

DOMESTIC GEESE FROM MEDIEVAL DUBLIN

RACHEL HUTTON MACDONALD¹, KEVIN C. MACDONALD¹
& KATHLEEN RYAN²

(1) Clare Hall, Herschel Road, Cambridge, CB3 9AL. United Kingdom
(2) MASCA, The University Museum of Archaeology and Anthropology,
Philadelphia. PA 19104-6324. USA

ABSTRACT:Archaeological excavations at the city of Dublin in Ireland, have yielded a substantial assemblage of bird bone dating to the 13th century A.D. This is composed predominantly of domestic fowls, and in particular of domestic geese, which were probably introduced to Ireland by the invading Anglo-Normans. This collection provides a unique opportunity to examine the metric characteristics of the Medieval domestic geese of Ireland. It also allows us to examine the nature of a substantial avian assemblage created by human exploitation, which may be of value to taphonomic studies.

KEYWORDS:IRELAND, DOMESTIC GEESE, ANGLO-NORMANS, TAPHONOMY, BODY PART DISTRIBUTION, BUTCHERY

RESUMEN:Las excavaciones arqueológicas en la ciudad irlandesa de Dublín han proporcionado una apreciable muestra de restos aviares procedentes del siglo XIII. Este conjunto está compuesto principalmente por aves de corral, especialmente gansos domésticos, que seguramente fueron introducidos en la isla por los invasores anglo-normandos. La colección proporciona una oportunidad única para examinar las características biométricas de los gansos domésticos irlandeses del Medioevo. Al mismo tiempo, nos permite examinar la naturaleza de una gran comunidad aviar creada por la actividad económica humana y extraer conclusiones de valor potencial en estudios tafonómicos.

PALABRAS CLAVE: IRLANDA, GANSO DOMESTICO, ANGLO-NORMANDOS, TAFONOMIA, DISTRIBUCION PORCIONES CORPORALES, DESPIEZE

INTRODUCTION

According to accounts in the *Annals of Ulster*, *Annals of Clonmacnoise* and *Chronicum Scotorum*, a *longphort* or sea-fortress was established by the Scandinavians (Vikings) at Dublin in AD 841. From the 850s to the 870s strong native Irish resistance and attractions of other areas encouraged the Scandinavians to turn their attentions towards England, Iceland, and France until they eventually abandoned Dublin in AD 902. However, there is, as yet, no archaeological evidence for this *longphort* or its location.

The Scandinavians returned to Dublin 12 to 15 years later and fortifications were built around a new settlement. This was the site named by the Irish as *Dun Dubhlinne* (fort of the black pool) which was described as one of the seven wonders of Ireland as late as the 1160s. The town of well laid out streets, which included habitations, craft industries, and waterfront, flourished under Scandinavian control from the early 10th to the later 12th centuries. By the beginning of the 12th century, "the direction of Ireland's foreign trade had shifted away from the old northern trade routes frequented by the Vikings in the 10th and 11th centuries and was increasingly concentrated on the seas between south-west England and northern and western France" (Wallace, 1981a).

In 1170 Dublin was captured by the Anglo-Normans, whose influence had been growing in the region for several decades. This takeover led to a growth in Civil and Ecclesiastical Institutions.

The port was expanded, a bridge built over the River Liffey and wetland was reclaimed as the waterfront grew. It was also during this period that domestic Geese were introduced into Dublin.

ARCHAEOLOGY

Archaeological investigation of Medieval Dublin began in 1961, during the reconstruction of Dublin Castle, when excavation revealed stratified Viking and Anglo-Norman (10th-13th century) occupational deposits¹. The next year Dublin Corporation, beginning planned redevelopment in the city, made available for excavation an area on High Street (see Figure 1, after Wallace, 1981a) and adjacent areas including the site of Wood Quay. These areas were excavated during the 1960s and 70s as redevelopment proceeded². The waterlogged deposits ensured that there was remarkable preservation of organics, including bones, plant remains, leather and wood (see Plate I).

From these excavations it became evident that the expansion of Dublin's waterfronts from 1.210-1.300 AD has left information on land reclamation and consequently large amounts of Medieval refuse, forming vast faunal and artifactual collections for the archaeologist of today. Bone materials included well preserved food remains, bone tools and objects of personal adornment. Bird bones were recovered from all levels of the excavation but were present in greatest numbers from the 13th century contexts. Bird remains from the 11th century Viking levels were analysed by Tanya O'Sullivan (1990) as a part of her MA thesis at University College Dublin.

This paper focuses on the Domestic Geese from the excavations at Wood Quay which yielded over 6,000 identifiable bird bones dating to the 13th Century. Of these, ca. 35% are attributable to domestic Geese, 35% to domestic Chicken and 30% to wild taxa including game birds, raptors and waders.

DOMESTIC GEESSE AND THEIR ORIGIN

The European Domestic Goose is thought to have been derived from the wild Greylag Goose *Anser anser*. The goose was originally domesticated in southeastern Europe (Zeuner, 1963), and may have become more widespread during Classical times. It first appears in Britain during the Roman period, but only in very small quantities. During the Anglo-Saxon period, domestic geese remains become increasingly more numerous, and this has led Bramwell (1980) to suggest that the Saxons were responsible for an increase in goose rearing in England at this time. A similar phenomenon can be seen in the avian remains recovered from Dublin, with only a small assemblage of bird bone being recovered from the Viking levels (O'Sullivan, 1990); these included a number of geese bones, all identified as being of wild, rather than domestic, species. However, in deposits post dating the Anglo-Norman Invasion, substantial quantities of bird bone were recovered, in which domestic fowls predominate. Thus, it would seem probable that the Anglo Normans were responsible for the introduction of goose rearing in Dublin. Elsewhere in Ireland, Finbar McCormick (1991) has noted

(1) - Excavations at Dublin Castle were undertaken by the Office of Public Works under the direction of Mr. O'Heochaidhe (1960-61); A. Lynch and C. Manning (1984-86); L. Swan (1992).

(2) - Excavation of High Street and adjacent areas, including Wood Quay, were undertaken by the National Museum of Ireland under the direction of A. B. O Riordáin (1962-76) and P. F. Wallace (1974-81).

that the Gaelic Irish appear to have had a low esteem for domestic fowls in comparison to their Anglo-Norman contemporaries; only 8% of the bird bones from the 13th century Gaelic (i.e. Native Irish) settlement of Lough Gur are those of domestic species. In contrast, the food remains of the Anglo-Norman settlers are dominated by domestic birds, with chickens and domestic geese comprising 70% of the bird bones at Wood Quay and 64-74% of the birds bones identified by Jope (1954) from the motte and bailey of Clough Castle, Co. Down.

DIFFERENTIATION OF DOMESTIC GEESE FROM THEIR WILD COUNTERPARTS

The differentiation of domestic geese from their wild counterparts remains one of the most contentious issues in avian archaeozoology. Although the differentiation of domestic from wild geese is not the principal theme of this paper, it is perhaps worthwhile to summarise the present state of our knowledge on the subject and to demonstrate how we attempted to do so.

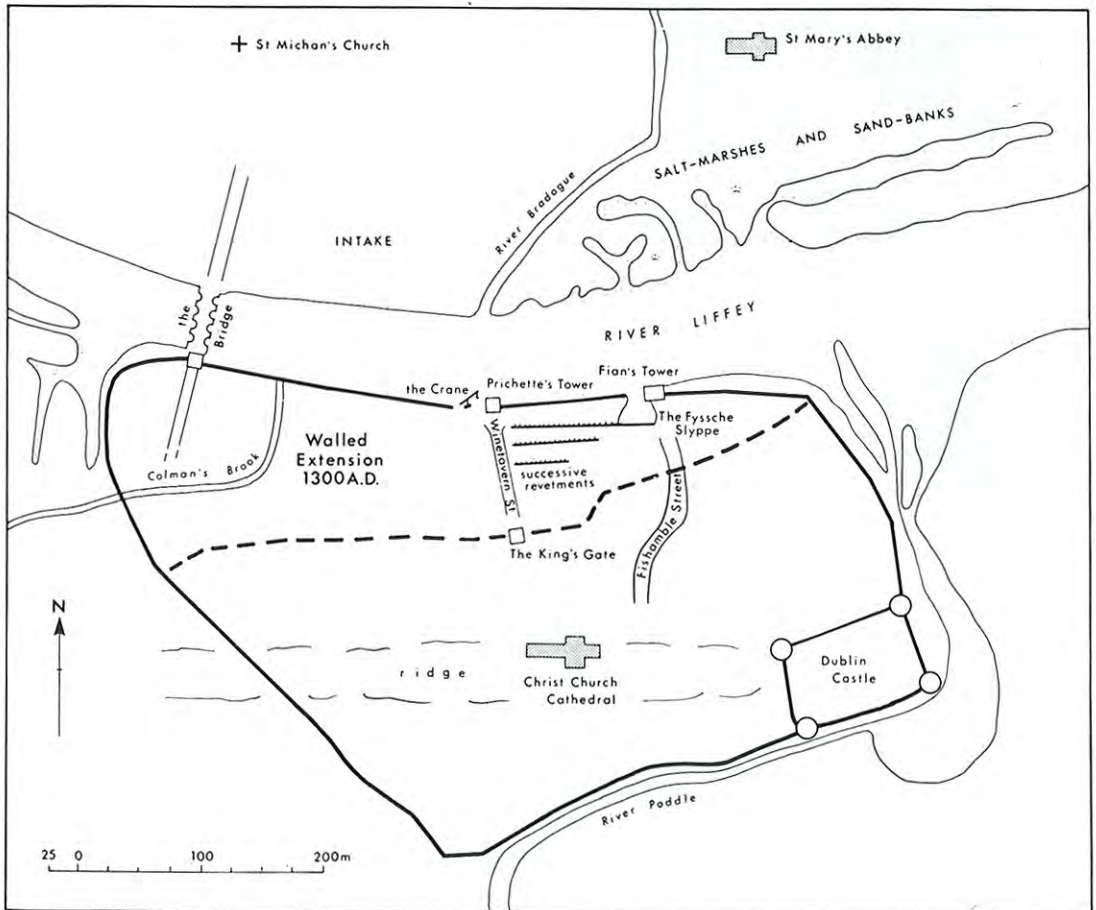


FIGURE 1 - Map of Walled Dublin A.D. 1300; Wood Quay is located between Winetavern Street and Fishamble Street. (From G. F. Mitchell, *Archaeology and Environment in Early Dublin*, 1987).

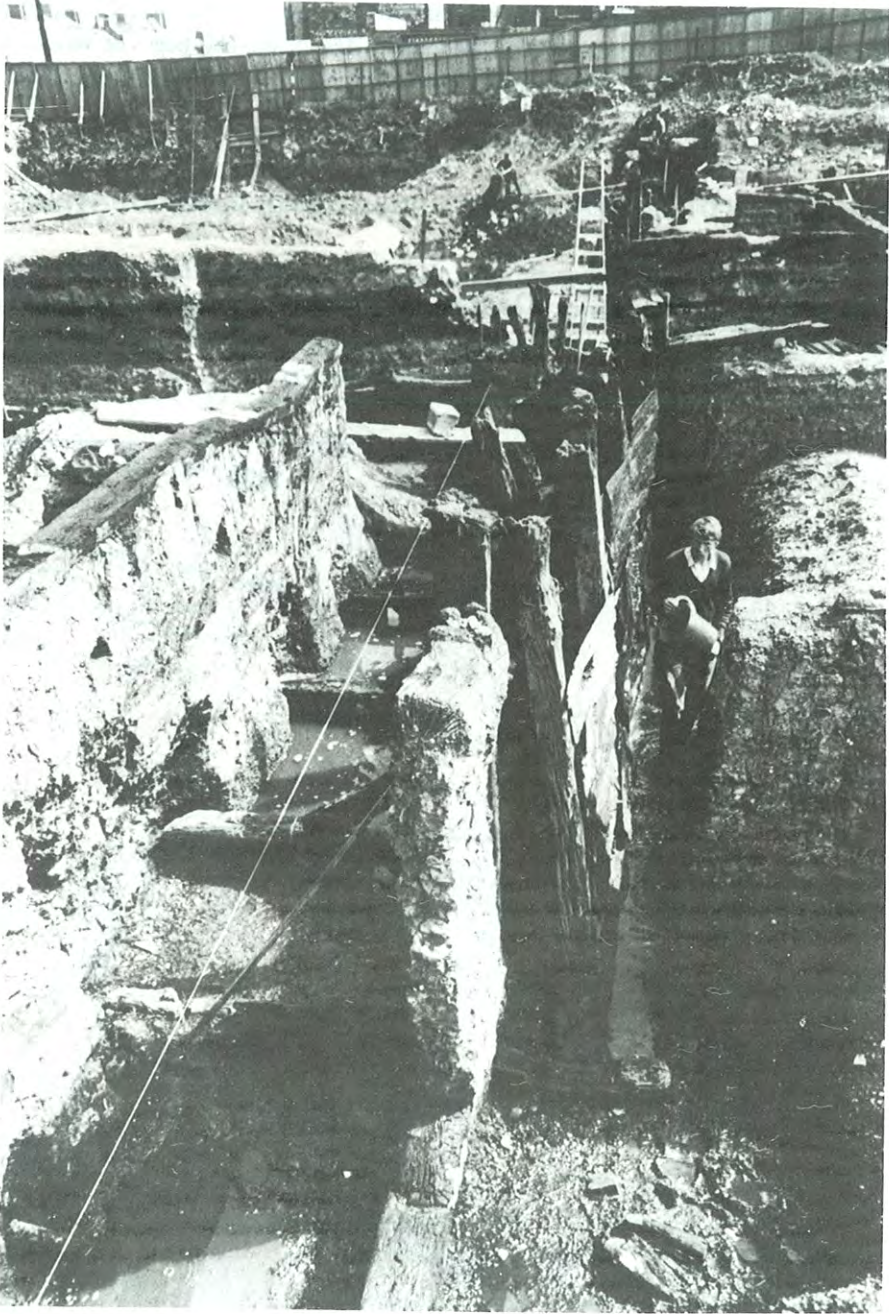


PLATE I - Excavations in progress, exposing the 13th century revetment at Wood Quay.

A number of different wild goose species may be found in the countryside surrounding Dublin. These include the supposed wild progenitor of the domestic form, *Anser anser* (the greylag goose), along with the migratory *Anser albifrons* (the white fronted goose), *Branta bernicla* (the brent goose) and possibly also *Branta leucopsis* (the barnacle goose). In 1967, Bacher described two osteological traits which could reliably distinguish *Anser* from *Branta*. The first of these was found on the furcula, which was pneumatized in the case of *Anser*, and unpneumatized in the case of *Branta*. The second criteria was based on the morphology of the *spina sterni externa* of the sternum which was flattened in the case of *Branta*. All of the bones identified as domestic from Wood Quay were *Anser* on the basis of the criteria outlined above. It should be noted, however, that Allison (1985) has found some variation in the morphology of the *spina sterni externa* within species, casting some doubt on the validity of this morphological trait as a means of differentiation.

Size was perhaps the most important factor taken into consideration, since the wild species, most notably those of *Branta* are considerably smaller and slighter in build, with only slight variation in size as compared to domestic breeds. While there is considerable overlap of size between species in some skeletal elements, Bramwell (1977) noted that the tarsometatarsus was the most reliable bone on which to differentiate domestic from wild geese. He believed that this was due to the (assumed) greater weight of the domestic bird which led to an increase in robusticity of the bone reflected in the thickness of the shaft and increased distal breadth; this may have been exacerbated by the greater dependence on the lower limbs as a result of flightlessness. Bramwell's conclusion has been supported by work done in Germany to show increasing size in the lower limb as a result of domestication (Reichstein & Pieper, 1986, and see below). Metrical data from tarsometatarsi identified from the Wood Quay assemblage can be seen plotted against that of a limited sample of modern comparative specimens in Figure 2. This clearly shows a tendency for the Wood Quay material to be much larger than either of the *Branta* species and slightly larger than *Anser albifrons*, falling well within the range indicated for *Anser anser*.

Conversely, there is an increasing body of evidence that as lower limb bones become larger and more robust as a result of domestication, the bones of the wing decrease in size. This is probably due to the decreased use of the wings as a result of clipping and increasing flightlessness. Reichstein & Pieper (1986) illustrated this phenomenon by plotting regression lines for the greatest lengths of the principal wing bones of modern domestic and wild geese. They were then able to argue that a medieval goose population recovered during excavations at Haithabu in Germany in the 1960's was indeed domesticated since they correlated well with the regression line plotted for the modern domestic species. They were also able to do this with the lower limb bones to show an increase in robusticity. Greatest length measurements (GL) taken for the humerus from the Wood Quay assemblage along with their regression line have been plotted against the regression line for wild species given by Reichstein and Pieper, and the results can be seen in Figure 3. This clearly shows a reduction in size of the humerus, and argues in favour of the assemblage being domesticated.

Domestication and subsequent flightlessness has also resulted in the reduction of musculature, with muscle attachments becoming considerably less distinct in the domestic birds. This may be seen on the ulna for example, with the reduction of the feather attachments (*Papillae remigales caudales*) from definite to indistinct bony eminences. Thus any particularly small, slender bones which also had strongly defined musculature were put aside as probable wild geese.

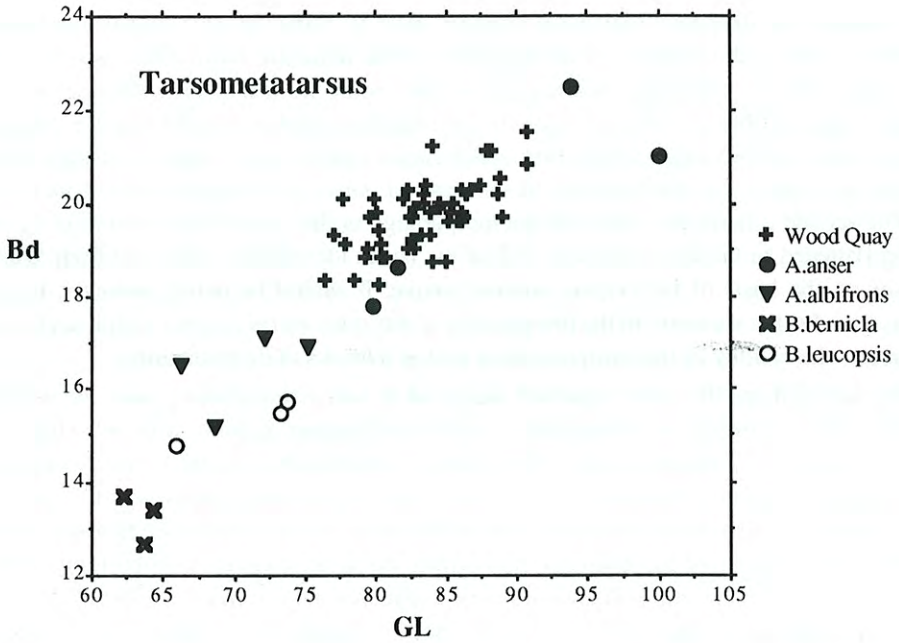


FIGURE 2 - Length and breadth (after Driesch, 1976) of the tarsometatarsus of different known geese species, along with those from Wood Quay.

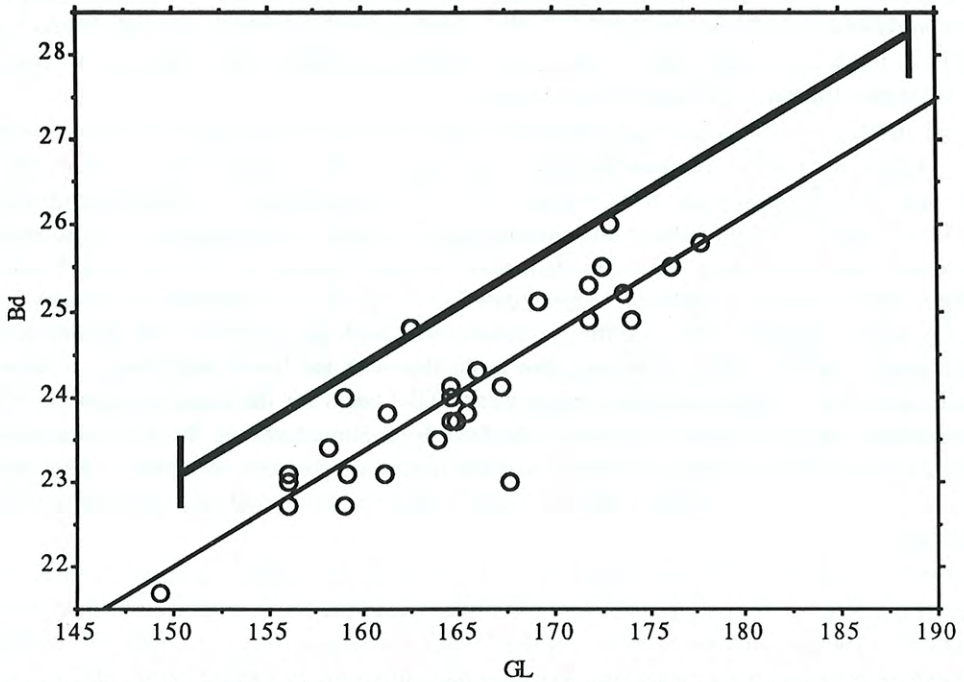


FIGURE 3 - The greatest lengths of the humeri from Wood Quay plotted with the regression line obtained for wild geese species (the heavier line) by Reichstein & Pieper (1986).

Lepiksaar (1969), noted the presence of a flattened facet on the anterior surface of the caput femoris (femur), in domestic geese, possibly as a direct result of flightlessness. This proved to be a problematic means of differentiation in this assemblage since the femur was rather poorly represented (see below) and when recovered was often damaged proximally making assessment impossible. A re-examination of the material revealed some flattening on the anterior surface of the caput femoris on the remains identified as domestic, but this was highly variable in its degree.

Only a very small fraction of the total geese remains from Wood Quay were identified as being probably those of the wild species (approximately 3%). A similarly small percentage of wild (versus domestic) geese bones has been recorded elsewhere in Britain during this period, for example at several sites in York (Allison, 1985). Geese rearing was particularly popular throughout Britain at this time in towns in low lying or marshy environments, such as at Lincoln, Kings Lynn, Oxford and Leicester (Astill & Grant, 1988), with geese being more important in towns than in rural areas. Geese had the advantage over chickens in that they could be driven rather than transported to market, and calorifically, they would have been more significant. Their very obvious presence in towns is documented historically in Winchester, where geese are banned from the main streets by a city ordinance dating to AD 1380 (Keene, 1985). Thus although there are considerable difficulties inherent in the differentiation of domestic and wild geese species, it may be possible to attempt to differentiate them using a variety of characteristics as opposed to a single diagnostic one. The presence of a very large goose population in the faunal material recovered from a large urban site is also more likely to be of a variety of goose bred locally and available all year round. In the Medieval period we also have good textual evidence for the keeping of domestic geese throughout Britain and Ireland, which supports our supposition that the majority of the geese consumed in Dublin at this time were domesticated.

RESULTS OF ANALYSIS

A total NISP of 2,108 bone fragments were recorded as probable domestic geese from the assemblage. Each bone was given three zones (proximal, shaft and distal, or three arbitrary zones in the case of the sternum, pelvis, etc...), and the presence or absence of these portions was recorded, to allow for the accurate calculation of MNI and MNE. The bones represented a minimum of 159 individual geese, and a minimum of 1,845 individual bones. The vast majority of the bone was from mature birds (94.8%), which may be suggestive of geese being economically important in terms of egg production, as well as a significant source of meat. The presence of laying females in the assemblage was indicated by a single broken femur, with medullary bone clearly deposited in the marrow cavity. Other intact long bones may have had similar deposits, not so readily evident.

One of our primary interests in the assemblage, given its size, was to describe the nature of the deposit which is known to have been exploited exclusively by man (although there may be some modification by dogs (and/or pigs)). It was hoped that this could shed some light on older avian assemblages where the primary accumulator of the bone was unknown. Following the formula of Mourer-Chauviré (1983), the principal limb bones (coracoid, humerus, radius, ulna, carpometacarpus, femur, tibiotarsus, and tarsometatarsus) were summed and then expressed as a percentage of this total, see Figure 4. Clearly, the humerus, radius and tibiotarsus are the most

numerous in the assemblage, followed by the ulna, carpometacarpus, and tarsometatarsus. The femur and the coracoid are only poorly represented. This correlates only partially with the model put forward by Mourer-Chauviré (1983) for an assemblage of bone accumulated primarily by humans (e.g. humerus and femur numerous in anthropogenic assemblages, with carpometacarpus and tarsometatarsus numerous in raptorial assemblages). The body part distribution of the Wood Quay assemblage of course also reflects the impact of carnivore scavenging.

Body part distribution expressed as a percentage of the expected number of bones based on MNI, can be seen in Figure 5. Clearly, as already observed, the humerus, radius and tibiotarsus dominate the assemblage. Overall the limb bones are much better represented than are the bones of the axial skeleton. This may be due in part to preservational bias in favour of the more robust long bones, as opposed to the more fragile pelvis and sternum. Another contributory factor may be the use of primary butchering of the birds away from the site, with the removal of the heads, and perhaps the meatless wing tips (the carpal phalanx, and other phalanges). This would seem to indicate that the deposit consists largely of domestic refuse. The splitting of the bird longitudinally may also constitute a form of primary butchery, or dressing of the bird for sale, and can be seen clearly in the form of chop marks on the pelvis (see Plate II) and the furcula, as well as on the sternum. Similarly, by plotting the percentage of total chop and cut marks by bone (see Figure 6), the axial bones favour chopping and the limb bones cutting presumably to facilitate dismemberment of the carcass into smaller familiar portions such as the leg and the wings. Fine cut marks were noted primarily on the distal humerus (see Plate III) proximal and distal radius and ulna, consistent with the dismemberment of the wing. Similarly, on the lower limb, cuts were noted on the proximal and distal femur, distal tibiotarsus (see Plate III), and the proximal tibiotarsus. A large number of cut marks were also noted on the coracoid, furcula and scapula, probably the result of the removal of the breast meat.

Some of the bone showed clear evidence of carnivore gnawing, although this was not dominant (on approximately 9% of the assemblage). By plotting the percentage of gnawed bone per element (see Figure 7) it can be seen that the humerus is clearly the most commonly gnawed element (N.B. the calculation eliminates the sample size bias per element). This is an unusual feature since you would not expect dogs (or pigs) to be so selective (although underrepresented elements may have been totally destroyed). All other elements show only minimal evidence for gnawing, although of these, the limb bones are more commonly gnawed, no doubt as a result of the marrow they contain. The extent of the damage sustained by the bone due to gnawing varies from simple puncture marks (see Plate IV), to varying degrees of bone destruction (see Plate V). Clearly the shredding of the bone as seen in Plate V, is likely to be due to either dogs or pigs. However the puncture marks seen in Plate IV, most notably on the humerus, may be of human origin.

Charring was also noted on the surface of the bone, although this was very uncommon, occurring on only 2.3% of the material. The sample of charred bone is thus too small to be very meaningful, but some tentative conclusions may be drawn from the results as plotted in terms of skeletal element distribution (Figure 8). Charring was most frequently observed on the scapula. Other axial elements also show a moderate degree of charring, such as the furcula and the coracoid, although some limb bones, notably the ulna, humerus and carpometacarpus were also affected. These almost certainly relate to portions of bones exposed during roasting.

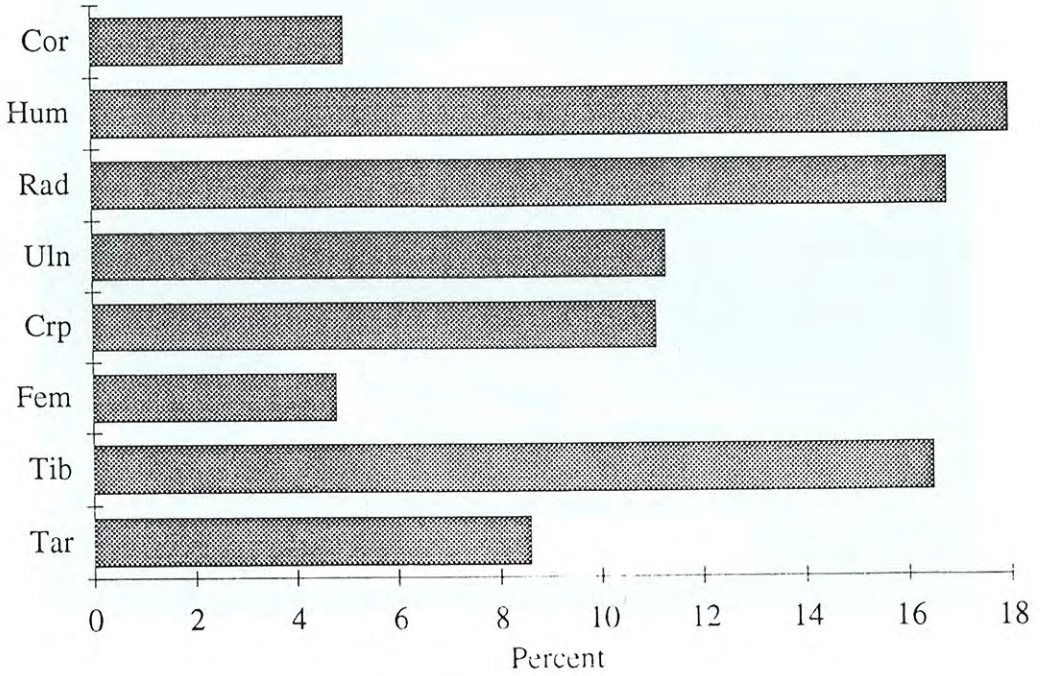


FIGURE 4 - Body part frequency after Mourer-Chauviré (1983).

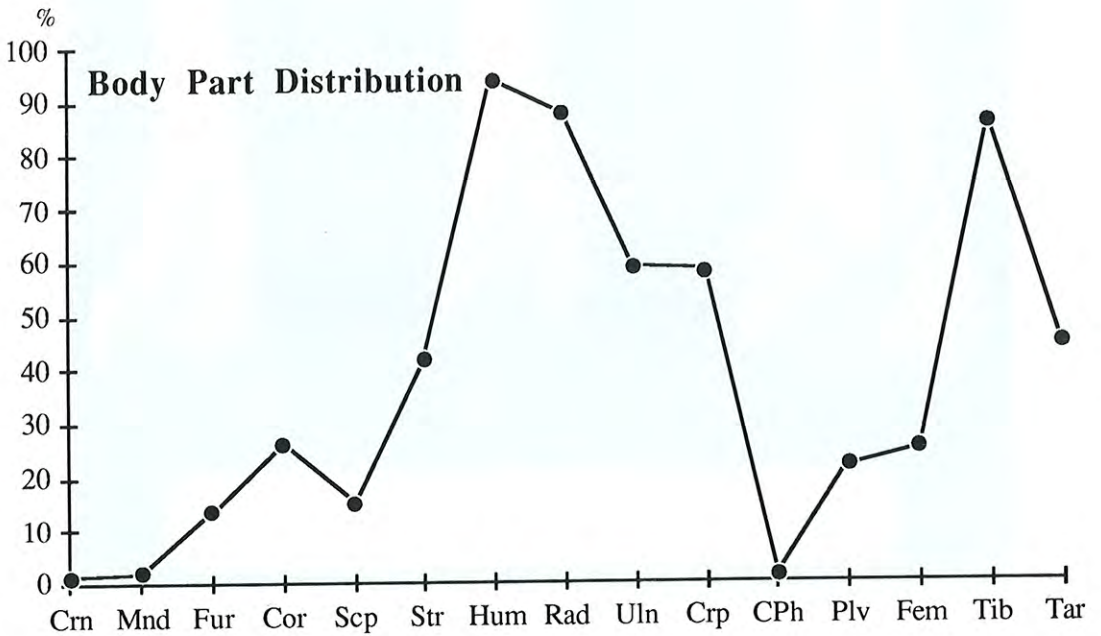


FIGURE 5 - Skeletal element distribution expressed as a percentage of MNI.

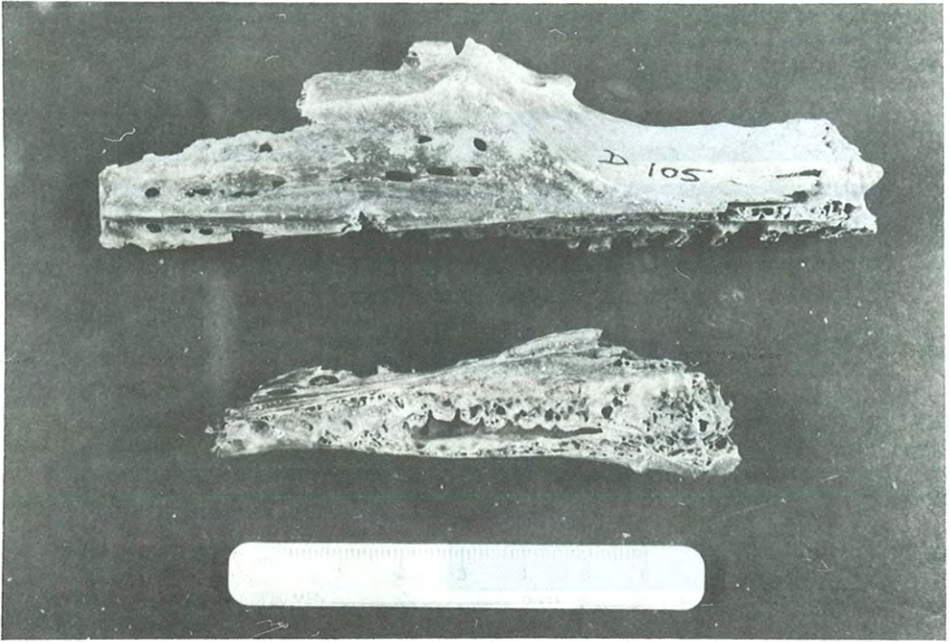


PLATE II - Longitudinal chopping of the carcass as seen on the pelvis.



PLATE III - Cut marks commonly found on the distal humerus and distal tibiotarsus.



PLATE IV - Puncturing of bone by teeth, possibly human (?) as seen on the humerus, proximally and distally.

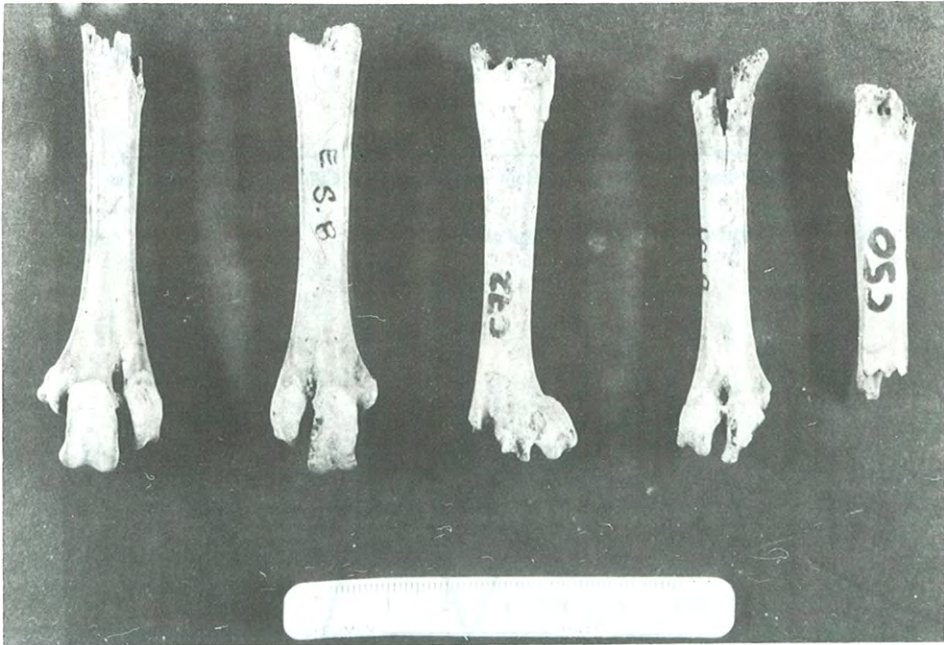


PLATE V - Sequence of carnivore gnawing from minor to major destruction of the tarsometatarsus.

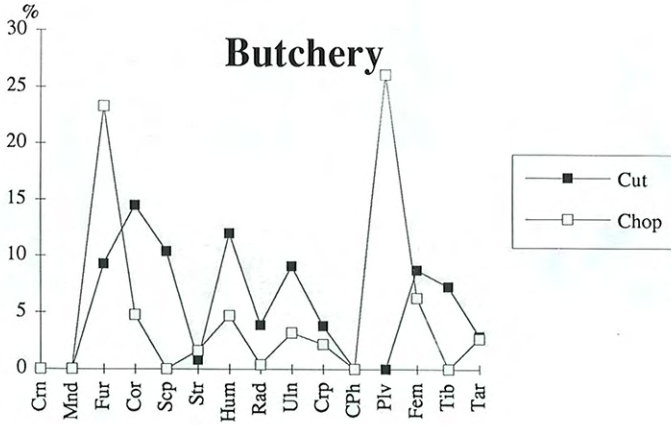


FIGURE 6 - Proportion of cut versus chop marks by skeletal element.

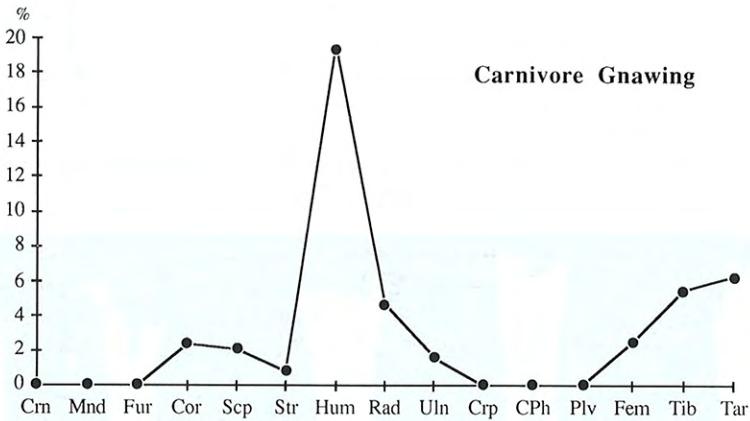


FIGURE 7 - Proportion of carnivore gnawing by skeletal element.

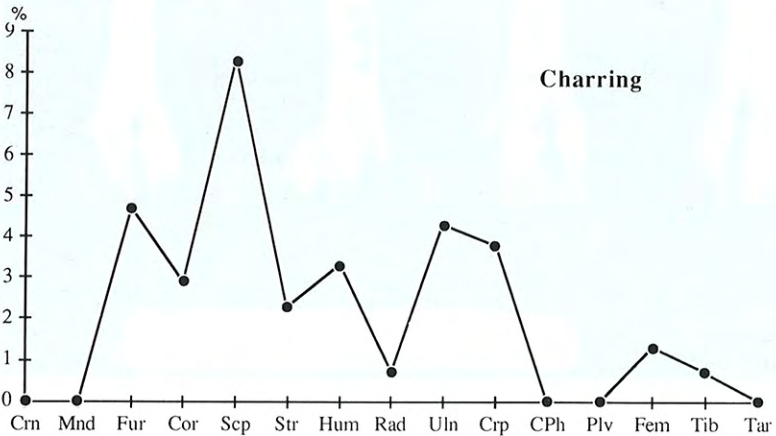


FIGURE 8 - Proportion of charred material by skeletal element.

The occupants of Medieval Dublin would seem to have enjoyed goose meat, and the large quantity of bone would suggest that this was a food source available to most of the population, and not just the higher classes. The material recovered is suggestive of some primary butchering of the birds prior to their consumption and perhaps sale. There is also a strong indication that the birds were sold or cooked in halves (chopped down the middle), if not as individual limbs, and breasts, portions.

COMPARISON WITH OTHER DOMESTIC GEESE POPULATIONS

By comparing the goose measurements obtained from the Wood Quay assemblage with others in Britain and Europe of a similar date, it can be seen that there is considerable similarity. The greatest lengths for the tarsometatarsi of populations from Medieval Dublin, York (Allison, 1985) and Haithabu (Reichstein & Pieper, 1986) are given in Table 1. Regarded chronologically, it appears that there was a diminution in size over time in domesticates during the medieval period (e.g. from 10th century Anglo Scandinavian York (Allison, 1985) to the 13th c. samples) which may have only been corrected until modern times.

CONTEXT	N	RANGE	MEAN
Domestic -- Medieval York, England	12	78.5 -- 89.2	83.6
Domestic -- Medieval Wood Quay, Ireland	69	77.1 -- 90.8	83.9
Wild -- Modern, Germany	32	76 -- 105	84.8
Domestic -- Medieval Haithabu, Germany	37	78 -- 97	86.1
Domestic -- Anglo/Scan. York, England	13	80.9 -- 91.7	87.4
Domestic -- Modern, England	17	82 -- 104	93
Domestic -- Modern, Germany	28	90 -- 107	99

TABLE 1 - Greatest length of the tarsometatarsi of some medieval and modern goose populations.

CONCLUSIONS

The problem of differentiating wild from domestic species of geese may be at least partially overcome by using a combination of metrical and morphological criteria. This situation will improve no doubt as increasing metrical data becomes available. However, it is unlikely that it will ever be possible to separate wild from domestic forms with complete certainty.

Following their introduction by the Anglo Normans, domestic geese were almost certainly of considerable importance to the economy of Medieval Dublin, and were probably available to the majority of the population as a source of food, both as meat and as eggs. The geese were probably reared locally, and are likely to have been a common sight in the streets of Dublin during this period.

ACKNOWLEDGEMENTS

The authors wish to extend their thanks to Pat Wallace and Debbie Caulfield of the National Museum of Ireland in Dublin for granting access to this material, and for their assistance throughout. Thanks also to Richard Meadow, and all at the Archaeozoological Laboratory in the Peabody Museum of Archaeology and Anthropology, Harvard University, and to Rosemary Luff and the Cambridge Faunal Remains Unit where this analysis was carried out. Finally, we wish to thank the British Museum of Natural History, Ornithological Section at Tring, for allowing us to measure the geese from their collection.

BIBLIOGRAPHY

- Allison, E.P.(1985) - Archaeozoological study of bird bones from seven sites in York. Unpublished Doctoral Thesis, University of York.
- Astill, G. & A. Grant (1988) - *The Countryside of Medieval England*. Clarendon Press, Oxford.
- Bramwell, D. (1980) - Identification and interpretation of bird bones. In *Excavations in North Elmham Park*. Ed. P. Wade-Martins. East Anglian Archaeology Report n° 9.
- Driesch, A. von den (1976) - *Das Vermessen von Tierknochen aus vor-und frühgeschichtlichen Siedlungen*. UniDruck, München.
- Jope, M. (1954) - Animal bones from Clough Castle. In: Waterman, D.M. (ed.): *Excavations at Clough Castle. Ulster Journal of Archaeology* 17(3rd series): 150-156.
- Keene, D.(1985) - *Survey of Medieval Winchester*. Winchester Studies Vol. 2. Clarendon Press, Oxford.
- McCormick, F.(1991) - The effect of the Anglo-Norman settlement on Ireland's wild and domesticated fauna. In: Crabtree, P.J. & K. Ryan (eds.): *Animal use and culture change*: 40-52. MASCA Research Papers, Suppl. to vol. 8, University Museum, University of Pennsylvania, Philadelphia.
- Mourer-Chauviré, C. (1983) - Les oiseaux dans les habitats préhistoriques: gibier des hommes ou proies des rapaces?. In: Grigson, C. & J. Clutton-Brock (eds.): *Animals and Archaeology, vol. 2, Shell Middens, Fishes and Birds*. BAR (International Series) 183: 111-124.
- Reichstein, H. & H. Pieper (1986) - *Untersuchungen an skelettresten von Vögeln aus Haithabu (Ausgrabung 1966-1969)*. Karl Wachholtz Verlag: Neumünster.
- O'Sullivan, T.(1990) - The bird remains from Fishamble Street. Unpublished MA thesis, University College Dublin.
- Wallace, P.F.(1981a) - Anglo-Norman Dublin: continuity and change. In: O'Corrain, D. (ed.): *Irish Antiquity*: 247-267. Tower Books, Cork.
- Wallace, P.F.(1981b) - Dublin's waterfront at Wood Quay: 900-1317. In: Milne, G. & B. Hobley (eds.): *Waterfront archaeology in Britain and northern Europe*: 108-118. CBA Research Report 41, London.
- Zeuner, F.E.(1963) - *A History of domesticated animals*. Hutchinson, London.