and of which she is exceedingly fond (Homer, *Odyssey*, Book XIX 536-7). It is possible here too that the birds mentioned were merely tamed but bearing in mind the earlier domestication of the goose in Egypt and the close relationship existing between the Aegean and Egyptian worlds, full domestication of these birds seems to be more likely.

By Roman times goose husbandry had become well established and there are a number of indications that it must have had a long history behind it. The first is that a number of domestic goose varieties are clearly identifiable, with a mottled type regarded as being difficult to tame and a much more valuable white type considered as being more productive and easier to keep (Varro, *Res Rusticarum* Book III, X [1st cent. BC]; Columella, *De Re Rustica* Book VIII, XIV [1st cent. AD]). While Columella recommends breeding large white geese, a small white German variety seems to have been especially prized for its feathers (Pliny the Elder, *Naturalis Historia* Book X, XXVII [1st cent. AD]). Pliny reports that another goose breed originating from Gaul could be driven from its native country to Rome – a truly remarkable feat that makes one wonder about how much fat the birds would have lost on their way. Goose husbandry also seems to have been intensified, as Columella indicates that domestic geese could lay eggs as many as three times a year (as opposed to the wild goose which only nests once a year), as long as the job of hatching the eggs was taken over by hens – a practice that he strongly recommends.

Columella encourages the breeding of geese particularly because of its low cost, but undoubtedly the Romans also valued geese for the variety of products and services that they could offer. Judging from its single entry in Apicius' book of recipes (*De Re Coquinaria* Book VI [1st cent. AD]) goose meat was probably not commonly eaten, yet it was certainly produced, as Varro suggests starting fattening the goslings when they are about one and half months old. Perhaps more prized were the eggs (Zeuner 1963) and the liver, as the rather cruel practice of stuffing geese in order to enlarge these organs was already reported by Roman authors, such as Pliny. Goose fat was apparently used in Syria for medical purposes (Pliny Book X, XXVIII). Both Columella and Pliny emphasise the importance of goose down feathers, which would be used for cushions and upholstery (Crawford 1984). The birds can be plucked twice a year with no need to kill them. Another important service offered by geese was as guards, for which they were apparently even better than dogs (Columella Book VIII, XIII; Pliny Book X, XVI). The reputation that geese had for keeping a watch undoubtedly stems

from a famous episode dating back to 390 BC. Apparently Rome had been taken by the Gauls, and the cackling of the geese on the Capitol awakened the Romans just in time to save the Temple of Juno from the enemies' attack (Livy, *Ab Urbe Condita Liber* V, XXXVII [1st cent. BC]).

The importance of geese for ancient human societies was not exclusively economic. In different times and regions these birds were regarded as sacred or were at least associated with particular gods. In Roman Egypt the goose was sacred to Isis and Osiris (Toynbee 1973, 263), whereas in Asia Minor and Greece it was mainly associated with Aphrodite (Zeuner 1963). There exists, for instance, a 5th cent. BC Greek representation of Aphrodite riding a goose. In Roman Italy the divine associations of geese are not in continuity with the Greek tradition as the bird was instead regarded as sacred to Priapus, a god of fertility (Zeuner 1963). It is because they were also sacred to Juno that the Capitoline geese were not eaten by the starving Roman army under siege from the Gauls (Toynbee 1973) – a worthwhile sacrifice as the alertness of the geese eventually saved them from being slaughtered and the temple of Juno from being sacked.

There is very scanty documentary or iconographic evidence for the use of geese in pre-medieval Britain, though Caesar's statement that the native population of Britain regarded it unlawful to eat geese and chickens but liked to keep them for pleasure (*De Bello Gallico* V.12 [1st cent. BC]) has been much quoted. Caesar's knowledge of Britain was certainly limited and though his observation is of interest it should not be taken at face value. Butchery marks found on domestic fowl (*Gallus gallus*) bones from archaeological sites almost contemporary to Caesar's visit of Britain indicate that if such a taboo ever existed it can not have been strictly applied (Albarella in press).

The association of the goose with religious symbolism can be found in later Roman times in Britain and is likely to have no links with the way these birds were perceived in the pre-Roman Iron Age. North of the Alps the goose came to be associated with Mars, the god of war, perhaps because the Capitoline event led this bird to symbolise the alertness of the soldier (Zeuner 1963). This symbolism seems to have been imported to Britain by the Germanic tribes who were part of the Roman army that invaded the island. An example of the exportation of this ideology to Britain is represented by the existence of an arch from the Roman Fort of Housesteads, on Hadrian's Wall, showing a relief of the warrior god Mars Thincsus with a goose at his feet (Fig. 4). This forms part of a temple erected in the 3rd century by Frisian soldiers (Crow 1995). Toynbee (1973) mentions the existence of a similar representation on an altar also found at Housesteads. Though the goose may have



Fig. 4: Arch from the Roman Fort of Housesteads, on the Hadrian's Wall (Britain), showing a relief of the warrior god Mars Thincsus with a goose at his feet.

had some religious significance, the evidence from Roman Italy indicates that the bird could be consumed despite any possible association with various divinities. Probably only specific flocks of birds kept in sacred areas, like the Capitoline geese from the Temple of Juno, could not be touched or eaten.

From this brief excursus on the early practices of goose husbandry we can therefore conclude that:

- Geese are likely to have been first domesticated in the 3rd millennium BC.
- The Romans already practiced a rather advanced system of goose breeding.
- The situation in pre-Roman Britain is uncertain but goose breeding – if practiced at all – must have been very limited.

Domestic duck: early history

If the history of goose domestication is incomplete and partly enigmatic, that of the duck seems to be immersed in even greater obscurity. The wild ancestor of the European domestic duck is the mallard (*Anas platyrhynchos*), which is widespread throughout the northern hemisphere. There is therefore little opportunity to detect duck domestication on the basis of human induced colonisation of new areas not occupied by the wild ancestor. Clayton (1984) reports the claim by Yeh of a 3000 years old domestication of the duck in China, but it is not clear on what evidence this suggestion is based. Further claims by Zeuner (1963) of the existence of a centre of domestication in Asia are only based on the variety of duck breeds existing in this part of the world. Though there is an abundance of iconographic representations of wild

ducks in ancient Egypt it does not seem that any of the ancient civilizations of Egypt, the Levant and Mesopotamia ever domesticated the duck (Zeuner 1963; Clayton 1984; Kear 1990). Unlike the goose, domestic ducks do not seem to have been known in ancient Greece either, and Pollard (1977, 65) reports that “the Ancients, for some curious reason, all but ignored the ducks”. The fattening of wild birds kept in captivity (Clayton 1984) is a possibility but full domestication did not seem to have occurred in these early times.

It is arguable whether the ducks that the Romans certainly kept in captivity were fully domestic or simply tamed. Writing in the 2nd century BC Cato does not mention ducks among a number of birds – including geese, chickens and pigeon squabs – recommended for fattening for the market (Harper 1972). Varro (Book III, XI), however, does provide detailed information about how to build a duck farm and how to feed ducks kept in captivity. For our understanding of the status of these birds our best source is Columella (Book VIII, XV), who suggests that a programme of duck breeding should be started by collecting eggs from wild birds and then letting them to be hatched by hens. Apparently the ducks then lose their wild status and will then carry on reproducing under human control, though Columella does not state whether these tamed ducks would then hatch their own eggs, or it would still be necessary to rely on hens on which the ducks had originally been imprinted. What Columella describes seems some form of domestication, albeit in its primitive stage, but it is revealing that he suggests a similar system of breeding for birds that we regard as fully wild, and these are translated by Harper (1972) as being teals, coots and partridges. The balance of evidence therefore seems to indicate that the

Romans were not yet in full control of duck husbandry and this goes some way in explaining why in the book of recipes of Apicius (VI) duck meat is rather oddly not distinguished from that of a truly wild bird such as the crane. Whether wild, tame or domestic the flesh of the duck was not held in high esteem by the Romans. Martial claims that only the neck and breast of the duck are tasty, whereas Trimalchio regards duck meat as low-class food (Toynbee 1973, 273).

The story of the following centuries is reviewed by Harper (1972), who believes that the decline of the market in the 3rd century led to the disappearance of duck meat as an item of trade. No further references can be found in the literature apart from a reference to a price in the edict of Diocletian (AD 301) and an ambiguous reference in the writing of the 7th century author Isidore of Seville. It therefore does not seem that any progress in duck husbandry occurred in the centuries following the times of Varro and Columella and in fact this practice may even have been subject to further decline.

There is no evidence for duck breeding in Roman Britain or for any form of duck use or perception by human societies of that period. As we have seen, the archaeological evidence is ambiguous (see also Parker 1988) and, on the basis of biometrical evidence, any of the duck bones found in the Roman site of Colchester could potentially be wild (Luff 2000). The situation for other sites is probably not dissimilar and is consistent with the lack of any zooarchaeological evidence of duck breeding from other North-western provinces, such as *Germania inferior*, *Germania superior*, *Raetia* and *Noricum* (Peters 1998).

On the basis of what has been discussed above it therefore seems that:

- The beginning of the domestication of the duck is unknown but it does not seem likely to have occurred before Roman times.
- The Romans kept ducks in captivity according to a system that can at best be described as a primitive form of domestication.
- It is unlikely that in pre-Roman Britain duck breeding was practiced at all.

Geese and ducks in the Middle Ages

The striking difference in the proportion of geese and ducks between archaeological sites of Roman and medieval date in England that we have discussed above is not matched by other sources, which rather indicate continuity. The type of use and consideration of these birds in medieval times is remarkably similar to that deduced from the writing of the Roman historians and agronomists.

Grand and Delatouche (1950) review the evidence from the 6th century Frankish document *Pactus Legis Salicae* that indicates that the goose was valued for its feathers, which were used for mattresses, sometimes mixed with wool. As in Roman times geese could be plucked twice a year and the down from the breast was used for cushions and pillows. Duck meat was regarded as poor food, because of the unhealthy feeding habits of these birds. In the *Brevium exempla ad describendas res ecclesiasticas et fiscales* (AD 810) there are occasional lists of peasant holdings with geese, chickens, peafowl, and ducks, but in most cases where birds are listed the duck is missing (Harper 1972).

Ducks are also uncommon in early medieval archaeological sites from Ireland (and remains which are found are generally interpreted as deriving from wild birds), but they then become more widespread in the later Middle Ages (Hutton MacDonald *et al.* 1993). This seems to be consistent with evidence from 7th-8th centuries documents where the old Irish term *lachú* is used for both the wild and domestic types. The duck is in general rarely mentioned, and seems to have been of minor importance in early Irish farms (Kelly 1997). This agrees with the archaeological evidence from England, where in Anglo-Saxon times the duck is far rarer than the goose (see above). In mainland Sweden, ducks never seem to have been of any particular economic importance and there is no Swedish word for the domestic form until the 16th century (Tyrberg 2002). At medieval Eketorp on the island of Öland (Sweden), however, there is fairly firm archaeological evidence of duck domestication. Here Boessneck and von den Driesch (1979, 228) identified an increase in the number of juvenile birds and size variation between the first (*c.* 400-700 AD) and second phase (*c.* 1000-1300 AD) of occupation of the site. If this pattern can be taken as proof of domestication, this would indicate that in the Baltic region no domestic ducks were kept before the end of the first millennium AD.

As in continental Europe, in medieval England geese were used for a variety of reasons, including the inevitable plucking of down feather from the living bird (Kear 1990), but feathers collected from either the living or the dead bird were also used to make quills (Serjeantson 2002). Eggs and meat were of course also used though I have not found any medieval reference to the use of geese as guard birds, a practice which seems to have been much valued in Roman times, and is again reported for the modern era (Kear 1990, 53). Historical and archaeological sources are consistent in suggesting that in the 13th and 14th century goose husbandry was at its peak. Large flocks of birds were kept in the countryside by peasants, while occasionally individual birds would be reared in towns (Serjeantson in press; Stone in press).

Ducks sometimes appear in manorial accounts along with other poultry but they are much less common than geese. An exception is represented by the Court Rolls of Elmley Castle (Worcestershire) in which ducks appear constantly, not for their economic importance but rather as a public nuisance, as they swam in the river, which was also the public water supply (Chris Dyer pers. comm. 5th Aug 2004). Kear (1990) notes that no domestic ducks are listed in the poultry trade of London until the 14th century, while wild ducks had been listed earlier. It is therefore possible that the domestic duck meat was rarely traded, or even consumed, before the late Middle Ages.

Although I have not carried out a systematic survey, it seems fairly obvious that the domestic duck is not at all well represented in the medieval iconography, whereas the domestic goose is common. In a beautiful illustration accompanying an Apocalypse commentary from 13th century Bremen (Germany) two white geese are depicted as facing an array of wild birds, leaving no doubts about the fact in the human perception of the time geese tended to occupy the domestic rather than wild realm. There are also a number of fine representations of the domestic goose in the 14th century manuscript *The Luttrell Psalter*, which conversely only provides images of ducks in their wild form (mallard). Geese are also much more common than ducks in carved representations in English *Misericordia* (Wells in this volume).

Domestic geese are thus consistently predominant over their duck relatives in various sources of medieval evidence, which include archaeological assemblages, documents and visual representations. Although the duck was almost certainly domesticated at some point during the Middle Ages it played a very minor economic role, whereas the goose was an animal probably not of primary importance but certainly very valuable for the diversity of products that could offer to the farmer.

Conclusion

The evidence discussed above leads us to the following conclusions regarding the breeding of anatids in Britain:

- In medieval times goose husbandry was common and well-developed, ducks were less commonly kept and their breeding played a very minor economic role.
- This situation was already well established in Anglo-Saxon times, soon after the end of the Roman period.
- In the Roman period duck breeding was unlikely to be developed, geese could potentially be bred, but their rarity on archaeological sites indicates that this occurred infrequently.

It is therefore clear that the higher number of duck bones on Roman sites cannot possibly be explained with a preference for raising ducks. Although we cannot acritically apply information from other regions to Britain, the circumstantial evidence is strong enough to suggest that in Roman as well as medieval times duck breeding must have been of minimal or no importance. The balance of the evidence strongly points to the suggestion that the anomalous predominance of duck bones from Roman sites in Britain has nothing to do with husbandry preferences but is a consequence of the fact that most, if not all, bones of ducks and geese derive from wild birds. If anatid husbandry had played any role in the economy of Roman Britain it is likely that the goose rather than the duck would have predominated, as is indeed the case for medieval sites. It is not so surprising that the whole 'package' of Roman husbandry practices was not fully adopted in Britain as there must have been a degree of cultural resistance to some of these innovations. Also not all influences derived from Roman Italy, but many merged with cultural elements from central and western Europe (King 1978).

The next step in this research should be a full biometric and genetic review of the nature of duck and goose bones from Roman and medieval sites in Britain. I am confident that this will eventually confirm that duck and goose breeding were virtually absent in Roman Britain, and that the husbandry of the goose took over in any substantial way only in the Middle Ages.

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