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THE ROLE OF BIRDS IN THE ECONOMY OF MEDIEVAL AND POST-MEDIEVAL FLANDERS: A DIVERSITY OF INTERPRETATION PROBLEMS

ANTON ERVYNCK
Institute for the Archaeological Heritage
of the Flemish Community.
Doornveld 1 Box 30, B-1731 Zellik. Belgium.

ABSTRACT: This paper evaluates the role of birds in the meat supply of medieval and post-medieval Flanders, Belgium. Apparently, bird remains are rather scarce in the archaeozoological record from Flemish sites. Are birds then only of minor economical importance or is the scarcity of their remains the result of a biased sample? Some factors that could theoretically be responsible for an underrepresentation of bird bones in archaeological contexts and archaeozoological inventories are outlined. Two case studies suggest that these factors have only minor influence and that bird bones are indeed not frequent in the sites. In terms of human consumption the breeding of birds was perhaps not very significant but birds could still be economically important because they were expensive and because one was interested in their secondary products (eggs).

KEYWORDS: FLANDERS, BELGIUM, MEDIEVAL, POST-MEDIEVAL, ARCHAEOZOOLOGY, ECONOMY, AVES

RESUMEN: El trabajo evalúa el papel de las aves como aporte cárnico en el Flandes medieval y post-medieval. Los restos de aves son, aparentemente, infrecuentes en el registro arqueológico de yacimientos flamencos. ¿Es real o artificial esta escasez?. El trabajo comenta una serie de agentes teóricos como potenciales responsables de esta infrarrepresentación. Dos ejemplos prácticos, sin embargo, demuestran que tal escasez es auténtica. Quizás en términos de consumo humano la cría de aves de corral no fué importante aunque la importancia económica de éstas pudo haberlo sido en función de dos factores: el alto precio de los animales y el interés por la producción de huevos.

PALABRAS CLAVE: FLANDES, BELGICA, MEDIOEVO, POST-MEDIEVAL, ARQUEOZOOLOGIA, ECONOMIA, AVES

INTRODUCTION

The role of birds in the economy of a medieval society will have been mostly limited to the field of food supply. Indeed, bird bones are present amongst the consumption refuse in excavations in medieval and post-medieval sites in Flanders, Belgium. However, one of the characteristics of the faunal collections from these sites is that bird bones are rather scarce. Thus, do birds play only an unimportant role in the food supply? Or, if they really formed an important part of the menu, why then are their remains never found frequently? It is our aim to evaluate the scarcity of the bird remains and to show that many factors hamper a sound interpretation of the importance of birds in our medieval and post-medieval economies.

Present-day Flanders, the Dutch-speaking part of Belgium, covers parts of many medieval political entities. These include not only the former county of Flanders or dukedom of Brabant, but also their many feudal precursors. However, when we describe phenomena as Flemish, this means that they occurred in the area of modern Flanders. The ideas proposed in this paper are based upon the study of bone collections from many sites, published by different authors. A reference list to these archaeozoological studies can be found in Ervynck (1992a) for urban sites, Ervynck (1992b) for castles and Ervynck et al. (in press) for abbeys. Where data from a specific site are mentioned, the reference to the original publication will be given.

Bird remains in Flemish medieval and post-medieval sites consist mainly of the bones of three domestic species: chicken (*Gallus gallus* f. domestica), goose (*Anser anser* f. domestica) and duck (*Anas platyrhynchos* f. domestica). These species were certainly the main meat suppliers within the avian livestock. Other domestic species are rarely found. The remains of hunted species only form a minor part of the bird bone finds. Without doubt, the consumption of more special, highly esteemed domestic species, such as peacock (*Pavo cristatus* f. domestica), and of hunted species will have been important in terms of social status but in terms of biomass intake this phenomenon can be neglected.

THE SCARCITY OF THE BIRD BONE RECORD

Is it possible that the number of bird bones in archaeological sites is not a good reflection of the number of birds eaten? Several factors have to be taken into account.

Fragmentation before deposition

In general, since bird bones are more fragile than mammalian skeletal elements, fragmentation will be more pronounced in the first group. Moreover, birds and mammals are differently processed for consumption and this affects the fragmentation of the remains. For instance, large mammal bones will be removed from a piece of meat while bird bones can be chopped into pieces while dividing the carcass. The destructive effect of long-time boiling will affect bird bones more severely than mammal bones. Because a bird is often eaten with the bones still in the carcass, these can be fragmented ('crunched') by the process of consumption itself.

Depositional factors

The way in which bird bones are deposited on a site can differ widely from that in which large mammal bones are discarded. Part of the large mammal bones are already removed from the carcass at the slaughter place while the rest of them is mostly chopped away from the meat in the kitchen. In contrast, most of the skeleton from a chicken ends up at the table. Within the group of consumption remains, avian and mammalian bones thus belong to different taphonomical categories (*sensu* Gautier, 1987). Within a human dwelling place slaughter offal, kitchen debris and leftovers from the table are mostly not deposited in the same way nor in the same place. Partial excavation of a site can, hazardously, miss one of these contexts and produce a distorted view of the local bird consumption. More important is that different deposition can lead to different chances of preservation. Table leftovers can be thrown away on a compost heap while slaughter offal is deposited in a deep pit. The chances of preservation are clearly higher for the second way of deposition.

Moreover, table leftovers frequently became part of a recycling process when they were given to the dogs or the pigs. These animals do not easily destroy complete cattle metapodials but they can deal with the carcass of a chicken. In that way, it is possible that a considerable part of the bird bones that were ever present on a site never became part of the soil archives.

Preservation

Differences in the deposition of bones affect their chances of preservation. As has been said, bird bones are always more fragile than large mammal bones and when a collection of bones does not quickly become part of the soil, the fragile ones are most likely to be destroyed by trampling or weather conditions. Even when bones do become part of the soil, preservation conditions are not very favorable in the whole of Flanders. Part of the area is characterised by the presence of sandy soils wherein bones, if located above the ground water level or present in alternating humidity conditions, are hardly preserved. It is possible that under unfavorable conditions fragile bird bones will disappear more easily than large compact mammal bones. This is especially true when dealing with juvenile specimens.

Primary *versus* secondary refuse

Primary refuse consists of material that is deposited on (or close to) the place where it was produced while secondary refuse consists of material that has been transported (Schiffer, 1976). This transport can be responsible for an underrepresentation of smaller finds in an archaeozoological collection. When on a site a primary deposit of consumption refuse is cleaned up and transported to a dump at some distance, a selection can take place. Often, only the more conspicuous elements of the primary deposit will be transported. Of course, transport itself can also destroy the more fragile bones.

Sampling methodology

Lack of sieving or even adequate hand sampling in the traditional Flemish archaeology is often quoted as an explanation for the scarcity of bird remains in our archaeozoological record. Recently, however, on sites wherefrom the faunal remains are studied by the Institute for the Archaeological Heritage of the Flemish Community, sampling methods have largely improved and suitable contexts are completely sieved on a 0.5 mm mesh. Even when faunal material is collected by hand, more attention is paid to the recovery of the more fragile, smaller bones. Considering that extensive sieve sampling is not always possible during many rescue excavations Flemish archaeologists have to perform, this change in attitude is sometimes as important as the shift towards sieve sampling. However, one gets the impression that the improved sampling methodology does not alter significantly the frequency of bird bones in our archaeozoological collections. A comparison between sieved and non-sieved samples subscribes this (see the case studies).

Determination problems

Bird remains pose more identification problems than mammal bones. Some avian skeletal elements, such as the phalanges, the vertebra and certainly the ribs, are generally not identifiable to species while this determination can be performed for large mammal remains. Secondly, there are more closely related species of birds than there are of mammals in the average fauna we encounter in our excavations. A considerable amount of bird bones will remain unidentified because they come from a series of families which are rich in species, such as the passerines or the wader birds. If archaeozoologists have not definitely settled the criteria for discrimination between the bones of

sheep and goat, how could they then distinguish the bones from carrion crow (*Corvus corone*) and hooded crow (*Corvus cornix*) or from the greenshank (*Tringa nebularia*) and the spotted redshank (*Tringa erythropus*)?. Finally, poor preservation conditions and fragmentation will affect the identification of bird bones more severely than will be the case with large mammals. As a result, a larger part of the bird bones end up in the category '*indeterminata*'. This will affect the counts of the finds and will lead to an underestimation of the role birds played in the food supply of a certain site. However, this disadvantage can partly be avoided when all bird bones (identified or not) are compared to all mammal bones. In that way, it is recommended to subdivide the *indeterminata* in an archaeozoological inventory into the major animal groups (mammals, birds, fish, etc.).

Consumed or not?

In order to assess the role of birds in the meat supply, one must be sure that the remains come from consumed animals. When near complete skeletons of magpie (*Pica pica*) or jay (*Garrulus glandarius*) are found amongst kitchen offal, do they represent consumption refuse or killed but non-eaten birds? From the cookery books we know that songbirds were prepared in the medieval kitchen but does this mean that all little birds we encounter in archaeological contexts represent consumption refuse? On the other hand, prestigious birds, as heron (*Ardea cinerea*) or peacock, were sometimes prepared for luxurious banquets, presented in their own plumage but not eaten. However, a misinterpretation of these curiosities will not severely affect the evaluation of the role of birds in the meat supply of our sites. These 'special' birds are rarely found.

Counting

How can the amount of avian bones that are found in an archaeological context be compared statistically with the amount of large mammal bones? A simple comparison of the raw find numbers simply cannot be sufficient. Firstly, the skeleton of mammals contains a different number of bones than that of birds. Secondly, we have seen that more avian skeletal elements become part of the '*indeterminata*' than is the case with mammalian bones. Moreover, deposition and preservation conditions might have eliminated a major part of the more brittle bird bones. Instead of counting real find numbers, evaluating the minimum numbers of individuals (MNI) could help to overcome some of these problems. However, this way of counting will always pose problems (Gautier, 1984). In particular when comparing the MNI of birds and mammals, the calculations can go wrong. From large mammals only certain body parts normally arrive at the kitchen while birds often arrive complete. By definition, a calculation and comparison of the MNI's is then useless.
A theoretical example illustrates further counting problems (Figure 1A). Assume that we are dealing with a small bone collection from an archaeological context, consisting of 12 bones of mallard (*Anas platyrhynchos*) and one skeletal element of cattle (*Bos primigenius* f. taurus). When trying to make an inventory of this collection, different counting techniques can be applied. A simple fragment count suggests a dominance of mallard remains (Figure 1B). A calculation of the MNI subscribes this statement. However, the MNI differs slightly depending on the way the estimation has been made. The MNI can be solely based upon the most frequent skeletal element but can also take into account the assumed presence of left-right pairs and be based upon the most frequent bone from one body side. Moreover, the presence of real pairs (bones from left and right body side with matching dimensions) can be investigated and, finally, bones from distinct age classes can be counted separately.

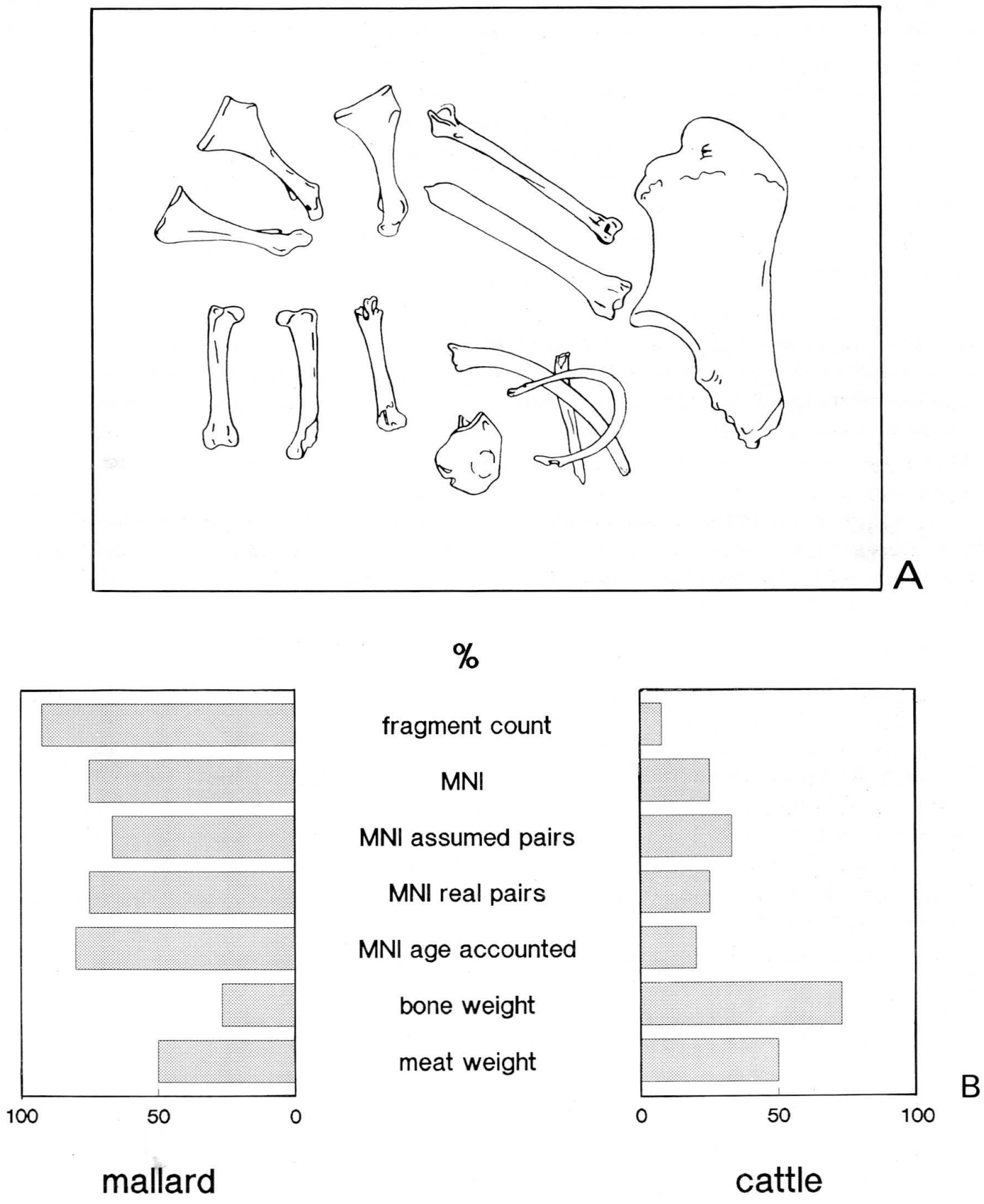

FIGURE 1 - A: An imaginary bone collection, consisting of twelve bones of mallard and one cattle bone. B: Different ways of evaluating the role of both species in the meat supply.

Alltogether the different ways of calculating the MNI point to a dominance of mallard remains in the collection (Figure 1B). If bone weight, often seen as a better way of evaluating the meat supply of each species, is considered, cattle becomes the more important animal in the collection (Figure 1B). In reality, however, the collection investigated was made up in such a way that the bones from mallard and cattle represent the same weight of consumed meat (Figure 1B). Clearly, the counting techniques applied do not give a good presentation of this. Of course, this simple example, based on a very small collection, seems somewhat ridiculous but it stresses underlying errors that are no longer evident in large collections.

Meat production

When bone find numbers have to be translated into meat weight, further problems arise. For example, a capon weighs a lot more than a normal rooster or a hen but these sterilized males are not recognizable in the bone collections (West, 1982, 1985). The bones from domestic goose and duck, found in our medieval sites, represent a homogeneous population that does not differ significantly in osteological characteristics from the wild living species. Despite that, it remains uncertain whether domestic and wild living species attained the same weight, since domestic birds could be easily fattened.

In conclusion, a lot of factors will hamper the evaluation of birds in the meat supply of former sites. A lot of them will provoke an underestimation of the frequency of birds in former consumption patterns. However, this still does not allow us to conclude that birds played more than a minor role in the medieval and post-medieval food-supply. Despite the effect of the factors, the scarcity of bird remains can still reflect a real situation. Two case studies will illustrate this.

CASE STUDY 1: MEDIEVAL AND POST-MEDIEVAL GENT

Gent (Ghent) was certainly one of the most important towns in medieval Flanders (Figure 2). It is also the Flemish town wherefrom bone collections were first studied (Gautier, 1977) and wherefrom, until now, most archaeozoological data for urban sites were gathered (Ervynck, 1992a). For these reasons, the archaeozoological record from Gent is used here as a case study.

All sites investigated thus far indicate a relative scarcity of bird remains. Six samples from consumption refuse layers in the centre of town, all dating back to the Middle Ages, demonstrate this. The sites considered are:

-Gouvernementstraat, 10th-12th century, number of identified bones (n) = 142 (Gautier, 1979);

-Kammerstraat, 12th century, n = 76 (Ervynck, 1990);

-Vrijdagmarkt, early 12th-13th century, n = 71; 1275-1325 A.D., n = 426; 1325-1375 A.D., n = 1085 (Lentacker, 1984);

-Belfortstraat, 13th century, n = 1190 (Van der Plaetsen, et al. 1986).

All bone collections from these excavations have been collected by hand, except for the last site where sieved samples (0.5 mm mesh) were added to the hand-collected collection. The identifiable bones from these urban sites have been divided in three groups: birds, small animals (smaller than sheep) and large animals. It is clear (Figure 3) that the relative frequencies of birds vary

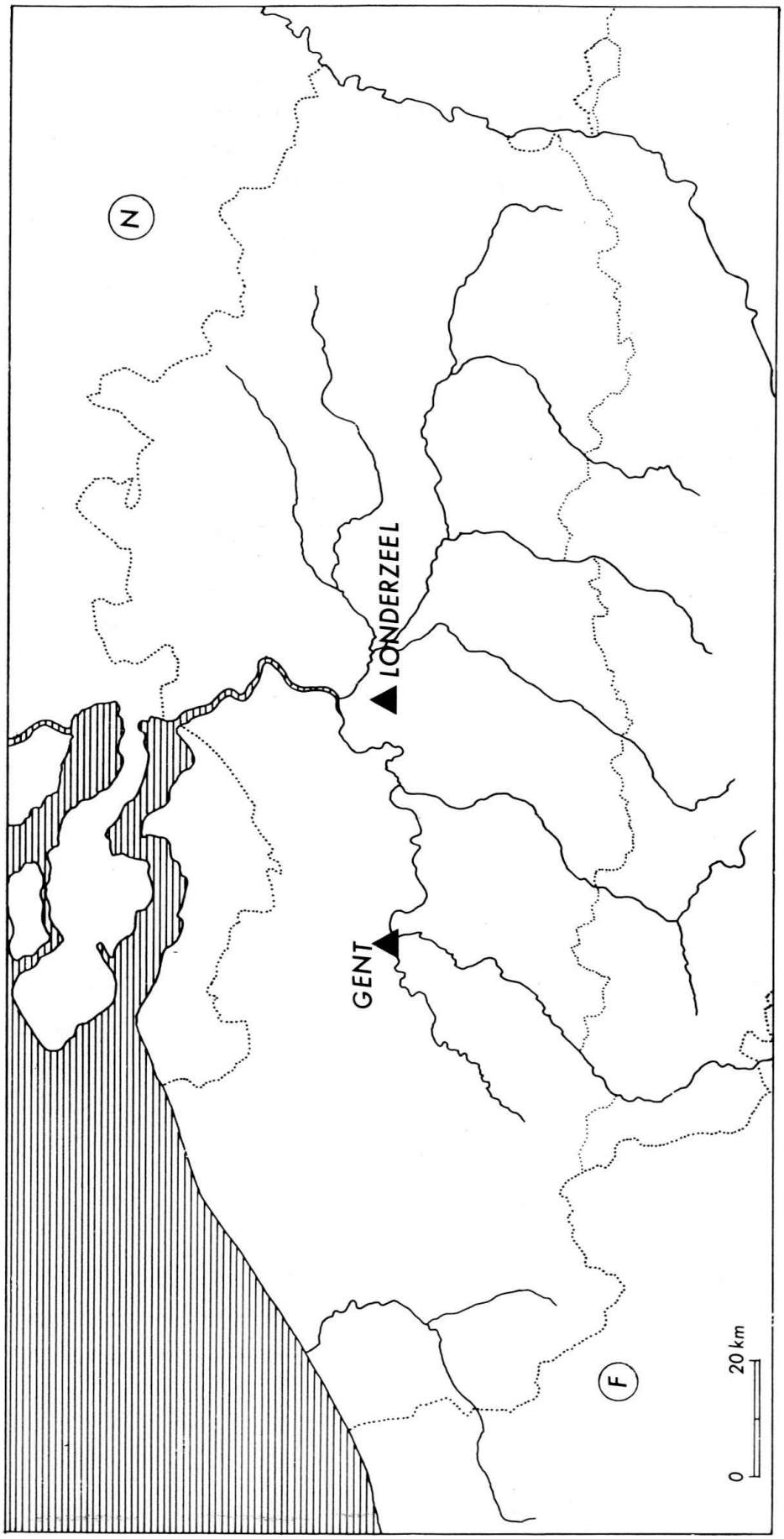

FIGURE 2 - Map of Flanders, Belgium, locating the sites mentioned in the text.

considerably between the sites but, in general, tend to remain low. Sampling procedures may not have anything to do with this since the last context (which was partially sieved) only shows an increase of the frequency of the bones from small animals, i.e. fish.

Since rough sampling methodology is apparently not the cause for the scarcity of bird remains in Gent, an explanation must be sought elsewhere, e.g. in the preservation conditions on the sites or the possibility that we are dealing with secondary refuse. However, this suggestion seems unlikely because sieving shows that fish bones are present in large quantities. On the other hand, depositional factors can be responsible for the lack of bird bones. Is it possible that in the medieval midtown refuse layers, undoubtedly the result of the continuous dumping of all kinds of garbage and household refuse, table leftovers such as chicken carcasses are underrepresented?

The analysis of faunal remains from cesspits can shed light upon this problem. Normally table leftovers were deposited in those structures, which functioned not only as container for human excrements but also for all kinds of household refuse. In Flemish towns the construction of cesspits with bricks starts in the 15th century. Three examples from Gent are used in this study:

-a cesspit from 'Den Bonten Mantele', last filled in the 18th century, n = 74 (Gautier, 1977);

-a cesspit in the 'Oudburg', filling dated back to the 17th-18th century, n = 130 (Van der Plaetsen, 1989);

-a cesspit in the 'Schepenhuisstraat', filling dated back to 1650-1750 A.D. (Stoops, 1992).

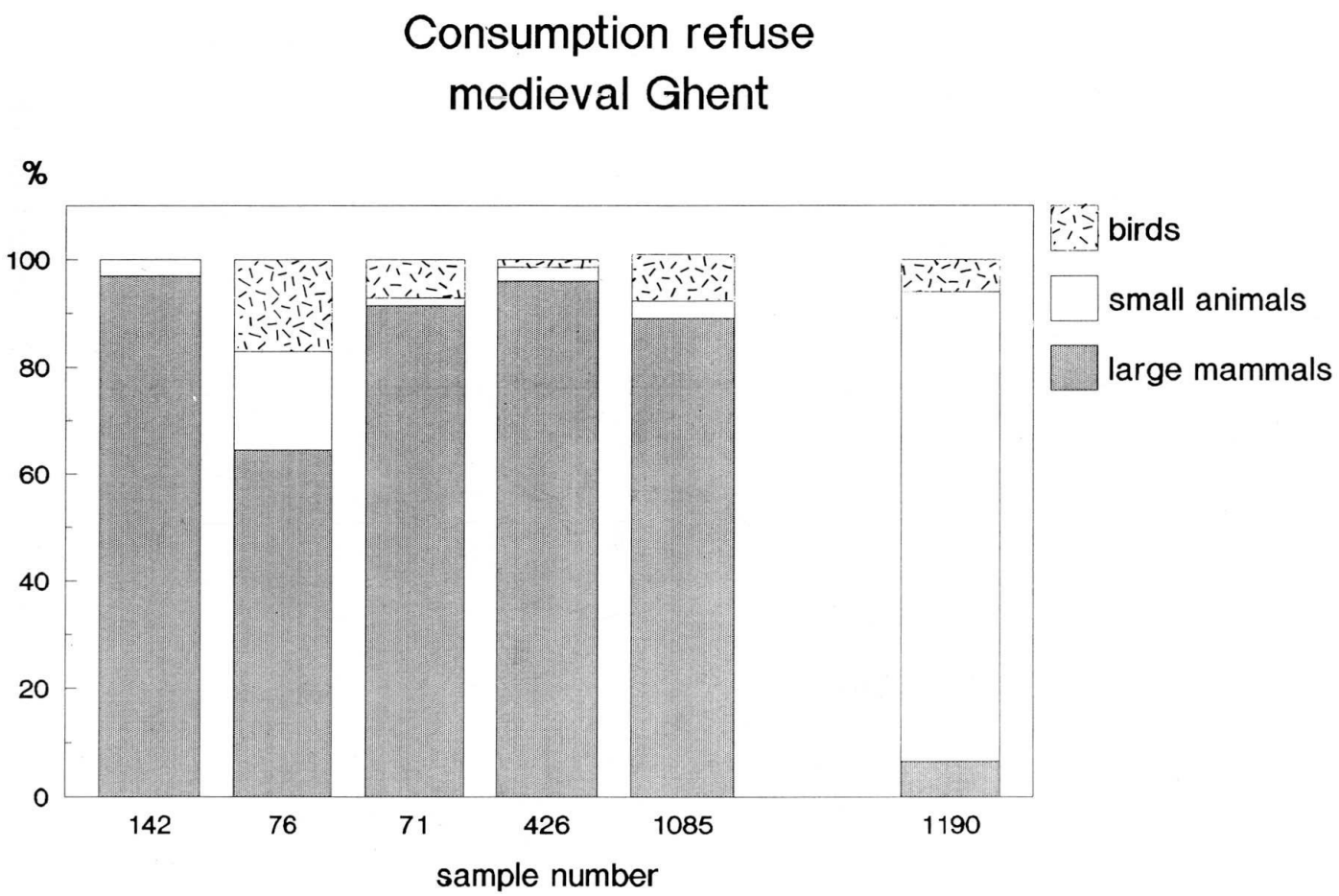

FIGURE 3 - Relative abundance of animal groups in six consumption refuse layers from medieval Gent.

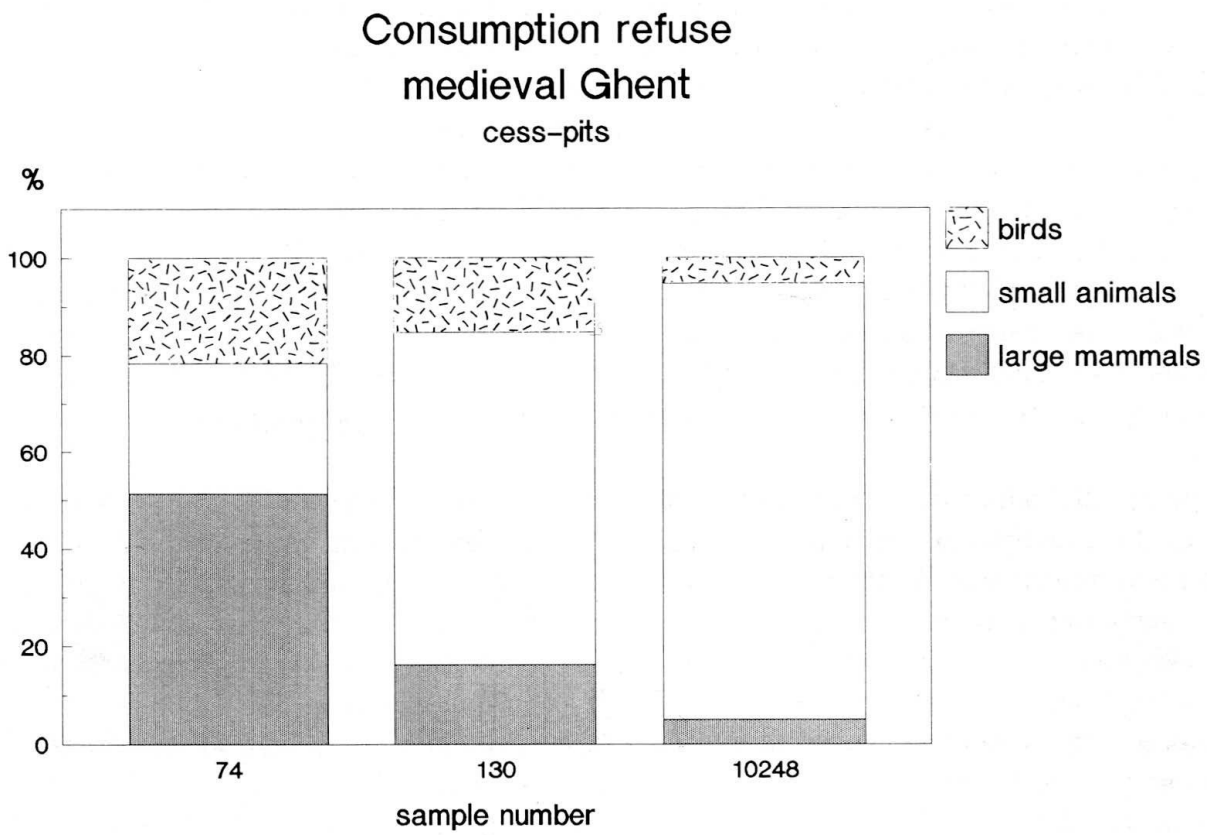

FIGURE 4 - Relative abundance of animal groups in three post-medieval cesspits from Gent.

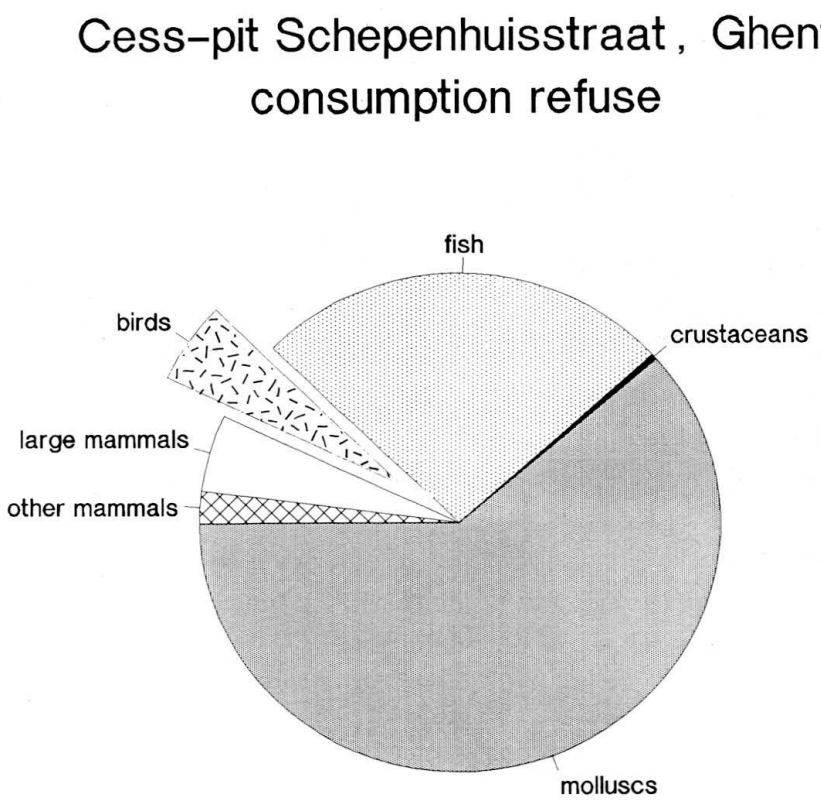

FIGURE 5 - Detailed frequency chart of the animal groups present in the post-medieval filling of a cesspit in the 'Schepenhuisstraat', Gent.

The first context was hand-collected without special attention for animal bones. On the second site, the material was also collected manually but special care was taken for the sampling of faunal remains. The filling of the third cesspit was completely sieved on a 0.5 mm mesh. When the relative frequencies of bird bones in these three structures are compared in the same way as for the consumption refuse layers, it can be shown that bird remains, again, are not abundant (Figure 4). Better sampling procedures do not tend to increase the bird bone frequency while small animals such as fish become really numerous in the sieved context. The filling of cesspits normally consists of primary refuse but taking birds into consideration the faunal spectrum from these contexts does not show much difference with that from the consumption refuse layers. Moreover, preservation conditions in cesspits are generally very good. Thus, the scarcity of bird bones cannot easily be explained by any factor previously described. Perhaps birds did not appear frequently on the citizen's table.

A detailed analysis of the filling of the cesspit in the 'Schepenhuisstraat' (Figure 5) again points to the problems of counting the finds. The numbers of remains reveal that amongst the consumption refuse most of the faunal samples come from fish and molluscs. Birds, large mammals (cattle, sheep, pig) and smaller mammals only form a minor part of the collection. Does this mean that these groups were unimportant in the food supply? Certainly, one has to take into account the biomass, represented by the numbers of each group, but even then birds will not gain much importance. Large mammals will have supplied most of the meat consumed in the household who owned this cesspit. Moreover, the possibility cannot be excluded that part of the meat arrived in the kitchen of the 'Schepenhuisstraat' without bone, something that was more likely to occur with the meat of large mammals than of birds. We can, again, only conclude that birds played a minor role in the food supply of this site.

CASE STUDY 2: THE MEDIEVAL CASTLE AT LONDERZEEL (BRABANT)

In the castle of Londerzeel (province of Brabant) a consumption refuse layer, dating back to the 14th century, was excavated (Dewilde et al., in press). From this context faunal material was gathered, both manually and by sieving. The bird remains are dominated by domestic species, i.e. chicken. In order to analyze the effect of sampling methodology and manner of counting, an inventory of the faunal remains is presented in four ways. Each time the faunal material has been divided in four groups: mammals, birds, fish and mollusks (Figure 6). As a result, major differences are to be observed in the relative frequencies of these groups, depending on whether the hand collected or the sieved collection is considered, or whether only the identified or all bones are taken into account. Depending on the way of counting, fish and mammal remains are numerically unimportant or very frequent. Surprisingly, however, the relative abundance of bird remains does not alter very much between the four counts. Bird bones are not more numerous in the most complete count, based on all sieved bones, than in the simple count of the identified hand collected finds. Note that the category of *indeterminata* does not contain a lot of bird remains; most of the unidentifiable finds come from mammals. Clearly then, determination possibilities, preservation condition, fragmentation and sampling procedures influence the results but do not suggest a significant underestimation of the frequency of birds in this site having taken place.

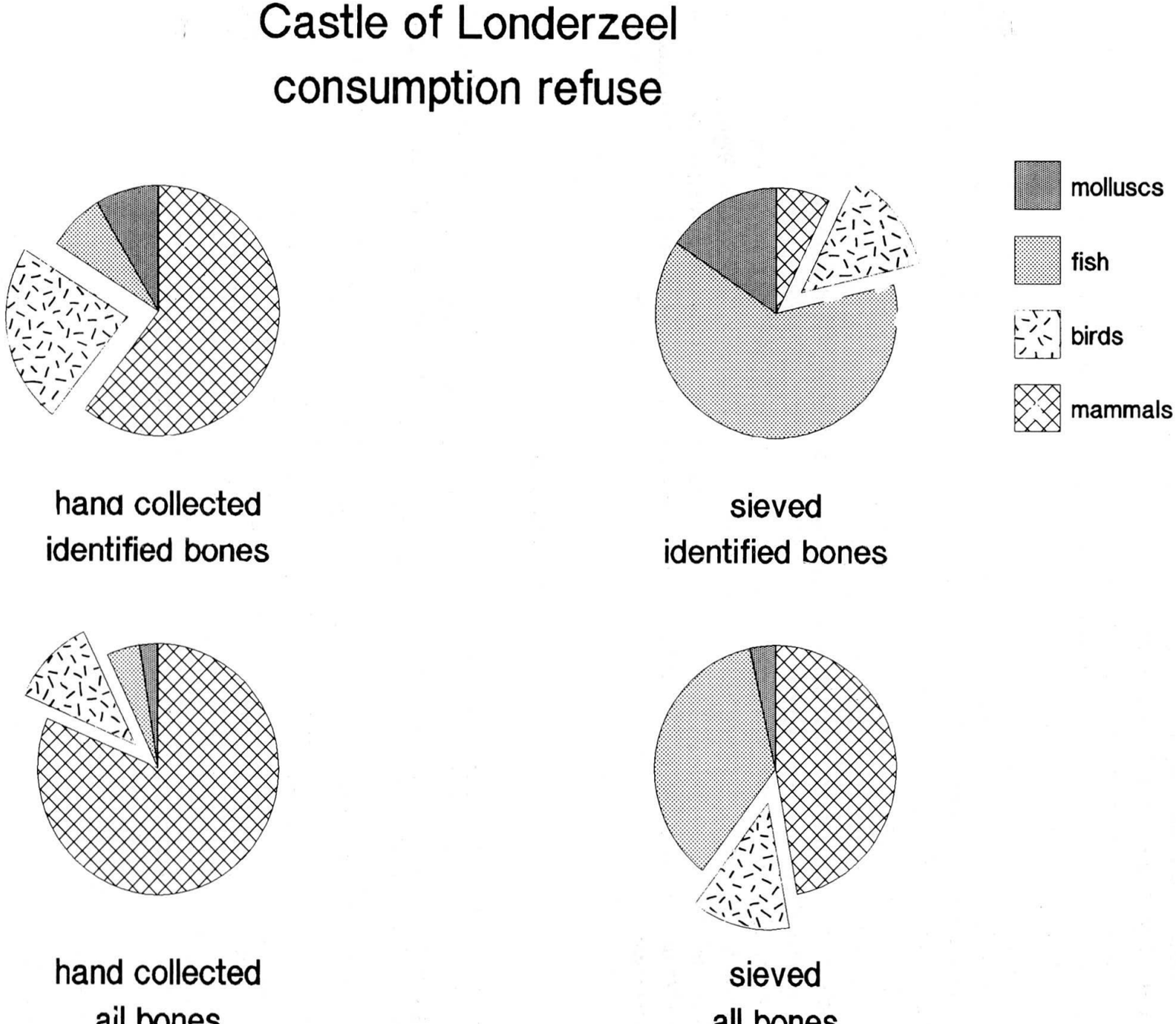

FIGURE 6 - Different ways of counting the animal groups from a 14th century layer of consumption refuse from the castle of Londerzeel.

A REAPPRAISAL OF BIRD REMAINS

Both case studies suggest that bird remains are really not very frequent in our sites and that their scarcity is not clearly linked to the theoretical factors described above. Are birds thus really unimportant for the economy of medieval and post-medieval Flanders? Maybe find counts or meat weight do not tell the whole story! Two suggestions reappraise the role of birds in the economy of medieval and post-medieval Flanders.

It could be that birds were not frequently eaten but that they were expensive and thus economically important. It is known from historical sources that sometimes peasants had to pay their rent *in natura* by annually offering the landowner a fixed amount of caponized fowl. Generally these animals were considered to be very valuable (Lindemans, 1952). It is also known that in Flanders, until World War I, chicken was considered by common families to be sunday food.

Finally, it is likely that chickens and geese were not primarily bred for their meat but were kept for their secondary products, namely eggs. An archaeozoological evaluation of this aspect will pose severe difficulties, e.g. because the laying frequencies of the medieval races are not known. Moreover, egg shells are seldomly preserved in sufficient quantity, they will often have been recycled, a.o. by the birds themselves, and, even when they are present in an archaeological context, how should they be quantified? When archaeozoologists already have troubles with the calculation of the MNI (minimum number of individuals), how could they possibly estimate the MNE (minimum number of eggs)?

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