

English Medieval Bone Flutes  
c.450 to c.1550 AD

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I, Helen Leaf, confirm that the work presented in this thesis is my own. Where information has been derived from other sources, I confirm that this has been indicated in the thesis.

## Abstract

This thesis focuses on the bone flutes of medieval Britain c.450 – c.1550 AD, and seeks to establish and assess their physical nature, archaeological context and cultural setting. In its broadest sense the project aims to provide the first detailed analysis of the flutes, expanding a previously limited array of data and addressing the social context of the flute in medieval society.

The subject area is cross disciplinary and draws from many areas of study, including archaeology and organology (the study of musical instruments). Previous work in related disciplines is identified and discussed, allowing the reader to place the thesis firmly in context.

The physical aspects of the flutes are assessed, with analyses of the data and presentation of information in an accessible form. A typology of flutes is established, based on species used and design of instrument. The archaeological context is also examined, with possible patterns emerging in relation to species used, chronological distribution and geographical locations. Cultural and social aspects are noted in conjunction with these themes.

The thesis is concluded with an appraisal of the information presented, and a setting forth of future directions for research. The 118 flutes from which the evidence is mainly derived are presented in the form of a gazetteer as Part 2 of the thesis.

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# 1 Introduction

This thesis focuses on the bone flutes of medieval Britain c.450 – 1550 AD, and seeks to establish and assess their physical nature, archaeological context and cultural setting. In its broadest sense the project aims to provide the first detailed analysis of flutes, expanding a previously limited body of data and addressing the social context of the flute in medieval society.

The evidence is mainly derived from the archaeological record, with 118 flutes found to date, both complete and fragmentary. Many flutes take pride of place in museum displays, and as artefacts they capture the imagination of visitors. There is, however, little or no evidence of their existence in the written or pictorial record, thus necessitating an archaeological approach. This aspect contrasts with the better known lyres, such as that found at Sutton Hoo, which are much depicted in iconography, yet there are relatively few archaeological examples. Given the wealth of potential information that a detailed study of the flutes can yield, an assessment and appraisal is clearly called for. This thesis aims to achieve just that, by a comparative approach evaluating the objects from a range of perspectives.

The flutes are presented in the form of a gazetteer in Part 2, that standardizes the information for each flute and which makes the available data suitable for comparative analysis. The gazetteer provides an invaluable tool for cross-referencing information. Included as an appendix to this gazetteer are the 'non-flutes', artefacts erroneously published previously as flutes.

## 1.1 The form of the thesis

The thesis comprises six chapters, which cover the topic described below.

Chapter 2 considers the archaeological study of musical instruments. This study of medieval bone flutes is cross-disciplinary, drawing from and informing several areas of study, including archaeology and organology (the study of musical instruments). Previous work in related disciplines is identified and discussed, allowing the reader to place the thesis firmly in context.

Chapter 3 identifies themes and approaches. As noted above, the primary aim of the thesis is to establish the physical properties, archaeological context and social setting of the bone flutes. The flutes themselves provide the main source of data, with supporting information



coming from published archaeological reports, and comparative bone collections with regard for species identification. The methodology used in gathering information, and rationale for recording methods is also discussed.

Chapter 4, the medieval bone flute, considers the physical nature of the objects. Cultural and social aspects are discussed in conjunction with both of the aforementioned themes, which in themselves overlap and mutually inform each other.

In assessing the physical characteristics of the flutes, analyses of the data are produced and discussed based on the categories of information recorded in the catalogue. The following themes are presented and discussed:

- The species of animal/bird used to make each flute, the skeletal element used and if this is species dependent.
- The social status of the animals and birds used.
- The proportion of complete flutes and fragments, and the type of fragments found.
- The definition of a flute and proposed system of nomenclature.
- Comment and analysis of occurrence and type of features present on the flutes.
- Establishment of a typology of flutes, based on species and design.

The medieval bone flute; context and status is the focus of Chapter 5. In addition to physical data relating to individual flutes, the archaeological context is also examined. The earliest example dates to the fifth century, with the majority occurring in the twelfth and thirteenth centuries, diminishing in number in the fourteenth and fifteenth centuries. The date range of the flutes is noted and discussed along with patterns relating to species use and geographical habitat.

The flutes have been recovered from a wide variety of sites, including castles, urban settlements, and domestic dwellings from across the social spectrum. An assessment of these site types is given. The type of context and deposit (where known) is also discussed to inform understanding of the social nature of flutes. Finds associated with flutes also add to this understanding. The contextual data provide the first social and cultural analysis of flutes in medieval Britain with significant results.

Chapter 6, the medieval bone flute; social interpretations combines the results of the physical, archaeological and cultural analyses to give a fuller understanding of the bone flutes. The thesis concludes with an appraisal of the key findings of the project and the setting forth of future directions for research.

## 2 The archaeological study of musical instruments

In order to provide a considered background to this thesis, previous work in related disciplines is reviewed and set forth below. Firstly, the development of the study of musical instruments in archaeology, or archaeomusicology is given. Then, work relating to musical instruments from different time periods is assessed: prehistoric and Roman, Anglo Saxon, and then Medieval. As bone flutes are similar in form to the more commonly discussed wooden duct flutes, an appraisal of the work relating to early wooden duct flutes is given. Studies of medieval bone flutes from North-West Europe are reviewed. This is followed by an appraisal of the work done on medieval bone flutes from mainland Britain. Finally, the music of the Anglo Saxon and Medieval periods is briefly assessed. All of these subjects provide background information that informs the subject of this thesis to varying degrees.

### 2.1 The archaeology of music

Archaeo-organology is a cross-disciplinary area of study, encompassing archaeology, ethnomusicology, organology (the study of musical instruments) and possibly anthropology. The discussion of the subject by Lund, in *What is wrong with music archaeology?* (Lund 1998) refers to Scandinavian examples, but is nevertheless relevant to overall consideration. Terms used to express the interdisciplinary nature of the research have included 'palaeo-organology', 'musical archaeology' (Megaw 1968b), 'archaeomusicology', 'archaeology of music', 'palaeomusicology', 'historical ethnomusicology' (Buckley 1998) and 'cultural archaeozoology' (Moreno-García and Pimenta 2004). A formal study group was established in 1981, the *Study Group on Music Archaeology*, as a sub-group of the ICTM (International Council for Traditional Music); the group published a short lived journal *Archaeologia Musicalis* (1987 to 1990) containing brief articles relating to a variety of instruments, and organised several conferences. In 1996 the group left the ICTM and re-formed itself as the ISGMA, the *International Study Group on Music Archaeology*. In the ongoing conference proceedings of the ISGMA, and in Buckley's volume, *Hearing the Past. Essays in Historical Ethnomusicology and the Archaeology of Sound* (1998) papers are presented on a broad range of instruments and issues, from a variety of cultures and time periods. A recent field of study, *archaeoacoustics*, addresses the intended musical purpose of architectural and archaeological places (Scarre and Lawson 2006). Though more social issues such as the cognition of music, and its social status are included in the overall field of research, it is the study of musical instruments that remains the key linking factor across the aforementioned disciplines. Archaeomusicology, the term more widely used today, is a relatively new aspect

of archaeology, to which this thesis adds a valuable contribution, both in its subject matter and its approach to interpreting this material.

## 2.2 Musical Instruments before the Middle Ages (Prehistoric and Roman)

Although the flutes that form the basis of this study are of medieval date, there are numerous European bone flutes from prehistoric contexts. Certain publications discuss them together though no continuity of tradition has been established. Far fewer flutes exist from prehistoric contexts, and they have a far wider chronological and geographical distribution. Given the isolated nature of them as finds, and their function of expressing a creative side of humankind, they have often been discussed in the context of analysing the development of man's cognitive abilities (d'Errico et al 2003). This is not the case with medieval bone flutes.

In a similar way to medieval bone flutes, the primary evidence for prehistoric music making in northern Europe comes from archaeological finds (Hickmann 2004). Bone flutes survive particularly well amongst the possible range of instruments, preserving the musical capabilities of the instrument in the design and form. Other instruments that may have existed such as drums, rattles, stringed instruments tend not to survive in the archaeological record due to the materials from which they were made (wood, horn, hide, gut etc).

A significant work that brought prehistoric flutes to light is that of Megaw in the 1960s. In his articles *Penny Whistles and Prehistory* (1960) and *Penny Whistles and Prehistory: Further Notes* (1961b) he listed examples of flutes from across the prehistoric ages. In *The Earliest Musical Instruments in Europe* (Megaw 1968c) he made brief mention of various flutes from the Palaeolithic through to the Middle Ages, and discussed sixteen flutes in more detail in *Problems and non-problems in palaeo-organology: a musical miscellany* (Megaw 1968b), giving brief contextual information. Megaw wrote an introductory note and closing comment for Brade's article *The Prehistoric Flute – Did it Exist?* (Brade 1982), in which Brade lists more flutes and discusses them in more depth. Brade calls for further investigation of the artefacts, paying attention to accurate dating, accurate identification as a musical instrument, and accurate assessment of its man-made character.

The oldest known flutes are from the Lower Palaeolithic, and date to 36,800 BCE (Hahn and Munzel 1995). Some of the better known prehistoric examples are from the middle and late Palaeolithic, from Isturitz in the French Pyrenees (Buisson 1990). These tend to be the ones

mentioned in books of a wider subject area when bone flutes are mentioned, such as *Our Prehistoric Past. Art and Civilization* (Vialou 1998) and *Musical Instruments. A Worldwide Survey of Traditional Music-Making* (Rault 2000). Interpretive problems are highlighted by the 'neanderthal flute' from Divje Babe Cave in Slovenia, which is discussed at length by Fink (1997) and Turk (1997) and is referred to as the world's 'oldest musical instrument' (estimated by Fink to be 43,400 years old). D'Errico however, claims that the artefact is not in fact a flute, the holes having clearly been caused by carnivore damage and not by human intervention (d'Errico et al. 1998; d'Errico et al. 2003). The point is also made that some of the prehistoric 'flutes' may in fact have been reed pipes, instruments of a similar size to flutes but that function using different acoustical mechanisms, and as such have different design features at their proximal end (d'Errico et al. 2003). Clearly, a re-assessment of prehistoric flutes is needed, and it appears that this has already begun (d'Errico and Lawson, 2006, Lawson and d'Errico, in press).

A recently excavated swan ulna flute from Geissenklösterle cave is currently considered to be the oldest known flute to date at 37000 BP (d'Errico et al 2003). It is mentioned in the recently published *Prehistoric Music of Ireland*, but is described as being made from a swan radius, and the illustrations depict a flute made from a swan humerus (O'Dwyer 2004, 13, 14, plate 2). It is mentioned in this publication alongside unsupported assumptions that prehistoric music of Ireland comprised of stringed instruments, percussion and played 'fast, lively and complex music' (O'Dwyer 2004, 15, 17, 20, 44, 54). Though prehistoric flutes will not be addressed in this thesis, the misidentification of the bones used to make them is an issue worthy of note, in addition to the misidentification of sound holes as being manmade as discussed above.

There seems not to be a continuation of tradition between prehistoric flutes and those examined in the present study, though this may be a question for future consideration. Certainly the Iron Age flute from Malham Tarn in Yorkshire, the only known Iron Age flute to date and one that comes from a secure archaeological context, has features similar in design to the flutes in this study (Raistrick, 1952). However, from the vast number of English Romano-British finds only one bone flute has been published, a decorated flute fragment from Frocester (Price 2000, 100-101). These few finds suggest a discontinuity of tradition between prehistoric and medieval bone flutes.

Perhaps more usefully, the current thesis provides a template for the future study and analysis of prehistoric bone flutes.

## 2.3 Anglo Saxon musical instruments

Bone flutes of both the Anglo Saxon and Medieval periods are represented in this study. The separation of these two time periods will not be strictly adhered to in this thesis, as taking the year '1066' to mark cultural change does not coincide with the slower changes expressed in material culture (Reynolds 1999, 23). However, for ease of discussion they will be dealt with separately here.

In relation to Anglo Saxon musical instruments specifically, Benko has provided a detailed appraisal in his 1983 PhD thesis *Anglo-Saxon Musical Instruments* (Benko 1983). In his own words, he 'catalogues and analyses all the existing data for nine types of Anglo-Saxon musical instruments: organs, pipes, horns and trumpets, bells, clappers, drums, Jew's harps, psalteries, and harps and lyres' and discusses the literary, iconographical and archaeological evidence. His section on bone flutes draws solely on Crane's examples (Crane 1972, see below), giving Crane's catalogue reference numbers. It is curious to note that of the fifteen examples he gives, the majority date to between the eleventh and fourteenth century and are clearly not Anglo-Saxon. No cultural analysis is offered, nor any comment about the design and typology of the flutes. These issues are fully addressed in this thesis.

A useful discussion in Benko's thesis considers the various different old English and Latin words that may refer to bone pipes, namely *hwistlere*, *hwistlunge*, *pipere*, *piperas* and *tibican*, or *tibia*. These appear to be drawn directly from Padelford's *Old English Musical Terms* (Padelford 1899) which he includes in his bibliography. Interestingly, Benko points out that in the three main old English poems that mention music, *Widsith*, *Deor* and *Beowulf*, it is singing and lyre playing that is practiced, with the occasional mention of the playing of a horn. Padelford gives numerous Old English words that indicate horns and trumpets (*blæðhorn*, *bleðhorn*, *fyhtehorn*, *guðhorn* and *truðhorn*), noting the difficulty of knowing what instruments these words actually refer to (Padelford 1899, 54). Benko also refers to Krapp and Dobbie's edition of *The Exeter Book* riddles (Krapp and Dobbie 1936) that give a variety of musical instruments as solutions to riddles, including 'flute', 'pipe', 'rye flute' and 'shepherd's pipe'. The ambiguity of the words 'pipe' and 'flute' is somewhat confusing. The word 'pipe' may refer to a reed pipe (a wind instrument activated by an inserted single reed), a hornpipe (a reed pipe whose proximal and distal ends are contained within two cow horns), a bagpipe (a reed pipe played by means of a bag that acts as a reservoir for the player's breath) or a duct flute (where the player's breath is directed into the instrument via a windway and across a specially shaped opening, as defined in Chapter 4). Similarly, the word 'flute' can be any number of

types of duct flute or (from the twelfth century onwards) a transverse flute, which is held horizontally and where the player blows directly across a special opening. 'Whistle', or *hwistlere* can refer to a signaling instrument without holes, or a duct flute (such as the later 'penny whistle').

Ohlgren's *Insular and Anglo-Saxon Illuminated Manuscripts. An Iconographic Catalogue c.A.D. 625 to 1100* (1986) and *Anglo-Saxon Textual Illustration* (1992) are invaluable reference works that enable any researcher to locate objects or themes within the corpus of Anglo-Saxon manuscript iconography. Musical instruments are present and referenced, though none can be definitely identified as being a bone flute. For the most part, the musical instruments that are illustrated are stringed instruments (lyres, harps, psalteries and lutes), trumpets, shawms and horns, and cymbals. They are most often shown as being played by angels or in relation to King David. No iconographical evidence has yet been found depicting bone flutes in the Anglo-Saxon period. The contemporaneity of the musical instruments depicted in Anglo-Saxon manuscripts is also to be questioned; some may well be copied from previous manuscripts of late antiquity, a practice discussed by Carver in his essay '*Contemporary Artefacts Illustrated in Late Saxon Manuscripts*' (Carver 1986). The supporting iconography, or lack of it, will be discussed in Chapter 6 when addressing social interpretations of flutes.

The publication in the 1980s of the finds from the Sutton Hoo ship burial brought the subject of Anglo-Saxon lyres into prominence (Care Evans 1989). This type of lyre has also been found at other high status burials such as Taplow and more recently, Prittlewell, and is also depicted in manuscript illustrations being played by David, such as in Cotton MS Vespasian A I, f.30.v. (Bell 2001). Page's *Anglo-Saxon Hearpan: their terminology, technique, tuning and repertory of verse 850-1066*<sup>1</sup> (Page 1981) provides a knowledgeable and thorough discussion of the subject. Though not directly concerned with the matter of bone flutes, Page's work provides valuable information about the state of knowledge of musical theory in Anglo-Saxon England. How this relates to bone flutes will not be covered in this thesis, though its relevance should be noted if future research seeks to assess the possible tuning patterns of bone flutes.

Lawson's entry in *The Blackwell Encyclopaedia of Anglo-Saxon England* gives a fair representation of the range of instruments of the period, with his main discussion dealing with bone flutes and lyres (Lawson 1999, 2001, 328-9). He also mentions the wooden panpipes and chanter from York, suggesting a level of craftsmanship offered by workshops or possibly organised trade. His proposal of a reed-pipe tradition uses as evidence instruments found in

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<sup>1</sup> *Hearpan* refers to the Anglo-Saxon lyre

Ipswich and West Cotton, though their identification as deer metapodials (d'Errico and Lawson 2006, 44; Lawson forthcoming c) is incorrect as discussed below in sections 3.2.2 and 4.3.3.

## 2.4 Medieval musical instruments

A survey of extant medieval musical instruments of all types was published by Crane, aptly named, *Extant Medieval Musical Instruments: A Provisional Catalogue by Types* (Crane 1972). This appears to be a thorough catalogue of known instruments of the time from Europe that gives brief summary information for each example. Information for each instrument varies, but typically includes the date, size, current location, and place of excavation where known. The list is a gazetteer, in itself a valuable starting point for research, but one that offers no discussion of the cultural influences or social significance of the flutes. One of the most recently published articles on medieval duct flutes, *Iconography in the history of the recorder up to c. 1430 – Part 1* (Rowland Jones 2005), mentions bone flutes, but notes them as 'probably made by shepherds', and refers to Crane's 1972 list as evidence. This clearly illustrates the lack of awareness of the extent and variety of bone flutes that exist, and reinforces the need for the information in the current thesis. The contextual analysis presented in this thesis clearly shows that the social arena of medieval flute playing extended beyond the realm of the shepherd.

In terms of musical instrument history, Montagu's *The World of Medieval and Renaissance Musical Instruments* (1976) presents perhaps the first summary of the range of musical instruments across the said time periods. It is the standard introductory textbook to the subject. In relation to the early medieval period, examples are drawn from iconography more than from extant musical instruments, although bone flutes are mentioned in passing (Montagu 1976, 17-18). Reliance on iconography may be misleading, as noted above, and highlights the value of archaeology in providing concrete evidence.

Perhaps the most recent presentation of archaeological musical instruments is *Opgedolven Klanken. Archaeologische muziekinstrumenten van alle tijden*, a much illustrated book covering a comprehensive variety of instruments, both extant examples and derived from iconographic evidence (Tamboer 1999). Medieval bone flutes are illustrated and considered equally among other musical instruments, rather than as something low status and trivial.

The guidelines for performance of medieval music do not consider bone flutes as a known instrument. McGee's *Medieval and Renaissance Music. A Performer's Guide* discusses approaches to music and the appropriateness of playing that music on period instruments (McGee 1985). Though he gives timelines of occurrence and popularity of all instruments (ibid. 64-65), bone flutes are not mentioned. Wilkins' *Music in the Age of Chaucer* similarly does not offer bone flutes in the list of instruments, though mention is made of some 'rustic or ephemeral' instruments such as Chaucer's 'pypes made of greene corne' (Wilkins 1979, 145).

One of the principle intentions, therefore, is that this thesis should raise the profile of bone flutes so that they may be considered as a valid, and socially valued, musical instrument.

## 2.5 The earliest wooden duct flutes

Bone flutes are duct flutes, as defined below in Chapter 4. Tabor pipes and recorders are also duct flutes, whose presence is readily accepted in the range of medieval and renaissance musical instruments. Both types of instrument have similar physical characteristics, and there is a chronological overlap between the later bone flutes and earliest known wooden flutes, although there may be earlier wooden flutes that have not survived archaeologically.

Montagu comments on the changing role of these instruments in *The World of Medieval and Renaissance Musical Instruments* (Montagu 1976). For the period 1200-1350, duct flutes are said to appear in iconography, though few concrete examples are given, and are suggested to have been played by ordinary people, shepherds or grotesques. The iconography of the pipe and tabor is also discussed. Bone flutes with three or four holes could have been used for this purpose as well as being played independently. For the period 1348-1453, the first wooden recorders appear, and duct flutes are said to have continued throughout this period, with recorder continuing into the Renaissance period and beyond (1450-1750) as a prominent wind instrument, often occurring in sets of differently sized instruments (Montagu 1976).

Rimmer's *An archaeo-organological survey of the Netherlands* (Rimmer 1981) discusses four wooden duct flutes (tabor pipes and recorders) dating 1350 – 1600, and Bosmans illustrates eleven tabor pipes from the Low Countries dating from c.1400-1700. He discusses the available contemporary iconography that supports their existence, and observes that they seem to have been used particularly for dance and popular entertainment (Bosmans 1991). Amongst Tamboer's illustrations is a tabor pipe of the eleventh century (Tamboer 1999, 16), and there are well known examples of fourteenth century recorders from Dordrecht, Göttingen and Würzburg (Rowland-Jones 2005, 557-8, Weber 1976).



The only known English example of a duct flute, apart from the three tabor pipes recovered from the wreck of the Mary Rose (dated to c.1535), is the mouthpiece of a duct flute from Southampton, securely dated to the late thirteenth century (Platt and Coleman-Smith 1975, 231-2).

It has become accepted fact that bone flutes are the ancestors of wooden duct flutes, though evidence to support this has not been published. An assessment is given in Chapter 6 when examining the evolutionary and social aspects of bone flutes. There is clearly a period when both bone and wooden instruments were contemporary, and the early wooden instruments can be compared to the bone flutes to assess a relativity or continuity of tradition.

## 2.6 Medieval bone flutes of North-West Europe

Several publications have provided surveys of bone flutes from other Northern European countries. Crane's *Extant Medieval Musical Instruments: A Provisional Catalogue by Types* (1972) catalogues one hundred and thirty-one flutes and twenty-three whistles, including flutes from Denmark, England, Frisia, Germany, Norway, Poland, Romania and Sweden. As noted above, a brief entry is given for each instrument. The information given for each flute varies, and includes: place of excavation, date of excavation, date of artifact, current location, length, number of holes, species and bone used, and bibliographical reference.

Brade's *Die mittelalterlichen Kernspaltflöten Mittel-und Nordeuropas* (1975) is a significant survey of the known medieval bone flutes of central and northern Europe; its information is accessible and impressive. Brade lists one hundred and nineteen flutes dating from the ninth to the sixteenth centuries, from Belgium, Denmark, Germany, the Netherlands, Norway, and Sweden. The flutes are assessed primarily by their physical aspects and are categorized into type by the number of holes, each one comprehensively measured. The museum accession number is also given, and each flute is illustrated. Tunings are given for each flute, although it is not immediately clear how tuning details were obtained.

Flutes from the Netherlands have been published in Boeles' *Friesland Tot de Elfde Eeuw* (1951) where three Frisian flutes are illustrated but not dealt with in depth, and Roes' *Bone and Antler Objects from the Frisian Terp-Mounds* (1963), where twelve are illustrated, and grouped into types according to physical attributes. The observation is made that the flutes appear to have been made by unskilled craftsmen, with the holes having been made usually by the point of a knife but also occasionally by a hot iron implement. The author

acknowledges the need for further studies of these artefacts (1963). Rimmer's *An archaeo-organological survey of the Netherlands* (1981) gives a brief typology of bone flutes, determined by the number of toneholes and their placement on the instrument. Examples are provided, with the place of excavation stated and occasionally the date, but no further details are given; three are illustrated and their current location listed.

In addition to the German flutes mentioned by Brade in 1975 (noted above), further examples are covered in her 1978 publication *Das Archäeologische Fundmaterial III der Ausgrabung Haithabu* and by Ulbricht in *Die Verarbeitung von Knochen, Geweih und Horn im mittelalterlichen Schleswig* (1984). Reimers and Vogel, in *Knochenpfeifen und Knochenflöten aus Schleswig* (1989) are the first to offer a nomenclature (in German) of the flute and its parts. They illustrate fifty-five flutes and whistles with photographs, and give a frequency analysis of some of them.

Swedish flutes are discussed by Lund (1985) in *Bone Flutes in Vaestergoetland*. Of the two hundred and fourteen finds (comprising both possible and definite flutes) two regions have yielded a concentration of finds, from the late Neolithic, the middle ages, and the mid-nineteenth century. The medieval finds mainly date from the thirteenth to the sixteenth centuries, and are briefly discussed in general terms. A possible continuation of a playing tradition in Västergötland is assessed, and is not thought to have occurred.

Previous studies have been useful in suggesting ways of assessing the information relating to each bone flute, and the presentation of data. Given the time that has passed since these publications, and the disparate nature of them, it would seem that a collective volume of northern European bone flutes is called for. If more recent finds were taken into account, and the information were standardized, then a sizeable and valuable body of reference could be produced. If this data were assessed according to cultural migration and historically and archaeologically documented territories, then possible musical traditions could be studied. This is beyond the scope of the present thesis, although reference is made to European flutes when discussing flute types in Chapter 4.

## 2.7 Medieval bone flutes from mainland Britain

Bone flutes from mainland Britain came to prominence largely through the work of Megaw (1960, 1961a). Subsequent publications detail unique flutes, from White Castle (Monmouthshire), Canterbury and Southampton (1961a, 1963, 1968a and 1975). Barrett published a flute from Keynsham Abbey at a similar time (Barrett 1969). Megaw considered the physical aspects of the flutes, and gave a musical appraisal, gained by restoring them to a playable condition and then playing them. This is a practice no longer condoned, as discussed below. All of the flutes published by Megaw were complete rather than fragments, and are still exceptional examples worthy of study. Subsequent authors primarily refer to flutes mentioned by Megaw and to Crane's list of 1972, and they are by far the most well known. Lawson has published various notes on flutes in excavation reports (1982, 1984, 1993, 1995a), referring to both Megaw's work and his own, concentrating on their physical and potential musical aspects.

Where several flutes are found at one location, they are sometimes seen as a group, such as the six found at Exeter (Megaw 1984) or the ten found at Winchester (Megaw 1990), yet more often than not, flutes are assessed independently without reference to a wider body of material other than the main flutes published in the 1960s. A comparative study of English flutes has not yet occurred, and is clearly needed as a basis from which to work. Such is presented in this thesis based on the catalogue, placing each flute within a wider overall group for a more informed understanding.

The inaccessibility of information has also possibly excluded readers. Many of the medieval bone flutes that have been found in mainland Britain are published in individual archaeological reports, sometimes among other artefacts of bone and antler, and sometimes within a 'pastimes' section. The report on the Southampton excavations (Platt and Coleman-Smith 1975) is widely read, and the bone flute found there is an example well known by most archaeologists. However, such a flute may be overlooked by more musicological researchers. There is a clear need for information relating to bone flutes to be available to both archaeologists and non-archaeologists (e.g. musical instrument historians, musicians, enthusiasts, re-enactors), and this thesis aims to present that information in a clearly accessible form.

## 2.8 Music

To ascertain what music might have been played on the flutes is an obvious area of research combining two areas of knowledge: the bone flutes' musical capabilities and a knowledge of the musical trends of the time.

A more reliable way of assessing a flute's tuning is to make an exact replica. Several recordings exist where replicas of bone flutes have been made and played, though not all are medieval. The CD, *The Kilmartin Sessions. The Sounds of Ancient Scotland* (Kilmartin House Trust 1997) has three tracks made using replicas of bone flutes, two using prehistoric bone flutes from Scandinavia, and the third a transverse bone flute of unknown provenance. It should be noted that there is no evidence for the existence of the transverse flute as an instrument before the Middle Ages, so it is unclear as to why this form was chosen, in spite of the beauty of the sound produced.

Similarly, the bone flute used on Sequentia's *The Rheingold Curse, A Germanic Saga of Greed and Revenge from the Medieval Icelandic Edda* (Sequentia 2004) is a transverse flute rather than a duct flute, even though all known Scandinavian finds are duct flutes.

Replicas of Scandinavian flutes are recorded on Lund's *Musica Sveciae Fornnordiska Klanger [The sounds of Prehistoric Scandinavia]* and on Viking Tones *I Dreamt me a Dream* (1998). In the latter example, replicas of two different flutes are used to play traditional Danish and Icelandic melodies.

Written music exists from Anglo-Saxon and Medieval times, as illustrated and discussed in Fenlon's *Cambridge Music Manuscripts, 900-1700* (1982) and Bell's *Music in Medieval Manuscripts* (2001). For the most part it is religious in nature, and written for voices rather than instruments. It is difficult to know how it relates to secular and folk traditions, and it is certain that all types of music would have been largely passed down *via* oral tradition. Written music is also not readily accessible to contemporary musicians, being comprised of 'neumes', or stylized graphic signs that indicate the rise and fall of a melody. There are rules by which one can understand them, though the rhythmic aspect of the music is not expressed.

Tunings can be studied by looking at instruments that embody the tuning systems they play (e.g. tuned bells) or by reading treatises on music theory. Page has published a great deal of work relating to the music of Anglo-Saxon and Medieval times, such as *Anglo-Saxon*

*Hearpan: their terminology, technique, tuning and repertory of verse 850-1066* (Page 1981) and *Fourteenth-century Instruments and Tunings: a Treatise by Jean Vaillant?* (Berkeley, MS 744) (Page 1980), which may inform understanding of the music played on bone flutes.

Assessing this music, and playing and recording it on appropriate replicas is an area of research that clearly needs to be undertaken. Though it does not fall within the scope of this thesis, it is clearly a study of potentially great significance. Such a study, however, can only begin with an understanding of the physical evidence.

## 2.9 Concluding remarks

Taking into account the various themes connected with the study of bone flutes, it is clear that a wide body of information needs to be gathered, assessed and analysed. This thesis does precisely that, and provides a thorough basis from which further avenues of investigation can be undertaken.

## 3 Themes and approaches

### 3.1 Research aims

The previous chapter reviewed existing work associated with the study of medieval bone flutes. The primary research aim of this thesis is to establish the physical, archaeological and cultural nature of the flutes.

Chapter 4 addresses the following questions relating to the physical aspects of the flutes:

- What animals and birds are used to make bone flutes?
- What skeletal elements are used to make bone flutes?
- What is the social status of these animals and birds?
- In what state of completeness do the flutes occur?
- What exactly is a bone flute and what nomenclature can be used to describe it?
- What design features occur, if any?
- What typology can be established?

Chapter 5 addresses the following questions relating to the archaeological aspects of the flutes:

- Is the survival of bone flutes limited by geographical and geological conditions?
- How has differing methods of excavation, recovery and recording affected the data relating to bone flutes?
- What is the geographical distribution of the flutes?
- In what types of site are bone flutes been found?
- What is the chronological distribution of the flutes?
- In what type of archaeological context are the flutes found?
- In what type of archaeological deposit are the flutes found?
- What other objects are found alongside bone flutes?

The social and cultural nature of the flutes is addressed throughout Chapters 4 and 5, particularly looking at the social status of animals and birds used, and the site types in which these flutes are found. The questions and themes explored in Chapters 4 and 5 are summarised in Chapter 6.

## 3.2 Methodology

### 3.2.1 Preliminary work

In view of the lack of previous survey and analysis, no comprehensive list of flutes is available as a starting point. As a first stage, it was first necessary to establish the extent and whereabouts of the flutes to be studied. The early surveys by Crane (1972), Megaw (1960) and MacGregor (1985) provide basic initial listings of twenty-five examples, though one of these was unable to be traced beyond this initial reference. A preliminary search of key archaeological publications such as the Winchester finds volumes (Biddle 1990) and the EAA (East Anglian Archaeology) report series yielded further flutes, and by following references in footnotes in the above publications, the list has expanded further. Searches on databases such as BIAB (the British and Irish Archaeological Bibliography), county archaeological databases such as NOAH (Norfolk Online Access to Heritage), and RILM (Répertoire International de Littérature Musicale) have also been fruitful, though here the word used in the search has to be considered carefully, given that the artefact may be listed as 'flute', 'whistle' or 'pipe'. For example, in an archaeological database the search word 'pipe' provides countless listings for clay pipes, whereas 'whistle', 'music' or 'musical' may give more specifically useful results. Further flutes added to the list have come about through personal connections with museum curators, archaeologists and worked bone specialists, leading to a total of 118 flutes that are included in this thesis. These are flutes that have definite identification as being flutes, having been personally examined and recorded.

In order to address the questions posed in this thesis, three stages of information processing are undertaken:

- 1 Gathering information
- 2 Presenting the data in an accessible and standardised way suitable for analysis
- 3 Analysing and synthesizing the data to address the research aims

These stages are discussed below.

### 3.2.2 Gathering information

When a flute is identified, full information for that particular example is gathered using all available sources, namely:

- 1 published information
- 2 direct observation and examination of the flutes

3 local insight and knowledge from museum curators and archaeologists

#### 3.2.2.1 Published information

This is often an accessible and available source of information, although the detail available depends on the nature of the report and when it was written. There is often a delay of many years between the recovery of materials from archaeological contexts and their publication, though so called 'Grey Literature' may be available through the archaeological unit responsible for the original excavation.

If insufficient information is given in published reports, the excavation field notes can be consulted where they survive. These latter are often housed in an archive in the local museum. Archives of this nature were consulted regarding flutes from London, Southampton and Winchester, although there are instances where no further information is available from archives, for example if it is missing (as was the case for Exeter) or where information or sites notes is poorly recorded, for example, the original excavation notes for Rayleigh Castle consist of small books with jotted notes that make little sense, and though there are small find and context numbers for the flutes from Ludgershall Castle, the excavation notes and maps give no clue as to what these numbers mean. When well presented, the information is highly valuable, with detailed record sheets for each context, and a small finds register.

#### *Critique of published information*

The benefit of published information, by its nature, is its availability and accessibility. However, certain problems have arisen when using such sources, namely the accuracy of species and skeletal element identification, the accuracy of illustrations, and the correct identification of the artefact as a flute.

Accurate identification of species and skeletal elements is vital with regard to understanding flutes within the cycle of procurement and manufacture and perhaps use. In most cases but not all, an experienced bone specialist undertakes identification. Bone specialists frequently have experience with mammal bones, but not with bird bones, whose identification is complicated by the differing proportions of bones between species. For example, a flute from West Cotton [91] has been identified as being made from a deer metatarsal, an identification confirmed by Northampton Archaeology's bone specialist. However, it seemed to be a crane tarsometatarsus, similar in form to the flute from Canterbury Lady Wootton's Green [7]. Comparison with bones in the reference collection of the Natural History Museum's Bird Group at Tring (Cooper, pers. comm. 2005) confirmed the



identification of the bone as a crane tarsometatarsus, a quite different bone altogether to the deer metatarsal. Other examples, such as the flutes from Gloucester Park Street 35 & 40 [24], Hertford Castle [29] and North Elmham [67], have also been erroneously identified in publication. The abovementioned example from West Cotton has been quoted as supporting evidence to the existence of a deer metatarsal reed pipe tradition (d'Errico and Lawson 2006, 44; Lawson in Shepherd Popescu, forthcoming). Given the inaccuracy of the original identification, the point made by the author is not fully supported.

Clearly accurate identification of each known flute is required based on thorough knowledge of appropriate bone identification. Preliminary study of bone flutes for this research revealed commonly used bones, for example goose ulna and sheep tibia. A personal reference collection has been created of these common bones, and also of bones that are less common, for example swan ulna, deer tibia and deer metatarsal. As such, a familiarity is built up with the bones and their cross sectional profiles as seen on the flutes. When an unusual bone occurs and the species is unknown, further reference collections and their specialist curators have been consulted, namely at the Natural History Museum's Bird Group at Tring, and the Natural History Museum's Mammal Section in London. The range of sizes within a particular known species is a further issue that requires careful consideration, as shown by the swan ulna flutes discussed below and shown in Figures 9 and 10. Commonly used bones are discussed in Chapter 4, with illustrations of their cross sectional profiles or key diagnostic features so as to provide a guide for future researchers.

An occasional problem encountered relates to the quality of illustrations in publications. Illustrations tend to show one view of a flute, that of the front surface which has the key features of the instrument like the toneholes and window. While this is to a certain extent useful and adequate, it does not always give the reader the fullest impression of the artefact. The following examples highlight this point.

In the case of one of the flutes from Wicken Bonhunt [99], the published illustration is so unlike the actual flute that there seem to be two flutes in existence. The illustration (Fig. 1) appears to show the upper end of a flute, with a window and 2 ½ toneholes, whereas the actual flute (Fig. 2), is the lower end of the flute, with 3 ½ toneholes (see below for an explanation of the terminology used when describing bone flutes).

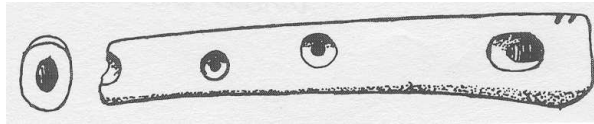


Figure 1. Published illustration of Wicken Bonhunt Small Find number 54 (from Bradley and Hooper 1974, 54).



Figure 2. Photograph of Wicken Bonhunt flute [99].

Two notable cut marks are present in both flutes in the same place, and given that the number of holes in both is the same, and there are no other flutes recorded from that particular excavation, the flutes might be one and the same, but it is difficult to see how even a rough sketch could differ so much from the actual object.

Another flute, from Hertford Castle [29], is illustrated upside down as shown in Figure 3. The conventional way of portraying musical instruments such as recorders is with their proximal end uppermost as if being seen in the hands of a player. In this particular example, the flute has been illustrated as if is an instrument with a flared distal end, a design feature common to instruments such as shawms or trumpets. Bone flutes, however, usually have the wider, slightly flared end of the tibia at their proximal end, and examination of the artefact confirms this by the notable presence of part of the window at this end. The preferred orientation of the flute is therefore that in the photograph to the right of Figure 3.



Figure 3. Hertford Castle flute, [29], as illustrated in the published report (Zeepvat and Cooper-Reade 1996, 29) and as photographed.

Most illustrations show the front surface of the flute, which is usually where toneholes are made. This does not show the toneholes in relationship to the curvature of the bone, i.e. if the toneholes are made in the convex surface, which is the more usual form of flute, or if they are in the more unusual concave surface as shown below in Figure 4. This is important information when trying to understand how the instrument may have been held and played.



Figure 4. Exeter B5 flute [16], showing toneholes cut into the concave surface of the bone.

The solution is to examine the flutes in person. In addition to measuring the flutes, photographs were taken of all four sides and both ends thus recording their proportions for future reference.

A further problem occurs when artefacts are erroneously identified as flutes, such as those from Colchester Cups Hotel and Bedford Cauldwell Street (Crummy 1988, 45, Baker et al. 1979, 291). These are often bone objects with one or more intentionally created holes along the long axis, that do not fit into any recognised classification of artefact. An understanding of the acoustical and functional aspects of bone flutes as discussed in Chapter 4, and a familiarity with the number of examples studied in this research assists in the accurate identification of artefacts as being flutes. It has therefore been possible to provide a secure definition of a flute and a list of 'non-flutes' is included in Part 2 of the thesis for reference.

Conversely, a flute may not be correctly identified, such as that from Ripplingham [77] of which it is stated, 'Three countersunk holes have been bored through this flattened surface, presumably for attachment to some unknown object as a handle' (Wacher 1966, 665). To confirm their identity, all artefacts have been personally examined and recorded.

#### 3.2.2.2 Examination and recording of the flutes

As noted above, many of the problems arising with published information are resolved by direct observation and examination of the flutes. The location of all flutes listed in the gazetteer was ascertained prior to research trips being undertaken. This made each regional trip as efficient as possible.

A given flute's current whereabouts is not often stated in published reports, and so had to be ascertained. The simplest method for this proved to be locating the site in question, and then the nearest museum. A phone call to the museum quickly established in most cases whether or not the finds from a particular excavation were there. Direct contact with curators also generated interest in the project and further instances of flutes have been located as a result.

Communication with the relevant museum or excavating body, and patience, has yielded the locations of the majority of flutes, though the locations of some remain unknown. Figure 5 lists the museums and locations visited during these research trips, and the flutes that were examined there. The flutes that were not examined directly are listed in Figure 6, along with the reasons for them not having been examined.

museum or location visited	flute(s) at that location
Bedford Museum	[2]
Bristol City Museum and Art Gallery	[1] [5]
Buckinghamshire Museum Resource Centre, Halton	[80] [93]
Cambridge, MacDonald Institute	[86] [89]
Cambridgeshire County Council Archaeological Field Unit	[82]
Canterbury Archaeological Trust	[12]
Canterbury, Museum of Canterbury	[7] [8]
Cardiff, National Museum of Wales	[98]
Daventry, Northamptonshire County Council secure store	[66]
Devizes, Wiltshire Heritage Museum	[59] [60] [61] [62]
Exeter, Royal Albert Memorial Museum	[13] [14] [16] [17]
Gloucester Folk Museum	[23] [24] [25]
Hertford Museum	[29]
Hull, Hull and East Riding Museum	[3] [4] [77]
Keynsham Town Hall	[35]
Kings Lynn Town House Museum	[26]
Lincoln, The Collection	[38] [40] [41]
London, Institute of Archaeology (temporary location of flute)	[30] [31] [111] [43] [44] 50 [51] [53]
London, LAARC	[54] [58] [42] [45] [46] [47] [48]
London, Museum of London	[49] [52] [57]
London, The British Museum	[20]
Malton Museum, Yorkshire	[94]
Northamptonshire Archaeology	[32] [33] [90] [91] [92] [9] [10] [67] [69] [70]
Norwich Castle Museum	[72] [87]
Oxford, Pitt Rivers Museum	[21] [55] [56]
Saffron Walden Museum	[99] [100]
Salisbury and South Wiltshire Museum	[73] [74]
Southampton Museum of Archaeology	[27] [28] [79]
Southend Museum	[75] [76]
Winchester City Museum	[101] [104] [105] [102] [103] [106] [107]
Winchester Historic Resources Centre	[109] [110]
WYAS Archaeological Services	[95] [96] [112] [115] [116] [117]
York Archaeological Trust	[118]
York, Yorkshire Museum and Gardens	[113] [114]
number of locations = <b>34</b>	number of flutes seen = <b>95</b>

Figure 5. Table showing locations visited and flutes examined there.

reason for not seeing the flute:	which flutes not seen:	number of flutes:
whereabouts unable to be ascertained	[6] [15] [18] [19] [22] [36] [37] [39] [63] [64] [65] [71] [81] [83] [84] [85] [88] [108]	18
flutes became known of too late in the survey	[11] [34] [68] [97]	4
museum closed for refurbishment, artefacts in store	[78]	1
number of flutes not seen: <b>23</b>		

Figure 6. Table showing reasons for not seeing flutes.

In one instance, the flute (from Seacourt [78]) was unable to be examined due to all artefacts being in store while the museum undergoes extensive refurbishment. Several flutes became known of too late for them to be included in the research trips ([11], [34], [68] and [97]). The main reason for not examining flutes directly is that of not knowing their whereabouts. For example, the current location of the flute from Bungay Castle [6], excavated in 1934-1935, is unknown, despite searches with all nearby museums, archaeology units and local history specialists. Another flute whose location is unknown is that from Lydney Castle [64]. The finds from the excavation, which are not catalogued, are housed in a private museum which is part of the Bledisloe estate, and which is open to the public on certain days of the year. By kind permission of the housekeeper and by prior arrangement, I was able to search through the cases and cupboards of the museum, but was unable to find the flute. The published illustration is not of sufficient detail to yield an accurate species identification apart from 'bird' ulna, and no context information is given (Casey 1931, 254). The flute remains in the gazetteer nevertheless, as does the flute from Bungay Castle, of which there is no known illustration.

The total number of flutes seen (examined directly) is ninety-five, from the 118 flutes in the gazetteer. Twenty-three flutes were not seen, and Figure 7 shows these values as percentages in a pie chart.

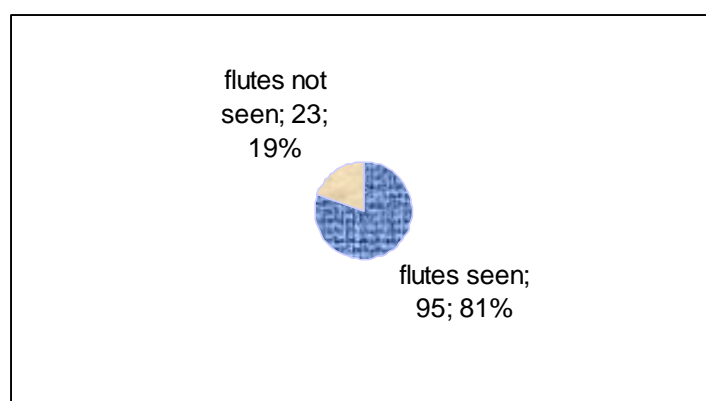


Figure 7. Pie chart showing percentages of flutes seen and not seen.

To record a flute fully during a museum visit, the following tasks were undertaken:

- 1 confirming of the identity of artefact as a flute
- 2 confirming or establishing the species and element identification
- 3 photography of all four sides and both ends of the flute
- 4 measuring the flute
- 5 noting features and observations

These tasks are discussed below.

#### Secure identification

As noted above, several artefacts have been misidentified as flutes, accurate identification only becoming possible when the artefact is examined directly. This re-identification of 'flutes' has been of great interest to the curators.

#### Species and element identification

Usually, the species of animal or bird used to make a flute and its skeletal element are accurately identified in published accounts. However, as noted in above, some are not. Sometimes bones are erroneously identified, or are listed simply using a general term such as 'bird' (Casey 1931) or 'mammal' (Fairbrother 1990). Certain bones of different species have very similar cross sectional diameters, particularly the central shaft of a bird ulna, which in some instances could be goose, crane or swan. During a museum visit, the published identification was questioned, confirmed and established on a sound basis.

As such, being able to make an accurate identification is important, and the following resources have been made use of:

- Published bone manuals
- Personal reference collection
- Public reference collections

#### *Published bone manuals*

Standard guides to bone identification usually depict bones in their complete form, i.e. with their epiphyses, or ends, in place (Hillson 1992, Schmid 1972, von den Driesch 1976). These are very useful, yet they rely on the presence of the epiphyses for identification, and bone flutes usually have these ends removed. For more accurate identification of bone flutes' species and element, therefore, knowledge of the varying cross sectional profiles of different bones is needed. Also, in the case of bird bones, the relative proportions of some of the less common bones (e.g. the tarsometatarsus) vary from species to species. Manuals rarely portray these variations or other key diagnostic features, such as the placement of 'muscle scars' (the depression for the brachialis muscle) and nutrient foramen, essential for diagnosis between species with similar sized bones such as the swan and crane. The knowledge of such variations has been gained from first hand study of the reference collection at the Natural History Museum Bird Group at Tring.

#### *Personal reference collection*

A reference collection has been established, with the most useful bones for flute identification. Some have proved easy to obtain, either because the animals are currently farmed (sheep or red deer) or because workers at wildlife centres have willingly given bones from deceased animals or birds. Other bones have proved more difficult to obtain, e.g. crane, fallow deer, roe deer, either due to their being a protected species, or their being wild and not widely hunted in contemporary society. In addition, certain bones from farmed livestock are actually difficult to obtain, e.g. the sheep metatarsus, as these are discarded at the abattoir in accordance with current legislation and are thus not available.

#### *Public reference collections*

Collections such as that of the Natural History Museum Bird Group at Tring have proved invaluable in two aspects: providing reference bones of rare birds such as the crane, and having a range of skeletons that give an idea of the ranges in size and form within a species. An example of the relevance and usefulness of this resource is highlighted by one of the flutes from West Cotton [91], mentioned above, and previously noted as being made from a deer metatarsal. Comparison with the reference collection confirmed the identification as that of a crane tarsometatarsus, though a point of interest is that it was temporarily thought to be possibly the tarsometatarsus of a stork. Close study of very subtle diagnostic features was needed to confirm the species and element identity (Cooper, pers. comm. 2005). The reference collection at Tring was also useful for comparison of



the range of sizes of a particular bone within a species, such as the swan ulna in Figures 9 and 10 as discussed below (Cooper, pers. comm. 2007).

### Photography

In order to obtain the highest standard of photograph possible, the following equipment was used.

- Digital SLR camera with large memory card.
- Tripod with a cross arm attachment, to position the camera directly above the subject
- Portable studio light, with a spare bulb.
- Extension cable for use with the light if necessary.
- Coloured velvet cloth for background contrast, the colour of which may be easily removed digitally when the photographs are manipulated and collated. In addition, small beanbags were made from the same cloth to support the flutes during photography.
- Scale, to be placed alongside the flute to provide an accurate comparative scale of measurement in the finished photograph.
- Reflector, used to illuminate the artefact more fully in conjunction with the studio light.

Photographs were taken using the highest resolution possible, of the front, back, and both sides of the instrument, and of both ends if possible. These photographs are combined to produce an overall picture as shown below in Figure 8. All photographs used in this thesis were taken by the author unless otherwise stated.



Figure 8. Photographs showing all sides of the flute from Yatesbury [111].

### Measuring flutes

During examination of a flute the length is measured using vernier callipers. Masking tape is used to cover any metal parts that may touch the flute, to avoid scratching the objects, and the callipers are set to zero before measurement commences. Measurements recorded by the callipers are to two decimal places, but these are rounded off to one decimal place for the catalogue entry. The flute is measured along its central longitudinal axis wherever possible. This is not always possible when a flute is fragmentary and in such cases, flutes were measured at their longest, with the flute held parallel to the length of the calliper.

The only measurement taken for the catalogue entry page is the length. However, the following additional measurements were taken during examination of the flute:

- Diameter of bone at both ends and at the midpoint of flute
- Wall thickness of bone at either end
- Distance to toneholes from the distal end of the flute
- Diameter of each tonehole (length x width)
- Window (length x width)

The diameter of the bone along the shaft can aid with species identification, or can add to understanding about variations of size within a species. For example, the flutes shown in Figures 9 and 10 from Norwich [69] and York [114] are both made from swan ulna.



Figure 9. Swan ulna flute from Norwich Bishopsgate [69].



Figure 10. Swan ulna flute from York Clifford Street [114].

The flute from Norwich [69] has a diameter typical of swan ulnas encountered in the research for this thesis; that from York [114], however, has a diameter far larger. Consultation with the reference collection at Tring confirmed the identification of the bone as swan ulna, but from a swan that must have been extremely large (Cooper, pers. comm., 2007).

The distances between toneholes can be measured from the centre of the hole, or from either of their edges, with a variety of possible systems able to be used:

- measuring to the proximal edge of the tonehole from the proximal end of the flute
- measuring to the proximal of the tonehole from the proximal edge of the window
- measuring to the proximal edge of the tonehole from the distal edge of the window
- measuring to the centre of the tonehole from any of the above points
- measuring to the distal edge of the tonehole from the distal end of the flute
- measuring to the centre of the tonehole from distal end of the flute
- measuring *between* toneholes (used in some published accounts, though it is not always stated if it's between the centres or between adjacent edges).

In current wind instrument making practice, the position of toneholes is marked on the instrument prior to drilling the hole, with the marked position being the central part of the tonehole. To apply this method to the measurement of bone flute toneholes, one must assess the central point of the tonehole. This must be done by eye, or by measuring the tonehole's length and adding half of that measurement to the length measured to the edge of the tonehole. Measuring to the edge of the tonehole seems more appropriate and accurate. To measure from the window risks damaging its potentially delicate edge, and the most accurate and non-harmful way to measure is from the distal end of the flute to the distal end of the tonehole. The measurements are taken from a point on the distal end that is central to the axis of the instrument and in alignment with the toneholes. When the distal end is absent, or when the flute is only a limited fragment, then the only measurements possible are the dimensions of toneholes, or distance between them.

The measurements relating to toneholes and windows are useful for comparative study of the flutes with those of other countries, and in the assessment of the musical capabilities of the flutes. In anticipation of these potential avenues of exploration, this data is held in a separate archive.

#### Additional features and observations

Each flute was examined by eye and with a 10x hand lens and any features noted, including observations about the choice of bone used, such as the unusual flute from Hamwic Stoner Motors [28] and any intentional marking of the bone by a tool was noted above and beyond that of basic manufacture (removing the ends of the bone and making holes). Aspects noted include:

- surface features such as longitudinal scraping or a high degree of patina
- noticeable neatly trimmed ends
- a thumbhole being present
- unusual aspects of the toneholes, such as being placed on an unusual surface of a commonly used bone, being placed at irregular or unusual positions along the length of the flute, or being misaligned with the window along the axis of the flute.
- unusual features or shape of the window

In addition, features are noted that result from modern intervention, such as the presence of consolidant on damaged areas, visible repairs or large unrepaired cracks. Although these features are not directly relevant to this study, they are noted and recorded as observations of the current condition of the artefact. Several artefacts have clearly visible residues of a substance within the proximal end of the instrument. This is thought to be a result of a previously accepted practice of inserting a block of plasticine into the end of the instrument in order to play it and to know what a flute may have sounded like. This was certainly the case for some of the English flutes reported by Megaw, who writes of it being 'only natural that a general examination . . . should include an attempt at practical reconstruction' where 'damaged knife edge, cracks, and missing block were all restored in plasticine' (Megaw 1963, 89). This procedure may also have been done by Brade, and Reimers and Vogel in their study of German flutes (Brade 1975, Reimers and Vogel 1989). As a practice it is no longer condoned, as it is considered to be potentially detrimental to the integrity of the instrument. Fluctuations in humidity and temperature caused by a player's breath may exacerbate any fissures or damage, and the insertion and manipulation of a plasticine block may destroy evidence of the original manufacture. It is hoped that this thesis promotes a greater understanding of the value of bone flutes within museum collections, and discourages the practice of restoration for playing purposes.

### 3.3 Structure of the gazetteer

<u>Name of flute (location/site):</u>  <div style="text-align: center;">Name of town name of site/find</div>	[number]
	<u>Date:</u>
<u>Illustration:</u>  	
<div style="text-align: center;"><u>Physical information:</u></div> <b>Species:</b> <b>Bone used:</b> <b>Extent:</b> <b>Length:</b> <b>No. of toneholes:</b> <b>Window:</b> <b>Evidence of manufacture?</b> <b>Unusual characteristics/comments:</b>	
<div style="text-align: center;"><u>Archaeological information:</u></div> <b><u>Site:</u></b> name code type information <b><u>Date excavated:</u></b> <b><u>Period:</u></b> <b><u>Context:</u></b> number information/description associated finds <b><u>Small find no.:</u></b> <b><u>Illustration no. in archaeological report:</u></b>	
<b><u>Current location:</u></b> <b>Contact information:</b>	
<b><u>Similar flutes:</u></b>	
<b><u>Bibliography:</u></b>	

Figure 11. Blank catalogue page.

To present the data in a standardised, accessible format, a catalogue has been created, with each flute constituting a single entry. This is presented in Part 2 of the thesis. For the purposes of data analysis, an excel spreadsheet has been created, to facilitate the creation of graphs and tables in Chapters 4 and 5. The catalogue aims to offer the information to readers of all backgrounds, not necessarily

archaeologists and organologists. A blank catalogue page is shown in Figure 11, and explanatory notes about the catalogue sections are given below. The information is grouped together by type for ease of perception, with the two main categories being the physical attributes of the flutes and information relating to their archaeological context.

### 3.3.1 Name of flute (location/site)

Flutes are named on the basis of where they were excavated, e.g. Exeter, Facombe Netherton, Castle Acre, clarified if necessary with the name of a site within a town, particularly where there is more than one excavated site in a town (e.g., York). If two or more flutes come from same site, then these are differentiated, usually by the excavator's small find number or catalogue number in published collections of material. The choice of which numbering system to use is led by the terminology used by the local museum or archaeology unit. For example, the flutes from Exeter are referred to by the catalogue numbers from the published excavation report (e.g. Exeter B1), and not the location within the town (Exeter Brook Street) (Megaw in Allan 1984, 349-351). The flutes from York Clifford Street, **[113]** and **[114]**, conversely, use the small find number (C663 and C666) for identification rather than the numbers (10 and 11) taken from the published illustration (Waterman 1959, 92).

Certain flutes from early excavations do not have small find numbers, for example those from Lydney Castle **[64]** and Rayleigh Castle **[75-76]**. When only one flute exists this is not such a problem, but when there are two or more flutes from the same location or site, a means of telling them apart is needed. Both flutes from Rayleigh Castle, **[75]** and **[76]**, are from different excavations but lack context numbers or descriptions of where they were found; in this instance the year of excavation is used. Two flutes from Lyveden, **[65]** and **[66]**, also had no small find number, and were excavated at the same time. In this case they are differentiated by the words 'ovicaprid' and 'goose'. The reasoning behind each flute's title should be apparent by reading the catalogue entry. In summary, the following factors are considered when giving a flute an identifying title:

- Name of town or location of excavation
- Street or area within the town or location
- Small find number
- Catalogue or illustration number from published report

And if no other means of differentiation available:

- Year of excavation
- Animal used for making the flute

### 3.2.2 [Catalogue number]

In addition to the name of the flute as discussed above, each flute is assigned a catalogue number. These are given in ascending order to the list of flutes as presented alphabetically, starting with **[1]** for the flute from Acton Court, and ending with **[118]** for the flute from York Coppergate 7078. Numbers make it easy to refer to flutes within the text of the thesis, without having to repeat the locational names of the flutes each time. For example, when discussing context categories in Chapter 5, the list of flutes from elite urban residences is given by a series of these catalogue numbers; this makes it simple for the reader to cross reference the information if needed.

### 3.3.3 Date

In excavation reports, a variety of terms are used to label the date of an artefact, namely:

- A general term such as 'medieval' or 'Saxon'
- General grouping to centuries, such as 'fourteenth to fifteenth century'
- Dating using the words 'early', 'middle' and 'late', such as 'late thirteenth century to mid fourteenth century' (Acton Court)
- Specific date ranges such as 1226 – 1350, as given in the published report
- Specific dating to known events, e.g. c.1224 (Bedford Castle)

The word 'mid' may suggest the half way mark of a century. However, Biddle's recent Winchester publication divides centuries into thirds, with 'mid' meaning the years 33 to 65. Clearly a form of standardisation is needed in order for comparative analysis to occur. Where possible, the Winchester system is adopted in this thesis giving the following chronological divisions (Biddle 1990a, 19):

Early xx century = the years 0 - 32

Middle xx century = the years 33 - 65

Late xx century = the years 66 - 99

xx century = the years 00 – 99

This system is applied where appropriate. For example, if a flute is noted as having a date of 'mid-twelfth to mid fourteenth century', then the above time divisions will be applied for ease of analysis, giving the date range in this example as 1133 – 1365.

In addition, the following dates are used to define broader subdivisions with the medieval period (Reynolds 1999, 23):

Early Anglo-Saxon = c.450 -c.650

Middle Anglo-Saxon = c.650 - c.850  
Late Anglo-Saxon = c.850 - 1066  
Anglo-Saxon = c.450 - 1066  
early medieval = c.450 - 1066  
medieval = 1066 - 1550

It should be noted that the point of cultural change between the Saxon and Medieval periods, in archaeological terms, is not defined by the year 1066 and the arrival of the Normans. Cultural and social change occurred either side of this event, with the end of the Anglo-Saxon period being placed at varying points between 1100 and even 1200 according to different expressions of material culture (Reynolds 1999, 23). How bone flutes relate to these changes is discussed in Chapter 6.

A difficulty is dating flutes from archaeological layers that have been much disturbed over time and which may contain a high level of material culture residual from the disturbance of earlier levels. This occurs particularly in urban sites where human occupation has repeatedly used the same space over time (e.g. Beverley), but also on rural sites where the topsoil is shallow and ploughing has disturbed archaeological contexts (e.g. Wharram Percy). A given context therefore might contain both earlier residual material and later intrusive material. When a site is excavated, finds within individual contexts are considered together to build an informed understanding of the site's use. Flutes from Ludgershall Castle, [59] to [63], and Wharram Percy, [94] to [97], for example, are from post-medieval layers that contained a great deal of residual material dated to the main phase of occupation in the medieval period. Both date ranges are noted in the catalogue entry, i.e. the date of the context, and the main phase of occupation of the site.

#### 3.3.4 Illustration / picture

Accurate illustrations of flutes are provided in the catalogue. Where possible a set of photographs, taken from four sides and both ends is included, to give a full impression of the form of the flute, and the cross sectional profile of the bone. In this way, the reader can gain full familiarity with aspects of the bone used such as wall thickness and cross sectional profile, and notice similarities and differences between flutes (e.g. when a goose ulna is used in opposite orientation to that used usually). When a flute's location remains unknown ([63] and [64]) or where the flute is temporarily inaccessible ([78]) the original illustration from the published report is used. When no illustration is given in the original report and the flute's



current location is unknown ([6]) the flute is still included in the catalogue with as much information as possible, but without an illustration.

### 3.3.5 The physical nature of the flutes

#### 3.3.5.1 Species and bone used

Both the species and the bone used (skeletal element) are noted in the catalogue. As mentioned previously, problems have been encountered by the mis-identification of bones, and it is important that accurate identifications are either made or confirmed, by handling the objects where possible.

#### 3.3.5.2 Extent

The surviving extent of the flute is noted, which primarily lists whether it is complete or is a fragment. The type of fragment is noted, as being the middle section, tonehole end, or window end, as each of these types of fragments can yield useful information. This adds clarity to the more generally used terms of 'fragment' or 'broken'. It is also useful when analysing the occurrence of types of fragment and nature of breaks. Some flutes are complete in length, but have a small fragment missing; they are noted as such, and considered to be complete as most of the key information is present.

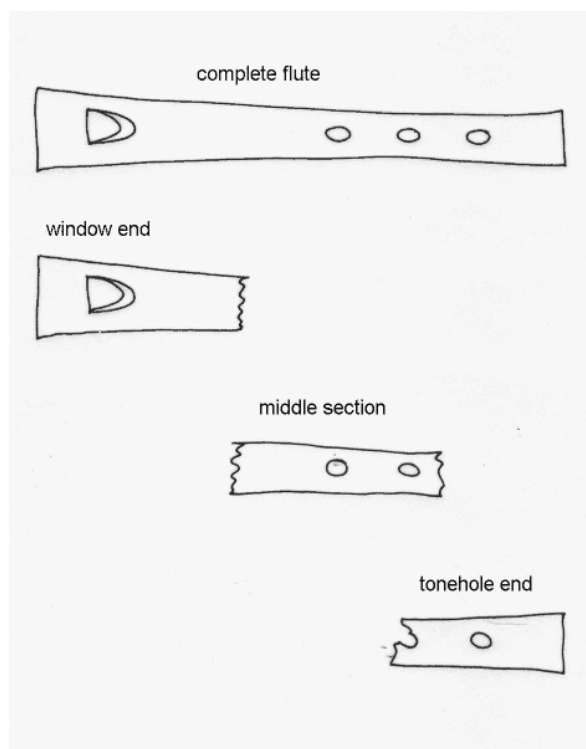


Figure 12. Different types of fragments of flutes.

In summary, the following terms are used:

- Complete
- Fragment (window end)
- Fragment (middle section)
- Fragment (tonehole end)

These are shown in Figure 12.

#### 3.3.5.3 Number of toneholes

The number of toneholes is noted, with thumbholes (on the underside) being referred to as 'T'. If the tonehole is broken with only half present, it is expressed as '½'. A typical catalogue entry might read '2 ½' meaning two complete and one partial toneholes, or '3 + T', meaning three toneholes and one thumbhole.

#### 3.3.5.4 Window

The window of a flute is the hole involved in sound production at the proximal end of the instrument; a definition is given in Chapter 4. In the catalogue entry, a description of the shape is given, which is often 'D-shaped' or sometimes 'rough oval'. If only the ramp (the distal edge of the window) is present, this is noted here, and is described as best as possible, e.g. 'ramp only present'.

### 3.3.6 The archaeological context of the flutes

As discussed previously, the earliest published lists of bone flutes pay little attention to details of archaeological context which could clearly inform an understanding of the social context in which the flutes may have been procured, manufactured and played. Few of these earlier flutes have more than basic details of the sites, with no regard for the nature of the deposit, location within the site, or the significance of the site itself. Examples of these are the flutes from excavations in Folkestone (Pitt-Rivers 1883; [21]) and Rayleigh Castle (Francis 1912; [75]). In other instances, no record of the context is found in the excavation report (e.g. in Fairbrother's Faccombe Netherton report of 1990). Part of the standard information about each flute covered by this project are thus details of its archaeological context. Importantly, the range of flutes is discussed in relation to archaeological site type and context for the first time. Catalogue entries in this section are explained and discussed below.

#### 3.3.6.1 Site name

This is the name of the site as given by the excavation or publication, usually the same as taken to be the title of the entry for the flute in the catalogue.

### 3.3.6.2 Site code

This is usually given by the excavating body, often a short series of letters and numbers that reflect the site's name, and/or year of excavation. It is used to mark the finds from an excavation prior to archiving them, so needs to be concise. For example, the Billingsgate excavation in 1982 has the site code of BIG82. The year is not always included; for example, the Winchester Castle Yard excavation has the site code of CY. The site code is useful to know when speaking with museums and archaeology units. Conversely, it is expressed in a site report when a flute's full reference code is given; in this way, it is ascertained where exactly the flute came from. For example, reading the Museum of London's *The Medieval Household* (Egan 1998) the flutes' descriptions are headed by their full reference codes, which include their site codes (WAT78, NFW74 and TEX88). By cross referencing with elsewhere in the publication, it is clear that they are from the sites of Watling Court, New Fresh Wharf and Thames Exchange respectively.

Not all excavations have a site code, in particular the older excavations such as Rayleigh Castle and Folkestone Caesars Camp, or when a flute has been found and donated, such as the flute from Stanton Low [80] which was found by a metal detectorist.

### 3.3.6.3 Site type

In order to help assess the cultural setting of the flutes, each site is categorised into types. No standard site-type categories were found in archaeological text books for use as a model. A system has been adopted after Sykes (2004) which provides the following categories:

- Rural: farmsteads, settlements and villages
- Urban: towns and trading sites
- Elite: manorial sites, castles, palaces and religious sites. (though Sykes considers religious houses as a separate category)

Problems arise with this system due to sites falling into more than one category such as the site of Wolvesley Palace, Winchester, which could be classified as both 'elite' and 'urban', or the site of Ludgershall Castle, which could be classified as being both 'elite' and 'rural'. As a solution to this, various levels of categorisation were established. Firstly, a site was classified as either rural or urban. Then, it was classified as either domestic or elite, and within the elite category, a further differentiation was made between a site being secular, ecclesiastical or a castle. A category of 'unknown' was also established, to accommodate artefacts and locations where the archaeological context is unclear.

On occasion two flutes from the same site can occur in different categories as the site's function and status changed over time. An example of this is that of Canterbury, which may automatically be assumed to be 'urban'. The flute from Canterbury, Marlowe Theatre [8], however was from a sunken featured building dated 450-550 AD, in the early stages of settlement of the area. As a result, this example is classified as 'rural' and 'domestic', whereas another flute from Canterbury, Lady Wooton's Green [7], dated 1130-1299 AD, is classified as 'urban' and 'domestic'.

Another example is the site of Wicken Bonhunt, from which two flutes were found, [99] and [100]. Though they are close in date, namely 1000 – 1100 and 1100-1150, a closer look at the site's phases of development shows that the earlier phase was a small Middle Saxon farmstead, and the later phase was a larger manorial farm. This highlights a need for further differentiation of site type, as both examples can be seen as 'rural', but clearly the later is of higher status, as supported by the associated finds of a gilded pin and an iron spur. This later phase of the site is classified as 'rural' 'elite' and 'secular'.

These categories are discussed in Chapter 5. They are useful in assessing the cultural and social aspects of the flutes and the subdivisions of types of flutes.

#### 3.3.6.4 Site information

Here, a brief description of the site is given to provide an overall view, with reference to the period that flute is related to where possible. Often this is derived from the excavation report. When flutes come from old excavations with little or no recorded information, museum curators are often able to give insight about the circumstances and nature of the site. For example, John Clark of the Museum of London gave information about the early twentieth century excavations from where the London Wall flutes came.

#### 3.3.6.5 Date excavated

The date of excavation was originally considered important, for example if a flute was excavated in 1959 and there is a flute mentioned from the same site from an earlier date, then there are clearly two flutes in existence. This circumstance did not actually occur, but noting the year of excavation is still considered relevant.

#### 3.3.6.6 Period

These are the phases and dates given by the excavating body, and are unique to

each excavation. When a site has clear phases of development, or change of use, these are also often known as 'periods'. Sub-divisions within periods are noted in the catalogue entry sheet where known. For example, one of the flutes from York Coppergate [116] is from 'Period 6, phase a'.

#### 3.3.6.7 Context number

Context numbers are also particular to specific excavations. They are given in sequence as new contexts are uncovered at the time of excavation.

#### 3.3.6.8 Context information

Here, a brief description of the specific context is given, to give an indication and understanding of what the context is, and what was happening in that particular area of the site at the time (i.e. dump, floor, hearth, workshop etc.).

#### 3.3.6.9 Associated finds

Finds from the same context can also add to overall understanding of individual flutes, the context or the site. Context sheets from well documented sites relate assemblages of finds from specific contexts, but published reports render this information less easy to access. In many cases, publications need to be thoroughly interrogated, to see if any of the other small finds are from the same context. This is a time consuming endeavour, and does not always yield results. Associated finds are not always known or knowable, but if they do exist, they can add to the interpretation of the site. A good example of this is the site of Wicken Bonhunt, a site that had a large building in its later phase whose function is as yet undefined, but which could be a barn or manorial centre. From the same context of the flute came a spur and a gilded pin, thus giving supportive evidence of a site of more elite status such as a manorial centre.

#### 3.3.6.10 Small find number

This number is given at the time of excavation. Numbers are given consecutively to any artefact found that is noteworthy (usually either diagnostic in some way or particularly unusual or rare). Once the finds are passed from the excavation to a museum archive, they may be given other numbers such as a museum accession number, and there may be a further number that relates to a catalogue or publication. All of the relevant numbers are given as they help to identify individual flutes.

#### 3.3.6.11 Illustration in archaeological report

When a flute is illustrated in a publication, a reference is given to this illustration.

The said illustration is not reproduced in the catalogue entry in this thesis, unless the flute was unavailable to be photographed. The inclusion of the reference allows a reader to easily find and view the original illustration. If no illustration was published originally, and if no photographs have been taken of the flute due to its location being unknown, the words 'no illustration available' are stated.

### 3.3.7 Current location and contact details

This is discussed in section 3.2.2. By giving this information, a reader can readily locate a particular flute and establish if it is on display.

### 3.3.8 Similar flutes

Listed here are flutes that are similar in form, or that display similar unusual characteristics. For example, one of the flutes from West Cotton, Raunds [90] is unusual in that it has the epiphysis of the bone still in place (Windell, Chapman and Woodiwiss 1990, 39). The only other flute that has this feature is from Exeter [17] (Megaw in Allan 1984, 350), and the reader of either catalogue entry is referred to the other entry in order to compare and contrast the two examples. When a flute is of a common type, then other examples of this type are referred to, such as the three holed goose ulna flutes from Southampton [79] and Thetford Brandon Road [84] (Platt and Coleman-Smith 1975, 273-4; Dallas 1993, 163). If a flute is a fragment of a common type, then complete examples are referred to.

### 3.3.9 Bibliography

Any references for the flute are given here. These are mainly specific publications such as excavation reports, but additional entries are provided for articles that are directly relevant to the flute or the site.

## 3.4 Accessing and using this information to address the research aims

Referring back to the main research question, which asks what the physical attributes, cultural setting and archaeological context of the flutes is, it is clear that the establishment of the data in an organised fashion as detailed above allows this question to be addressed. Chapters 4 and 5 synthesise and interpret the physical and archaeological aspects of the flutes, using the data gathered and presenting the information from various relative viewpoints. Charts, tables and illustrations serve to aid understanding of the information presented. Information gained from

assessing both the physical and the archaeological nature of the flutes facilitates an understanding of the social and cultural aspects of the flutes. Chapter 6 draws all of these aspects together in a concluding discussion.

## 4 The medieval bone flute

### 4.1 Introduction

To assess the physical aspects of flutes, the bones used to make them will be examined with regard to the different species of animal or bird used and its skeletal element. The social status of the respective animals and birds is also discussed.

As differing terminology has been used by previous authors when discussing bone flutes, a proposed nomenclature of flute parts is presented in order to standardise terminology. Examples of 'non-flutes' are discussed and reasons for their rejection given. Design features of flutes are commented upon, including windows, toneholes, thumbholes, decoration present and evidence of manufacture.

Drawing several of these discussions together, 'types' of flutes are assessed and a typology is established.

### 4.2 Species of bird and animal used

The bones of various birds (goose, swan and crane) and animals (sheep and deer) have been used to make bone flutes. The proportions of flutes made from each species are shown in Figure 13.

This shows that it is the bones of sheep and goose that are most commonly used to make bone flutes (33% and 36% respectively). The bones of swan, crane and deer are also used, but to a lesser extent (7%, 9% and 8% respectively). Several flutes are made from bones that are not precisely identified, bones that could be either swan or crane (2%), bones that are simply identified as 'bird' (4%), or bones of unidentified species (1%). Each of the named species is discussed below.



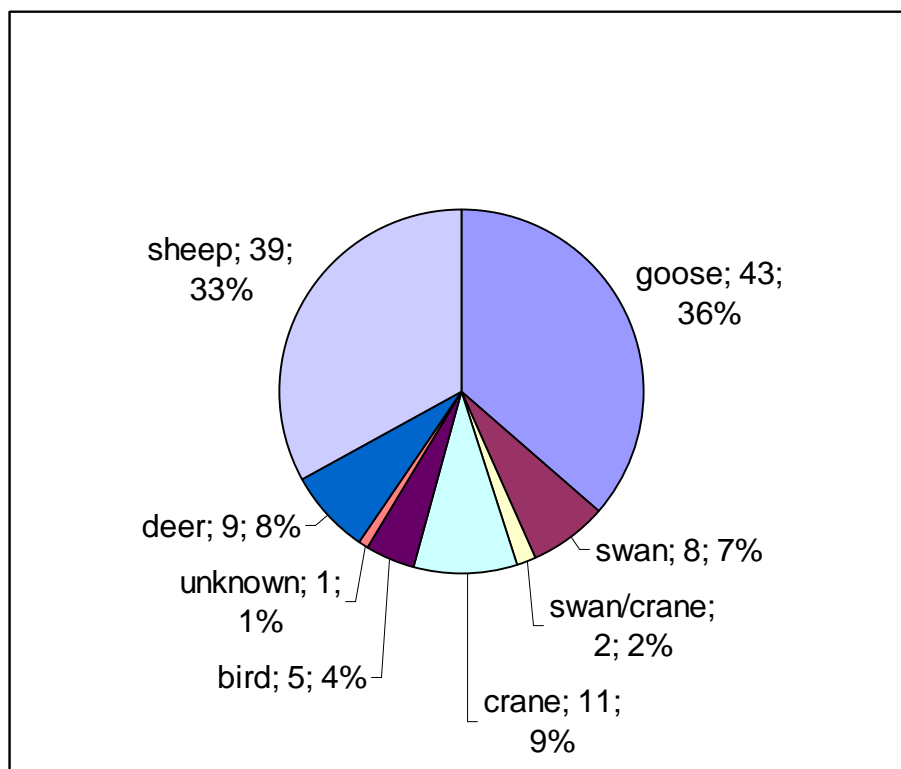


Figure 13. Pie chart showing proportions of animal and bird species used for making bone flutes.

#### 4.2.1 *The goose*

The domestic goose is thought to be derived from the greylag or wild European goose, *anser anser* (MacDonald et al 1993, 206; Sergeantson 2002, 40-41). It is now a visiting winter migrant and an all year round resident. The greylag goose (Fig. 14) appears to have been domesticated from the late seventh century (Fisher 1966, 309), though archaeologically, it is difficult to distinguish between the wild and domesticated species (Dobney, Jacques and Irving, 1996, 51). A domestic goose and goslings are illustrated in a scene of rural life in the early fourteenth century Luttrell Psalter, as are wild geese grazing and a goose being taken by a fox (Backhouse 2000, 29, 35).

Geese were popularly kept as domestic fowl throughout medieval England for their meat, eggs and feathers (Sergeantson 2002, 41-43, 51-52). There is a marked increase in goose bones found in the Anglo-Norman period of Dublin in Ireland; far greater than numbers found in the Viking or Gaelic Irish periods suggesting that the keeping of geese as a domestic fowl was a popular Anglo-Norman practice, and that domestic geese were an important food source to a very broad spectrum of

society (MacDonald et al 1993, 206). From cut and chop marks on goose bones from Winchester, Eynsham and Dublin, it appears that the birds may have been sold or cooked either in halves, or as individual leg or breast portions (MacDonald et al 1993, 212; Sergeantson 2002, 49).



Figure 14. The greylag goose.

In the thirteenth century the rearing of geese was particularly popular across Britain. Certain authors consider it an activity more important in urban areas as opposed to rural, particularly in towns that were on waterways such as Lincoln, Kings Lynn, Oxford and Leicester (MacDonald et al 1993, 211). Others have argued that geese were raised in rural areas and walked into towns in large flocks (Keene 1985, 261-2; Sergeantson 2002, 51-52), being raised in villages or on manors (Sergeantson 2006, 147). Important goose fairs were held in midsummer or the autumn, with famous fairs held outside Nottingham, Oxford and Cambridge (Sergeantson 2002, 42).

The eating of goose was seasonal. In most of England the first geese of the year were traditionally eaten at the feast of Michaelmas in late September. This was a Christian festival introduced in the ninth century which coincided with the end of the harvest, when the Michaelmas goose would be a 'green goose', having been fed on summer grass and corn stubble. Older geese would be eaten at Christmas, having been fed on stores of corn.

In a few places such as Farndale in Yorkshire, as well as in Northern Europe, the traditional goose feast was held in association with the feast of St Martin in early November (Armstrong 1958, 25-28, 32). Martinmas is a Christian festival dating to the sixth century, which superseded a Germanic festival linked with the slaughter of livestock in early November (Armstrong 1958, 32). The early winter period from Martinmas to midwinter or Christmas in late December was associated with sacrifice, feasting and celebration, with some of the traditions being transferred to the festival of Michaelmas (late September) according to cultural and political influences (Armstrong 1958, 32-33).

Sergeantson has proposed alternate seasonal timings, with a 'green goose' eaten in May and June, and a 'stubble goose' eaten in October and November (Sergeantson 2002, 42).

#### 4.2.2 *The swan*

The two main types of swan occur in Britain: the mute swan (*cygnus olor*) and the whooper swan (*cygnus cygnus*). They have quite different life habits. The mute swan (Figs. 15 and 18) is a resident bird, present and breeding on lakes and rivers all year round, while the whooper swan (Figs. 16 and 17) is a migrant bird, spending the winter months in estuaries and wetlands.



Figure 15. The mute swan.

Though very similar in appearance, the two species of swan can be easily distinguished, especially by their bills. The mute swan has a curving neck and a predominantly orange bill, slightly bulbous in shape with a black knob at the top, whereas the whooper swan has a fairly straight neck, and a yellow and black bill

that is more tapered and smooth in profile. Another difference is the sound they make. The mute swan is mostly silent and only hisses and snorts when agitated. The whooper swan makes a trumpeting sound, particularly when in flight. When the mute swan flies it has an extremely loud wing beat, audible at over a mile away (Kitson 1994, 79). The whooper swan, by contrast, has silent wing beats.

The whooper swan migrates to Britain from Iceland for the winter, and is usually seen in the north and eastern areas of the country.



Figure 16. The whooper swan.



Figure 17. Whooper swans in flight at wetlands in Norfolk.

A winter visitor occurring in lesser numbers is the Bewick's Swan (Fig. 18), which is smaller than the whooper swan and has less yellow on its beak. The unique patterns of yellow and black bill markings are used today as a means of recognising individual swans that return regularly to the same winter grounds.



Figure 18. Mute swan (above) and Bewick's swan (below).

Today most people generally refer to all of the above species as swans; in the Anglo Saxon period there was a clear differentiation. In Old English the mute swan was *swan* and the whooper swan was *ylfetu* (Kitson 1994, 79). Another indication of the distinction of two types of swans is a reference by the tenth-century scholar Aelfric (Godden 1999, 2001), where he speaks of '*swans and ylfets*' (Kitson 1994, 80; Crawford 1921, lines 253-5).

The swan is thought to be the solution to the tenth century Exeter Book riddle number seven (according to Krapp and Dobbie 1936, 184-6) or five (according to Williamson 1977, 72-3). The riddle is translated as followed:

My clothing is silent, when I tread the ground  
Or occupy a dwelling, or disturb the waters  
At times my garments and this high air lift me over the habitation of heroes,  
and the strength of clouds then carries me over the people.  
My garments resound loudly and whistle, sing clearly, when I, a travelling  
spirit, am not in contact with water or earth. (Meaney 2002, 120-122)

The line 'garments resound loudly, and whistle, sing clearly' could refer to the loud wing beats heard in the mute swan, though the 'travelling spirit' is more suited to the migrating whooper swan. A further meaning to the 'make music, sing splendidly' could be the fact that the bones of swans' wings might be made into flutes. This may be the only known literary reference to bone flutes in the early Middle Ages in Britain.

The *ylfetu*, or whooper swan is also mentioned in the 'Bass Rock' passage of 'The Seafarer', in the line, 'There heard I naught but seething sea, ice-cold wave, awhile a song of swan....' It dates to c.1000, but is thought to be copied from an earlier poem dated to the eighth century (Fisher 1966, 43-4; Lapidge 2000). The *ylfetu* is also mentioned in Beowulf, and the swan is mentioned in the fourteenth century 'Piers Ploughman' by William Langland (Fisher 1966, 43, 45, 50,181).

In the medieval period mute swans were not bred in the same way as geese or hens, but were taken from the river when young and then reared and kept in special 'swan-pits' or 'swan-houses' (Ticehurst 1957, 114-116). It is because of this that they are often said to be 'semi domesticated'. Mute swans were not an introduced bird; they have been resident in Britain since Neolithic period (Northcote 1980; Yalden 2002, 424). They were seen as crown property from at least the twelfth century unless ownership was granted to an individual by the King (Ticehurst 1957, 6, 10). From the late fifteenth century, books known as 'swan rolls' recorded lists of owners, along with the specific beak markings of their swans (Ticehurst 1957, 73-74). However, Ticehurst suggests that the marking of swans was practiced prior to the aforementioned swan rolls, and while an owner's 'swan mark' usually refers to a design cut into the skin of the beak (Fig. 19) it can also be cut into the webbing of a swan's foot, the leg, the lower beak or the wing (Ticehurst 1957, 81-89). Figure 20 shows a manuscript illumination of c.1340 (Bodleian Library MS. 204, f.214, v.) depicting a penned swan whose foot is being marked (Ticehurst 1957, 87 and Plate XIa).



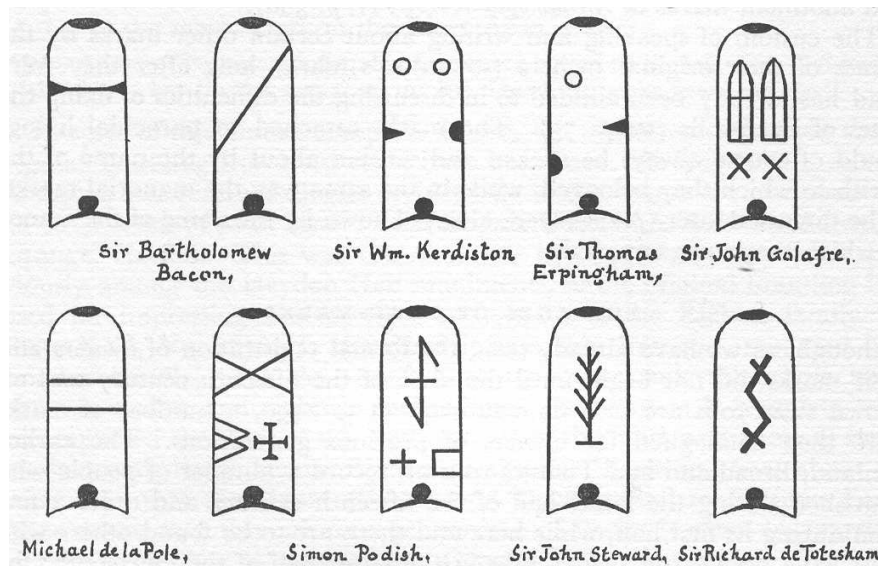


Figure 19. Various swan marks in use prior to 1400 (from Ticehurst 1957, 90).

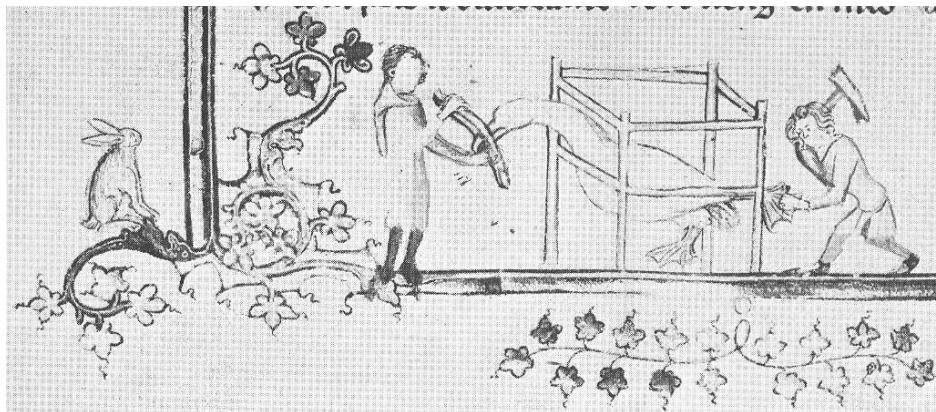


Figure 20. Marking the foot of a penned swan  
(from Bodleian Library MS. 204, f.214, v.).

Private swan-marks were granted by the King to individuals, who could then give, sell or bequeath it to another. Swan-marks were also owned by certain communities such as monastic houses, hospitals, colleges, and some town and village guilds (Ticehurst 1957, 95-6). Abbotsbury Swannery in Dorset is a current day remnant of this tradition, which survived after the dissolution of the monasteries in the sixteenth century and is still home to hundreds of breeding mute swans, though the swans are no longer marked.

Once caught, swans were managed by a swan-herd or swan-master who used a special long 'swan hook' to catch them, while strict legislation governed the taking

of young swans (cygnets) and the ownership and use of the swan hook (Ticehurst 1957, 18-36). In order to prevent swans flying away, the feathers on their wings were pinioned, or clipped. This entails cutting the primary flight feathers on one wing only, and would not be detectable in skeletal remains. It would have meant that the loud wing beats normally associated with the mute swan in flight were not a familiar sound (Cocker and Mabey 2005, 60).

The birds were kept in swan-pits until needed, i.e., until they were killed and eaten at high status feasts, being of similar status to crane, peacock and bustard (Cocker and Mabey 2005, 184). They were eaten at the Feast of the Swan in 1306, for example, when three of Edward III's sons and three hundred other men were knighted, and in religious houses; 'a fat swan... roasted whole' is the favourite dish of the monk in Chaucer's *Canterbury Tales* (Sykes 2004, 92).

Sykes comments that the status of the swan as an elite bird shifted after periods of social change such as the time following the Black Death in the mid-fourteenth century. After this point, it appears that swan was consumed less on high status sites and more on urban sites, presumably by the urban elite, with swanneries supplying swans at prices high enough to be prohibitive to most people (Sykes 2004, 92-93).

Legislation surrounding the capturing and management of mute swans is recorded in a parliamentary law called 'The Act for Swans' passed in 1482, though it is thought that its creation was prompted by widespread earlier practice of theft and mismanagement of swans, cygnets (young swans) and eggs (Ticehurst 1957, 19-21). In the late tenth century King Edgar granted rights over local swans to the abbots of Crowland Abbey in Lincolnshire (S 741; Birkhead and Perrins 1986, 20; Sawyer 1968, 538). Their position as a high status bird between the mid-fifth and the mid-fourteenth centuries is supported by archaeological evidence with remains being found predominantly on elite sites, though remains have also been found in urban trading sites (Sykes 2004, 91). Remains cease appearing in rural sites from the mid-ninth century, and become prominent in religious sites from the mid-eleventh to mid-fourteenth century (Sykes 2004, 91-2). It is between the mid-twelfth and mid-fourteenth centuries that swans appear prominently depicted in manuscript illuminations (Sykes 2004, 91; Yapp 1981, 24). The swan became an important heraldic symbol at this time, associated with the Bohun and Stafford families in the fourteenth century, and with the House of Lancaster in the fifteenth



century, all of whom claimed to be descendents of the Swan Knight of medieval romance (Rose and Hedgecoe 1997, 35; Spencer 1990, 105-6). The swan often appears with a crown around its neck, as seen in the Dunstable Swan Jewel (Fig. 21), a finely crafted gold and enamel livery badge dating to c.1400 (Klingender 1971, 460-61; Spencer 1998, 289).



Figure 21. The Dunstable Swan Jewel showing the swan as a heraldic symbol.

The swan motif is also seen on pewter livery badges, considered to have been issued by Edward, son of Henry VI and Margaret of Anjou in 1459 as a mark of political allegiance (Spencer 1990, 105-6, 127, Spencer 1998, 287-289).

The presence of swans as identifiers of place is residual in many street names seen today, such as Old Swan Wharf, Swan Lane, Swan Mead, Swan Pass and Black Swan Mead, all of which are close to the River Thames in London. (Cocker and Mabey 2005, 60). The word 'swan' in many pub names might be a reflection of their physical occurrence, but more probably refers to their use as a heraldic motif. Inns known as 'the Swan' are recorded in Winchester dating to the fourteenth and fifteenth centuries (Keene 1985, 1430). Swans also figure prominently in myths in many world cultures, often in stories of swan maidens or beings that transform themselves from humans into swans (Price 1994, 14-23). A character in Northern European mythology is *Perhta*, *Berchta* or *Perchta*, who has one goose- or swan-foot, and who is linked with fertility. The goddess Freya was also goose- or swan-footed (Armstrong 1958, 31). The eighth century Franks Casket has characters on the front panel which include Weland the smith. One interpretation of the character on the right of this scene is that he is Weland's brother Egil, who is catching swans to make wings for Weland (Armstrong 1958, 57). The birds may be geese or

swans, and no symbolic meaning is given to them in this context (Webster 1999, 232-3). Egil is a famous archer and is shown as such in the casket's top panel (Webster 1999, 235). It is the wing feathers of geese or swans that were used in the medieval period for the fletching of arrows, though it is not clear if this fact is linked with the presence of the birds on the Franks Casket. Lang sees the repeated image of the bird as a linking motif between the scenes on the casket (Lang 1999, 248).

#### 4.2.3 *The crane*

The common crane, *grus grus*, though rare today, was formerly more widespread in England, in particular in East Anglia, and known as a breeding bird up to about 1600; their preferred habitats being areas of wetland or marsh (Fig. 22). These are distinctive large birds, shy in nature, and when mature exhibit striking behavioural displays. Their call, often heard during flight, is described as 'sonorous' and 'bugling', and can be heard up to three and a half miles away (Cocker and Mabey 2005, 184). It is extremely loud due to the crane having a lengthened windpipe that coils inside the breastbone (Perrins and Middleton 1985, 142).



Figure 22. The common crane.

The presence of cranes across Britain is reflected in almost 300 place names (distributed throughout England as shown in Fig. 184 in Chapter 5). Often occurring with other words referring to a watery place, Old English *cran*, the alternative Old English roots *cron*, *corn* and *cranuc*, the Old Norse *trani* in areas of

Viking settlement, and Cornish *garan* give names such as Cranmere, Cranwell and Cranborne. No other bird has such extensive references in place-names (Boisseau and Yalden 1998, 483). According to Yalden, when cranes started to become less common, the word crane was transferred to the heron (1999, 131).

The crane is much depicted in iconography, appearing in bestiaries, illuminated manuscripts and other documentary sources such as the Sherborne Missal (c.1400). It is the most commonly illustrated bird after the eagle and the dove, appearing as early as the eleventh century in hunting scenes, and then from the thirteenth century onwards as marginal decorations (Yapp 1981, 13). Its widespread distribution and frequent occurrence in iconography appears to be in contradiction to its rarity, and may be a reflection of it being symbolic of something desirable and rare (Sykes 2004, 98).

Cranes were hunted using gyr falcons, large and strong birds well suited to such a task. These birds were often imported from northern Scandinavia and Germany, and were trained using captive and partially incapacitated birds such as herons and cranes (Cummins 1988, 197, 204). A list of hunting birds in the *Boke of St Albans* matches various birds with different classes of nobility, starting with an eagle for an emperor, a gyr falcon for the King, through to a merlin for a lady and a hobby for a young man (Cummins 1988, 187-188). Cummins comments that adhering to this list would be impractical, due to the temperaments of the birds, the quarry hunted and the needs of the environment. However, hunting cranes with gyr falcons was certainly associated with royal households, as King Æthelberht II of Kent (d.762) requested a pair of gyr falcons from a bishop in Germany in 754, and in the thirteenth century King John kept them for crane hawking (Cocker and Mabey 2005, 184).

In the medieval period crane was clearly regarded as a high status bird, served at feasts and banquets. They were of equal status to the swan, bustard and peacock, and could be roasted, with a fifteenth century recipe giving the following instructions:

'Let a crane bleed in the mouth as thou didst a swan; fold up his legs, cut off his wings at the joint next the body, draw him, wind the neck about the spit; put the bill in his breast'

(Cocker and Mabey 2005, 184).

Referring to the anatomy of the crane and in particular its skeleton (Fig. 28), it

appears that the practice of the wings being cut off might mean that the ulna was discarded prior to cooking; the ulna is one of the bones from the crane that is used for making bone flutes, as discussed below and shown in Figures 38 and 39.

However, even though cranes were high status birds hunted by the nobility and eaten at banquets, it appears that the crane had varied prominence as a dietary component. Analytical data presented by Sykes suggests that between the mid-twelfth and mid-fourteenth centuries they were eaten by a cross section of society on rural, urban, elite and religious sites. Prior to this, in the mid-eleventh to mid-twelfth centuries, it seems that they were avoided on elite sites, but eaten frequently on religious sites (Sykes 2004, 98). The type of site where crane bone flutes have been found is discussed in Chapter 5.

#### 4.2.4 *The sheep*

Sheep (*ovis aries*) were kept as domestic livestock in the Anglo-Saxon and medieval periods (Fig. 23). They were killed at varying ages, but were kept for their wool rather than for their meat, as suggested by the predominance of bones from older animals in archaeological contexts (Dobney, Jacques and Irving, 1996, 40). The woollen industry generated great wealth for many areas of society, particularly between the twelfth and the sixteenth centuries, and sheep were kept both in vast flocks on secular and monastic estates as well as being kept on a smaller scale by peasants (Astill and Grant 1988, 151). Sheep only started being purposefully bred for their meat in the mid-eighteenth century (Hart-Davis 2005, 168).



Figure 23. Sheep.

Sheep vary according to regional breed, each suited to particular climatic and geographic conditions and being one of three types: 'shortwool and down', 'longwool and lustre', and 'mountain and hill'. Breeds have names such as Devon Closewool, Hampshire Down, Lincoln Longwool, Welsh Mountain and

Wensleydale. Their wool has differing properties accordingly, being suitable for a range of purposes such as hardwearing carpets or fine soft cloths (Trow-Smith, 1976).

Sheep appear in manuscripts with depictions of rural life, such as the early fourteenth century *Luttrell Psalter* (Backhouse 2000, 30), and the fifteenth century *Très Riche Heures* (Cantor 1999, 94). They are referred to in the names of places such as Sheepen, with more place-names containing word elements relating to domesticated animals than to wild ones (Yalden 1999, 136).

#### 4.2.5 *The deer*

In the medieval period there were three types of deer: the red deer (*cervus elaphus*), the fallow deer (*dama dama*) and the roe deer (*capreolus capreolus*). They vary in size, appearance and habitat preferences (Figs. 24, 25 and 26). Of these, only the red deer and roe deer can be thought of as truly indigenous; the fallow deer was originally brought to Britain by the Romans (Bendrey 2003; Sykes 2006b; Sykes et. al. 2006), and was then later reintroduced after the Norman Conquest. It is thought to have been brought from the Near East *via* Sicily, where the Normans acquired Islamic and Classical traditions of keeping oriental animals (Rackham 1980, 177).



Figure 24. Red deer.



Figure 25. Fallow deer.



Figure 26. Roe deer.

In the Anglo Saxon period, red deer antler was a major raw material for manufacturing purposes, either gathered after having been shed annually by the deer, or cut from an animal after it had been killed. The antlers of roe deer are very small by comparison, but were still used as a raw material (Riddler 2003).

The Old English words for deer include the following:

Red deer = OE *headeor*

Stag = OE *heorot*

Roe deer = OE *rahdeor*

Doe = OE *hind*

There are no Old English words for fallow deer as they were unknown at that time. Modern names are given below in Figure 27.

	male	female	young
<b>red deer</b>	stag	hind	calf
<b>fallow deer</b>	buck	doe	fawn
<b>roe deer</b>	buck	doe	kid

Figure 27. Table showing current day nomenclature of deer.

One of the major changes in the management of the English countryside brought about by the Normans was the establishment and management of 'forests' or 'parks', which were large tracts of prime hunting land governed by strict legislation. They were owned primarily by the King, but also by noblemen of high status. The main hunted animal there would have been the red deer, and then later, the fallow. Roe and fallow deer were of lesser status as hunted animals, as discussed below. Laws that protected the deer were strict; the Anglo-Saxon Chronicle s.a.1087 notes:

'The king W[illiam] set up great protection for deer (*deorfrīp*), and legislated to that intent, that whosoever should slay hart or hind should be blinded . . . he loved the high-deer as if he were their father' (Rackham 1980, 180).

Penalties for poaching, or 'trespass of venison' are evidenced in legal records throughout the medieval period, and often consisted of fines and imprisonment and not necessarily of being blinded. Faunal remains also yield evidence of poaching, with examples such as the red deer bones found in a well shaft in the village of Lyveden, which had been heavily and hastily butchered (Sykes 2006a, 169; Grant 1971, 90-93). In addition, it appears that in some areas there was an organised network of trafficking of venison; one man is recorded in a court roll as hiding a deer carcass in a cart load of timber (Sykes 2006a, 170; Birrell 1982, 18, 20).

Deer featured as minor part of the diet, but a highly prized one, being the privilege of the higher classes (Dobney, Jacques and Irving 1996, 50). In 1251 the Christmas feast of Henry III listed 180 red deer stags, 250 red deer hinds, 200 fallow deer bucks, 100 roe deer, 200 wild swine, 1,300 hares, 395 swans and 115 cranes (Rackham 1980, 181).

At a time when hunting was an activity undertaken as a mark of nobility, the deer was considered the prime animal of the hunt, with the red deer and later the fallow deer being the most desirable (Almond 2003, 17, 64-5, Cummins 1988, 84). Though on the whole hunting involved a large cross section of the community,

such as foresters, huntsmen, kennel men, beaters and cooks, the focus of the hunt as introduced by the Normans was the knowledge and display of certain rituals, language and traditions. These were set down in hunting manuals such as the thirteenth century *Tristan* and the late fifteenth century *Boke of St Albans* and *Livre de Chasse*, the understanding and performing of which not only asserted a nobleman's aristocratic status, but which also marked a cultural separation between noblemen and the general peasantry. This was particularly the case by the end of the twelfth century (Sykes 2005).

Deer could be hunted in one of two ways, depending on the species. The hart, or solitary red deer stag, was hunted in the *par force* way, which was considered the noblest. This involved riding on horseback alongside a pack of hounds that chased the stag until it tired. When the stag was exhausted it would turn 'at bay' to confront the hounds, at which point the king or nobleman would arrive and kill it with a knife or sword. The *drive* or *bow and stable* method was a different type of hunt, where many deer (red deer hinds, fallow deer and roe deer) were flushed from their cover and directed towards hidden archers and hounds, who would then kill them (Rooney 1993, 4, Sykes 2006a).

The way in which they were hunted and killed was highly ritualised, according to the procedures set down in the hunting manuals. After death, the deer was 'unmade', with the corbyn bone (the pelvis) being cast away at the kill site for the crows and ravens, the front legs given to the forester or parker, and to the huntsman who unmakes the hart, and both haunches (the back legs) kept by the lord (Cummins 1988, 180-1; Sykes 2005).

This ritual distribution of bones is supported by archaeological evidence, with post conquest high status sites having more rear limb bones and few examples of the foreleg and pelvis (Thomas forthcoming, Yalden 1999, 156). Hertford castle yielded fragments of fallow deer tibia and metatarsal, both bones of the back leg as shown in Figure 49 (Zeepvat and Cooper-Reade 1996, 35). The late medieval hunting lodge at Donnington Park showed a predominance of the left forelimb, tying in with the left forelimb of the deer being given to the huntsman (Sykes 2006a). It is interesting to note that flutes made from deer bones are all made from the hind leg and almost all come from sites that could be labelled high status. This latter aspect is discussed in Chapter 5.



In addition, deer held symbolic meaning with many Christian overtones, as portrayed in tapestries and literary sources. The hart was symbolic of Jesus and eternal life, the hunter was the devil, the hounds were Judas and the Jews, and the unmaking of the deer represented the crucifixion (Cummins 1988, 68-73).

Many place-names refer to deer; primarily red and roe, and to a lesser extent fallow deer. Such names include Harthill, Hindhead, Buckhill, Buckfast and Rogate (Yalden 1999, 135).

### 4.3 Skeletal element used

#### 4.3.1 The ulna

By far the most common skeletal element used for bird bone flutes is the ulna, one of the principal bones of the wing (Fig. 28). Along the surface of this bone is a row of bumps, also called dimples, quill knobs or *papillae ulnares*, to which the secondary flight feathers are attached (Cohen and Serjeantson 1986, 36; Proctor and Lynch 1993, 56-57, 136-8; Schmid 148-9). These are less prominent in domestic birds, and often removed in the manufacture of bone flutes; when present, they are a simple diagnostic feature of this particular bone in addition to its shape.

Figure 28 can be compared with Figure 29, which shows a mute swan with outstretched wings. The position of the ulna is clearly visible.

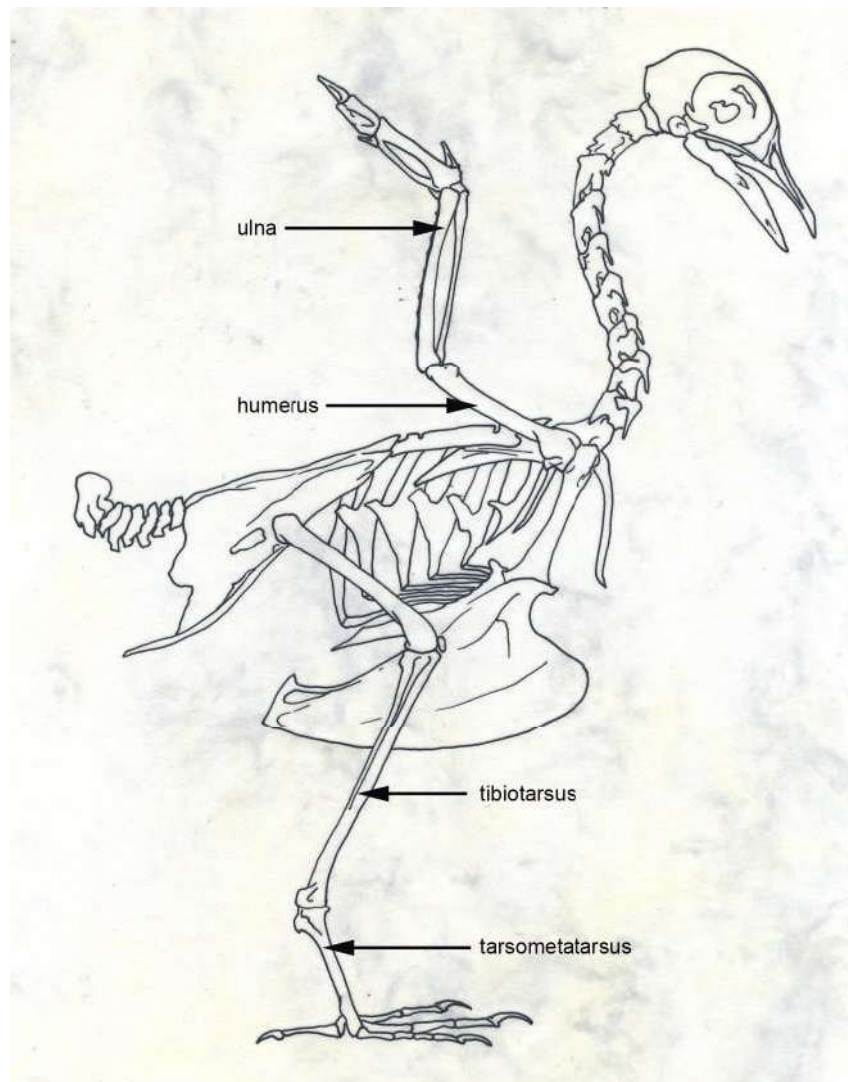


Figure 28. Pigeon skeleton showing bones used to make bone flutes.



Figure 29. Mute swan with outstretched wings.

The ulna varies in size according to species, although it has similar proportions. Figure 30 shows the ulna of the whooper swan, crane, mute swan and greylag goose, all of which would have been used to make bone flutes. Goose ulna flutes are accepted as being made from the ulna of the domesticated greylag goose as discussed above. Variations in size of goose ulna may be due to different age of goose, or wild species such as the barnacle goose. Figure 31 shows the ulna of the greylag goose alongside the slightly smaller ulna of the barnacle goose.



Figure 30. From top to bottom: whooper swan ulna, crane ulna, mute swan ulna and greylag goose ulna.



Figure 31. Greylag goose ulna (above) and barnacle goose ulna (below).

The ulnae of heron were not used for making bone flutes, though it is not clear why this is the case. They are of a size that is feasibly useful (i.e. slightly larger than a goose and slightly smaller than a swan), but the bone is extremely thin and perhaps was considered too delicate and fragile. Figure 32 shows the ulna of a heron alongside the ulna of a whooper swan.



Figure 32. Heron ulna (above) and whooper swan ulna (below).

Typical cross sectional profiles of the ulna are shown in Figure 33, namely a round middle section, a smaller flattened oval to slightly kidney-shaped end and a larger, flared, slightly triangular end. It is at this larger end that the window of the flute (the proximal end) is invariably placed (Fig. 34). The nomenclature of flute parts is discussed below in section 4.5.

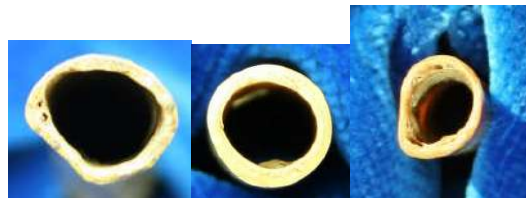


Figure 33. Cross sectional profiles of the ulna.



Figure 34. Reproductions of goose bone flute alongside goose ulnae.

Occasionally, the line of bumps or quill knobs is seen along the convex surface of the ulna where the secondary flight feathers attach to the bone; these are more prominent on swans than on geese, but have often been removed by longitudinal scraping during manufacture of the flute. The ulna also has a distinctive 'muscle scar', a depression where the brachialis muscle attaches at the flared end (Cohen and Serjeantson 1986, 37), and a nutrient foramen, the positions of which relative

to each other are a key factor in distinguishing the swan ulna and the crane ulna. These two bones can be of such a similar size, that it is difficult to tell them apart (Fig. 35). The key feature that distinguishes one from another, noted after study of the reference collection of the Natural History Museum Bird Group, Tring, is the position of the foramen, which on the crane ulna is proportionally closer to the muscle scar than that of the swan ulna. Knowledge of this has led to fragments of flutes being identified as crane, such as the flute from Winchester Brook Street [103], which was previously identified as the ulna of a 'large bird of goose size' (Biddle 1990, 721). The crane ulna is also slightly straighter than the swan ulna, as is illustrated effectively in Figure 35.



Figure 35. Swan ulna (above) and crane ulna (below).

The ulna is the most commonly used bone to make flutes. It comprises 79% of all bird bone flutes (Fig. 36) and 45% of all flutes viewed as a whole (Fig. 37).

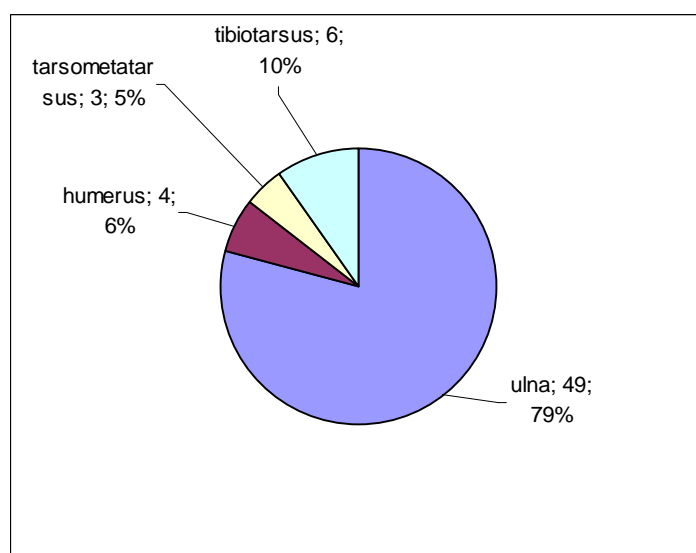


Figure 36. Pie chart showing bird bones used for making bone flutes.

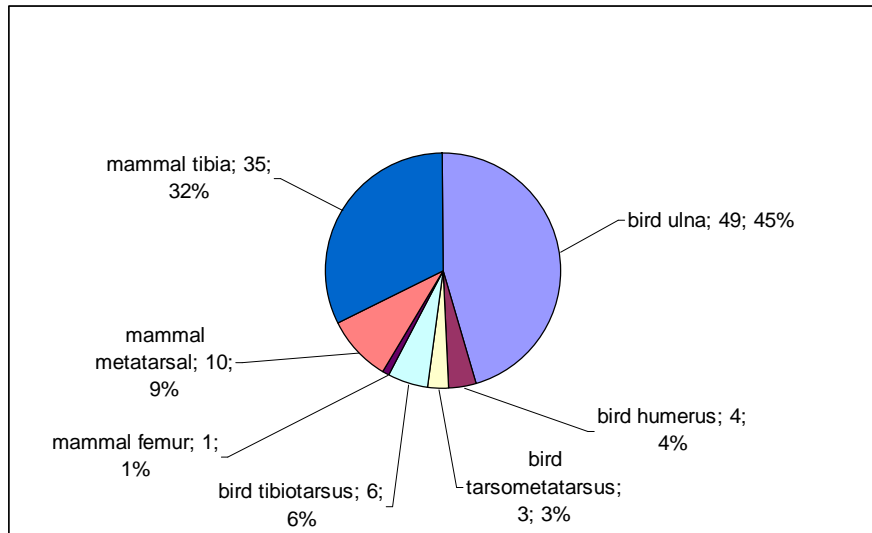


Figure 37. Pie chart showing bird and mammal bones used for making bone flutes.

Figure 38 shows all bird bone flutes by catalogue number, categorized by species and bone used.

species:	bone used:			
	ulna	humerus	tibiotarsus	tarso-metatarsus
goose	<u>36 in total:</u> [1] [5] [8] [9] [11] [21] [22] [23] [25] [27] [30] [33] [36] [37] [39] [41] [42] [49] [57] [58] [59] [65] [68] [75] [78] [79] [84] [89] [93] [97] [104] [105] [108] [109] [112] [115]	<u>4 in total:</u> [13] [72] [101] [118]	<u>2 in total:</u> [28] [117]	
swan	<u>8 in total:</u> [14] [31] [43] [60] [69] [73] [114] [116]			
swan/crane	<u>1 in total:</u> [85]			
crane	<u>4 in total:</u> [38] [82] [100] [103]		<u>4 in total:</u> [24] [47] [67] [113]	<u>3 in total:</u> [7] [87] [91]

Figure 38. Table showing bird species and skeletal element used for making bone flutes.

Of the bird ulna flutes, It is the ulna of the goose that is the most frequently used (74% of all bird ulna flutes), with the remaining bird ulna flutes made from swan and crane ulna (16% and 8% respectively; Fig. 39). One flute is made from a bone that is the ulna of either a swan or crane.

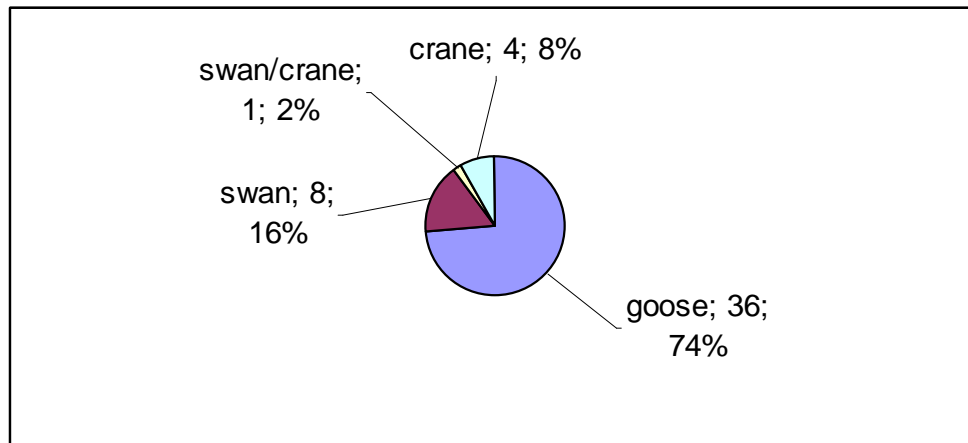


Figure 39. Pie chart showing species of birds whose ulna is used for making bone flutes.

#### 4.3.2 The humerus

Four bird bone flutes (7% of all bird bone flutes, Figs. 36 and 38) are made from the goose humerus; these are uncommon and have not always been identified correctly when originally published. One **[13]** is published as a 'bird (?swan) tibia' (Megaw 1984, 349), another **[118]** is published as simply 'goose bone' (MacGregor *et. al.* 1999, 2021) and the remaining two **[72]** and **[101]** are described as 'probably goose humerus' and 'humerus of large bird of goose size' respectively (Ayers 1987, 106; Megaw 1990, 721). No swan humerus flutes have been identified, though the swan humerus, and indeed the swan radius, could feasibly have been used to make a flute. The swan humerus (Fig. 38), though wide in proportion to its length, is of a roughly similar size internally to a large sheep tibia or deer tibia, bones discussed below that have also been used to make flutes. The swan radius (Fig. 38) is particularly long and thin, but of a similar diameter along its length to some of the goose ulna flutes. Figure 39 shows the humerus of the whooper swan, crane, mute swan and greylag goose, all of which could feasibly be used to make bone flutes.





Figure 40. Swan humerus (above) and radius (below) with epiphyses removed.



Figure 41. From top to bottom: whooper swan humerus, crane humerus, mute swan humerus and greylag goose humerus.

#### 4.3.3 The tarsometatarsus

Each bird has different relative sizes of bones according to its species. The bird skeleton shown in Figure 28 is that of a pigeon, and shows a skeleton with bones in typical proportions. Goose, swan and crane ulnae are of similar proportions, although different in size, as shown in Figure 30, and the humerus of these birds shows slight variation in proportion (Fig. 39). The leg bones show greater variation in proportions, however. The crane tarsometatarsus is equally as long as the tibiotarsus, and has a very distinct form with two longitudinal ridges along its length (Figs. 42 and 43).





Figure 42. From top to bottom: the tarsometatarsus of the whooper swan, crane, mute swan and greylag goose.

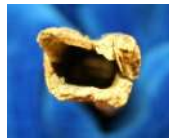


Figure 43. Cross section of crane tarsometatarsus.

Three flutes are made from the tarsometatarsus (5% of all bird bone flutes, Figs. 36 and 38), although only one [87] has been published with the bone accurately identified (Rogerson and Dallas 1984, 182). One [7] is published as a 'long bone of a crane or other large bird' (Megaw 1968, 149), and the other [91] is published as a deer metatarsal (Lawson forthcoming b, 172). This particular flute was taken to the Natural History Museum Bird Group in Tring and compared to the tarsometatarsus of both crane and stork (Fig. 44). On close examination of the diagnostic features of both bones, identification of crane tarsometatarsus was made. It is interesting to note that the tarsometatarsus is not always used in the same orientation when used to make a flute, as discussed below.



Figure 44. Flute from West Cotton [91] with the tarsometatarsus of both crane (above) and stork (below).

#### 4.3.4 The tibiotarsus

The tibiotarsus is a bone in a bird's leg (Fig. 28), usually long and straight but varying in proportion according to species (Fig. 45). There are very few muscles between the bone and the skin of the bird's leg, illustrated by one crane tibiotarsus in the Natural History Museum's reference collection which has the skin of the bird's leg still in place (Fig. 46).



Figure 45. From top to bottom: whooper swan tibiotarsus, crane tibiotarsus, mute swan tibiotarsus and greylag goose tibiotarsus.



Figure 46. Tibiotarsus of a crane with skin.

As a result of this lack of muscle, some of the blood vessels press into the surface of the bone and leave distinct impressions, which are diagnostic features of this bone when seen on flutes (Fig. 47). Another feature is the fibular crest, a protruding ridge of bone that meets with the smaller adjacent bone, the fibula, as shown in Figure 45. This crest is removed in the making of bone flutes, revealing a nutrient foramen which passes along and through the wall of the bone. Figure 48 shows a flute **[113]** with this crest removed, alongside a crane tibiotarsus, the bone from which it was made. Comparison of flutes with reference bones in this way allows for a better understanding of the flute's original complete length.



Figure 47. Flute from York **[113]** showing impressions on the tibiotarsus caused by blood vessels.



Figure 48. Flute from York **[113]** with the fibular crest removed alongside a crane tibiotarsus.

Six flutes are made from the tibiotarsus (10% of all bird bone flutes, Figs. 36 and 38). Two of these are from the goose tibiotarsus; one from York **[117]** made from the tibiotarsus of a 'domestic fowl' (MacGregor et. al. 1999, 1978), and another **[28]** from Hamwic (unpublished). Four flutes are made from the crane tibiotarsus, none of which were accurately identified when first published. They are from Gloucester **[24]**, published as a dog tibia (Sermon 1997, 51), London **[47]**, published as simply 'bone' (Library Committee of the Corporation of the City of London, 1908, 42), North Elmham **[67]** published as sheep tibia (Wade Martins 1980, 493) and York **[113]**, published as 'hollow bone' (Waterman 1959, 91). All four have now been accurately identified as being crane tibiotarsus.

#### 4.3.5 Mammal bone flutes

All of the mammal bones used for making flutes are from the rear leg of the animal, as shown in Figure 49.

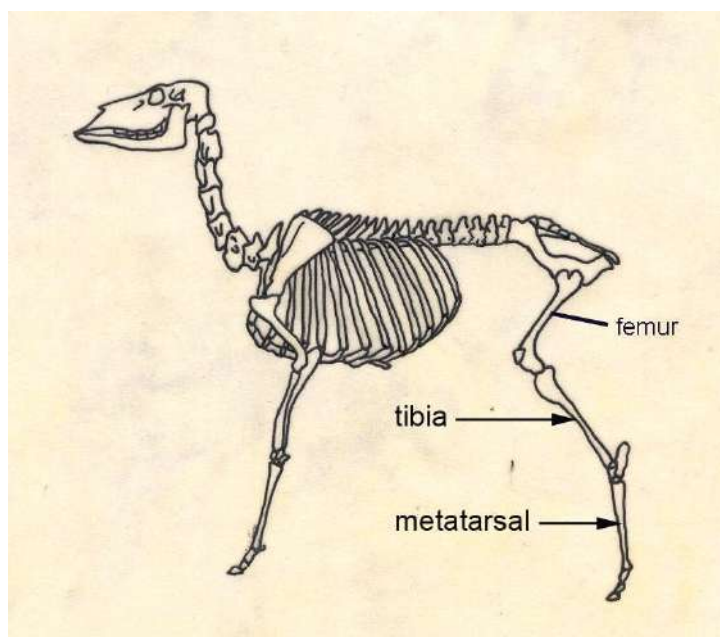


Figure 49. Deer skeleton showing bones used for making mammal bone flutes.

The most commonly used mammal bone is the tibia, these 35 flutes comprising 76% of all mammal bone flutes and 32% of flutes overall (Figs. 50 and 51). One flute is made from the femur 2% of all mammal bone flutes and 1% of flutes overall, and the remaining ten flutes are made from the metatarsal, being 22% of all mammal bone flutes and 9% of flutes overall (Figs. 50 and 51).

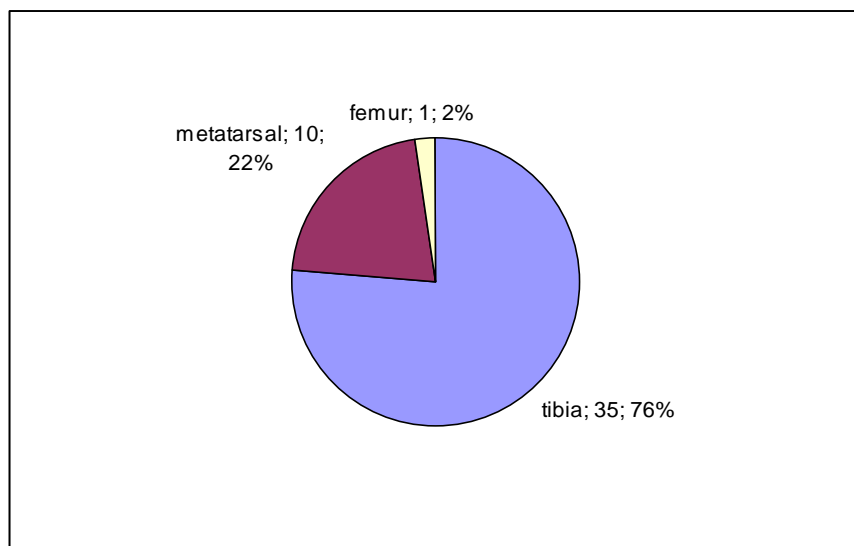


Figure 50. Pie chart showing mammal bones used for making bone flutes

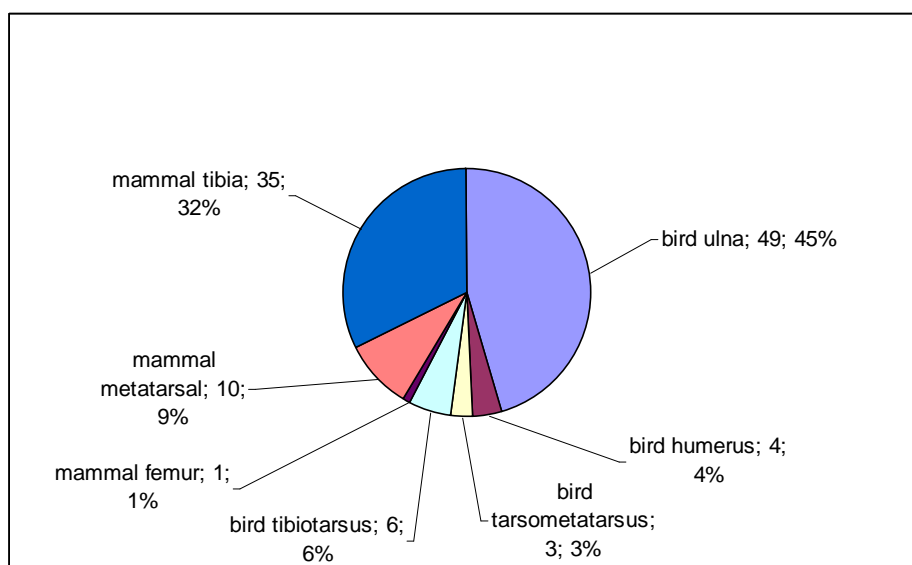


Figure 51. Pie chart showing bird and mammal bones used for making bone flutes.

As discussed above in section 4.2, the bones of both sheep and deer were used to make flutes. Figure 52 shows the numbers of flutes made from the different skeletal elements of these species. The 22% of mammal bone flutes made from the metatarsal contains an equal number of sheep and deer metatarsal flutes. This is in contrast to the 76% of mammal bone flutes made from the tibia, the majority of which are sheep tibia flutes. The catalogue numbers of the flutes of each species and skeletal element are given in Figure 53.

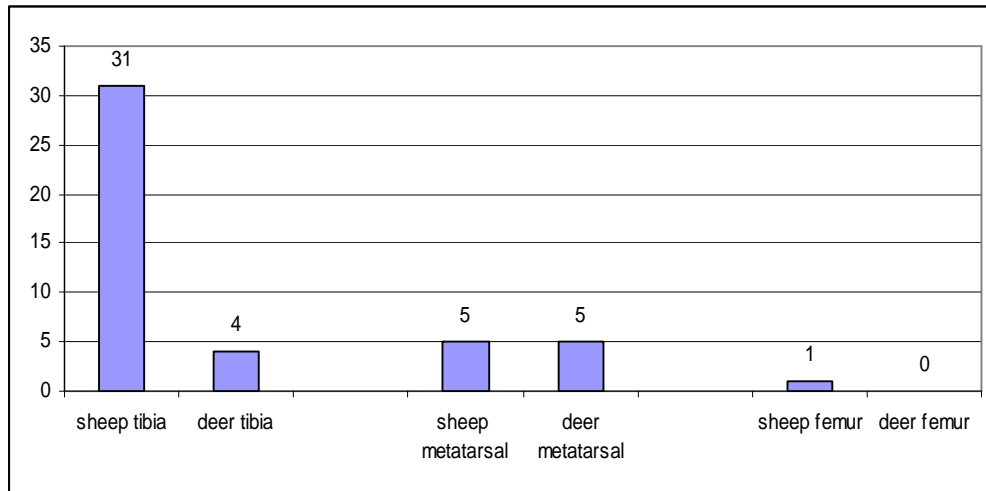


Figure 52. Bar chart showing numbers of mammal species and skeletal element used for making bone flutes.

species:	bone used:		
	tibia	metatarsal	femur
<b>sheep</b>	<u>31 in total:</u> [3] [4] [10] [16] [17] [18] [20] [26] [32] [34] [44] [45] [46] [52] [53] [54] [55] [56] [61] [62] [66] [77] [80] [81] [90] [92] [94] [95] [96] [99] [111]	<u>5 in total:</u> [19] [51] [70] [86] [106]	<u>1 in total:</u> [74]
<b>deer</b>	<u>4 in total:</u> [2] [12] [29] [50]	<u>5 in total:</u> [35] [48] [98] [107] [110]	

Figure 53. Table showing mammal species and skeletal element used for making bone flutes.

#### 4.3.6 The tibia

The tibia is the bone in a traditional 'leg of lamb'; it is the main meat bearing bone taken from the haunch or back leg. It has an oval cross section to its shaft in the central area, which flares to a triangular shape at one end; the opposite end flares very slightly and changes from an oval cross section to one that is almost pentagonal (Figs. 54 and 57). The shape of the internal cavity can be seen and easily recognised on broken flutes, even when the ends are absent (Fig. 55).

The flared triangular end forms the proximal end of all mammal tibia flutes apart from one, which uses the bone in the opposite orientation ([50], the flute from London Paternoster Square). One of the 'corners' of the triangular end protrudes as an extended crest of bone known as the *crista tibiae* (Schmid 1972, 120-1); this is often partially removed in the manufacture of flutes, and is usually at the back of the instrument. The opposite flat surface of the triangular end is usually the front of the flute into which the window and toneholes are cut. In only one flute is a different side of the bone used as the front of the instrument, (the flute from Ripplingham [77]).

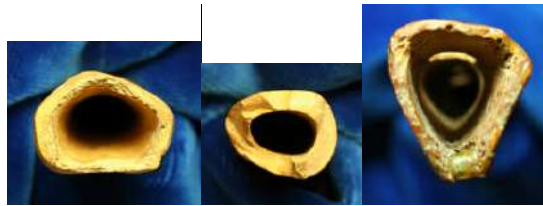


Figure 54. Cross sectional profiles of a tibia from the distal, central and proximal parts of a flute.



Figure 55. Cross sectional profile of the tibia seen on the ends of broken flutes.

Sheep tibiae are used far more frequently for making flutes. Figure 56 shows the proportions in a pie chart, with 89% of mammal tibia flutes being made from sheep tibiae and 11% being made from deer tibiae.



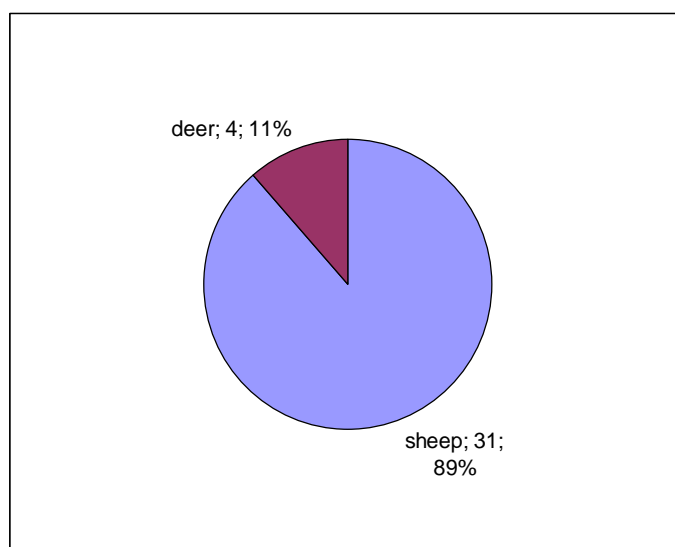


Figure 56. Pie chart showing proportions of flutes made from sheep and deer tibiae.

#### 4.3.7 The metatarsal

The metatarsal is a bone often referred to as the ‘foot bone’ of an animal. It is not meat bearing, and as such is often seen to have no intrinsic use. A butcher for example, would normally pass a hide on to a tanner with its horns and hooves still attached, a practice supported by archaeological evidence at places where tanning was practiced (Cherry 1991, 295-6). Metatarsal bones have distinct straight sides and vary slightly according to whether they are from a deer or sheep. A deer metatarsal has more or less parallel sides and an almost square internal profile with two distinct ridges along the front and back surfaces, which in bone flutes are often removed (Fig. 57). The sheep metatarsal is smaller and tapers slightly, as shown below in Figure 58.

Both deer and sheep metatarsals have a wafer thin plate of bone present that protrudes into the internal cavity. In bone flutes made from the metatarsal, this plate is broken off and removed, but the base of this plate can sometimes still be seen (Fig. 59).





Figure 57. Fallow deer tibia (above) and metatarsal (below), seen from four sides.



Figure 58. Sheep metatarsal flute [106] showing tapering shape.



Figure 59. Detail of the broken internal plate of bone seen in the metatarsal in the end of a flute from Norwich [70].

The metatarsal is very different to the metacarpal, the equivalent bone from the front leg of the animal. The metacarpal has a D-shaped cross sectional profile, and has not been observed in the manufacture of bone flutes. Artefacts published as bone flutes from Bedford (Cauldwell Street) and Beverley (Dominican Priory) are clearly made from the metacarpal and show this distinct cross sectional profile (Fig. 60), although these are not actually flutes for reasons discussed below.



Figure 60. Both ends of the 'flutes' from Bedford Cauldwell street (left) and Beverley Dominican Priory (right) showing typical D-shaped cross sectional profile of the metacarpal bone.

The metatarsal of both sheep and deer is used in equal proportions (Fig. 61). This pie chart can be compared to that in Figure 56, which shows the proportions of sheep and deer tibia flutes, and to Figure 52 which shows the numbers of these flutes in a bar chart.

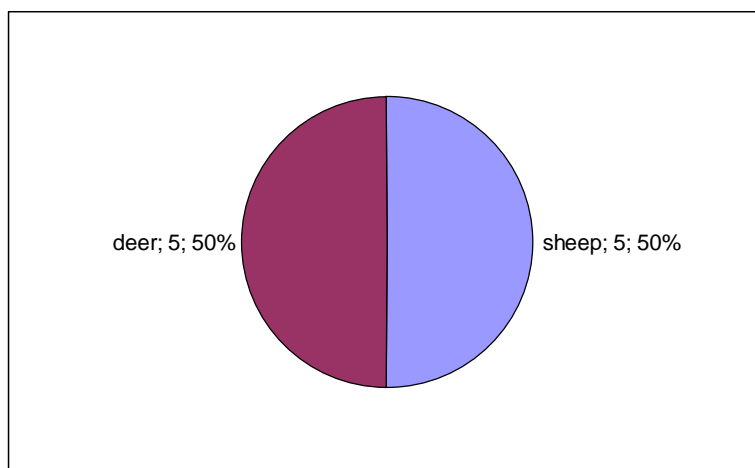


Figure 61. Pie chart showing proportions of flutes made from sheep and deer metatarsal.

#### 4.4 Complete flutes and fragments of flutes

Not all flutes found are complete; many are broken, and some comprise only a small section of the original as discussed in Chapter 3 and shown in Figure 12. Forty-four of the flutes found to date are complete (38%). A flute is labelled complete if the original length can be determined, but it may be chipped or damaged in a way that does not impede the understanding of its original form, such as the flute from Great Massingham in (Fig. 62; [26]).



Figure 62. Flute from Great Massingham [26] with chipped proximal end.

Of the remaining flutes, various types of fragments are seen (Fig. 63). Nineteen flutes (16%) are of the 'window end' of the flute, i.e. the proximal end. These are often broken before the first tonehole, yet they give valuable information about the window; the example on the left of Figure 64 has an unusually large square window, while the example on the right has a distinct line that either marks the window's position or its upper limit.

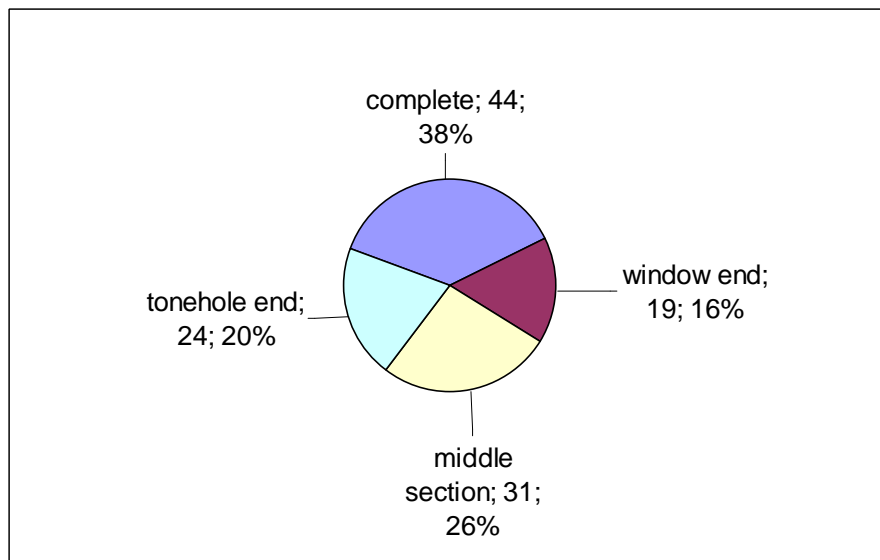


Figure 63. Pie chart showing types of fragments of flutes.



Figure 64. Fragments of flutes comprising the window end, [4], [92] and [115].

Twenty-four flutes (20%) are fragments from the tonehole end; they do not give information about the complete number of toneholes present, but they can show the size, form and spacing of toneholes in relation to the bone used (Fig. 65).



Figure 65. Fragments of flutes comprising the tonehole end [12], [23] and [67].

Thirty-one fragments (26%) are of the central part of the flute. They tend to be broken across one or more of the toneholes. By their nature they rarely show the complete number of toneholes, but they nevertheless yield information about size and positions of toneholes, as well as the cross sectional profile, such as shown in the sheep tibia to the right of Figure 55.



Figure 66. Fragments of flutes comprising the middle section, [94] and [14].

#### 4.5 Nomenclature of flute parts

In order to discuss flutes, a standardization of terminology is clearly needed. The proposed nomenclature presented below draws from contemporary musical instrument making, with words such as duct flute instead of 'fipple flute' and window rather than 'blowhole'. The word 'blowhole' is a popular but potentially misleading descriptive term, as it usually refers to a hole that a player does not actually blow down. The proposed nomenclature also uses words of anatomical description such as proximal and distal. The following diagram shows a typical bone flute, labelled with the proposed nomenclature (Fig. 67).

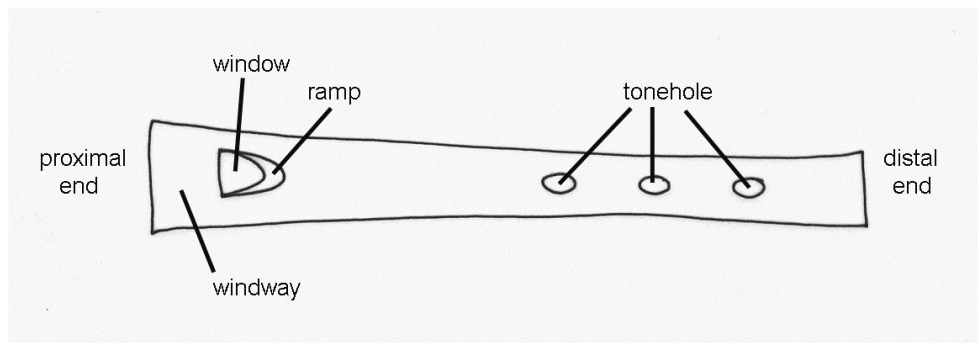


Figure 67. Labelled diagram of a bone flute.

The terms used in this proposed nomenclature are given below in Figure 68, with brief definitions to assist understanding. Terms used by previous authors to describe the same feature are also given.

<b>proposed nomenclature</b>	<b>definition</b>	<b>name used elsewhere (if different)</b>
duct flute	a flute that uses a narrow air channel to focus an air stream over an aperture and onto the far edge of that aperture (Hopkin 1996, 63-4)	pipe, whistle, fipple flute, block and duct flute, end blown flute, flageolet, penny whistle
proximal end	the end of the instrument that is nearest to the player.	head, top
distal end	the end of the instrument that is furthest away from the player.	foot, bottom
window	a hole at the proximal end of the instrument (usually with no others adjacent or nearby) that is vital to the operation as a musical instrument. Usually D-shaped or oval on bone flutes, and rectangular on wooden instruments.	blowhole, fipple, sound window, soundhole
block	a manufactured plug of material that is inserted into the proximal end. An air channel is left at the front to create the windway.	fipple, fibble
windway	a channel that the player blows down, which directs a stream of air onto the labium.	fipple
beak	an area of material that is cut away, giving a more ergonomic design for playing the instrument. Not usually seen on bone flutes.	
ramp	a cut away area adjacent and distal to the window that slopes from the window to the exterior surface of the bone	inverted lip
cheeks	defined side boundaries to the ramp. May be seen on instruments with square or rectangular windows	
labium	the distal edge of the window, which is often the curved part of a D shaped hole.	knife edge, edge, voicing lip, lip
bore	the internal cavity of the instrument formed by the natural hollow form of the bone.	
tonehole	a hole on the front of the instrument where fingers are placed in order to create different notes. Usually in the central or distal areas on the front of the instrument.	fingerhole, hole
thumbhole	a hole on the back of the instrument where the thumb is placed. Not always present on bone flutes.	
undercutting	the deliberate modification of the area where the tonehole meets the bore. Material is removed, which facilitates a better sound. As yet unobserved in Medieval bone flutes.	

Figure 68. Table showing nomenclature of bone flute features.

#### 4.6 Definition of a duct flute, with examples of ‘non-flutes’ and their reasons for dismissal

Bone flutes are aerophones according to the Hornbostel-Sachs system of musical instrument classification (Jenkins 1970, 8, 24). This system categorises instruments according to how the sound is produced acoustically, and has the major categories of *aerophones* (wind instruments), *idiophones* (self-sounding instruments), *membranophones* (instruments with membranes), *cordophones* (stringed instruments) and additionally, *mechanical and electrical* (Diagram Group 1976, 8; Jenkins 1970, 8). Aerophones are further categorised according to how air is made to vibrate, which may occur when air is directed against a sharp edge on a pipe, when it is passed through a special reed, or when it is compressed by a player's lips (Jenkins 1970, 24). A *duct flute* (such as the bone flute, recorder or whistle) is a flute that uses a narrow air channel in an otherwise blocked proximal end, to focus an air stream over an aperture and onto the far edge of that aperture (Hopkin 1996, 63-4).

The following is a description of how the various features at the proximal end of a bone flute are integral to its function as a musical instrument. A block or plug of solid material (e.g. wood) is inserted into the proximal end of the flute so that its distal surface is level with the proximal edge of the window. This block is made to fit into the end of the flute in a way that leaves no air gaps, apart from the front side, which is intentionally cut away to create a *windway*, or tunnel. The windway is formed by the natural curvature of the internal surface of the bone and the block. The distal end of the windway opens onto the *window*, which in bone flutes is usually D-shaped, as illustrated below in Figures 71 and 72. When a player holds the bone flute to his or her mouth and blows, a correctly positioned windway will direct the player's breath so that it strikes the distal edge of the window. At this point, the air stream, being no longer bound by the windway, oscillates so that it flows alternately to the outside and the inside surfaces of the bone. It is this oscillation that causes the air column to vibrate, and an audible sound to be created.

Various factors may cause either the sound produced to be weak or for no sound to be produced at all.

- If the windway is not shaped correctly, the air stream may not be directed



to strike the far edge of the window.

- If the windway is too long, it may be difficult to make and insert a block to create the windway.
- If the internal surfaces of the windway are rough, the air stream may not be able to flow smoothly through the windway, and may not hold its direction towards the far edge of the window.
- If the window is too large, and the distance from the proximal to the distal edge too great, the air stream may lose its pressure and may dissipate into the environment before being able to strike the far edge of the window.
- If the far edge of the window is rough, rather than being pointed in cross sectional profile, the air stream may strike it and not oscillate smoothly.

An example of a flute having several of these factors is the goose ulna flute from Ipswich (Foundation Street/Star Lane shown in Figure 69; [30]). It has a D-shaped window, but one which faces the opposite way to that normally seen. In addition, the windway is extremely long, and will have caused difficulty in fashioning and inserting a functioning block. An understanding of the acoustic requirements of the window suggests that this instrument was made by an inexperienced hand, that it was not copied from another instrument directly, and that although unable to be proved, it would probably not have sounded; it is still classified as being a flute, however.



Figure 69. Goose ulna flute from Ipswich [30] with unusual design features.

An example of an artefact published as a flute which in fact is not, is that from Colchester Cups Hotel (Fig. 70), which has two holes in alignment along one side, and could superficially be a flute with one tonehole, or a flute that had more originally before being broken. On examination of the object, however, it is clear that it is complete rather than broken, and that neither of the holes could function as a window.



Figure 70. Bone artefact from Colchester erroneously published as a flute.

An inventory of the 'non-flutes' found during research is included as an appendix to the main gazetteer of flutes in Part 2. Overall, it is clear that an understanding of how bone flutes work acoustically greatly enhances understanding of flutes as musical instruments, and leads to clarity in assessing them as archaeological artefacts.

## 4.7 Comment on features

### 4.7.1 *Windows*

The majority of bone flutes have a D-shaped window and this can be seen as a feature that typifies them. The D-shape ties in with the functioning of a duct flute as discussed above, where the player's breath is directed to the curved edge in order to make the instrument sound. The window is seen on the 38% of flutes that are complete and the 16% of flutes comprising the window end as discussed in section 4.4 (totalling 54%). The curved distal edge of the window is also seen on some of the 26% of flutes that comprise the middle section of a flute, such as the example in Figure 75 below.

Though generalised as being 'D-shaped', much variation in window shape can also be seen. Figure 71 shows the windows of three sheep tibia flutes from London, [54], [44] and [53]. The flute on the left shows a neatly made almost triangular window, whereas the flute in the centre shows a more roughly made, almost oval window. The flute on the right has only part of the window present, but a distinct edge can be seen, and it is fair to say that it would have had an approximately D-shaped window, had it been complete.



Figure 71. D-shaped windows of three sheep tibia flutes [54], [44] and [53].

In a similar way to the sheep tibia flutes discussed above, bird bone flutes display a variety of forms of window, although most of them are D-shaped (Fig. 72). The flattened proximal edge of this form of window and the distal curved edge tie in with the acoustic function discussed above.



Figure 72. D-shaped windows on bird ulna flutes [25], [58], [53], [79], [69] and [100].

A flute with a window of any other shape would be difficult though not impossible to sound clearly, such as the flutes from Northampton [68] and Westbury-by-Shenley [93], which have rough oval windows (Fig. 73).



Figure 73. Goose ulna flutes with rough oval windows, [68] and [93].

Many fragments of flutes, in particular those from bird ulnae are broken at the window, and show only the distal curved edge (Fig. 74). The distinctiveness of D-shaped windows can aid identification of bone fragments as flutes, especially when no toneholes are present, or where the proximal edge of first tonehole remains (Fig. 75).



Figure 74. Bird ulna flutes showing broken windows, [38], [14], [1] and [82].



Figure 75. Bird ulna flute showing broken window and broken first tonehole [82].

On only three flutes, [35], [98], and [110], all of deer metatarsal, are the windows rectangular rather than D-shaped (Fig. 76); although the flute on the right is only a fragment, the edge of its rectangular window is visible. This fragment [110] is from Winchester, and the other two flutes shown in Figure 76 are from Keynsham Abbey, Somerset [35], and White Castle, Monmouthshire [98].



Figure 76. Rectangular windows on deer metatarsal flutes [35], [98], and [110].

A further two flutes show a broken window with a straight side and only slightly shaped distal edge (Fig. 77). These are both from Winchester, the flute on the left made from a sheep metatarsal [106] and that on the right from a deer metatarsal [107].

The fabrication of a neat rectangular window is more complex than the fabrication of a D-shaped window, and requires careful control with a knife. In my own experimental reconstructions of these instruments, a square profile needle file is used to achieve the same effect. Though larger files have been found in association with metalworking, these are specialised tools and would only have been in the possession of skilled craftsmen. Smaller needle files are unlikely to survive well after deposition (Hinton 2000, 34-5).



Figure 77. Possible rectangular windows on sheep and deer metatarsal flutes [106] and [107].

#### 4.7.2 Toneholes

The majority of toneholes are conical in profile, and are consistent with having been made with the point of a knife. This conical profile is more easily seen on mammal bone flutes due to their greater wall thickness. Certain toneholes show an imperfect circular hole, where the twisted point of the knife has stopped and has cut into the bone more deeply (Fig. 78). Additionally, marks are sometimes seen following the internal 'slope' of the tonehole, where it is presumed that a knife has been used with a rough edge; i.e. irregularities in the profile of the knife have left radial marks on the tonehole wall as the knife has been turned.

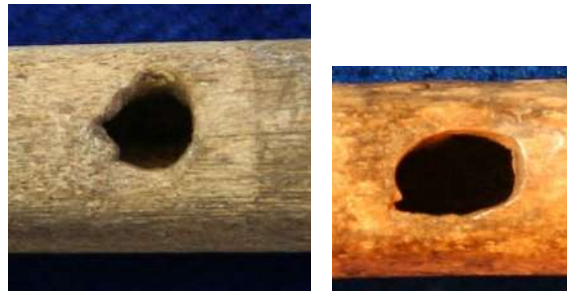


Figure 78. Toneholes showing twisted knife cut on flutes [86] and [103].

Toneholes on bird bone flutes are less obviously conical, as the bone is considerably thinner, often between 1 and 2mm thick.

While certain conical holes show a profile that is almost parallel, there are few if any flutes with holes that are so parallel sided and so perfectly round that they might suggest having been made with a bow drill. Only one flute shows toneholes that have been clearly made by a saw (Fig. 79). The flute is from Thames Street, London [55], but is not from a secure archaeological context and therefore not precisely dated. It is assumed to be medieval, and the form of the flute is comparable with other sheep tibia flutes with holes centrally placed. The use of a saw is unusual, however, and is not seen in any other flute.





Figure 79. Three views of the flute from Thames Street, London [55].

#### 4.7.3 Thumbholes

Only seven flutes (5.9%) have a thumbhole; it is an unusual feature and occurs on mammal bone flutes dated to the twelfth century onwards but also on flutes that are undated. Thumbholes are seen on three sheep tibia flutes, from London Thames Exchange [54], Castle Acre Castle [10] and Stanton Low [80], two deer tibia flutes from Bedford Castle [2] and Hertford Castle [80], and two deer metatarsal flutes from White Castle [98] and Keynsham Abbey [35]. These latter flutes are shown in Figures 99, 100 and 101. It is interesting to note that of these examples, two have more than one thumbhole; The White Castle flute has two and that from Castle Acre Castle three.

#### 4.7.4 Unusual characteristics

Two flutes, from Exeter [17] and West Cotton [90], have the distal epiphysis of the tibia still present (Fig. 80). The presence of the epiphysis may be deliberate and intended as part of the instrument, or may indicate a partial state of manufacture.

My own experimental reconstruction yields the understanding that internal marrow is easy to remove from a bone when the epiphyses are removed, but is very difficult to remove from the deep cavity of bone created by having the epiphysis in place. Leaving remnants of marrow present is not a satisfactory practice for making a musical instrument as it is unpleasant to have marrow, fresh or dried, in this

cavity. In one of the two examples in Figure 80 below (from West Cotton [90]), the solid end of the bone has a hole through it as a continuation of the hollow cavity within the bone; this is not apparent from the published line drawing, but clearly seen by direct observation.



Figure 80. Two flutes with the distal epiphysis of the tibia left on, [17] (above) and [90] (below).

#### 4.7.4.1 Suspension hole

Five flutes (4.2 %) have holes hitherto described as ‘suspension holes’, as illustrated in Figures 81 and 82 ([26], [98] and [23]). These holes are usually smaller than toneholes and normally on the back of the instrument close to the distal end. Most of those noted are on mammal bone flutes, and more commonly seen on sheep tibia flutes, with examples from Stanton Low [80], Great Massingham [26] and West Cotton and [90]. However, they are also seen on the deer metatarsal flute from White Castle [98] and the goose ulna flute from Gloucester Park Street [23]. On close examination, the holes display no obvious signs of surface wear on one side that might indicate their use in suspending the flute from a belt or around a person’s neck. They are, however, ‘out of the way’ both visually and acoustically and appear to serve no musical purpose.





Figure 81. Suspension holes on the rear of mammal bone flutes, [26] and [98].



Figure 82. Suspension hole on rear of a goose bone flute [23].

One of the above mentioned flutes, from Stanton Low [80] has a hole that may or may not be a suspension hole on the front rather than the rear surface close to the distal end of the flute (Fig. 83, below). It is offset to one side from the alignment of the other toneholes, which are of differing sizes and not well aligned. An alternative explanation of this possible suspension hole is that it is an additional tonehole. If so, it is the only one known that is offset to one side to such an extent. The maximum number of toneholes on the front surface of the instrument as discussed below is five.



Figure 83. Possible suspension hole offset on front surface [80]

#### 4.7.4.2 Decoration

Unlike many bone and antler objects of the Early and later Medieval periods, bone flutes tend to be undecorated. Only six examples are decorated (5.1 %), and no consistent style is evident (Figs. 84 to 89). The most striking example is the flute from White Castle [98] (Fig. 84). Its front and side surfaces are covered with dots

and it is the only flute to have this form of decoration which, along with the ring and dot motif, is a form commonly found on objects of worked bone and antler, such as combs.



Figure 84. Decorated flute from White Castle [98].

A flute with roughly incised decoration is known from Lyveden [66] (Fig. 85). The lines which inscribe the circumference of the bone along the flute's length are made by a knife; close examination of these lines showed them to have a slightly V-shaped profile, whereas a line cut by a saw would have a square profile.



Figure 85. Decorated flute from Lyveden [66].

A flute from Winchester [110] has a series of incised grooves around its proximal end (Fig. 86). Another flute has one incised groove at its proximal end (from Exeter [16]; Fig. 117), which is taken to be a possible means of suspension. In the case of the flute from Winchester [110], the grooves are relatively shallow and more plausibly purely decorative.



Figure 86. Decorated flute from Winchester [110].

A further flute from Winchester [102] is decorated with a series of fine incised lines, marked diagonally in sections defined by further incised lines (Fig. 87). In contrast to the flute from Lyveden [66] noted above, it is neatly executed, though the position of the sole extant tonehole in relation to its overall dimensions raises questions about its identity as a flute.



Figure 87. Decorated flute from Winchester [102].

The decoration present on a flute from Lincoln Flaxengate [40] comprises a mixture of short diagonal lines and small incised dots (Fig. 88). This flute has an unusually short windway and may have served as a knife handle. Flutes that may have had more than one function are discussed below.



Figure 88. Decorated flute from Lincoln Flaxengate [40].

Another decorated flute that may have served as a multi-functional object is a flute from Ludgershall Castle [63] (Fig. 89). This may have also served as a stylus or parchment pricker (Robinson, pers. comm. 2005).

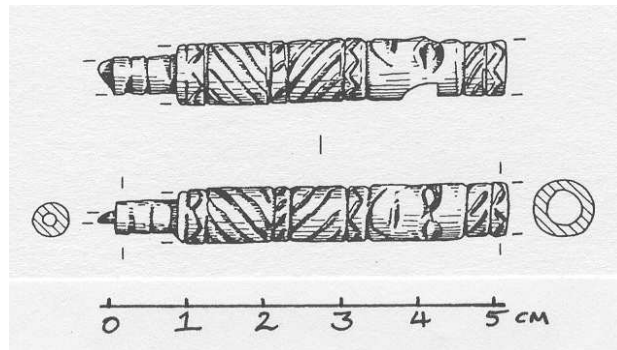


Figure 89. Decorated flute from Ludgershall Castle [63].

#### 4.7.4.3 Evidence and marks of manufacture

Other than the decorated flutes mentioned above, few flutes show signs of marking above and beyond that necessary for manufacture. Occasionally seen are transverse marks either side of a tonehole or window (Figs. 90 and 64), possibly indicative of possible intentional and careful pre-planning of tonehole and window position, or to limit the extent of the tonehole during manufacture. Another interpretation of the marks could be that they may have been left in place rather than being neatened and removed after their purpose had been served. Flutes from Acton Court [1] and Rayleigh Castle [76] have such marks, but they are close to the edge of the tonehole rather than immediately adjacent to it, suggesting that they might have been made to mark the rough position of the tonehole rather than its exact limits. However, marks on a flute from Canterbury Marlowe Theatre [8] are clearly at the immediate edge of the toneholes. In instances where the bone has protuberances, such as the crane tarsometatarsus flute from Canterbury Lady Wootton's Green [7], transverse marks on either side of the tonehole are functional in that they coincide with the marks needed to cut away a section of bone so that the fingers can lie flat against the tonehole. In other crane tarsometatarsus flutes, [91] and [87], such protuberances have been smoothed away, so that cutting away is not necessary.



Figure 90. Flute showing transverse marks around toneholes from Rayleigh Castle, [76].

On certain flutes, a small circular impression appears to be the start of a tonehole either about to be made, or started and not completed (Figs. 83 and 91 showing [80], [70] and [29]).



Figure 91. Flutes showing partially made tonehole from Norwich Castle Mall [70] and Hertford Castle [29].

One flute in particular, from Folkestone [21], shows interesting marks and appears to have undergone two stages of manufacture (Fig. 92). Its two surviving toneholes are manufactured differently; one is neatly made and circular, while the other is roughly made and has marks either side. Its distal end is also trimmed with two oblique cuts, and its current length is perhaps two thirds of its potential complete



length, probably with three toneholes. During its life it was broken below the first tonehole, after which it was trimmed and neatened and a subsequent tonehole made above the original surviving one.



Figure 92. Goose ulna flute from Folkestone [21]  
showing two stages of manufacture.

Many flutes show marks where the ends of the bone have been trimmed away or neatened. This could have been done to round off the corners of the bone during manufacture, or could have occurred as part of the process of removing the epiphyses of the bone. Marks may be prominent, such as those seen on the flute from Thetford Redcastle Furze [86] (Fig. 93), or small and barely visible such as those on the flute from London Watling Court [58] (Fig. 94).



Figure 93. The flute from Thetford Redcastle Furze [86] showing trimmed end.



Figure 94. The flute from London Watling Court [58] showing trimmed end.

## 4.8 A typology of bone flutes

There are several ways than a typology of flutes can be approached, and a certain degree of flexibility is involved. For example, the principal category of differentiation could be the number of toneholes a flute has, the species or skeletal element. Distinctive patterns of toneholes can also be indicators, regardless of what species or skeletal element is used.

The typology of flutes is presented below in Figure 95. The chosen categorisation for each type is derived from the number of toneholes that the flute has, from Type 0 with no toneholes to Type 5 with five. This numbering does not take into consideration the window that all flutes have. Subdivisions within each type are given the letters *a*, *b*, *c*, etc.; these subdivisions refine the definition of the flute type and are categorised according to species, element, or placement of toneholes. Thus, any flute that has a four toneholes in total will be a Type 4 flute. If it is made from a crane or swan ulna it will be Type 4c.

Each flute type is discussed below with a tabulated summary and pie chart of the subdivisions at the end of each overall type. Only the fifty-five flutes that are complete, or of a condition where the total numbers of toneholes are evident, are discussed in these sections. This is followed by charts comparing numbers of all Types (Figs. 131 and 132), and then charts showing the different Types of flutes made from each species (Figs. 133 to 137). Fragments are presented and discussed separately afterwards. All photographs are shown to the same scale for ease of visual comparison. Rather than show the flutes in catalogue order when discussing the types, they are presented so that similar flutes are adjacent.

Figure 163 at the end of this discussion presents all of the flutes in a table, listing the flutes by species, skeletal element and number of toneholes; this table presents the facts about the flutes without the interpretation of types. Fragments of flutes are included in this table according to species and element. For further information and photographs the reader is referred to the gazetteer where complete details of each flute can be found.

flute type	definition
Type 0	<i>flute with no toneholes</i>
Type 0a	goose ulna flutes with no toneholes
Type 0b	deer tibia flutes with no toneholes
Type 0c	sheep tibia flutes with no toneholes
Type 1	<i>flute with one tonehole</i>
Type 1a	goose bone flute with one tonehole
Type 1b	swan ulna flute with one tonehole
Type 1c	deer tibia flute with one tonehole
Type 2	<i>flute with two toneholes</i>
Type 2a	goose ulna flute with two toneholes
Type 2b	sheep tibia flute with two toneholes
Type 2c	flute with two toneholes (centrally placed)
Type 3	<i>flute with three toneholes</i>
Type 3a	goose ulna flute with three toneholes
Type 3b	crane tarsometatarsus flute with three toneholes
Type 3c	crane tibiotarsus flute with three toneholes
Type 3d	swan ulna flute with three toneholes
Type 3e	sheep tibia flute with three toneholes
Type 3f	sheep femur flute with three toneholes
Type 3g	goose tibiotarsus flute with three toneholes
Type 3h	goose humerus flute with three toneholes
Type 4	<i>flute with four toneholes</i>
Type 4a	goose ulna flute with four toneholes
Type 4b	crane tibiotarsus flute with four toneholes
Type 4c	swan/crane ulna flute with four toneholes
Type 4d	sheep tibia flute with four toneholes
Type 5	<i>flute with five toneholes</i>
Type 5a	sheep tibia flute with five toneholes
Type 5b	deer tibia flute with five toneholes
Type 5c	deer metatarsal flute with five toneholes

Figure 95. Table showing types of flutes and their definitions.



#### 4.8.1 Type 0: flutes with no toneholes

Flutes with no toneholes may have been used as a signalling device, and some people may describe them as whistles rather than flutes by the fact that they have no toneholes. They are not necessarily limited to playing just one note; a player can make at least two different notes on them by covering and uncovering the distal end whilst blowing. The examples below in Figures 96 and 97 are all complete, with a purposefully finished distal end as confirmed by direct observation.

##### 4.8.1.1 Type 0a

Flutes with no toneholes are most commonly made from the goose ulna, with five complete examples, [49], [93], [75], [105] and [68] (Fig. 96). The eight fragments shown in Figures 144 and 145 consisting of the proximal end of goose ulna flutes, [9], [11], [22], [36], [37], [65], [108] and [115], may belong in this category, but without examination of the flutes in person, this cannot be confirmed. They could equally be of Types 2a and 3a as discussed below.



Figure 96. Type 0a: goose ulna flutes with no toneholes, [49], [93], [75], [105] and [68].

##### 4.8.1.2 Type 0b

One deer tibia flute [50] has no toneholes (Fig. 97). It is interesting in that it is made with the bone in opposite orientation to that used normally, i.e. with the wider triangular end of the tibia at the distal end rather than the proximal.

#### 4.8.1.3 Type 0c

A sheep tibia flute **[46]** also has no toneholes (Fig. 97). This, along with deer tibia flute **[50]** above could perhaps be categorised as one type, defined as a flute made from sheep or deer tibia with no holes. For this study, they are considered separately. Either of may be in a state of partial manufacture, with toneholes yet to be made. The Type 0 flutes are summarised below in Figure 98, and the proportions of types within Type 0 are shown in a pie chart in Figure 99.



Figure 97. Types 0b and 0c: deer tibia flute **[50]** and sheep tibia flute **[46]** with no toneholes.

flute type:	definition:		
Type 0	flute with no toneholes	<i>total number of examples:</i>	
		complete: <b>7</b>	fragments:
		<i>which flutes:</i>	
		complete: <b>[46] [49] [50] [93] [75] [105] [68]</b>	fragments:
Type 0a	goose ulna flute with no toneholes	<i>number of examples:</i>	
		complete: <b>5</b>	fragments:
		<i>which flutes:</i>	
		complete: <b>[49] [68] [75] [93] [105]</b>	fragments:
Type 0b	deer tibia flute with no toneholes	<i>number of examples:</i>	
		complete: <b>1</b>	fragments:
		<i>which flutes:</i>	
		complete: <b>[50]</b>	fragments:
Type 0c	sheep tibia flute with no toneholes	<i>number of examples:</i>	
		complete: <b>1</b>	fragments:
		<i>which flutes:</i>	
		complete: <b>[46]</b>	fragments:

Figure 98. Table summarising Type 0 flutes.

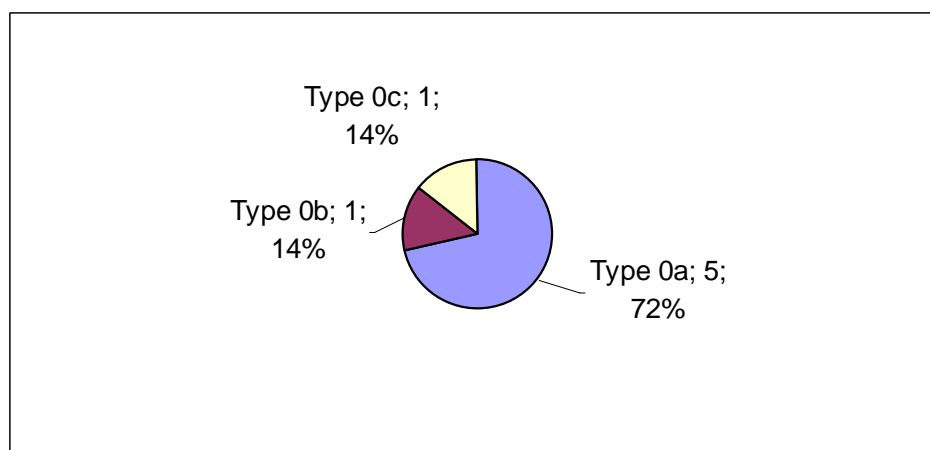


Figure 99. Pie chart showing proportions of Type 0 flutes.

#### 4.8.2 Type 1: flutes with one tonehole

Five flutes have just one tonehole, as shown below in Figures 100, 101 and 102.

##### 4.8.2.1 Type 1a: goose bone flutes with one tonehole

The flutes to the left and right of Figure 100, [59] and [89], are made from the ulna of a goose, whereas the central flute is made from the humerus [72]. The two flutes to the left of Figure 100, [59] and [72], have the tonehole set right next to the proximal end of the instrument; comparable flutes with one tonehole have been found in northern Europe and have been discussed in the context of being used as plover lures, with traditional use in the Netherlands dating up to the twentieth century (Tamboer 2004). They may equally have been used to attract a variety of birds or animals (Tamboer, pers. comm. 2007).



Figure 100. Type 1a: flutes with one tonehole made from goose bones, [59], [72] and [89].

##### 4.8.2.2 Type 1b: swan ulna flute with one tonehole

The flute in Figure 101 appears similar to those in Figure 100 but on a larger scale. It may be in a state of partial manufacture; on the back of the flute at the proximal end are four shallow depressions that, if the flute were inverted, could be interpreted as initial marks of manufacture for the creation of four toneholes. There are no other swan ulna flutes with just one tonehole. This flute is also shown below alongside Type 4c flutes.



Figure 101. Type 1b: Swan ulna flute with one tonehole, [116] (front and back shown).



Figure 102. Type 1c: Sheep tibia flute with one tonehole [45].

#### 4.8.2.3 Type 1c: deer tibia flute with one tonehole

The flute shown below in Figure 102 is made from a sheep tibia, and is unusual in construction. The tonehole is set extremely close to the window, and is at the proximal end rather than the (more usual) distal end of the instrument. In addition,

the window is at the 'small' end of the tibia, instead of at the larger triangular end, as seen in the majority of sheep tibia flutes. The distal end is not trimmed across in a straight line; rather, it has a concave curve. All of the above factors may point to the flute having been made in the usual orientation initially (i.e. with the window at the larger triangular end of the bone), but after some unforeseen breakage, the bone was turned around and re-made, the break at the window being trimmed and neatened, and the toneholes becoming the window and the existing tonehole. This cannot be a certain explanation, but must be considered as a possibility.

The Type 1 flutes are summarised below in Figure 103. Types 1b and 1c are assigned a Type category, even though they are unusual and may be in a state of partial manufacture. Future finds of similar flutes, or a greater sample size would enhance understanding. The proportions of types within Type 1 are shown in a pie chart in Figure 104.

flute type:	definition:		
Type 1	flute with one tonehole	<i>total number of examples:</i>	
		complete: <b>5</b>	fragments:
		<i>which flutes:</i>	
		complete: <b>[45] [59] [72] [89] [116]</b>	fragments:
Type 1a	goose bone flute with one tonehole	<i>number of examples:</i>	
		complete: <b>3</b>	fragments:
		<i>which flutes:</i>	
		complete: <b>[59] [72] [89]</b>	fragments:
Type 1b	swan ulna flute with one tonehole	<i>number of examples:</i>	
		complete: <b>1</b>	fragments:
		<i>which flutes:</i>	
		complete: <b>[116]</b>	fragments:
Type 1c	deer tibia flute with one tonehole	<i>number of examples:</i>	
		complete: <b>1</b>	fragments:
		<i>which flutes:</i>	
		complete: <b>[45]</b>	fragments:

Figure 103. Table summarising Type 1 flutes.

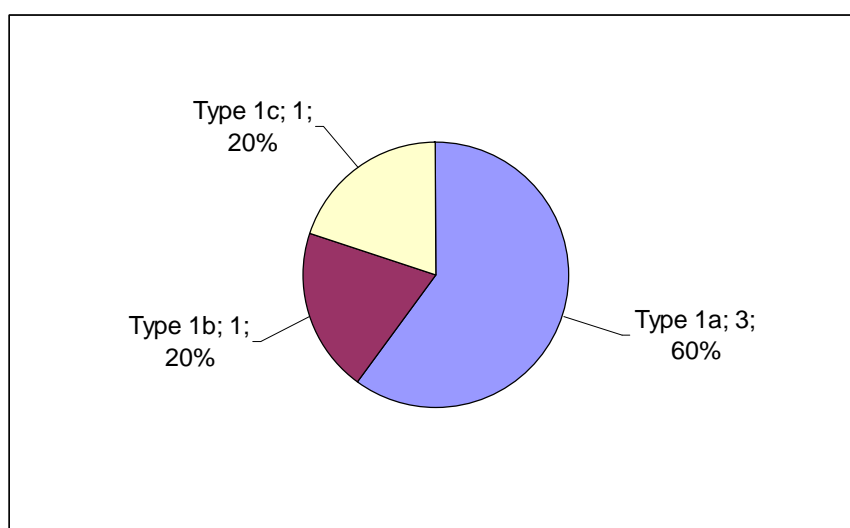


Figure 104. Pie chart showing Type 1 flutes.

### 4.8.3 Type 2: flutes with 2 toneholes

#### 4.8.3.1 Type 2a: goose ulna flutes with two toneholes

There are four goose ulna flutes with two toneholes; these are set close to the distal end of the instrument (Fig. 105). The flute on the right hand side of Figure 105 [21] is unusual in that it appears to have been made in two stages, having originally been longer, having been broken and subsequently repaired. Its original number of toneholes may have been greater than two, but it is capable of having served as a functional instrument with two after its re-modelling. It is shown alongside flutes of Type 3a for comparison in Figure 106.



Figure 105. Type 2a: goose ulna flutes with two toneholes, [104], [5], [57] and [21].





Figure 106. Type 2a flute from Folkestone shown alongside type 3a flutes, [79] [21] and [25].

#### 4.8.3.2 Type 2b: sheep tibia flutes with two toneholes

Figure 107 shows two sheep tibia flutes with two toneholes, placed distally on the instrument, [10] and [32]. The flute to the left, shown viewed from the front and back, has unusual features in that it has a cut away 'beak' and three thumbholes; it is unusual to have even one thumbhole.



Figure 107. Type 2b: sheep tibia flutes with two toneholes, [10] and [32].

#### 4.8.3.3 Type 2c: flutes with two toneholes (centrally placed)

Four flutes have two toneholes centrally placed on the instrument, [106], [107], [55] and [13] (Fig. 108). The two flutes to the left of the figure, [106] and [107], are from the metatarsal (sheep and deer respectively), one [55] is made from a sheep tibia and one [13] is made from a goose humerus. With the exception of [55] which is from London but without a secure provenance, the flutes are from the south-west of England, from Exeter and Winchester. This could be indicative of a regional style, though with a greater sample size this could be assessed with more certainty. This tonehole placement is seen on examples of medieval sheep tibia flutes from Europe (Brade 1975, 69 and fig.8, Tamboer 1999, 11).



Figure 108. Type 2c: flutes with two toneholes centrally placed, [106], [107], [55] and [13].

A flute fragment from Exeter [17] has two toneholes (Fig. 109). It may be in a state of partial manufacture, an explanation suggested by the presence of the epiphysis of the bone, although this is by no means certain.



Figure 109. Sheep tibia flute that may have two toneholes [17].

The Type 2 flutes are summarised below in Figure 110, and the proportions of types within Type 1 are shown in a pie chart in Figure 111.

flute type:	definition:		
Type 2	flute with two toneholes	<i>total number of examples:</i>	
		complete: <b>10</b>	fragments:
		<i>which flutes:</i>	
		complete: <b>[5] [10] [13] [21] [32] [55] [57] [104] [106] [107]</b>	fragments:
Type 2a	goose ulna flute with two toneholes (distally placed)	<i>number of examples:</i>	
		complete: <b>4</b>	fragments:
		<i>which flutes:</i>	
		complete: <b>[104] [5] [57] [21]</b>	fragments:
Type 2b	sheep tibia flute with two toneholes (distally placed)	<i>number of examples:</i>	
		complete: <b>2</b>	fragments:
		<i>which flutes:</i>	
		complete: <b>[10] [32]</b>	fragments:
Type 2c	flute with two toneholes (centrally placed)	<i>number of examples:</i>	
		complete: <b>4</b>	fragments:
		<i>which flutes:</i>	
		complete: <b>[13] [55] [106] [107]</b>	fragments:

Figure 110. Table summarising Type 2 flutes.

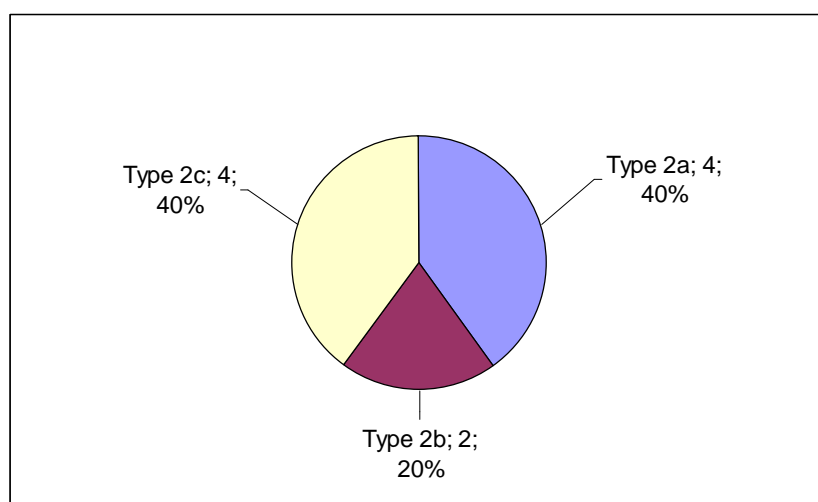


Figure 111. Pie chart showing Type 2 flutes.

#### 4.8.4 Type 3: flutes with three toneholes

Seventeen flutes have three toneholes; referring to Figure 131 below, three is the most common number of toneholes seen in bone flutes.

##### 4.8.4.1 Type 3a: goose ulna flute with three toneholes

Flutes made from goose ulnae are reasonably consistent in design, usually with a D-shaped window and three toneholes at the distal end, even though the spacing of the toneholes varies with each individual instrument (Fig. 112). Fragments of goose ulna flutes that consist of the distal end of the instrument also show this tonehole configuration (Fig. 113). Exceptions to this typical form are goose ulna flutes with no toneholes as discussed above (Type 0a), and a few examples with either two or four toneholes (Types 2a and 4a). The numbers of goose bone flutes of different Types are shown in Figure 133.



Figure 112. Type 3a: Goose ulna flutes with three toneholes, [25], [42], [79], [58] and [84].



Figure 113. Type 3a: Fragments of goose ulna flutes with three toneholes, [1] and [41].

#### 4.8.4.2 Type 3b: crane tarsometatarsus flute with three toneholes

Three flutes made from crane tarsometatarsus have three toneholes, [91], [7] and [87] (Fig. 114). The tarsometatarsus is not always used in the same orientation, with the slight flare being at the proximal end in [7] and [91], and at the distal end in [87]. The spacing of toneholes is not consistent, although it should be noted that there is a broad geographical and temporal range with these three examples. The flutes come from West Cotton (Northamptonshire) [91], Canterbury [7] and Thetford [87], with dates ranging from 900 to 1300 in their broadest sense. The toneholes on [87] and [91] are equidistant, whereas those on [7] are not; this difference of spacing may be indicative of a carefully planned sequence of sounded notes when the instrument is played. These three flutes are the only known crane tarsometatarsus flutes; no fragments have been found.



Figure 114. Type 3b: Crane tarsometatarsus flutes with three toneholes, [91], [7] and [87].

#### 4.8.4.3 Type 3c: crane tibiotarsus flute with three toneholes

Other crane bones were also used to make flutes, most commonly the ulna as discussed below, but also the tibiotarsus, another bone from the crane's leg, [24] and [113] (Fig. 115). Crane tibiotarsus flutes have not always been correctly identified as discussed above, and the examples below have three toneholes. The only other example of a crane tibiotarsus flute is a fragment from North Elmham, [67] which has four toneholes (Fig. 122; Type 4b).



Figure 115. Type 3c: Crane tibiotarsus flutes with three toneholes, [24], and [113].

#### 4.8.4.4 Type 3d: swan ulna flute with three toneholes

One example of a swan ulna flute from York [114] (Fig. 116) has three toneholes. All other swan ulna flutes are of Type 4c with four toneholes (Fig. 123). Although the flute in Figure 116 is a fragment, it represents the complete number of toneholes; a fourth tonehole on this flute would be placed at an equal distance to the existing three, so is clearly absent.



Figure 116. Type 3d: Swan ulna flute with three toneholes [114].



#### 4.8.4.5 Type 3e: sheep tibia flute with three toneholes

Three toneholes are also seen on sheep tibia flutes, though they are also found with two or four, or in one instance, five toneholes (Fig. 163). The three toneholes vary in their placement, being either at the distal end of the instrument or in the centre (Fig. 117). The most distal of the toneholes in the flute in Figure 117 with its toneholes centrally placed is much smaller than the other toneholes; this may indicate that the flute is only partially complete, and may originally have been intended to have four or five toneholes. However, flutes with three centrally placed toneholes have parallels in northern Europe and given a greater sample size, may be considered a separate type (Brade 1975, 79-81 and Fig. 9, Tamboer 1999, 11).



Figure 117. Sheep tibia flutes with three toneholes, [16], [56], [44] and [77].



Figure 118. Types 3f, 3g and 3h: additional flutes with three toneholes, made from a sheep femur [74], a goose tibiotarsus [28] and a goose humerus [101].

#### 4.8.4.6 Types 3f, 3g and 3h: other flutes with three toneholes

Several other flutes have three toneholes, as shown below in Figure 118. One is made from a sheep femur and is the only example of a flute made from this bone (Type 3f; **[74]**). The goose tibiotarsus is also an unusual bone to use, and this example (Type 3g; **[28]**) lacks the window that would make the instrument complete in form. Goose humerus flutes are occasionally seen, though of the four known examples three have different numbers of toneholes (Fig. 163) and one is a fragment (Fig. 143). This example (Type 3h; **[101]**) is complete and has three toneholes. As with other flute types with only one example, future excavations and a greater sample size may add to understanding if these are a Type with more example, or are unique examples of flutes that were perhaps made from convenient bones available at the time. The Type 3 flutes are summarised below in Figure 119 and the proportions of types within Type 3 are shown in a pie chart in Figure 120.

flute type:	definition:		
Type 3	flute with three toneholes	<i>total number of examples:</i>	
		complete: <b>16</b>	fragments: <b>4</b>
		<i>which flutes:</i>	
		complete: <b>[7] [16] [24] [25] [28] [42] [44] [56] [58] [74] [77] [79] [84] [87] [91] [101]</b>	fragments: <b>[1] [41] [113] [114]</b>
Type 3a	goose ulna flute with three toneholes	<i>number of examples:</i>	
		complete: <b>5</b>	fragments: <b>2</b>
		<i>which flutes:</i>	
		complete: <b>[25] [42] [79] [58] [84]</b>	fragments: <b>[1] [41]</b>
Type 3b	crane tarsometatarsus flute with three toneholes	<i>number of examples:</i>	
		complete: <b>3</b>	fragments: <b>0</b>
		<i>which flutes:</i>	
		complete: <b>[7] [87] [91]</b>	fragments:
Type 3c	crane tibiotarsus flute with three toneholes	<i>number of examples:</i>	
		complete: <b>1</b>	fragments: <b>1</b>
		<i>which flutes:</i>	
		complete: <b>[24]</b>	fragments: <b>[113]</b>
Type 3d	swan ulna flute with three toneholes	<i>number of examples:</i>	
		complete: <b>0</b>	fragments: <b>1</b>
		<i>which flutes:</i>	
		complete:	fragments: <b>[114]</b>
Type 3e	sheep tibia flute with three toneholes	<i>number of examples:</i>	
		complete: <b>4</b>	fragments: <b>0</b>
		<i>which flutes:</i>	
		complete: <b>[16] [56] [44] [77]</b>	fragments:
Type 3f	sheep femur flute with three toneholes	<i>number of examples:</i>	
		complete: <b>1</b>	fragments: <b>0</b>
		<i>which flutes:</i>	
		complete: <b>[74]</b>	fragments:
Type 3g	goose tibiotarsus flute with three toneholes	<i>number of examples:</i>	
		complete: <b>1</b>	fragments: <b>0</b>
		<i>which flutes:</i>	
		complete: <b>[28]</b>	fragments:
Type 3h	goose humerus flute with three toneholes	<i>number of examples:</i>	
		complete: <b>1</b>	fragments: <b>0</b>
		<i>which flutes:</i>	
		complete: <b>[101]</b>	fragments:

Figure 119. Table summarising Type 3 flutes.

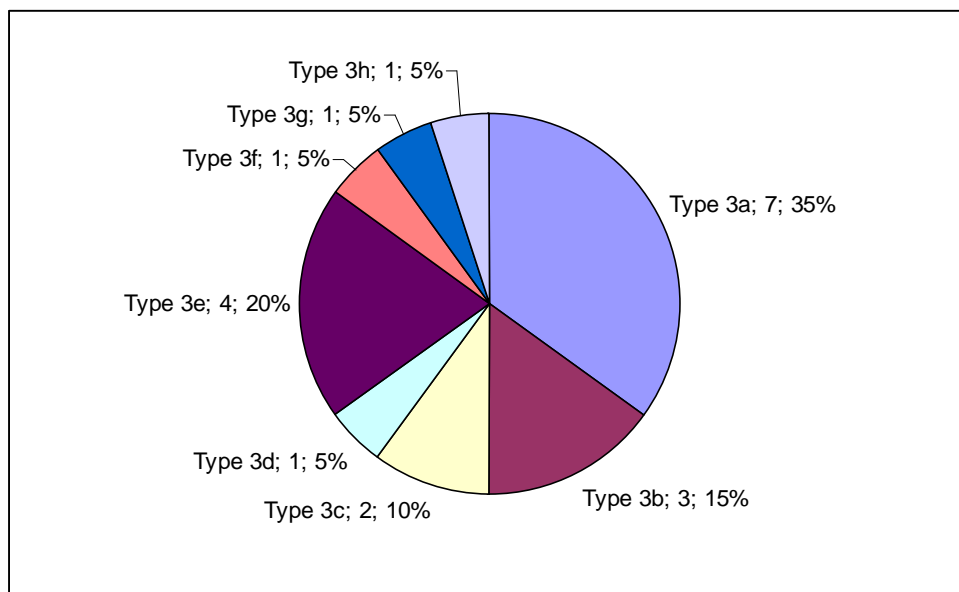


Figure 120. Pie chart showing Type 3 flutes.

#### 4.8.5 Type 4: flutes with four toneholes

Flutes with four toneholes tend to be made from larger bird bones, or from sheep or deer bones.

##### 4.8.5.1 Type 4a: goose ulna flute with four toneholes

One example of a goose ulna flute [30] has four toneholes (Fig. 121). It is unusual, as most goose ulna flutes are of Type 3a with three toneholes. As discussed previously, this flute is unusual in that its window is made in the opposite orientation to that normally used, and it is unlikely to have functioned successfully as an instrument. It may have been made by an unskilled maker in a misinformed emulation of a Type 3a flute.

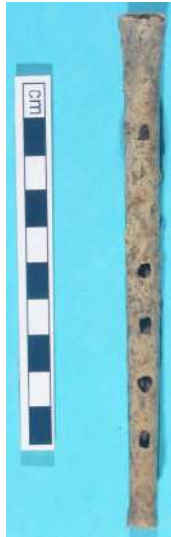


Figure 121. Type 4a: goose ulna flute with four toneholes, [30].

#### 4.8.5.2 Type 4b: crane tibiotarsus flute with four toneholes

One crane tibiotarsus flute from North Elmham [67] is a fragment that is broken across the fourth tonehole (Fig. 122). Two other crane tibiotarsus flutes have three toneholes as their complete number (Type 3c; [24], and [113]; Fig. 115). Given that no bird bone flutes have more than four toneholes, it is likely that this example, [67], has four. However, it should be noted that this is not certain.

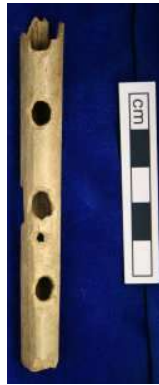


Figure 122. Type 4b: fragment of crane tibiotarsus flute with four toneholes, [67].

#### 4.8.5.3 Type 4c: swan/crane ulna flute with four toneholes

Three flutes made from the swan or crane ulna have four toneholes ([69], [73], [100]; Fig. 123). Both species are grouped together for this type because they are so similar in form and size. This is also illustrated by some of the fragments discussed below, which could be of either species.

The flute to the right of Figure 123 **[116]** is a swan ulna flute with one tonehole, discussed above as Type 1b (Fig. 101). If the reverse of the flute is examined, four indentations are visible behind the window and the current proximal end. These might be interpreted as marks for the positioning of the toneholes in a preliminary part of the manufacturing process that was not acted upon. Although this flute has only one tonehole, crane and swan ulna flutes normally have four toneholes. It is shown here because it may have originally been in the process of having been made into a Type 4c flute.



Figure 123. Type 4c: swan and crane ulna flutes with four toneholes, **[69]**, **[73]**, **[100]**, and with one tonehole, **[116]** (front and back shown).

#### 4.8.5.4 Type 4d: sheep tibia flute with four toneholes

Four toneholes are also seen on sheep tibia flutes, **[53]**, **[26]**, **[54]** and **[90]** (Fig. 124). The holes are usually placed between the centre and distal end. Although the flute on the right of Figure 124 is only fragmentary, it appears to show the complete number of toneholes. The epiphysis is in place, but has been broken through to be

a continuation of the bore of the instrument. The most common number of toneholes on sheep tibia flutes is four, three or two, as shown in the table in Figure 163.

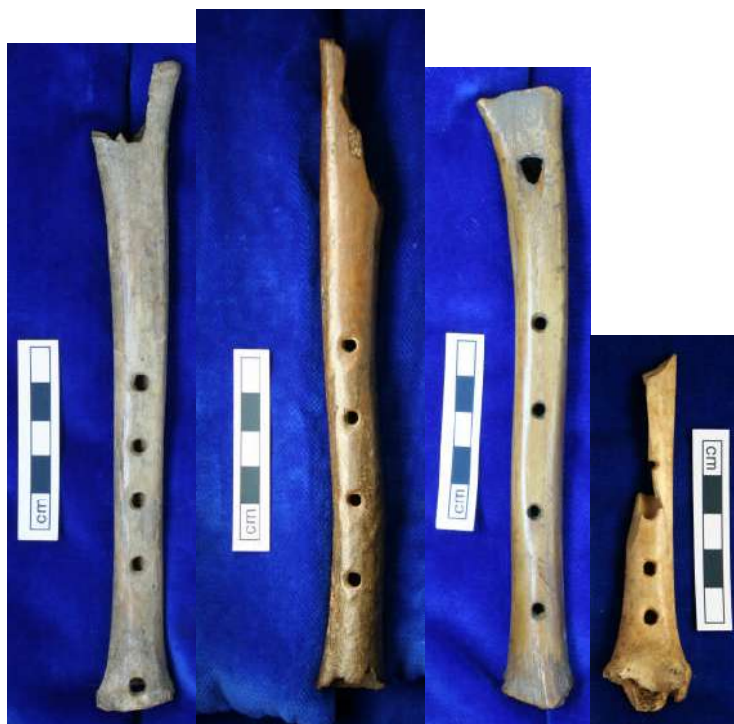


Figure 124. Type 4d: sheep tibia flutes with four toneholes, [53], [26], [54] and [90].

The Type 4 flutes are summarised below in Figure 125 and the proportions of types within Type 4 are shown in a pie chart in Figure 126.

flute type:	definition:		
Type 4	flute with four toneholes	<i>total number of examples:</i>	
		complete: <b>7</b>	fragments: <b>2</b>
		<i>which flutes:</i>	
		complete: <b>[26] [30] [53] [54] [69] [73] [100]</b>	fragments: <b>[67] [90]</b>
Type 4a	goose ulna flute with four toneholes	<i>number of examples:</i>	
		complete: <b>1</b>	fragments: <b>0</b>
		<i>which flutes:</i>	
		complete: <b>[30]</b>	fragments:
Type 4b	crane tibiotarsus flute with four toneholes	<i>number of examples:</i>	
		complete: <b>0</b>	fragments: <b>1</b>
		<i>which flutes:</i>	
		complete:	fragments: <b>[67]</b>
Type 4c	swan/crane ulna flute with four toneholes	<i>number of examples:</i>	
		complete: <b>3</b>	fragments: <b>0</b>
		<i>which flutes:</i>	
		complete: <b>[69] [73] [100]</b>	fragments:
Type 4d	sheep tibia flute with four toneholes	<i>number of examples:</i>	
		complete: <b>3</b>	fragments: <b>1</b>
		<i>which flutes:</i>	
		complete: <b>[53] [26] [54]</b>	fragments: <b>[90]</b>

Figure 125. Table summarising Type 4 flutes.

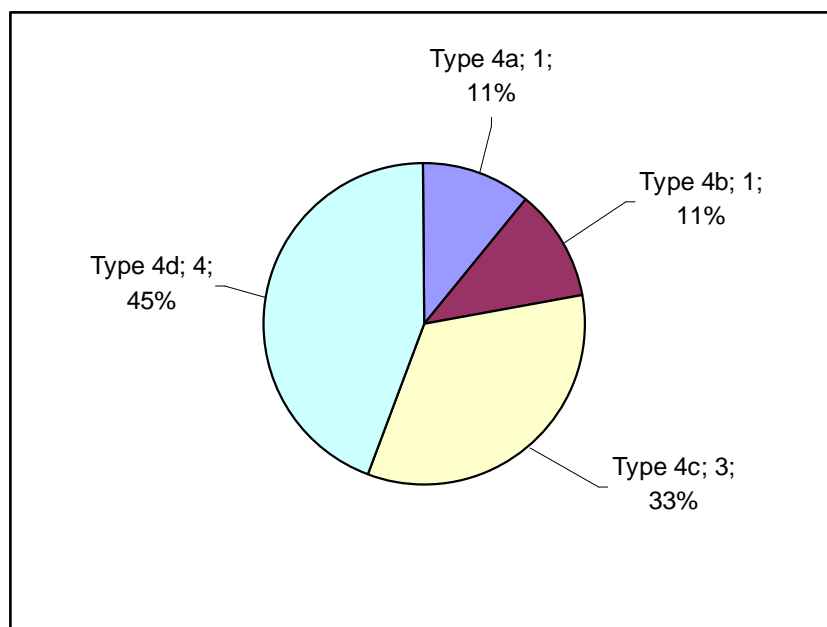


Figure 126. Pie chart showing Type 4 flutes.



#### 4.8.6 Type 5: flutes with five toneholes

The only known flutes with five toneholes are made from sheep or deer bones; none are made from bird bones.

##### 4.8.6.1 Type 5a: sheep tibia flute with five toneholes

One sheep tibia flute **[80]** has five toneholes (Fig. 127). A sixth hole is thought to be a 'suspension hole' as discussed above.

##### 4.8.6.2 Type 5b: deer tibia flute with five toneholes

One deer tibia flute **[29]** has five toneholes (Fig. 127). There is a possibility that it has six, though this is uncertain because its distal end is broken.



Figure 127. Types 5a and 5b: sheep and deer tibia flutes with five toneholes, **[80]** and **[29]**.

##### 4.8.6.3 Type 5c: deer metatarsal flute with five toneholes

Two flutes are made from deer metatarsal, **[35]** and **[98]** (Fig. 128). They display a high degree of craftsmanship and expertise for several reasons. Much material has been removed from the exterior of the bone to produce the smooth square profile of the flute, the flutes have one or two thumbholes, an unusual feature in bone flutes in general, and interestingly, the flutes have a rectangular window, a feature

otherwise only seen on deer metatarsal flutes.



Figure 128. Type 5c: deer metatarsal flutes with five toneholes [35] and [98].

The Type 5 flutes are summarised below in Figure 129 and the proportions of types within Type 5 are shown in a pie chart in Figure 130.

flute type:	definition:		
Type 5	flute with five toneholes	<i>total number of examples:</i>	
		complete: <b>4</b>	fragments: <b>0</b>
		<i>which flutes:</i>	
		complete: <b>[29] [35] [80] [98]</b>	fragments:
Type 5a	sheep tibia flute with five toneholes	<i>number of examples:</i>	
		complete: <b>1</b>	fragments: <b>0</b>
		<i>which flutes:</i>	
		complete: <b>[80]</b>	fragments:
Type 5b	deer tibia flute with five toneholes	<i>number of examples:</i>	
		complete: <b>0</b>	fragments: <b>1</b>
		<i>which flutes:</i>	
		complete:	fragments: <b>[29]</b>
Type 5c	deer metatarsal flute with five toneholes	<i>number of examples:</i>	
		complete: <b>2</b>	fragments: <b>0</b>
		<i>which flutes:</i>	
		complete: <b>[35] [98]</b>	fragments:

Figure 129. Table summarising Type 5 flutes.

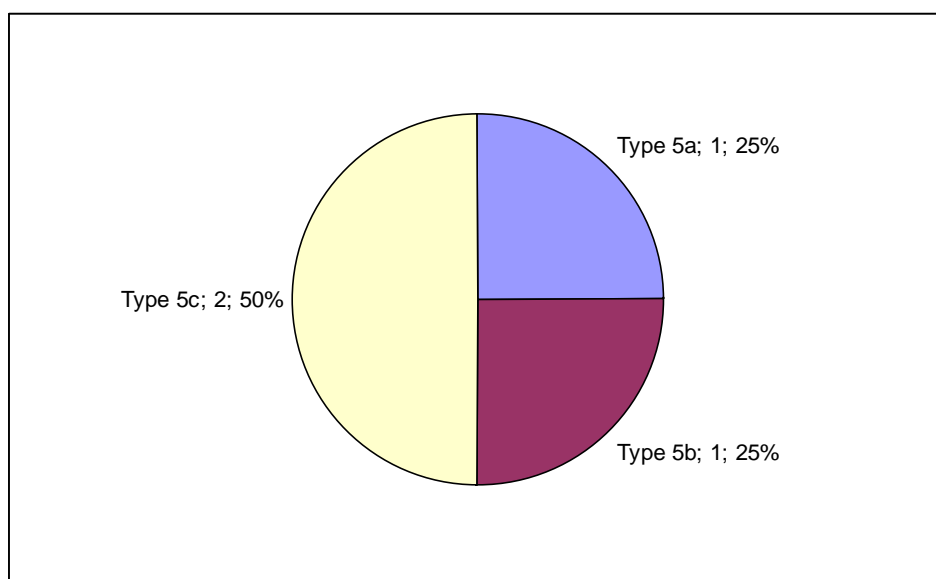


Figure 130. Pie chart showing Type 5 flutes.

## 4.9 Summary of numbers of types

The fifty-five flutes discussed above are those that can be categorised into types. The numbers of each type are shown in Figure 131. From this chart, it is easily seen that the most common form of flute is that with three toneholes, i.e. Type 3.

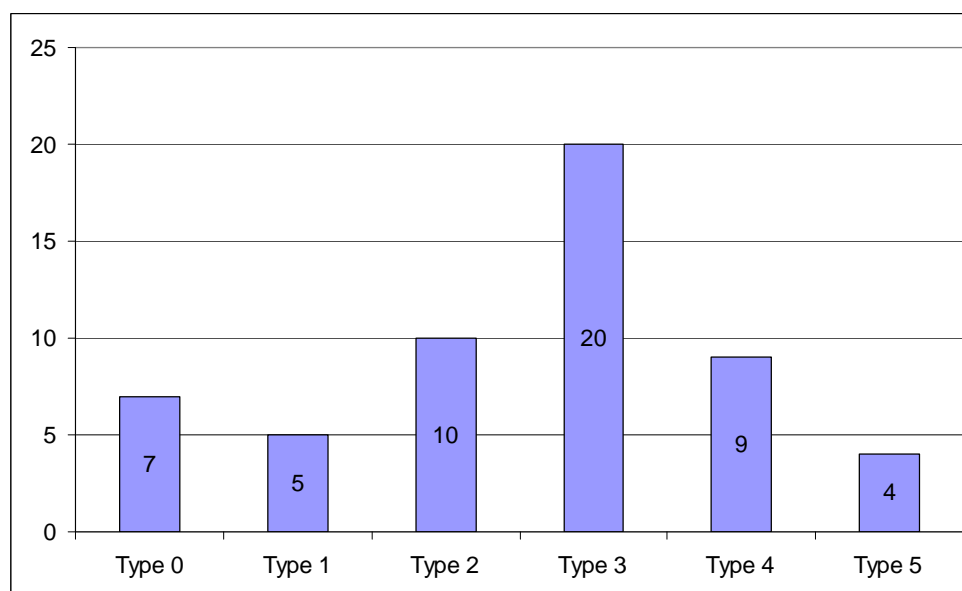


Figure 131. Chart showing numbers of each overall flute type.

The numbers of flutes in the subdivisions of each Type are shown below in Figure 132.

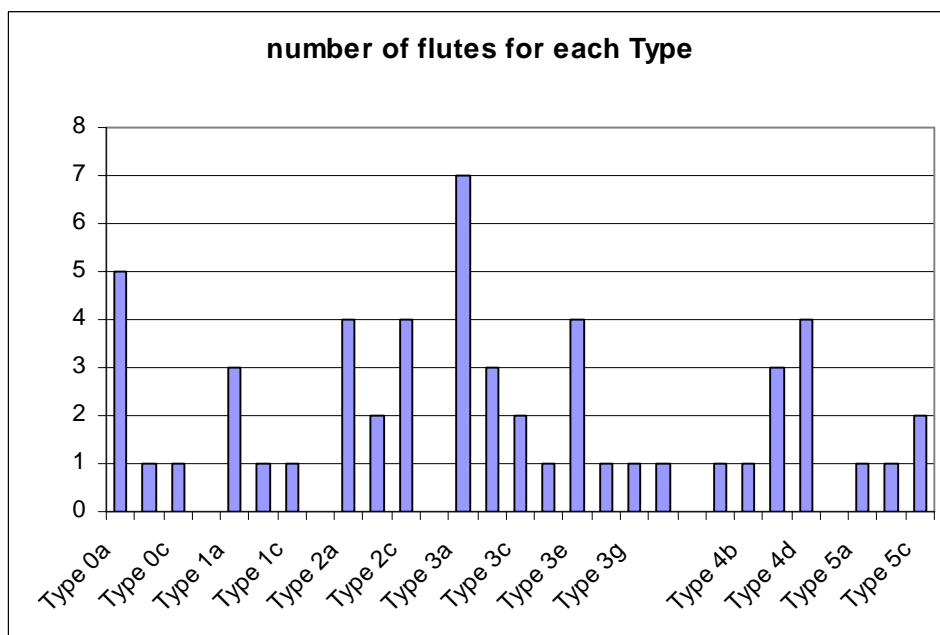


Figure 132. Chart showing numbers of each flute type.

The following bar charts take each species separately, and show the different Types of flutes made from that species (Figs. 133 to 137). Figure 133 shows that the most common form of goose bone flute is Type 3a, a goose ulna flute with three toneholes. Goose ulna flutes with two, one and no toneholes are less common but have several examples (Types 2a, 1a and 0a respectively). Other goose bone flutes occur, but of types with only one example (Types 4a, 3h, 3g and 2c).

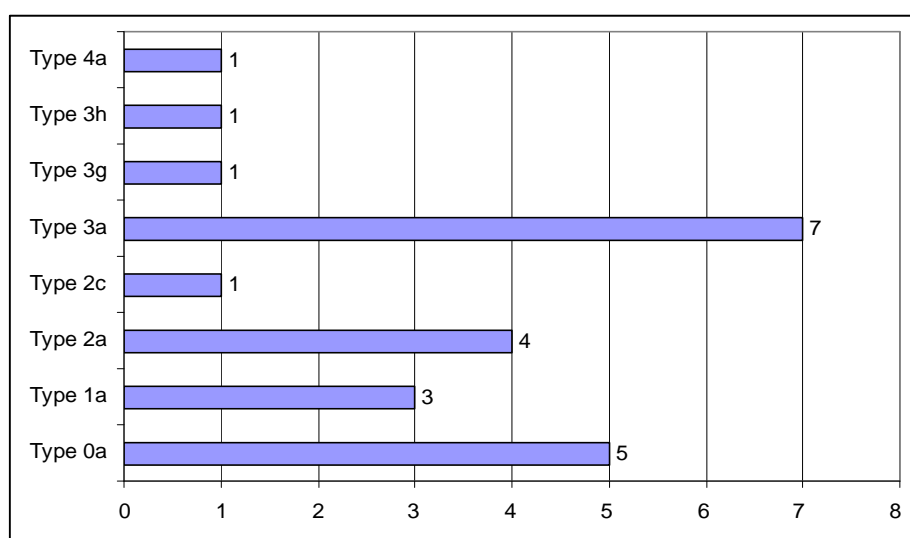


Figure 133. Bar chart showing proportions of different types of goose bone flutes.

Figure 134 shows the different types of swan bone flutes. There is less variety in the form the flutes take, with only three Types, and all made from the ulna. Apart from Type 1b, which is unusual in form as discussed above, then it could be said that all swan ulna flutes have three or four toneholes (Types 3d and 4c).

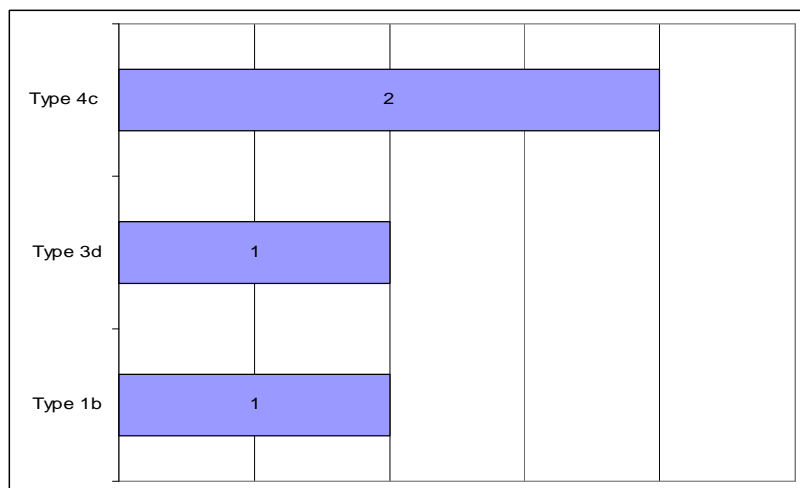


Figure 134. Bar chart showing proportions of different types of swan bone flutes.

Figure 135 shows the different types of crane bone flutes. Although made from three different bones (Type 3b from the tarsometatarsus, Types 3c and 4b from the tibiotarsus and Type 4c from the ulna), they all have three or four toneholes.

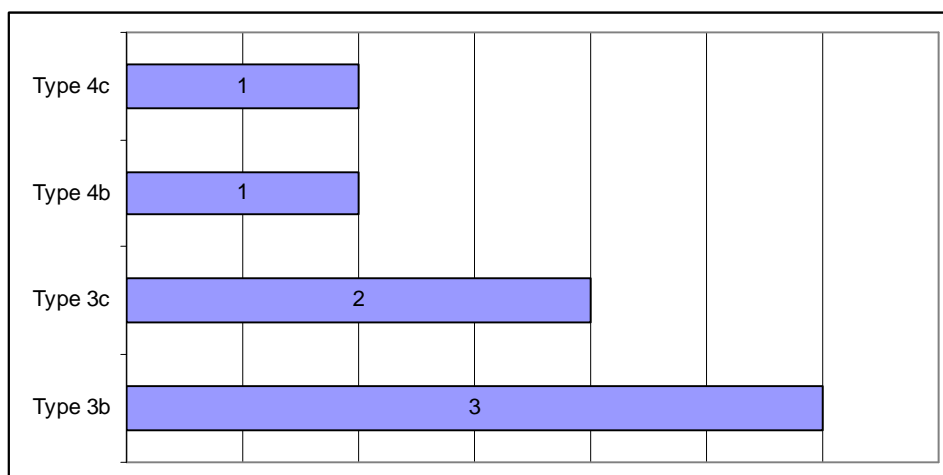


Figure 135. Bar chart showing proportions of different types of crane bone flutes.

Figure 136 shows types of sheep bone flutes, with the most common forms being Types 3e and 4d (sheep tibia flutes with three and four toneholes respectively).

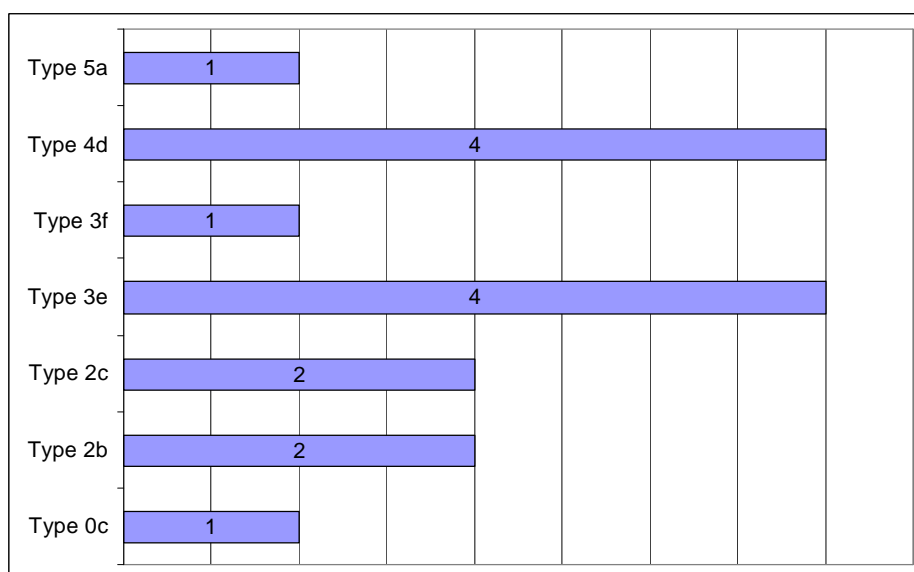


Figure 136. Bar chart showing proportions of different types of sheep bone flutes.

Figure 137 shows types of deer bone flutes. The more common form is Type 5c, the deer metatarsal flute with five toneholes, although there are so few examples overall of deer bone flutes that the difference between numbers of Types is very small, i.e. one example and two examples.

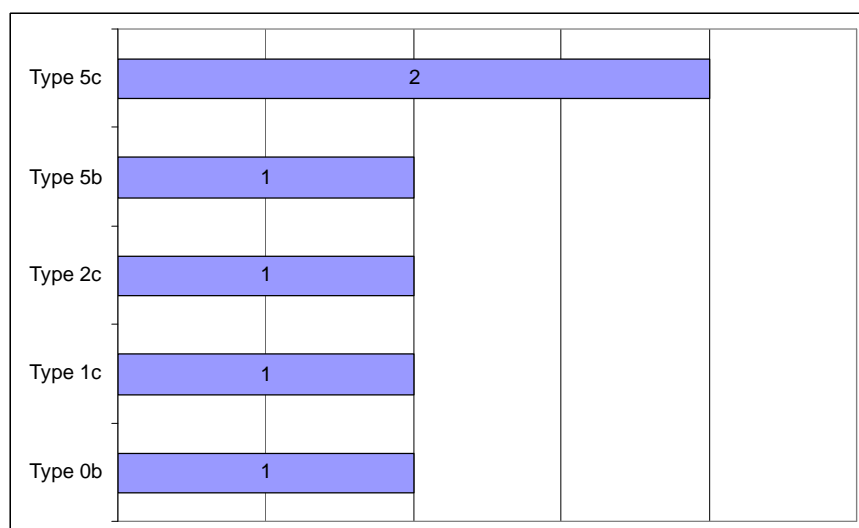


Figure 137. Bar chart showing proportions of different types of deer bone flutes.

#### 4.10 Flutes with thumbholes

As discussed previously, only seven flutes (5.9%) have a thumbhole; an unusual feature that occurs on mammal bone flutes as shown below in Figures 138, 139 and 140; it is not seen on any of the bird bone flutes. These figures show both the front and back of each flute, so that the relative position of the thumbhole is apparent. When only one thumbhole occurs, which is the more usual form, it is usually placed on the rear of the flute close to the first tonehole, often between the first and second tonehole. This is where the thumb would naturally be placed when holding the flute in a playing position. Two of these flutes ([10] and [98]) have more than one thumbhole (shown in Figs. 138 and 140); the uppermost thumbhole is placed above the first tonehole and the lower thumbhole is placed between the centre and the distal end. Looking at the deer tibia flutes in Figure 139, the thumbholes are placed similarly, and it is possible that these originally may have had two thumbholes. This cannot be stated with certainty, however, and a larger sample size would aid analysis of thumbhole placement. Having two thumbholes suggests that the instrument was played with two hands, a fact that does not support the idea of all bone flutes being played with one hand and being precursors of the tabor pipe (as mentioned in Chapter 2). It is not clear, however, how the flute from Castle Acre [10] (Fig. 138) was played with its three thumbholes. If the flute were turned around and played with the window at the rear of the flute, the three thumbholes would become three centrally placed toneholes, as seen in the flute [44] in Figure 117. However, the two toneholes at the distal end of the flute would become two thumbholes, located too far down the instrument for the thumbs to reach comfortably. The flute must have been played in a similar way to others, with the window facing away from the player. How the three thumbholes were managed remains unknown.





Figure 138. Sheep tibia flutes with thumbholes from London [54], Stanton Low [80] and Castle Acre [10].



Figure 139. Deer tibia flutes with thumbholes from Hertford Castle [29] and Bedford Castle [2].



Figure 140. Deer metatarsal flutes with thumbholes from White Castle [98] and Keynsham Abbey [35].

The table below (Fig. 141) shows the above examples of flutes with thumbholes according to the Types discussed above.

flutes with thumbholes			
<i>flute Type:</i>	<i>no. of flutes:</i>	<i>which flutes:</i>	<i>Type:</i>
Type 2	1	[10]	Type2b
Type 4	1	[54]	Type 4d
Type 5	3	[29]	Type 5b
		[35] [98]	Type 5c

Figure 141. Table showing Types of flutes with thumbholes.

The flute with three thumbholes from Castle Acre [10] would perhaps be assessed separately with a larger sample size as it is so unusual. A concluding observation relating to flutes with thumbholes is that they occur on sheep or deer tibia flutes with (excluding [10]) with four or five toneholes. This observation is useful in assessing flutes that are in fragmentary condition. For example, the deer tibia flute

from Bedford Castle [2] (Fig.139) is likely to have had four or five toneholes originally.

#### 4.11 Fragments of flutes

Fifty-seven of the flutes found are fragments rather than complete objects. They are noted according to species in Figure 163. Though fragments yield information, it is not always possible to know which of the above types of flutes they are. The fragments in Figure 142 are from sheep tibia flutes, although it is unclear how many toneholes these flutes may have had, which could have ranged from none through to five and been of Types 0c, 2b, 2c, 3e, 4d or 5a (Figs. 97, 107, 108, 117, 124 and 127), with Types 3e and 4d being the most common (Figs. 117 and 124 respectively).



Figure 142. Fragments of sheep tibia flutes, [4], [92] and [81].

The fragment of a goose humerus flute in Figure 143 shows the typical D-shaped window, although it raises questions about the validity of it being a functioning musical instrument due to the internal form of the bone and the resulting difficulty in creating a block and windway within that form. It is a useful fragment to note as the goose humerus is an uncommon bone to use for bone flute making. It may have been Type 1a ([72]; Fig.100), Type 2c ([13]; Fig. 108) or Type 3h ([101]; Fig. 118).



Figure 143. Fragment of a goose humerus flute [118].

The fragments of goose ulna flutes in Figure 144 below are clearly broken, and it is unclear what form the flutes originally took. Referring to Figure 133, they are most likely to have been part of the more common type of goose ulna flute with three toneholes (Type 3a; Fig. 112). Equally, the flutes may have had no toneholes (Type 0a; Fig. 96), or have been of the less common form with two toneholes (Type 2a; Fig. 105). The flutes in Figure 145 appear similar, though it is unclear from the published line drawings if they are broken at their distal end, or neatly trimmed and therefore complete, forming flutes with no toneholes similar to the Type 0a flutes in Figure 96. They are all flutes whose current location is unknown, and thus personal examination has not been possible.

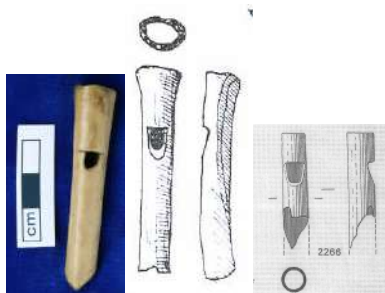


Figure 144. Fragments of goose ulna flutes, [9], [115], [65] and [108].

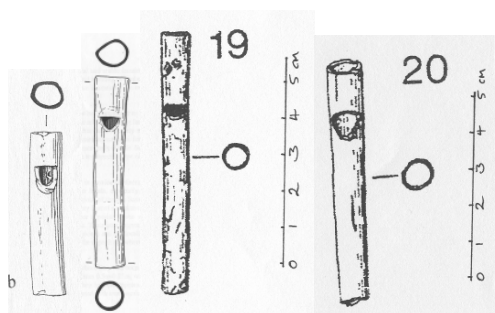


Figure 145. Fragments of goose ulna flutes, [11], [22], [36] and [37].

Swan and crane ulnae are so similar in form that the two bones are easily mistaken if certain diagnostic features are absent. The flute fragment **[85]** in the centre of Figure 146 may be either a swan or a crane, and without direct examination this cannot be known for certain. As noted above and shown in Figures 116 and 123, all but two of the swan and crane ulna flutes have four toneholes. The fragments of swan and crane ulna flutes shown below in Figures 146 and 147 may not add to the understanding of tonehole numbers, but they do show various other aspects of flute design: the distance between the proximal end of the instrument and the window (**[31]** and **[43]**), the distance between the window and the first tonehole (**[14]**, **[38]**, **[43]** and **[82]**), the cut-away surface of bone around the tonehole (**[60]**) and the size and spacing of the toneholes (**[14]**, **[38]**, **[43]**, **[60]**, **[82]** and **[103]**).



Figure 146. Fragments of swan ulna flutes, **[43]**, **[14]**, **[85]**, **[60]** and **[31]**.



Figure 147. Fragments of crane ulna flutes, [38], [82] and [103].

The fragments of goose ulna flutes in Figure 148 give similar information, with several of them raising questions about tonehole placement. The most common number of toneholes in goose ulna flutes is three (Fig. 133), and they are usually set close to the distal end of the instrument. The flutes to the right of Figure 148 ([27] and [8]) show their most proximal tonehole set at quite a distance from the distal end of the instrument, a feature seen in the fragment in Figure 149 but not noted elsewhere in bird bone flutes. If more complete flutes with such tonehole spacings come to light in future excavations, then another Type of flute may become apparent.



Figure 148. Fragments of goose ulna flutes, [112], [109], [23], [33], [27] and [8].





Figure 149. Fragment of a flute made from the tibiotarsus of a goose or domestic fowl [117].

The fragments of goose ulna flutes in Figure 150 have not been examined directly due to their unknown whereabouts. The flute to the left of Figure 150, [97], appears to be of Type 3a, a goose ulna flute with three toneholes as shown in Figure 88. From the line drawing, one flute [83] appears to have four toneholes, similar to the unusual Type 4a flute in Figure 121. However, the proximal edge of the fourth tonehole may be a facet of the bone where the flute broke, rather than part of an actual tonehole; direct examination of the instrument will confirm this, and will therefore confirm if there is a second example of a Type 4a flute. The flute [78] to the right of Figure 150 shows a triangular cross section to the bone, which indicates that the flute has been made with the ulna in the opposite orientation to that normally used, something not seen as yet in goose ulna flutes. Again, direct examination will confirm this.

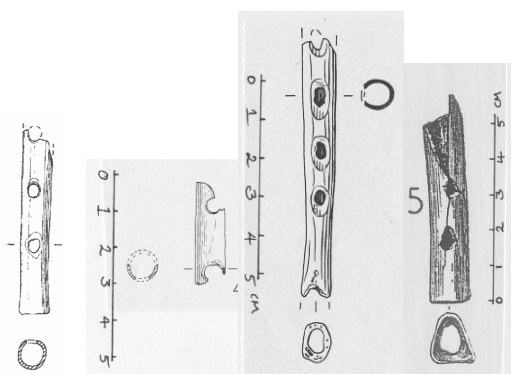


Figure 150. Fragments of goose ulna flutes, [97], [39], [83] and [78].

The flutes in Figure 151 below are all made from the crane tibiotarsus ([113], [24] [47] and [67]). The flute fragment in the centre of Figure 151 [47] can be compared with the Type 3c flutes to the left of Figure 151 [113] and [24] and the Type 4b flute to the right [67]. The central flute fragment [47] could be of either type.



Figure 151. Crane tibiotarsus flutes, [113] and [24] (Type 3a), [47] and [67] (Type 4b).

Sheep tibia flute fragments are numerous, and all yield valuable information (Figs. 152, 153 and 154). The flutes in Figure 152 are crude in manufacture, made with transverse cuts across the bone rather than a twisted knife-created hole ([3], [20], [34], [61] and [62]). Flutes in Figure 153 show central sections of sheep tibia flutes with two or three toneholes, and show the spacing of these toneholes, and the fact that they were made with the point of a knife ([94], [95], [96] and [111]). The flutes in Figure 154 show the distal end of sheep tibia flutes, with varying numbers and spacings of toneholes ([18], [66], [52] and [99]).

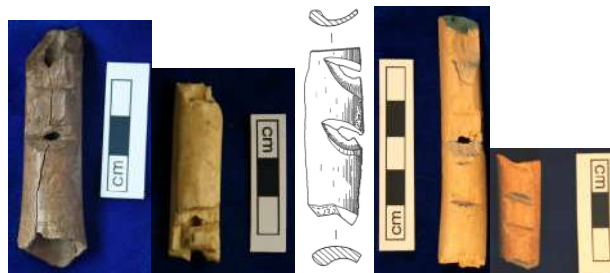


Figure 152. Fragments of sheep tibia flutes [3], [20], [34], [61] and [62].





Figure 153. Fragments of sheep tibia flutes, [94], [95], [96] and [111].



Figure 154. Fragments of sheep tibia flutes, [18], [66], [52] and [99].

The flutes in Figure 155 are unusual in that they do not fall easily into categories. The flute to the left of the figure [51] is apparently from the metatarsal, and the flute to the right [86] is apparently from the metacarpal. Although the flutes have been examined directly, comparable reference bones of species and element have not been found. The flute [70] in the centre of Figure 155 is clearly from the metatarsal, but may be in a state of partial manufacture, as the tonehole placement is unusual and possibly uncompleted.



Figure 155. Fragments of sheep bone flutes, [51], [70] and [86].

Figure 156 shows fragments of deer tibia flutes. No complete deer tibia flutes have been found, but an almost complete one [29] is shown in Figure 127 which is taken to be Type 5b, with five toneholes. Additional comparison with the large sheep tibia flutes in Figures 124 and 127 (Types 4d and 5a) that have toneholes along their length suggests that the flutes in Figure 156 may have had five toneholes.



Figure 156. Fragments of deer tibia flutes [2] and [12].

The fragment [110] in Figure 157 is from a deer metatarsal flute, which is likely to have been similar to the Type 5c flutes in Figure 128 ([35] and [98]), or the Type 2c deer metatarsal flute in Figure 108 ([107]). The edge of the unusual square window is visible, as is the distinctive square profile of the bone seen in the cross section of the fragment.



Figure 157. Fragment of a deer metatarsal flute [110].

Figure 158 shows a flute made from a deer metatarsal [48]. Due to rodent damage, it is difficult to establish the flute's original form, though if the teeth marks are taken to have been made around the window and toneholes, then this flute

would have had the typical D-shaped window and four or five toneholes and may have been of Type 5c (Fig. 128).



Figure 158. A deer metatarsal flute [48].

Several flutes appear to be of a form indicating that they may have formed part of an object with more than one use (Fig. 159). The flute to the left, [40], may have been part of a knife handle while the flute in the centre, [63], may have been a parchment pricker. The flute to the right, [102], is unusual in that the only extant tonehole is a long way from the distal end, and the object may or may not have been a flute. All three examples are highly decorated, in an accomplished manner rather than crudely, which may also point to their identity as objects other than flutes; bone flutes tend to be undecorated, as discussed above. To support this idea, Figure 160 shows post medieval artefacts that have flutes forming their handles as a secondary use, and Figure 161 shows a replica of a *rinkelbel*, a seventeenth century child's rattle from Northern Europe that has a flute as part of the handle (Tamboer 1999, 14).



Figure 159. Flutes that may have been part of other objects, [40], [63] and [102].



Figure 160. Post medieval objects with flutes as their handles from Bristol and London.



Figure 161. Replica of a rinkelbel.

Figure 162 shows an assortment of flutes whose species identification is unknown ([15], [64], [71] and [88]). Although they are possibly the ulna of a bird, it is not evident which. One flute [71], though published as an ulna, may be a humerus or tibiotarsus.

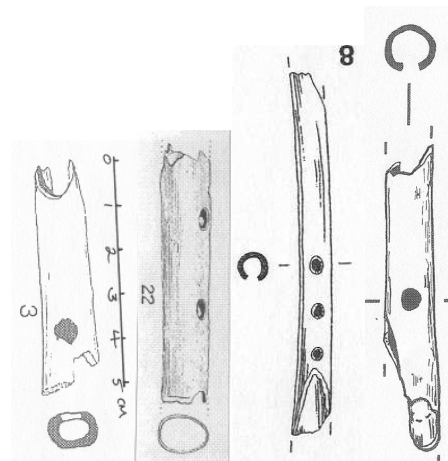


Figure 162. Unidentified bird bone flutes, [15], [64], [71] and [88].

The table in Figure 163 lists the flutes according to species, bone used and number of toneholes, without reference to Types. It makes clear the frequency of types of flute, and what forms flutes predominantly take when made from a particular species. For example, all known swan and crane ulna flutes have four toneholes apart from one that has three; all known crane tarsometatarsus flutes

have three toneholes, and that while sheep tibia flutes have varying numbers of toneholes, the more common number is two, three or four. Flutes not included in the table in Figure163 are: **[6]**, **[15]**, **[40]**, **[63]**, **[64]**, **[71]**, **[76]**, **[83]**, **[88]** and **[102]**, due to the unknown identification of species and element.

species:		goose			swan	swan/ crane	crane			sheep			deer		total no. of flutes:
bone used		ulna	hum- erus	tibio- tarsus	ulna	ulna	ulna	tarso- meta- tarsus	tibiot- arsus	tibia	meta- tarsal	femur	tibia	meta- tarsal	
number of toneholes:	0	total = 5 [49] [68] [75] [93] [105]								total = 1 [46]			total = 1 [50]		7
	1	total = 2 [59] [89]	total = 1 [72]		total = 1 [116]					total = 1 [45]					5
	2	total = 4 [5] [21] [57] [104]	total = 1 [13]							total = 3 [10] [32] [55]	total = 1 [106]			total = 1 [107]	10
	3	total = 7 [1] [25] [41] [42] [58] [79] [84]	total = 1 [101]	total = 1 [28]				total = 3 [7] [87] [91]		total = 4 [16] [44] [56] [77]		total = 1 [74]			17
	4	total = 1 [30]			total = 2 [69] [73]		total = 1 [100]			total = 4 [26] [53] [54] [90]					8
	5									total = 1 [80]			total = 1 [29]	total = 2 [35] [98]	4
fragments of flutes:		total = 17 [8] [9] [11] [22] [23] [27] [33] [36] [37] [39] [65] [78] [97] [108] [109] [112] [115]	total = 1 [118]	total = 1 [117]	total = 5 [14] [31] [43] [60] [114]	total = 1 [85]	total = 3 [38] [82] [103]		total = 4 [24] [47] [67] [113]	total = 17 [3] [4] [17] [18] [20] [34] [52] [61] [62] [66] [81] [92] [94] [95] [96] [99] [111]	total = 4 [19] [51] [70] [86]		total = 2 [2] [12]	total = 2 [48] [110]	57
total number of flutes:		36	4	2	8	1	4	3	4	31	5	1	4	5	total =108

Figure 163. Table showing flutes listed by species,  
skeletal element and number of toneholes.

## 4.12 Concluding remarks

This chapter clearly shows the following major points:

- The bones of very specific species are used to make bone flutes. In order of species most commonly used they are: goose (36%), sheep (33%), crane (9%) deer (8%) and swan (7%). 7% of flutes have no clear species identification.
- These species vary in status, with goose and sheep being kept domestically, crane and deer being hunted by the nobility, and swan being kept semi-domestically in elite residences.
- 79% of bird bone flutes are made from the ulna, one of the principal bones of the wing. Other bones used to a lesser extent are the tibiotarsus (10%), the humerus (6%) and the tarsometatarsus (5%). The most common form of bird bone flute is made from the goose ulna.
- All of the mammal bone flutes are made using bones from the rear leg of the animal. 76% of these are from the tibia, 22% are from the metatarsal and 2% are from the femur. The most common form of mammal bone flute is made from the sheep tibia.
- Of the 118 flutes in this survey, 38% are complete. The remaining 62% are fragments.
- On all flutes that have the window present, the window can be described as D-shaped. The three examples that differ all have neat rectangular windows and are all made from the deer metatarsal.
- The majority of toneholes are conical in profile, and are consistent with having been made with the point of a knife.
- Seven mammal bone flutes (5.9%) have a thumbhole; two of these examples have more than one thumbhole.
- Five flutes (4.2 %) have an additional hole that can be described as a 'suspension hole'.
- Six flutes (5.1 %) are decorated, with an evident consistency in style; the remaining 94.9% of flutes are undecorated.
- The most common number of toneholes for a flute to have is three.
- Goose ulna flutes with three toneholes are the most common form of flute, though they also occur with none, two or four toneholes, and other goose bones are occasionally used.
- Swan bone flutes are all made from the ulna and have either three or four toneholes.

- Crane bone flutes all have three or four toneholes, and are made from the ulna, tibiotarsus or tarsometatarsus.
- Sheep bone flutes are usually made from the tibia and have varying numbers of toneholes, the most common number being three or four.
- Deer bone flutes are made from the metatarsal with five or two toneholes, or from the tibia, though there are very few extant examples.

In addition to the above points, the bone flute is defined and a proposed nomenclature is established. A comprehensive typology is presented, derived from the number of toneholes that the flute has, from Type 0 with no toneholes to Type 5 with five. Comparison of fragments of flutes with complete examples and knowledge of the occurrence of types informs understanding about the possible original complete form of these fragments.

This thesis now moves on to consider the archaeological contexts in which the flutes were found. The flutes can then be placed in a broader context both socially and chronologically.



## 5 The medieval bone flute; context and status

### 5.1 Introduction

The previous chapter discussed the physical aspects of bone flutes, establishing which species are used to make the flutes and what form the flutes take; this chapter deals with the flutes from an archaeological perspective. The circumstances in which the flutes were excavated is discussed, with the effect of soil conditions on the preservation of bone and changing approaches to excavation techniques and the effect that these have on the quality of resulting information about each flute. The geographical distribution of the flutes is shown both as an overview and with specific detail of the distribution of flutes made from particular species. Where applicable, distribution maps are compared to distribution patterns of the animal or bird in question, and in the case of crane, the distribution of place-name evidence is also compared. The chronological distribution of flutes is then discussed, then the archaeological context and type of deposit, along with associated finds. The chapter concludes with an appraisal and summary.

### 5.2 The preservation of bone

How well bone survives in the soil depends on soil type. Acidic conditions cause demineralization and very alkaline conditions can cause the collagen within the bone to degrade. The amount of water in the soil also greatly affects preservation, with waterlogged conditions often providing a good environment for preservation (O'Connor 1987, 7). The following table (Fig. 164) gives soil types and the likely state of preservation of bone objects found within them (Brothwell 1981, 7-8).

Areas of Britain such as East Anglia are associated with corrosive soil conditions, as can be evidenced by the lack of skeletons in the burials of Sutton Hoo and Prittlewell. However, if the context where the flute was found is one of anthropomorphic origin, such as an area of mixed domestic refuse, then the effect of soil type can be negated. Looking at East Anglia as an example, all the sites yielding flutes are indeed places of dense occupation. The sites are: Castle Acre [9], [10], Great Massingham [26], Ipswich [30], [31], Kings Lynn [36], [37], North Elmham [67], Norwich [69] - [72], Rayleigh Castle [75], [76], Swavesey [82], Thetford [83] - [89] and Wicken Bonhunt [99], [100]. It is seldom that a flute is found in a context unrelated to domestic occupation. Of the above, the flutes from Great Massingham [26] and Wicken Bonhunt [99] are not securely stratified, yet are in excellent states of preservation.

SOIL TYPE:	LIKELY STATE OF PRESERVATION OF BONE:
chalk	brittle, porous, eroded, fragile condition
clay	fresh appearance
clay, acidic	corroded
gravel and sand, calcareous	good preservation
gravel and sand, acidic	poor preservation, bones likely to decalcify
waterlogged peat, peaty gravel, alluvial mud	good preservation, though likely to be stained

Figure 164. Table showing how bone is preserved in different soil types.

### 5.3 Changing approaches to archaeological excavation

In the early days of archaeology, excavation and recording methods were very different from those of today, at times regarded as being more like treasure hunts (Greene, 1983, 58). Modern techniques are considered to have been developed in the late nineteenth century by General Pitt Rivers, who undertook large scale excavations and recorded plans and results with accuracy and thoroughness (Baker 2002, 36-7). He recorded both the artefacts and the contexts in which they were found (Greene 1983, 62). In the 1930s Mortimer Wheeler pioneered the use of grid systems and three dimensional recording, assessing a large scale excavation both horizontally and vertically (Baker 2002, 37). In the 1960s processual archaeology was a key influencing factor, emphasizing the cultural context of systems, and the relationship between environment, technology and economics (Sabloff 2005, 212-19). In practice this meant that many smaller areas were excavated; in contrast, open area excavations such as those undertaken in Winchester in the 1960s were excavated in layers in very large areas (Carver 2005, 106-7). The now widely used concept of the archaeological context was introduced in 1972 and was used first in York and then in London (Carver 2005, 107).

Figure 165 shows the numbers of flutes excavated over five year periods, from 1875 onwards. These results are shown in a bar graph in Figure 166. The first flute found was that excavated in Folkestone in 1878 by General Pitt Rivers [21]. Difficulty was encountered when pinpointing exact dates of excavation for some of the flutes, particularly some of those from early excavations. Several of the flutes from London, [47], [48] and [52], were excavated at some point before 1908, but their exact date of excavation is unknown. Two other flutes from

London, [55] and [56], are noted as having been either collected or excavated in 1909 by George Fabian Lawrence. He sold them to Henry Balfour in the same year, who then subsequently bequeathed them to the Pitt Rivers Museum in 1939. Rather than their date of excavation being listed as unknown, these five flutes are listed as being excavated 'before 1909'.

Some of the flutes are noted as being from excavations that span a number of years, such as one of the flutes from Old Sarum [73] which is recorded as having been excavated between 1909 and 1915; it is listed in the five year period that ranges from 1910 to 1914, as this best represents the possible date of excavation.

<b>year</b>	<b>number of flutes excavated</b>	<b>which flutes excavated</b>
before 1909:	6	[47] [48] [52] [55] [56] [57]
1875 - 79	1	[21]
1880 - 84	2	[113] [114]
1885 - 89	0	
1890 - 94	0	
1895 - 99	0	
1900 - 04	0	
1905 - 09	1	[75]
1910 - 14	3	[46] [73] [74]
1915 - 19	0	
1920 - 24	1	[45]
1925 - 29	2	[64] [98]
1930 - 34	2	[6] [42]
1935 - 39	1	[78]
1940 - 44	0	
1945 - 49	3	[87] [94] [96]
1950 - 54	2	[7] [8]
1955 - 59	1	[77]
1960 - 64	6	[35] [61] [72] [76] [104] [106]
1965 - 69	20	[36] [37] [59] [60] [62] [63] [65] [66] [67] [79] [83] [84] [85] [101] [102] [105] [107] [108] [109] [110]
1970 - 74	17	[2] [9] [10] [13] [16] [17] [20] [27] [34] [38] [39] [40] [69] [81] [99] [100] [103]
1975 - 79	15	[5] [14] [15] [18] [19] [22] [30] [49] [58] [88] [112] [115] [116] [117] [118]
1980 - 84	8	[3] [4] [23] [24] [28] [31] [43] [80]
1985 - 89	9	[1] [25] [29] [54] [86] [90] [91] [92] [93]
1990 - 94	3	[51] [70] [89]
1995 - 99	8	[12] [26] [41] [44] [53] [71] [82] [111]
2000 - 04	4	[11] [32] [33] [50]
2005 - 09	1	[68]

Figure 165. Table showing numbers of flutes excavated in given years.

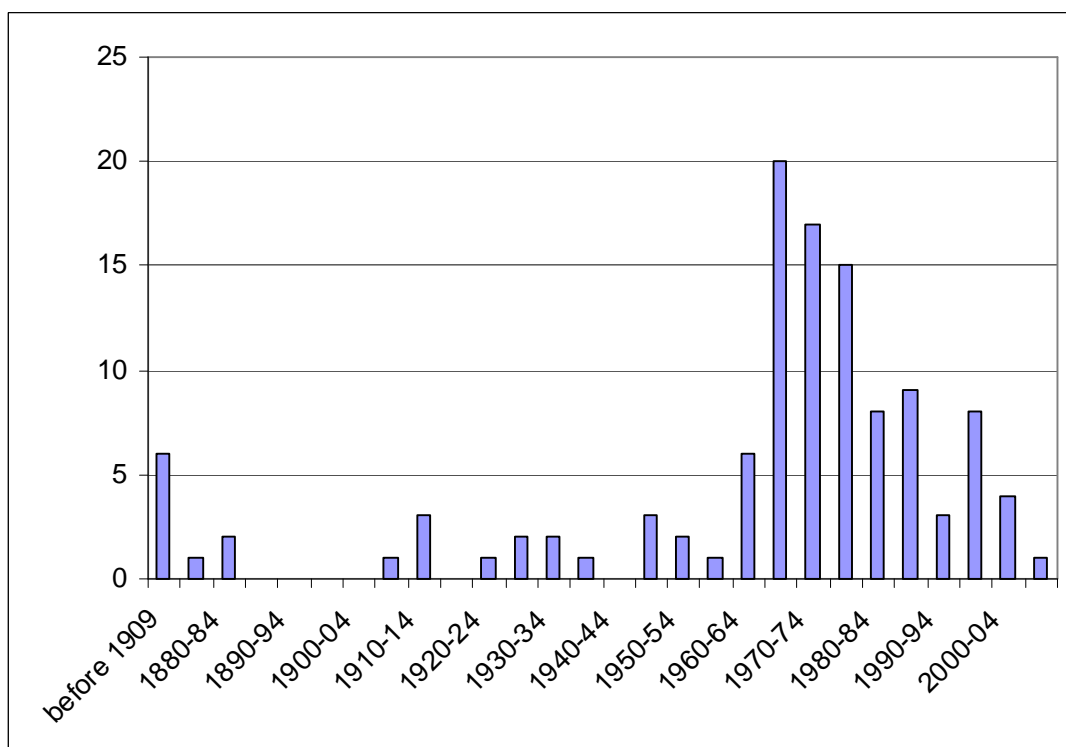


Figure 166. Graph showing numbers of flutes excavated in given years.

There are many factors that could have had an effect on the numbers of excavations and flutes found in the above time periods. For example, the occurrence of the First and Second World Wars (1914-1918 and 1939-1945) would have made it highly unlikely for any excavations to be undertaken. Conversely, the rebuilding of towns that were bombed during the First and Second World Wars would have led to an increase in the occurrence of urban excavations. There is an increase in the number of flutes excavated in the 1970s and 1980s, possibly linked to the increase in funded excavations commonly known as 'Rescue Archaeology' (Gerrard 2003, 133-4). Changes in legislation may also have affected numbers of flutes found, such as the introduction of PPG16 in 1990, a set of government guidelines applicable to archaeology and planning. This led to there being more watching briefs as opposed to extensive excavations, with less attention given to small finds.

More recent excavations that have yielded flutes may be still unpublished, as post-excavation analysis and preparation for publication can take many years. Of the flutes in the current study, 19% are unpublished ([5], [23], [26], [28], [30], [31], [41], [42], [44], [45], [46], [50], [51], [52], [53], [55], [56], [80], [82], [100], [111] and [112]), and 3% are unpublished but forthcoming ([68], [70] and [95]). The remaining 78% have been published. These proportions are shown in Figure 167. Although great effort has been spent to take into

account all flutes found thus far, it remains possible that further flutes have been found in recent years that are unknown and have yet to be published, and that may in time cause the above figures and graphs to change.

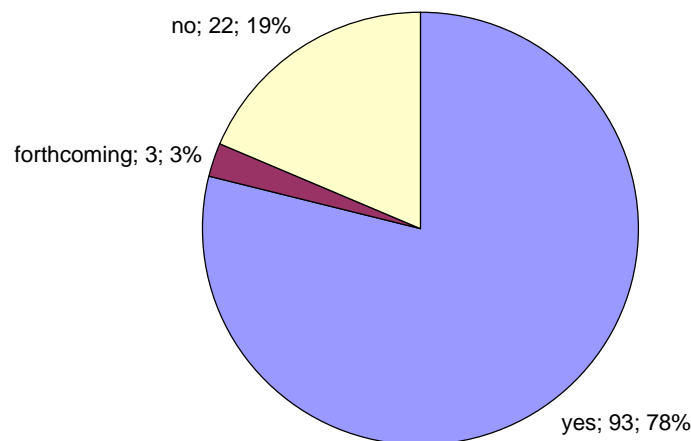


Figure 167. Pie chart showing how many flutes have been published or otherwise.

#### 5.4 Problems with methods of recovery and recording techniques

Differing approaches to methods of excavation and recovery of artefacts influence the amount and quality of information available about each flute. Many excavations in the early twentieth century were poorly documented, to the extent that it is unclear where on the site the flutes were found and what was happening in any detail on the site at that time or period (e.g. flutes [6] and [64]). In these two examples, the whereabouts of the flutes themselves is now unknown, so the species and skeletal element cannot be confirmed by direct examination and the only information known is that a flute was found from those particular sites.

Certain excavations are undertaken over a period of many years, either by amateur archaeological societies as at Facombe Netherton, or by professional archaeological units such as at York and Winchester. Variations in quality of information about the archaeological

context of a flute occur in all manner of excavations; the flute from Faccombe Netherton [20] has a small find number and a context number, but there is no information available about what kind of context it is from. The flutes from Coppergate, York, excavated by York Archaeological Trust ([115] to [118]), have context numbers that relate to tenement numbers and sequences within the tenements. Although cross referencing within the databases at York Archaeological Trust yielded lists of associated finds for the given contexts, it is unclear what these contexts actually are.

The above examples are not unique, and limit the ability to give full analyses when assessing some of the aspects of the bone flutes. For example, showing geographical locations is relatively straightforward and is easily known. Showing the range of context types where the flutes have been found, such as pits, dumps, or ditches, and the range of type of deposit, (such as primary, secondary or tertiary) becomes limited when flutes are only described as being from 'the north side of the store shed' [66] or found 'associated with pottery 553-94' [17]. For many of the approaches to analysis of the flutes as discussed below, not all flutes are able to be considered due to the nature of the information available. For each discussion, the most flutes possible are used as appropriate in each instance.

## 5.5 Geographical distribution of finds

### 5.5.1 Overall distribution

The geographical distribution of flutes can be mapped as shown below in Figure 168. Multiple flutes have been found in areas of population density (i.e. towns) such as Beverley, Exeter, Gloucester, Hamwih, Ipswich, Lincoln, London, Norwich, Salisbury, Thetford, Winchester and York, as well as in less populated areas that have been excavated extensively such as rural settlements like West Cotton and Wharram Percy. Given that excavations have occurred throughout the British Isles (shown on distribution maps in Clarke 1984, 28, 50, 64, 85, 118, 128, 171), it is interesting to note the absence of flutes found in the north western areas.



Figure 168. Map of England showing distribution of all flutes.

This distribution of flutes is more informative if the information presented is more selective. For example, when the distribution of flutes made from a particular species is compared to the distribution map for that particular species. The results of these comparisons are more informative for species with a limited distribution such as the crane. It should also be borne in mind that the distribution maps represent the locations of deposition of the flutes, and not their place of origin. Active trade networks and movement of people mean that on a given site small finds such as pottery may be locally, nationally or internationally produced.

The proportions of flutes found in rural or urban sites are shown in Figure 169. Approximately two thirds (68%) of the flutes are from urban sites and approximately one third (32%) are from rural sites.



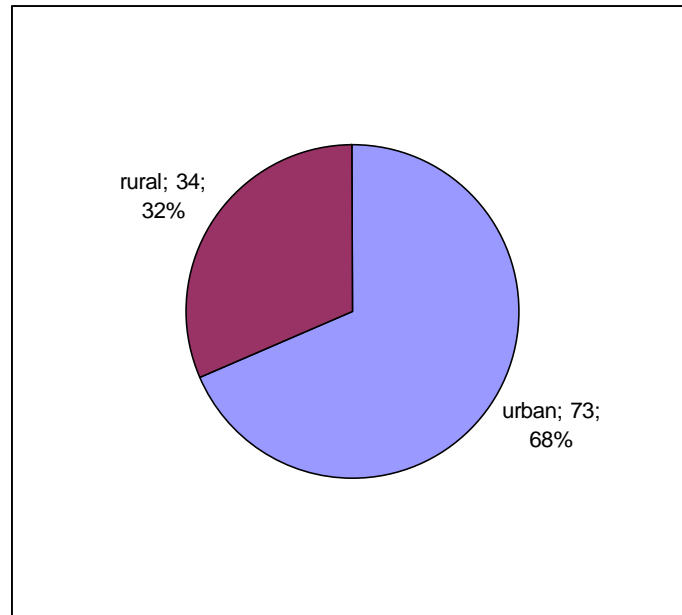


Figure 169. Pie chart showing percentages of urban and rural sites where bone flutes have been found.

The proportions of flutes found in elite or domestic sites are shown in Figure 170. The majority of flutes (80%) are from domestic sites, both urban and rural. The remaining 20% are from both urban and rural elite sites.

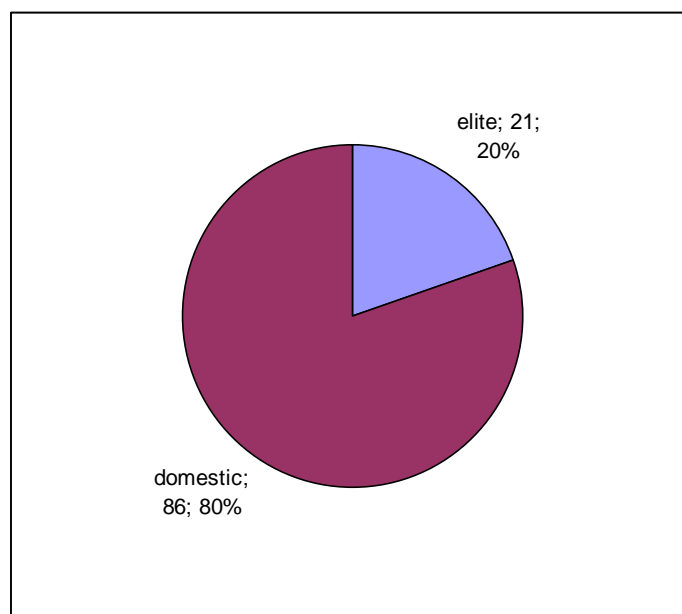


Figure 170. Pie chart showing percentages of elite and domestic sites where bone flutes have been found.

The chart in Figure 171 shows numbers of flutes found in the different site types, both urban and rural. It shows that the most common sites where flutes are found are domestic urban sites and domestic rural sites.

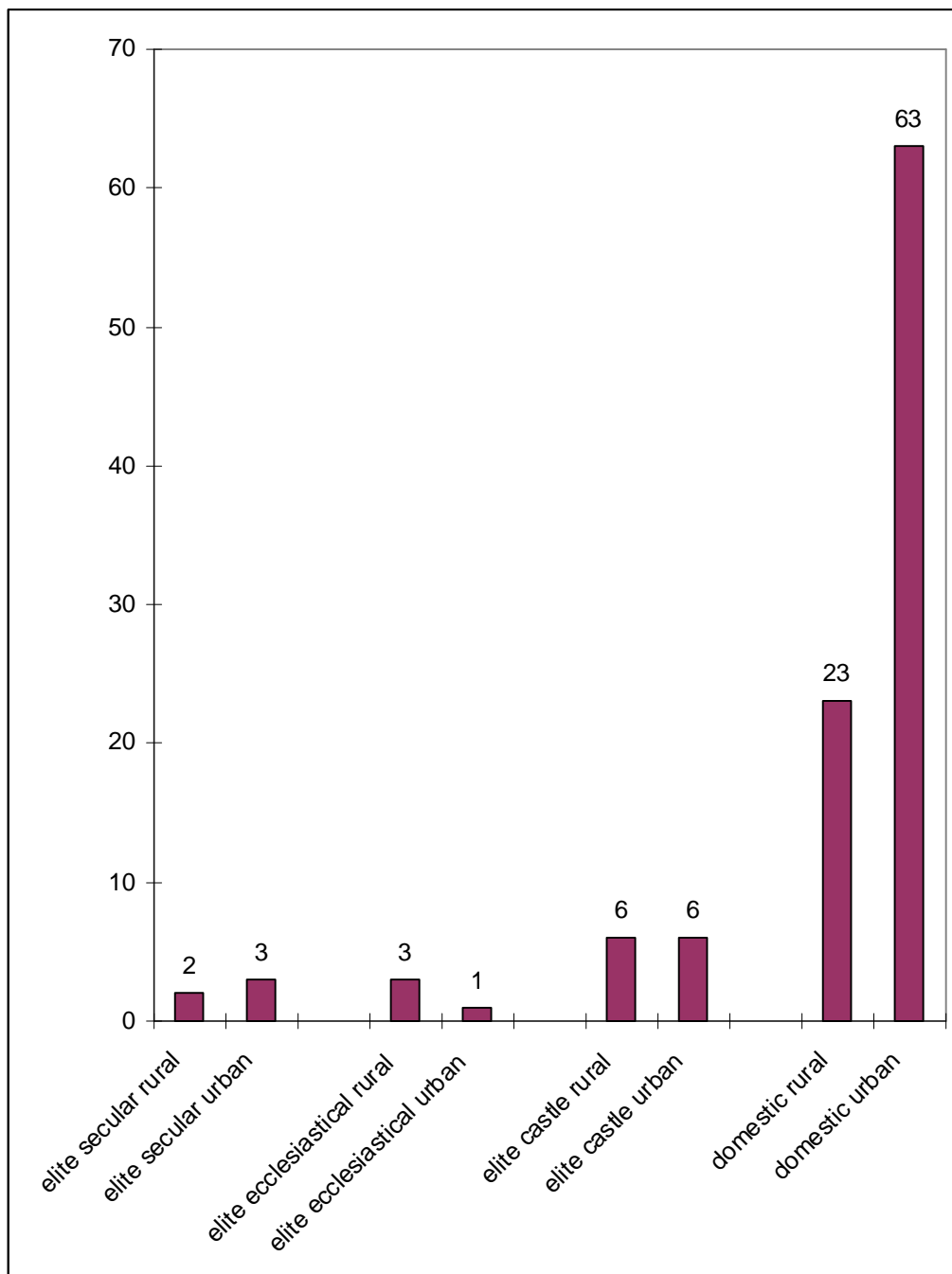


Figure 171. Chart showing numbers of bone flutes found in different site types.

### 5.5.2 Distribution of specific species

Figure 172 shows the percentages of animal and bird species used to make bone flutes, as discussed in Chapter 4. Goose and sheep are the species most commonly used, comprising 36% and 33% of flutes respectively. Swan, crane and deer are used in almost equal numbers (7%, 9% and 8% respectively).

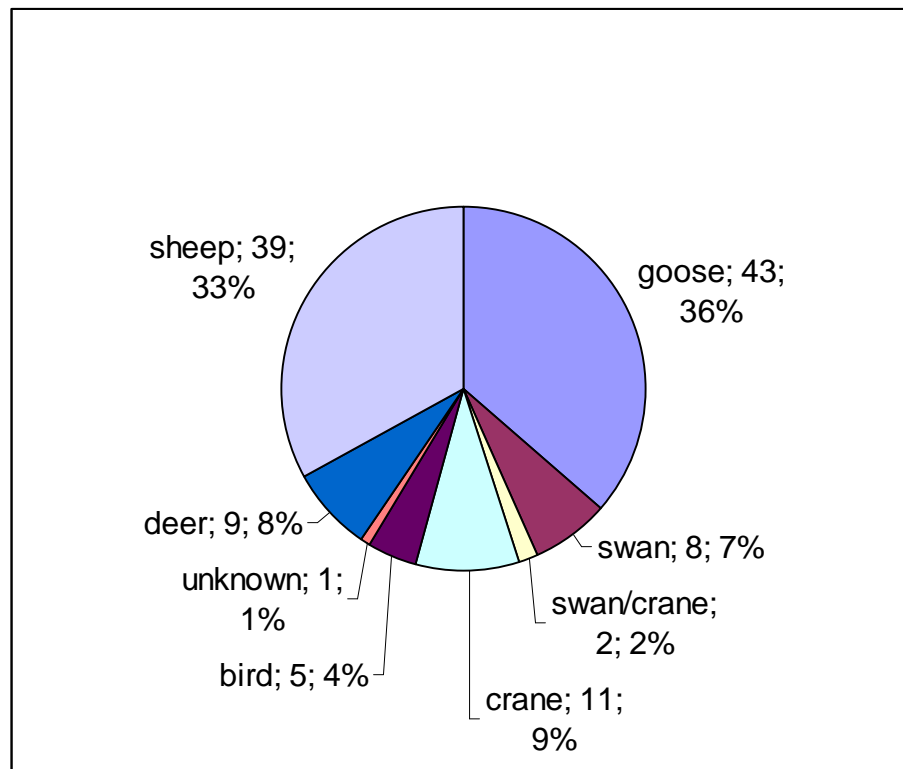


Figure 172. Pie chart showing proportions of animal and bird species used for making bone flutes.

These species are discussed separately below. Firstly, a distribution map is shown, and then a table is given which lists the flutes according to site type. The proportions of flutes found in different site types, i.e. rural or urban, and elite or domestic, are shown in pie charts. Finally, a chart is given which shows numbers of flutes found in the different site types. All of these results are presented and discussed for each species.

#### 5.5.2.1 The goose

As noted in the previous chapter, geese were popularly kept as domestic fowl throughout medieval England. Goose bone flutes have a wide distribution across England (Fig. 173), with a similar pattern to the overall distribution of all the flutes (Fig. 168).



Figure 173. Map of England showing distribution of goose bone flutes.

The types of site where goose bone flutes have been found are shown in Figure 174 below.

<i>site type</i>			<i>number of flutes found</i>	<i>which flutes found</i>
RURAL	elite	secular	1	[1]
		ecclesiastical	0	
		castle	2	[21] [59]
	domestic		7	[8] [22] [33] [65] [78] [93] [97]
URBAN	elite	secular	3	[105] [108] [109]
		ecclesiastical	1	[11]
		castle	1	[101]
	domestic		28	[5] [13] [23] [25] [27] [28] [30] [36] [37] [39] [41] [42] [49] [57] [58] [68] [71] [72] [79] [83] [84] [88] [89] [104] [112] [115] [117] [118]
	total:		43	

Figure 174. Site types where goose bone flutes have been found.

The pie charts below show these flutes according to where the site is, i.e. rural or urban (Fig. 175) and the nature of the site, i.e. elite or domestic (Fig. 176).

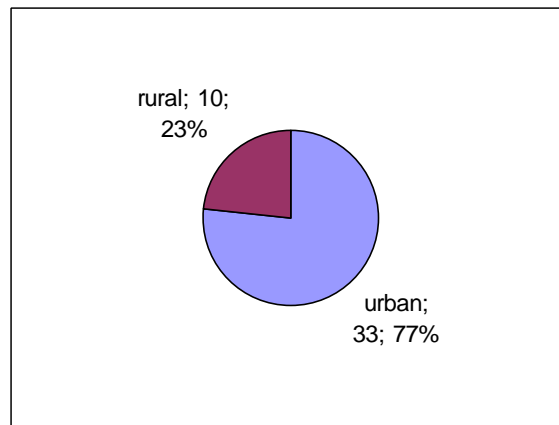


Figure 175. Pie chart showing percentages of urban and rural sites where goose bone flutes have been found.

Approximately three quarters of the flutes (77%) have been found in urban settlements, such as Bristol, Exeter, Gloucester, Hamwih, Ipswich, Kings Lynn, Lincoln, London, Norwich, Southampton, Thetford, Winchester and York, [5], [11], [13] [23] [25] [27] [28] [30] [36] [37] [39] [41] [42] [49] [57] [58] [68] [71] [72] [79] [83] [84] [88] [89] [101] [104] [105] [108] [109] [112] [115] [117] and [118]. The remaining 23% come from rural sites such as Acton Court, Raunds Furnells, Irthlingborough, Lyveden and Westbury-by-Shenley, [1] [8] [21] [22] [33] [59] [65] [78] [93] and [97].

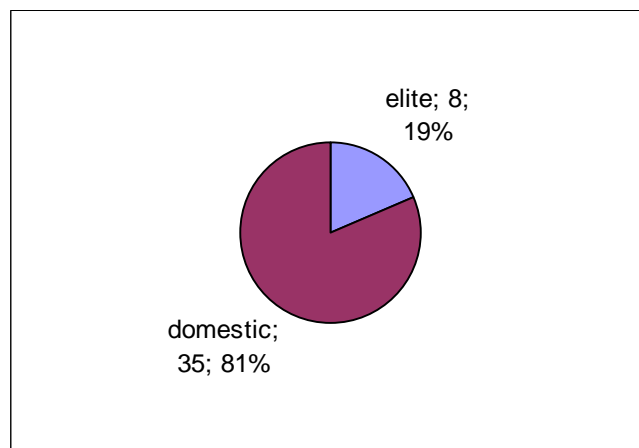


Figure 176. Pie chart showing percentages of elite and domestic sites where goose bone flutes have been found.

Of goose bone flutes found in both urban and rural settlements, thirty five (81%) are from domestic sites (Fig. 176). The remaining eight (19%) are from elite sites [1] [11] [21] [59] [101] [105] [108] and [109]. Of these flutes found from elite sites, four have been found in secular sites [1] [105] [108] [109], one has been found in an ecclesiastical site and three have been found in castles [21] [59] [101]. The numbers of flutes found in each category, in both urban and rural sites, is shown in Figure 177. This shows that domestic urban sites are by far the most common site type where goose bone flutes are found.

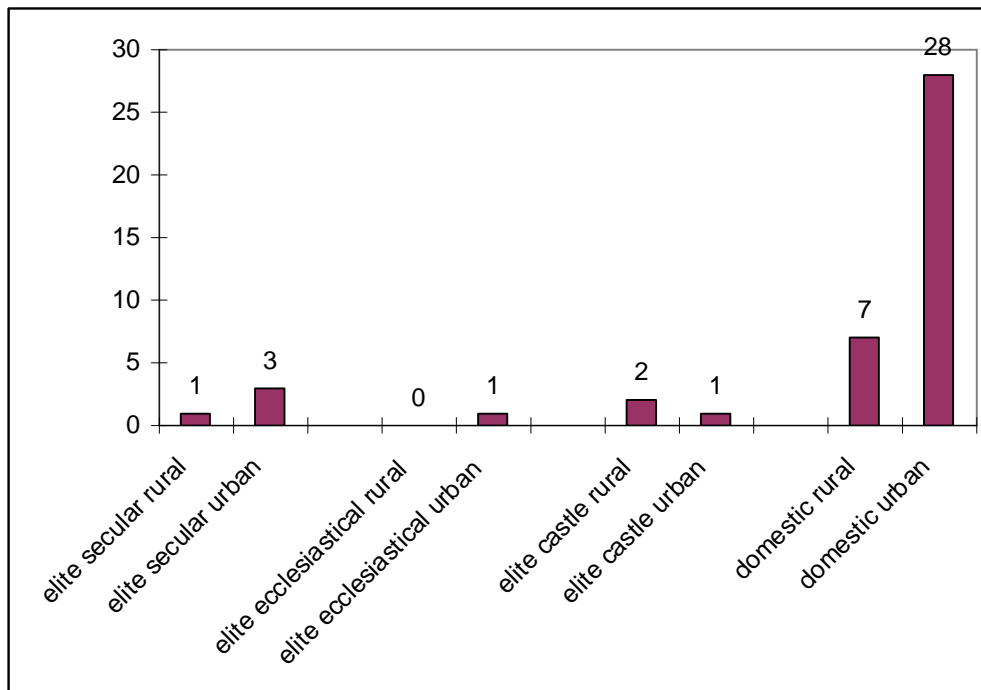


Figure 177. Chart showing numbers of goose bone flutes found in different site types.

#### 5.5.2.2 The swan

As discussed in the previous chapter, there were two main species of swan in England in the medieval period, the bones of which are difficult to tell apart. Both preferred water based habitats, such as rivers, marshes and fens. The mute swan had a widespread distribution across the country, and though records were kept recording swan marks and the requisitioning of swans for feasts, in particular from the thirteenth century onwards, it is difficult to assess the overall population (Ticehurst 1957, 15-17). The whooper swan, however, has a very definite migratory pattern; its current winter distribution is shown below in Figure 178. It spends the summer months in Iceland. If modern distribution patterns are similar to those of the medieval period, then it would follow that the more southerly of the swan bone flutes, such as those from Exeter and London, are more likely to have been made from the bones of the mute swan.

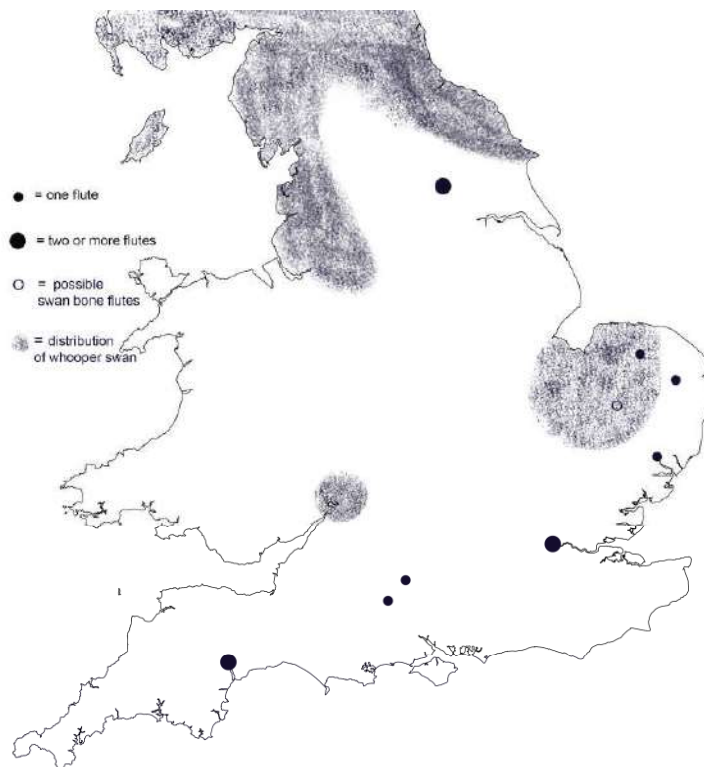


Figure 178. Map of England showing distribution of swan bone flutes and present day distribution of the whooper swan.

The mute swan was kept as a semi-domesticated bird, often in association with elite establishments and residences. The types of site where swan bone flutes have been found are shown in Figure 179 below.

site type			number of flutes found	which flutes found
RURAL	elite	secular	0	
		ecclesiastical	0	
		castle	1	[60]
	domestic		0	
URBAN	elite	secular	0	
		ecclesiastical	0	
		castle	1	[73]
	domestic		6	[14] [31] [43] [69] [114] [116]
total:			8	

Figure 179. Site types where swan bone flutes have been found.

The pie charts below show these flutes according to where the site is, i.e. rural or urban (Fig. 180) and the nature of the site, i.e. elite or domestic (Fig. 181).

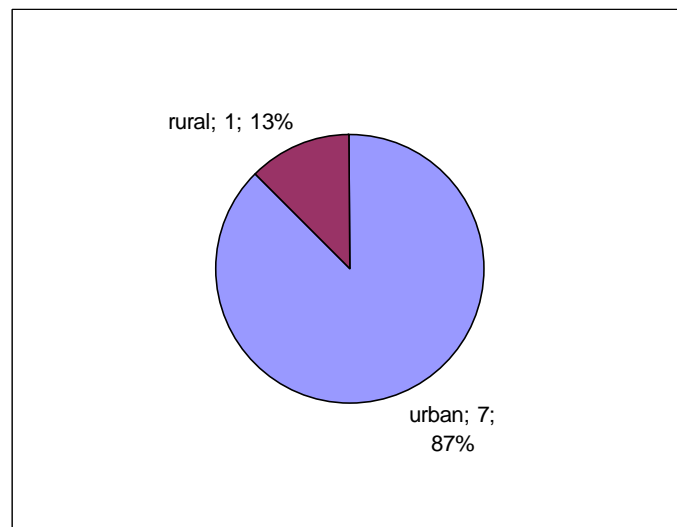


Figure 180. Pie chart showing percentages of urban and rural sites where swan bone flutes have been found.

Most of the swan bone flutes (87%) have been found in urban settlements such as Exeter, Ipswich, London, Norwich and York, [14], [31], [43], [69], [73], [114] and [116]; only one flute (13%) is from a rural context, [60] (Figs. 179 and 180).

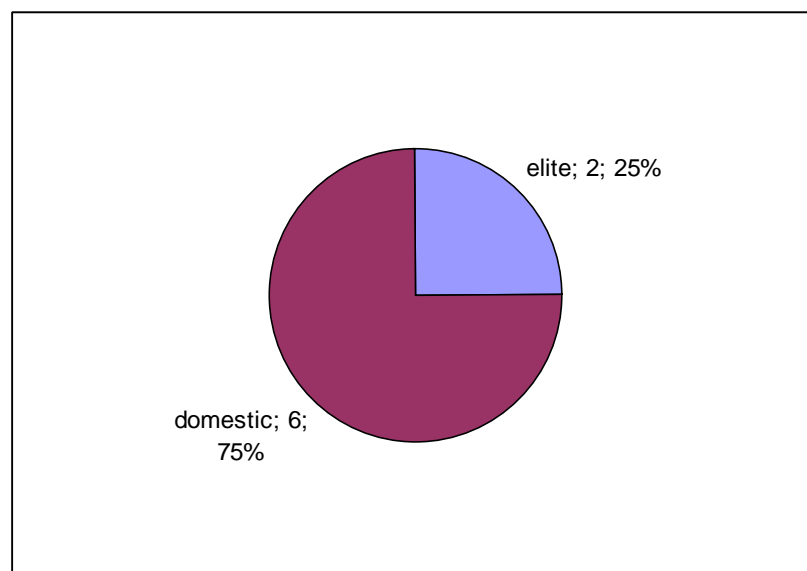


Figure 181. Pie chart showing percentages of elite and domestic sites where swan bone flutes have been found.



Most of the flutes (75%) are from domestic sites (Fig. 181). The two flutes from elite sites (25%) are both from castles, one urban and one rural, [60] and [73], with no flutes from ecclesiastical or secular elite sites, (Figs. 179 and 181). The numbers of flutes found in each category, in both urban and rural sites, is shown in Figure 182. This shows that domestic urban sites are the most common site type where swan bone flutes are found.

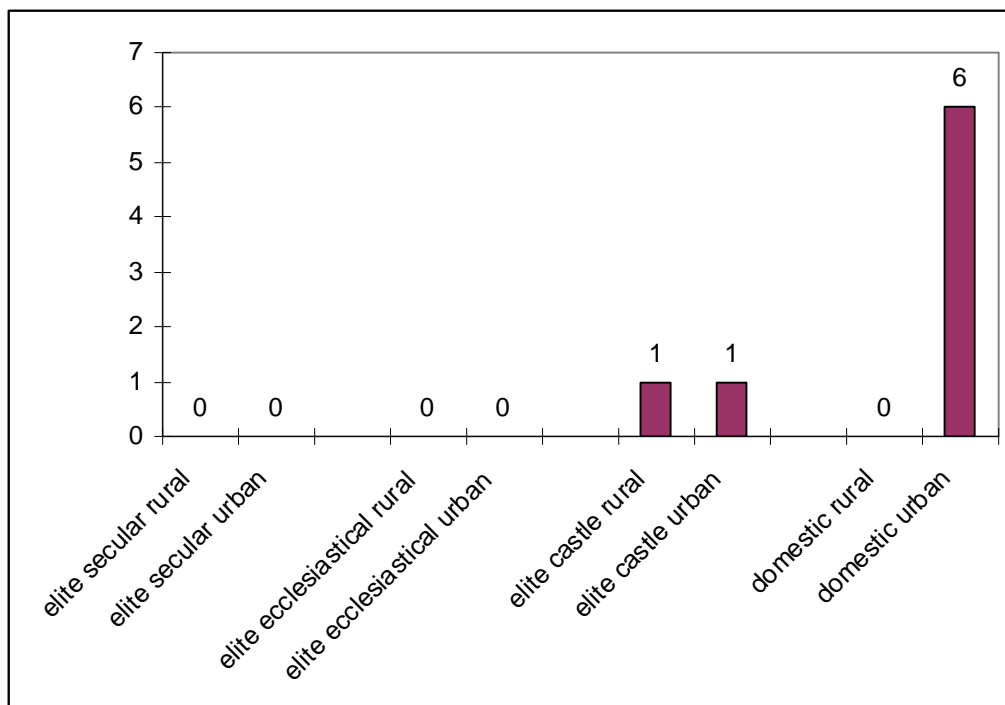


Figure 182. Chart showing numbers of swan bone flutes found in different site types.

### 5.5.2.3 The crane

The crane's present day distribution is limited to a small area of East Anglia, the location of which is not made public in order to protect where these cranes live and breed. It appears that cranes had a widespread distribution in the medieval period, with flutes found across the country (Fig. 183) and as indicated by place-name evidence as given by Boisseau and Yalden (Fig. 184).



Figure 183. Map of England showing distribution of crane bone flutes.

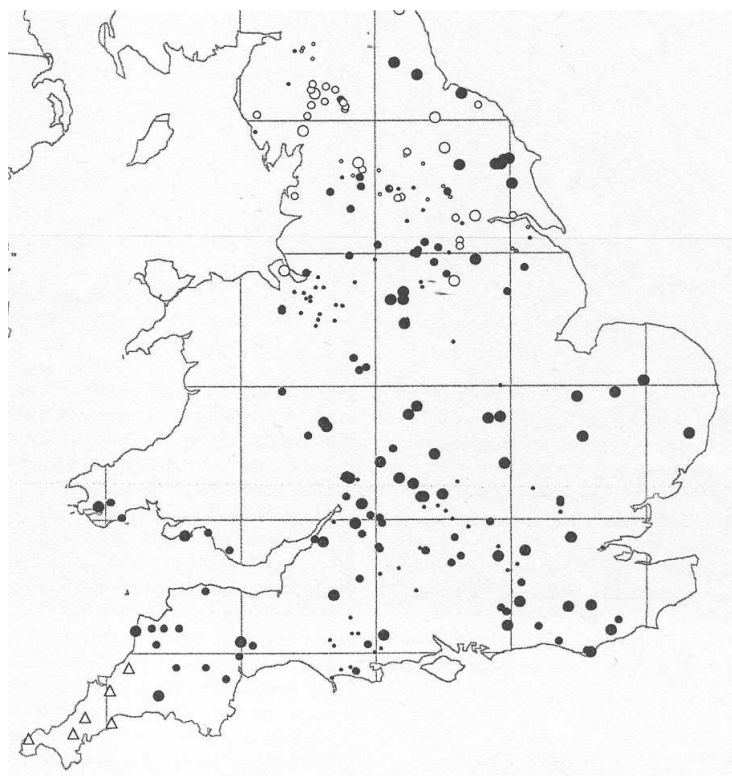


Figure 184. Map of England showing distribution of place-names with links to cranes (from Boisseau and Yalden 1998, 484).

The types of site where crane bone flutes have been found are shown in Figure 185 below. The pie charts in Figures 186 and 187 show these flutes according to where the site is, i.e. rural or urban and the nature of the site, i.e. elite or domestic

site type			number of flutes found	which flutes found
RURAL	elite	secular	0	
		ecclesiastical	1	[67]
		castle	0	
	domestic		2	[91] [100]
URBAN	elite	secular	0	
		ecclesiastical	0	
		castle	0	
	domestic		7	[7] [ 24] [38] [47] [87] [103] [113]
unknown			1	[82]
total:			11	

Figure 185. Site types where crane bone flutes have been found.

The pie charts below show these flutes according to where the site is, i.e. rural or urban (Fig. 186) and the nature of the site, i.e. elite or domestic (Fig. 187).

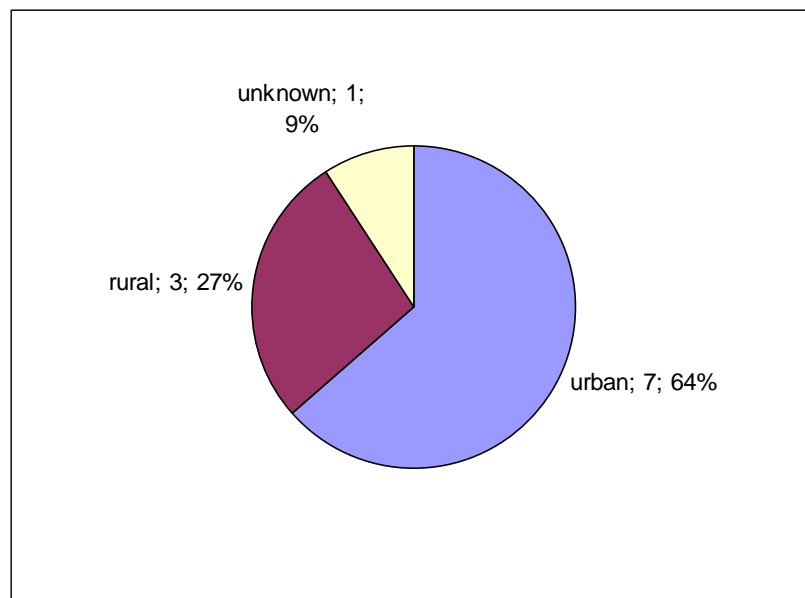


Figure 186. Pie chart showing percentages of urban and rural sites where crane bone flutes have been found.

Figure 186 shows that 64% of crane bone flutes are from urban sites and that 27% are from rural sites.

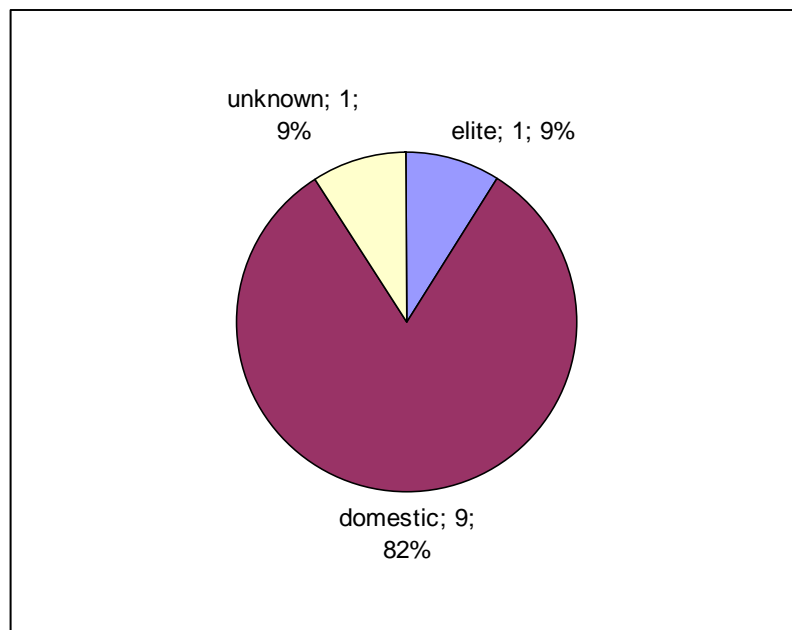


Figure 187. Pie chart showing percentages of elite and domestic sites where goose bone flutes have been found.

All but one of the crane bone flutes are from domestic contexts (90%), in both urban and rural settlements such as Canterbury, Gloucester, Lincoln, Thetford, Winchester, Swavesey, Wicken Bonhunt, West Cotton and York, [7], [24], [38], [47], [87], [91], [100], [103] and [113], (Fig. 187). Given the elite nature of cranes as a species as discussed in Chapter 4, it is interesting to note that only one crane bone flute (10%) is from an elite site; it is from North Elmham [67], a rural ecclesiastical site. The crane bone flute from Swavesey [82] is from a site that appears to have been mainly low-status and domestic, but where there was a castle and defensive enclosure from the eleventh to the thirteenth centuries. The flute was found in a surface cleaning layer, and as such is not clearly associated with either the castle or domestic areas. For this analysis it is categorised as 'unknown'.

The numbers of flutes found in each category, in both urban and rural sites, is shown in Figure 188. This shows that domestic urban sites are the most common site type where crane bone flutes are found.

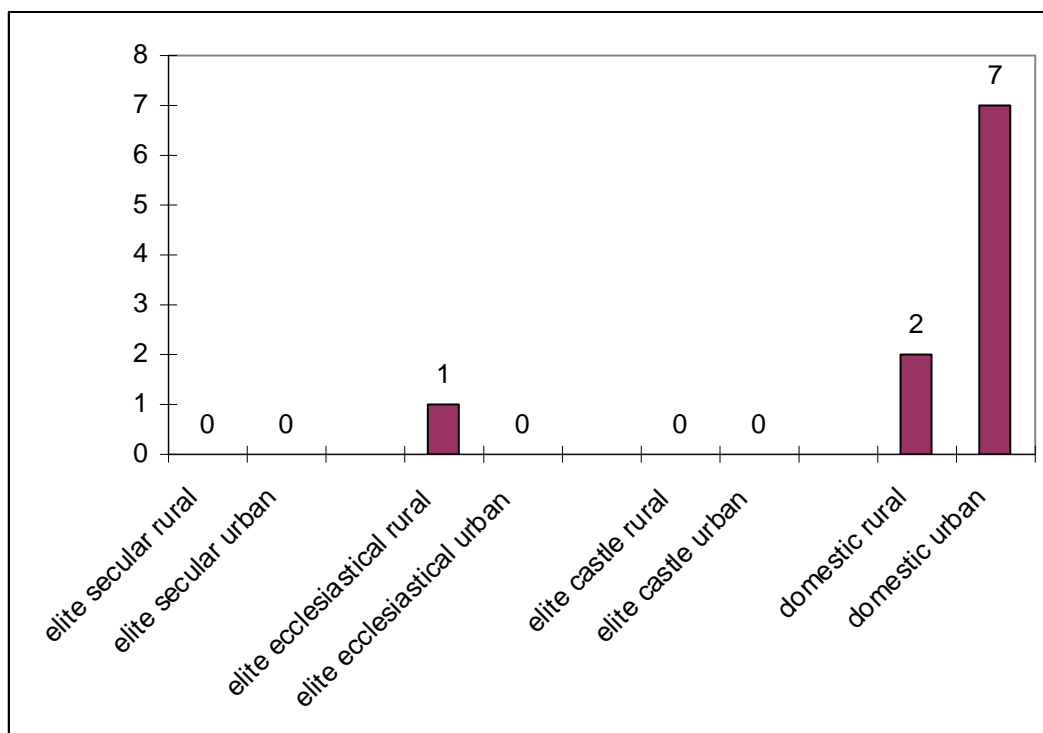


Figure 188. Chart showing numbers of crane bone flutes found in different site types.

#### 5.5.2.4 Sheep

Sheep bone flutes make up approximately a third (33%) of all of the flutes (Fig. 172). This is comparable to goose bone flutes, and their distribution maps can be compared to that of the distribution of all of the flutes as a whole (Figs. 168, 173 and 189).

The types of site where sheep bone flutes have been found are shown in Figure 190, and the pie charts in Figures 191 and 192 show the proportions of rural or urban, and elite or domestic sites.



Figure 189. Map of England showing distribution of sheep bone flutes.

site type			number of flutes found	which flutes found
RURAL	elite	secular	1	[20]
		ecclesiastical	1	[34]
		castle	2	[61] [62]
	domestic		14	[26] [32] [66] [77] [80] [81] [86] [90] [92] [94] [95] [96] [99] [111]
URBAN	elite	secular	0	
		ecclesiastical	0	
		castle	2	[10] [74]
	domestic		17	[3] [4] [16] [17] [18] [19] [44] [45] [46] [51] [52] [53] [54] [55] [56] [70] [106]
total:			37	

Figure 190. Site types where sheep bone flutes have been found.

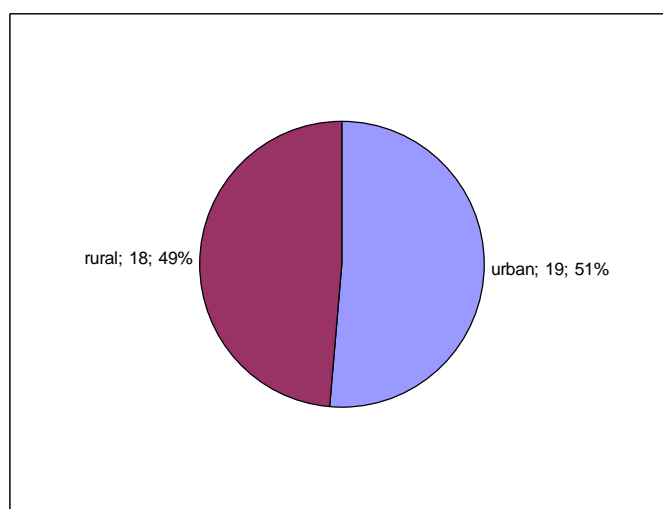


Figure 191. Pie chart showing percentages of urban and rural sites where sheep bone flutes have been found.

Sheep were kept in rural situations, but it seems that their meat was consumed almost equally in urban and rural contexts. Approximately half of the sheep bone flutes (51%) come from urban sites and 49% come from rural sites (Fig. 191). Most of the flutes (84%) are from domestic sites, whereas 16% are from elite sites (Fig. 192). Four of the flutes from these elite sites are from castles ([10], [61], [62] and [74]); two from rural castles and two from urban castles. Of the other two flutes from elite sites, one [34] is from a rural ecclesiastical site (Jarrow) and the other [20] is from a rural secular site (Faccombe Netherton).

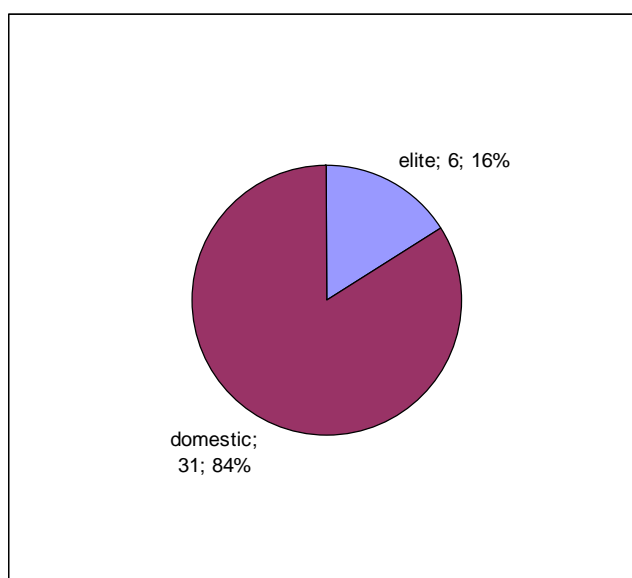


Figure 192. Pie chart showing percentages of elite and domestic sites where sheep bone flutes have been found.

The numbers of flutes found in each category, in both urban and rural sites, is shown in Figure 193. This chart clearly shows that sheep bone flutes are far more commonly found in domestic contexts, both urban and rural.

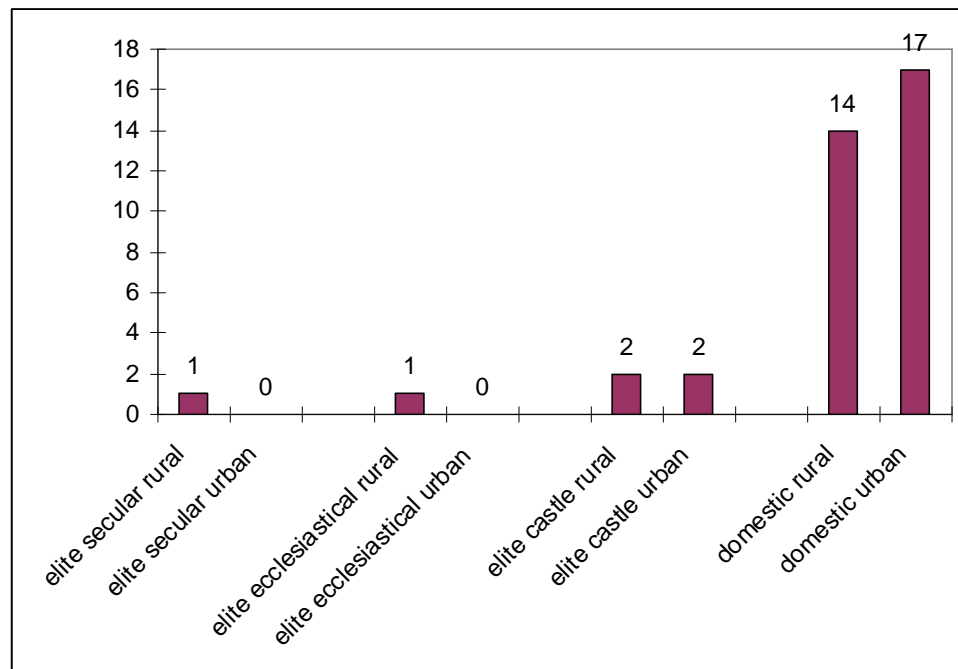


Figure 193. Chart showing numbers of sheep bone flutes found in different site types.

#### 5.5.2.5 Deer

Given the social status of deer in the medieval period as discussed in Chapter 4, it might be expected that deer bone flutes would be found in elite locations. Certainly the locations reflect this, with deer bone flutes from Bedford Castle, Hertford Castle, White Castle and Keynsham Abbey, as well as from major urban settlements with fortifications, such as Dover, London and Winchester (Figs. 194 and 195).





Figure 194. Map of England showing distribution of deer bone flutes.

However, a closer look at the locations within these sites reveals a more widespread cultural background, with the flute from Dover [12] coming from a poor district between the castle and the town, and the flutes from Winchester, [107] and [110], coming from an area where dyeing and tanning occurred. Although the flute from London Paternoster Square [50] came from an area close to the cathedral, it was from a cess pit in an area of cess pits. The elite locations vary also, with Hertford Castle [29] regularly frequented by royal and noble visitors, and White Castle [98] being a predominantly military outpost.

site type			number of flutes found	which flutes found
RURAL	elite	secular	0	
		ecclesiastical	1	[35]
		castle	1	[98]
	domestic		0	
URBAN	elite	secular	0	
		ecclesiastical	0	
		castle	2	[2] [29]
	domestic		5	[12] [48] [50] [107] [110]
total:			9	

Figure 195. Site types where deer bone flutes have been found.

The pie charts below show these flutes according to where the site is, i.e. rural or urban (Fig. 196) and the nature of the site, i.e. elite or domestic (Fig. 197).

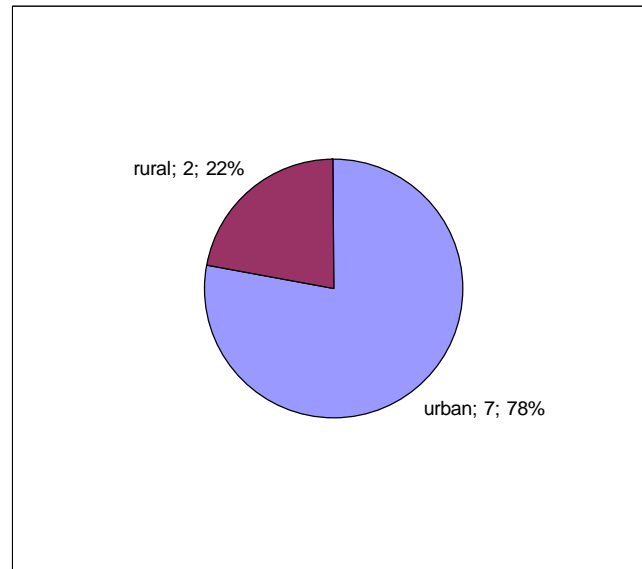


Figure 196. Pie chart showing percentages of urban and rural sites where deer bone flutes have been found.

Most of the deer bone flutes (78%) are from urban sites, with 22% from rural sites (Fig. 196).

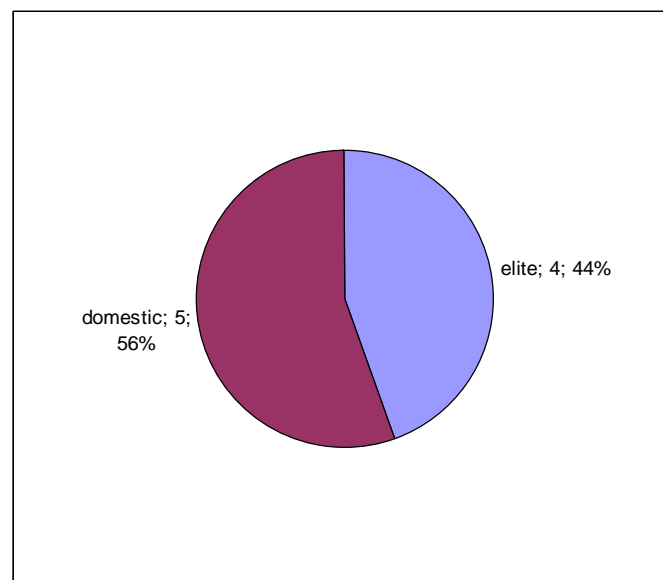


Figure 197. Pie chart showing percentages of elite and domestic sites where deer bone flutes have been found.

Given that deer are regarded as an elite species as discussed in Chapter 4, it is interesting to note that the deer bone flutes are found almost equally in elite and domestic sites (Fig. 197). However, given a larger sample size these proportions may be different.

The numbers of flutes found in each category, in both urban and rural sites, is shown in Figure 198. This shows that domestic urban sites are the most common site type where deer bone flutes are found.

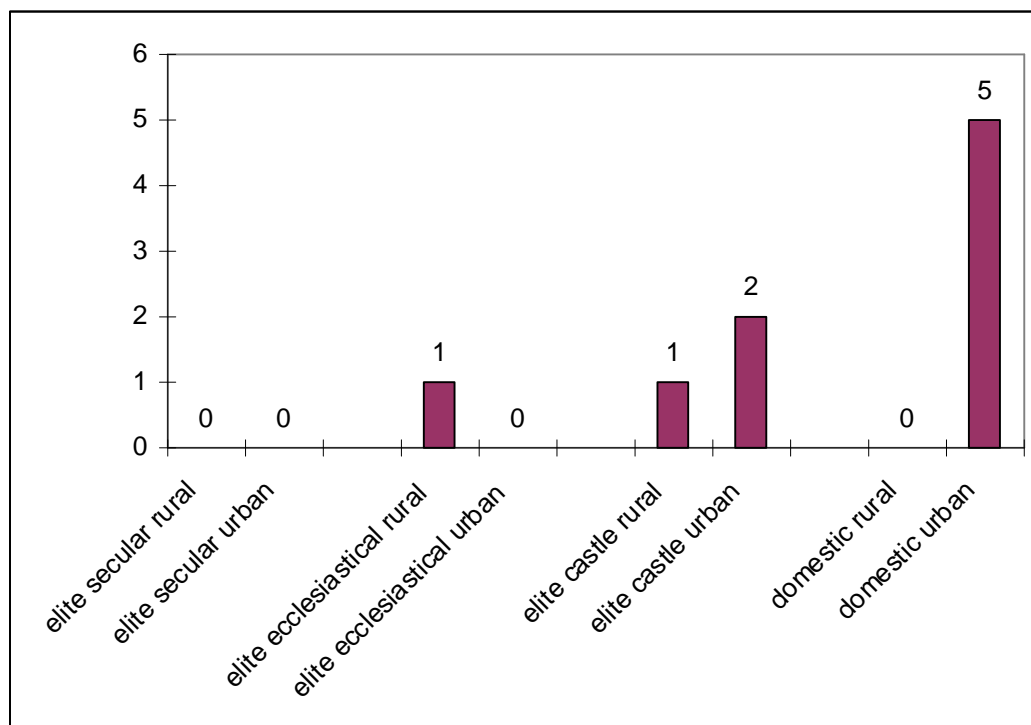


Figure 198. Chart showing numbers of deer bone flutes found in different site types.

## 5.6 Site type – urban and rural

### 5.6.1 Urban sites

The flutes can be analysed according to species and the site type in which they are found, i.e. urban or rural. Figure 169 showed that 68% of the flutes come from urban sites, and Figure 199 shows how this 68% is represented by species of animal and bird used to make the flutes. The most common species used is the goose, comprising 44% of the flutes from urban sites, and the second most common species used is sheep with 26%. Deer, swan and crane, the species considered more elite in nature comprise 10% each.

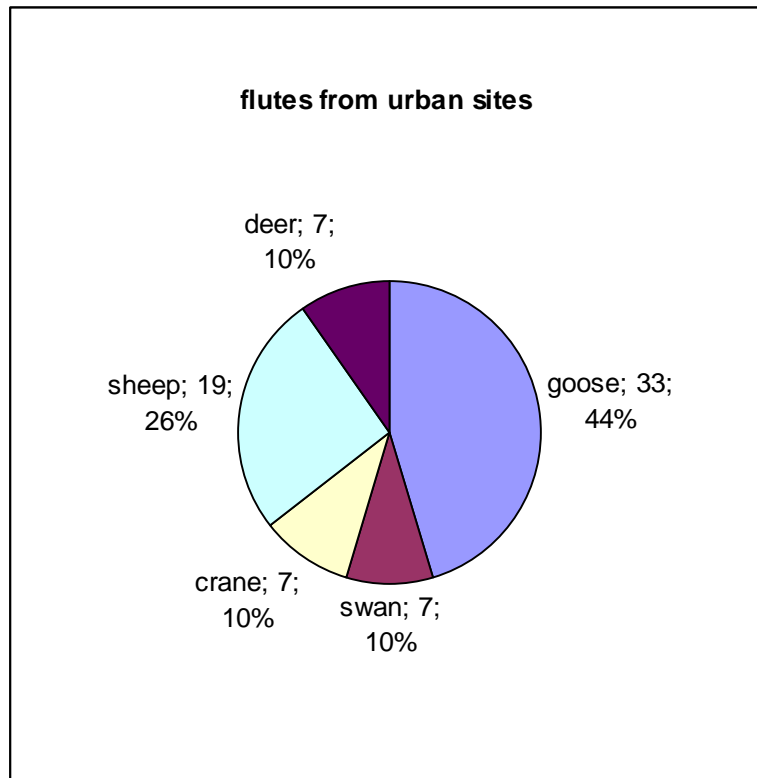


Figure 199. Pie chart showing flutes from urban sites.

Figure 200 shows the flutes found from urban sites, but separated into elite and domestic analyses. Goose and sheep bone flutes are still the most common flutes in both categories. The more elite species of swan and crane are represented almost equally in both elite and domestic contexts. The main difference is seen in the numbers of sheep and deer bone flutes. There are more deer bone flutes (18%) in elite urban sites than in domestic urban sites (8%), and there are more sheep bone flutes (27%) in domestic urban sites than in elite urban sites (18%).

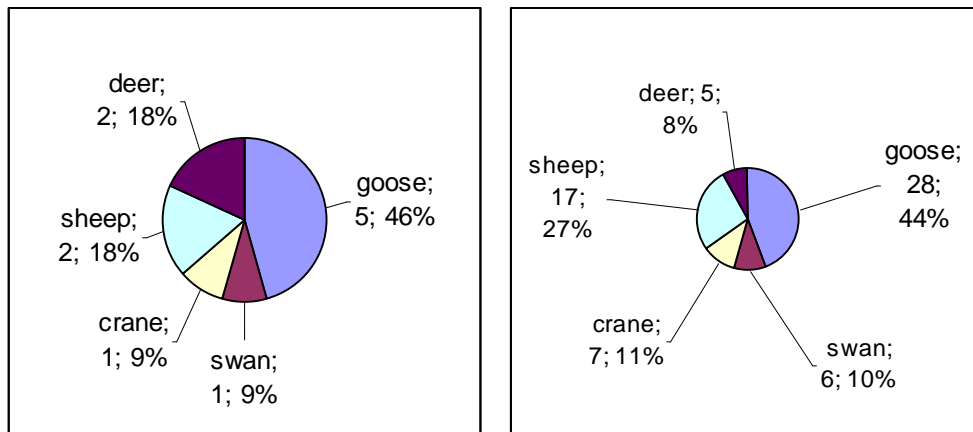


Figure 200. Pie charts showing flutes from elite (left) and domestic (right) urban sites.

### 5.6.2 Rural sites

Flutes from rural sites, which comprise 32% of all flutes (Fig. 169) are shown in Figure 201. Sheep bone flutes are the most common flute found in rural sites (53%) and goose bone flutes are the second most common (29%). These percentages can be compared with those for flutes found in urban contexts shown above in Figure 199; it is clearly shown by Figures 199 and 201 that sheep bone flutes are more common in rural sites (53%) than in urban sites (26%), and that goose bone flutes are more common in urban sites (44%) than in rural sites (29%). The more elite species of deer, swan and crane are represented in rural sites, but in lesser proportions to those from urban sites (Figs. 199 and 201). Crane is represented almost equally in urban (10%) and rural sites (9%), deer is more common on urban sites (10%) than on rural sites (6%), and swan is much more common on urban sites (10%) than on rural sites (3%). These comparative percentages are valid and interesting; though it should be borne in mind that these percentages are not from samples of equal size (i.e. the flutes from urban sites are only 32% of the whole).

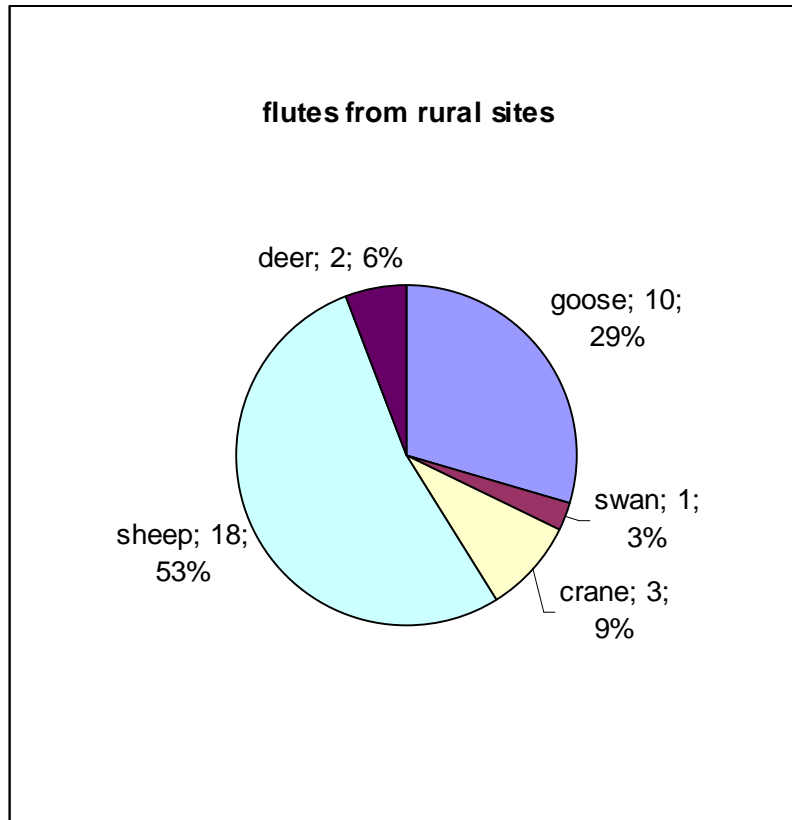


Figure 201. Pie chart showing flutes from rural sites.

Figure 202 shows the flutes found from rural sites, but separated into elite and domestic analyses. Sheep and goose bone flutes are still the most common flutes in both categories, but in very different proportions. Sheep bone flutes are far more common (61%) in domestic rural sites than in elite rural sites (37%) and goose bone flutes occur almost equally in domestic (30%) and elite (27%) rural sites.

The more elite species of deer, swan and crane are represented differently in both elite and domestic rural contexts (Fig. 202). There are no deer bone flutes in domestic rural sites, whereas there are 18% in elite rural sites. There are no swan bone flutes in domestic rural sites, whereas there are 9% in elite rural sites. Crane bone flutes occur in equal proportions in domestic and elite rural sites (9% in both).

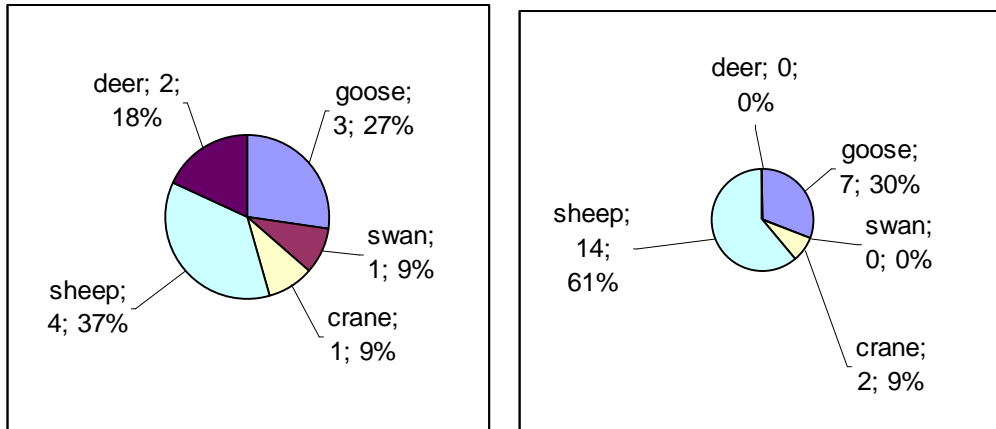


Figure 202. Pie charts showing flutes from elite (left) and domestic (right) rural sites.

## 5.7 Site type – elite and domestic

### 5.7.1 Elite sites

The flutes can also be analysed according to species and the site type in which they are found, i.e. elite or domestic. Figure 170 showed that 20% of the flutes come from elite sites, and Figure 203 shows how this 20% is represented by species of animal and bird used to make the flutes. The most common species used is the goose, comprising 37% of the flutes from elite sites, and the second most common species used is sheep with 29%. Deer, swan and crane, the species considered more elite in nature comprise 19%, 10% and 5% respectively.

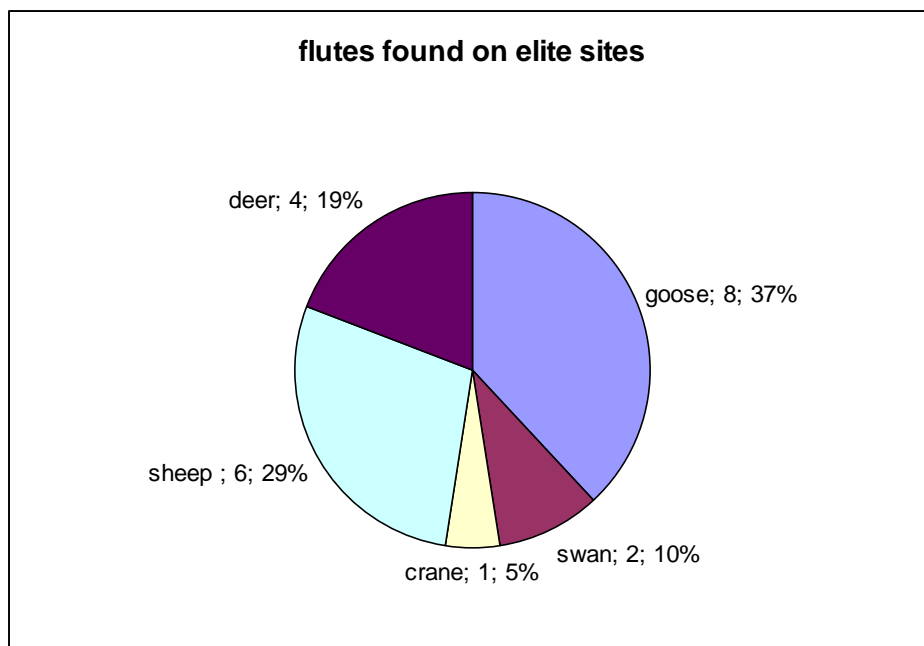


Figure 203. Pie chart showing flutes from elite sites.

Figure 204 shows the flutes found from elite sites, but separated into urban and rural analyses. Sheep and goose are the most common species in both categories, but in very different proportions; on elite sites the most commonly used species for urban flutes is goose (46%), whereas the most commonly used species for rural flutes is sheep (37%). The more elite species of deer, swan and crane occur in equal proportions in both urban and rural elite sites (18%, 9% and 9% respectively).

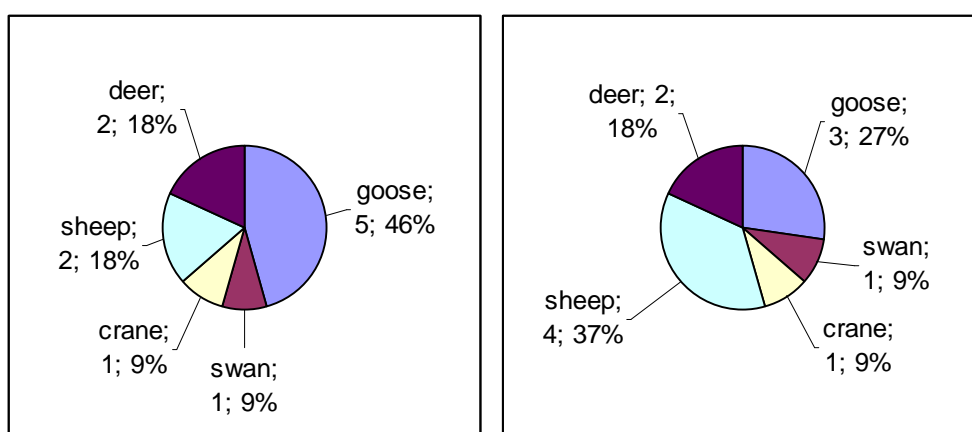


Figure 204. Pie charts showing numbers of flutes of different species found on urban (left) and rural (right) elite sites.



### 5.7.2 Domestic sites

Figure 170 showed that 80% of the flutes come from domestic sites, and Figure 205 shows how this 80% is represented by species of animal and bird used to make the flutes. The most common species used is the goose, comprising 41% of the flutes from elite sites, and the second most common species used is sheep with 36%. Deer, swan and crane, the species considered more elite in nature comprise 6%, 7% and 10% respectively. These results can be compared with those in Figure 203 showing the flutes from elite sites. Goose is the most common species used on both site types, used slightly more on domestic sites (41%) than on elite sites (37%). Sheep, the second most common species used on both site types, is also used slightly more on domestic sites (36%) than on elite sites (29%). Deer, swan and crane, the species considered more elite in nature, are still represented on domestic sites, though in different proportions to those from elite sites (Figs. 203 and 205). Deer bone flutes are found less on domestic sites (6%) than on elite sites (19%), swan bone flutes are also found less on domestic sites (7%) than on elite sites (10%), but crane bone flutes are found more on domestic sites (10%) than on elite sites (5%).

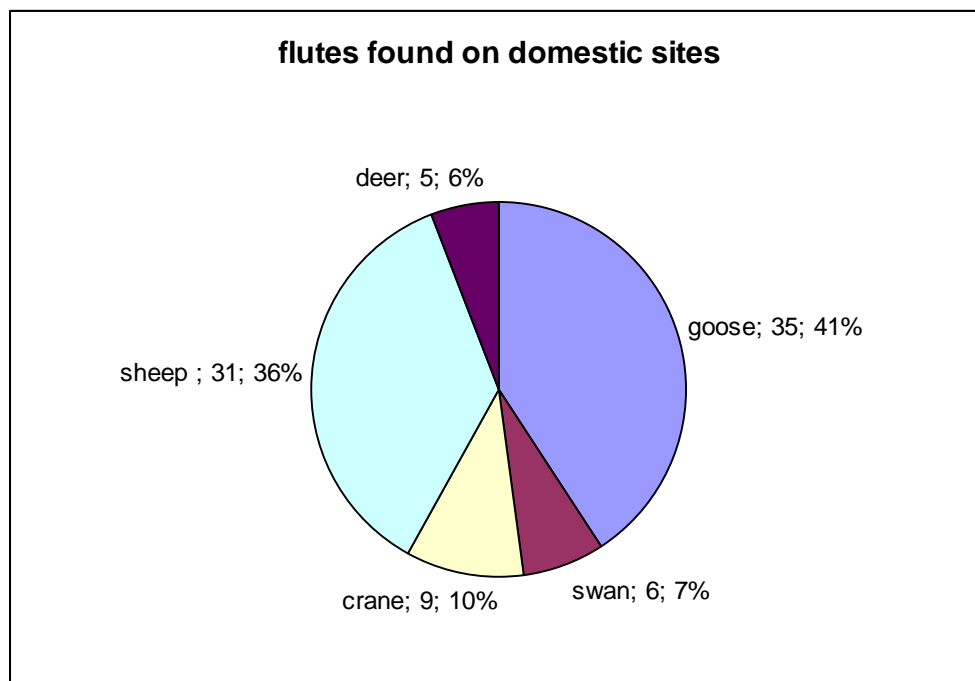


Figure 205. Pie charts showing flutes from domestic sites.

Figure 206 shows the flutes found from domestic sites, separated into rural and urban analyses. The proportions differ quite widely in both analyses. In urban domestic sites, all species are represented, with goose being the most common (44%) and sheep the second

most common (27%); in rural domestic sites, sheep bone flutes are the most common type (61%) and goose bone flutes are the second most common (30%). No flutes from deer or swan have been found in rural domestic sites, and the percentage of crane bone flutes from this site type (9%) is similar to that from urban domestic sites (11%).

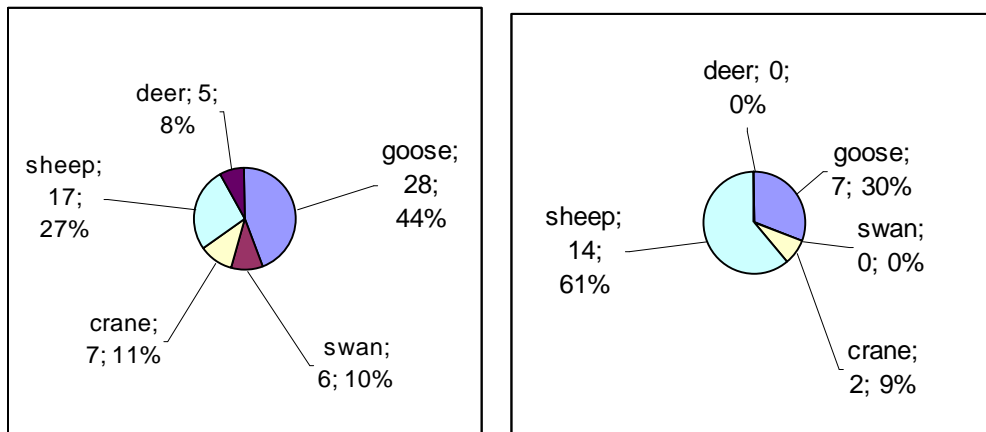


Figure 206. Pie charts showing numbers of flutes of different species found on urban (left) and rural (right) domestic sites.

Figure 207 shows numbers of flutes for each species in either elite or domestic site types. It clearly shows that the two most commonly occurring flutes are goose bone flutes and sheep bone flutes found in domestic contexts.

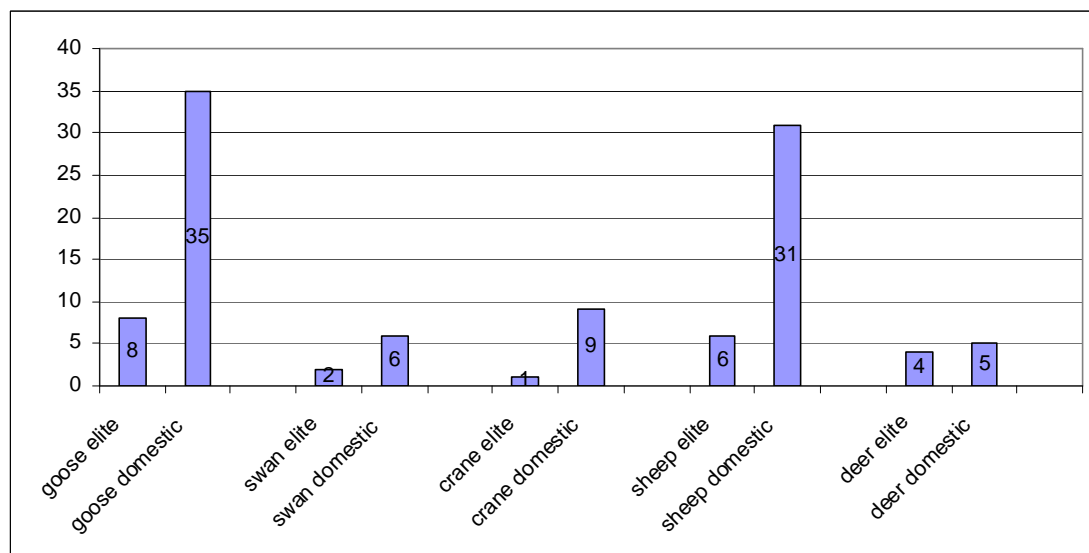


Figure 207. Chart showing numbers of types of bone flutes found in elite and domestic sites.

## 5.8 Flutes found in each site type

The numbers of flutes from each individual site type can also be shown. For details regarding which particular flutes are in each category, the tables in Figures 174, 179, 185, 190 and 195 can be consulted; these show the site types for goose, swan, crane, sheep and deer bone flutes respectively. For example, Figure 190 shows that the sheep bone flutes found in urban castle sites are **[10]** and **[74]**.

Figure 208 shows the numbers of flutes from each species found on urban and rural domestic sites. Goose is the most commonly used species on urban domestic sites, though all species are used to some degree. Sheep is the most commonly used species on rural domestic sites, and swan and deer are not used at all.

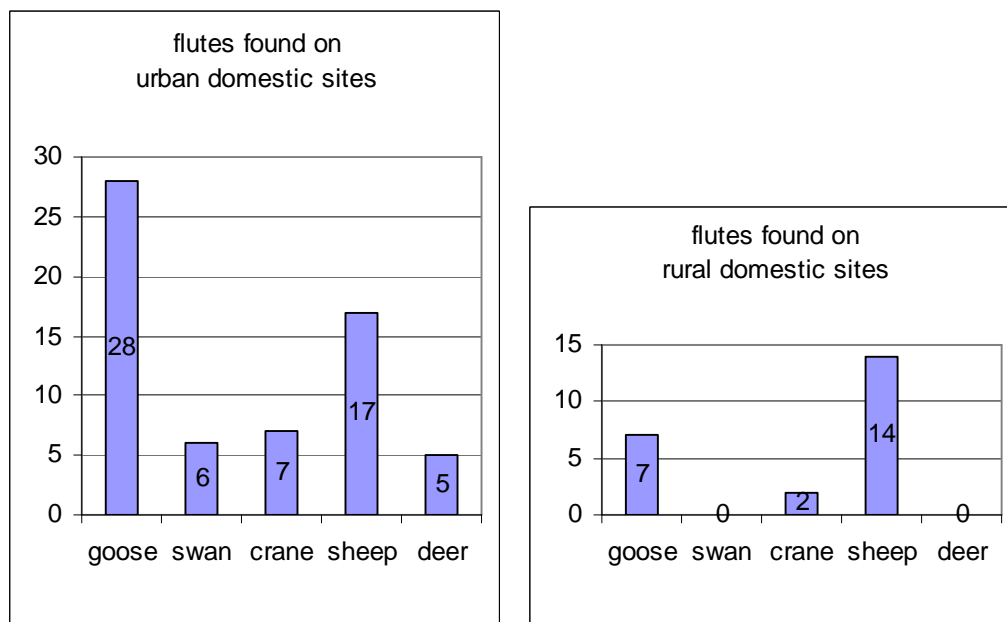


Figure 208. Charts showing flutes found on both urban and rural domestic sites.

Figure 209 shows the numbers of flutes made from each species found on urban and rural secular sites. Goose is the only species used on urban secular sites; all three of these flutes (**[105]**, **[108]** and **[109]**) are from Winchester Wolvesey Palace, the high status residence of the Bishops of Winchester. One goose and one sheep bone flute are from rural secular sites. The sites are Acton Court **[1]** and Faccombe Netherton **[20]** respectively, both elite manor houses in rural settings.

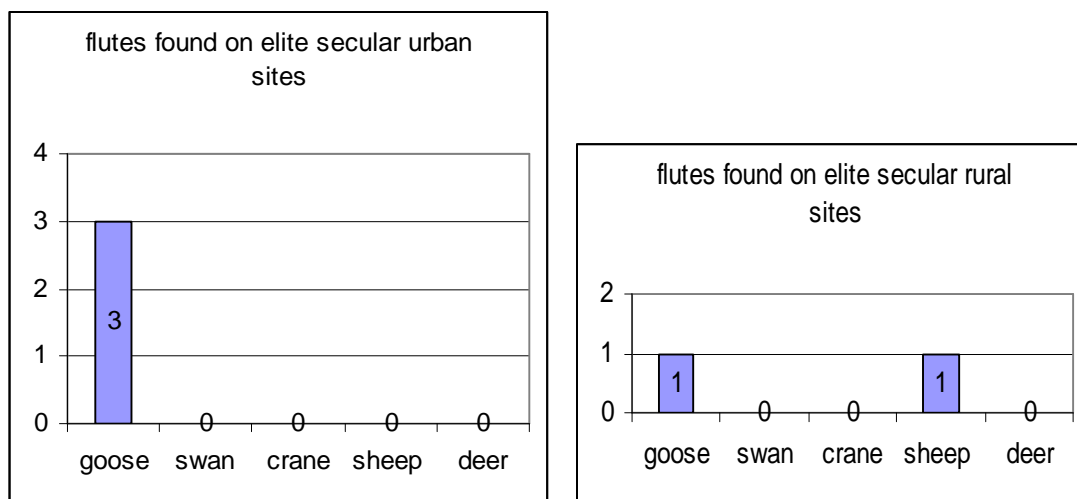


Figure 209. Charts showing flutes found on both urban and rural secular sites.

Figure 210 shows the numbers of flutes made from each species found on urban and rural ecclesiastical sites. The only flute found from an urban ecclesiastical site is a goose bone flute from Coventry Cathedral [11], a site that was a Benedictine Priory and Church in the medieval period. The three flutes from rural ecclesiastical sites are a crane bone flute from North Elmham, the residence of the bishops of East Anglia [67], a sheep bone flute from Jarrow monastery [34] and a deer bone flute from Keynsham Abbey, a Victorine Abbey site [35].

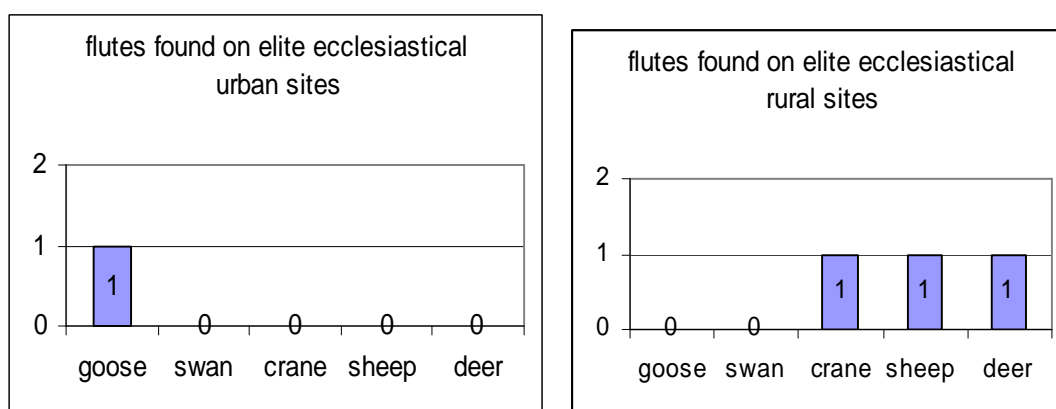


Figure 210. Charts showing flutes found on both urban and rural ecclesiastical sites.

Figure 211 shows the numbers of flutes made from each species found on urban and rural castle sites. No crane bone flutes have been found on these site types. The flutes from urban castle sites are: a goose bone flute from Winchester Castle Yard [101], a swan bone flute from Old Sarum [73], two sheep bone flutes from Castle Acre [10] and Old Sarum [74] and

two deer bone flutes from Bedford Castle [2] and Hertford Castle [29]. The flutes from rural castle sites are: two goose bone flutes from Folkestone [21] and Ludgershall Castle [59], one swan and two sheep bone flutes from Ludgershall Castle [60], [61], [62], and a deer bone flute from White Castle [98].

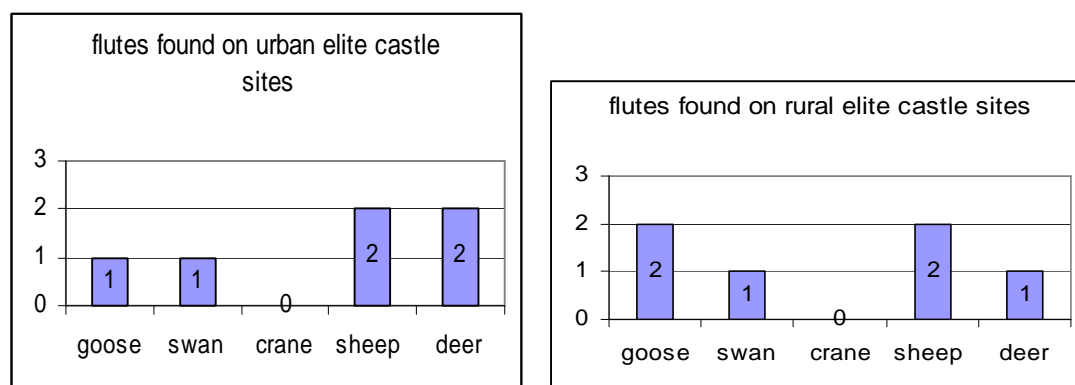


Figure 211. Charts showing flutes found on both urban and rural castle sites.

## 5.9 Chronological distribution of finds

The dates given for each flute are non-standardized, and vary from being quite specific, e.g. the date of a siege of a castle, to periods of 50 to 200 years, to being described as generally 'medieval'. The chronological distribution of the flutes is shown by using graphs with separate entries for each flute, with a darkened horizontal line marking each flute's given date range, such as in Figure 212. Each century is divided into the equal time phases of early, middle, and late, as described in Chapter 3. Flutes that are not specifically dated such as the one from London Thames Exchange [52], ones with wide date ranges such as 'early Saxon to 1500' [22] or are residual such as those from Beverley, [3] and [4], are not included in the analysis, though ones with dates such as 'before 1400' or 'middle Saxon' are ([78] and [97]). In addition to showing each individual flute and its date range for each species, the chronological distribution is shown in a second way; the mid-point for each flute's date range is taken, and all of the mid-points for each species are plotted on a chart. This gives a more accessible visual impression of the occurrence of the flutes, even though the accuracy of the data is limited. Both types of chart are given for each species (Figs. 212 to 221), followed by a mid-point chart for all of the flutes together (Fig. 222).

### 5.9.1 Goose bone flutes

The chronological distribution of goose bone flutes is shown below in Figures 212 and 213. Goose bone flutes have the widest occurrence, from the fifth through to the fifteenth century, with most being from the eleventh to the fourteenth century.

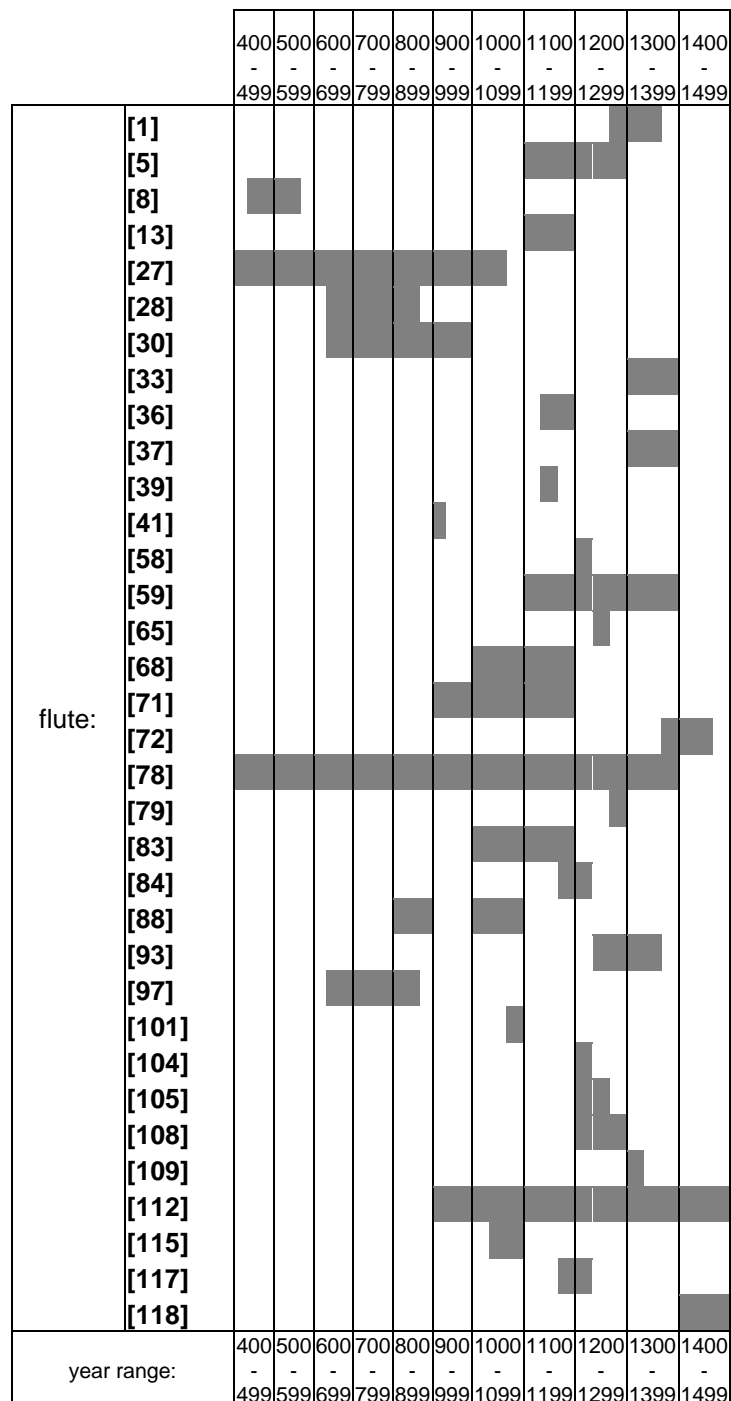


Figure 212. Chronological distribution of goose bone flutes.

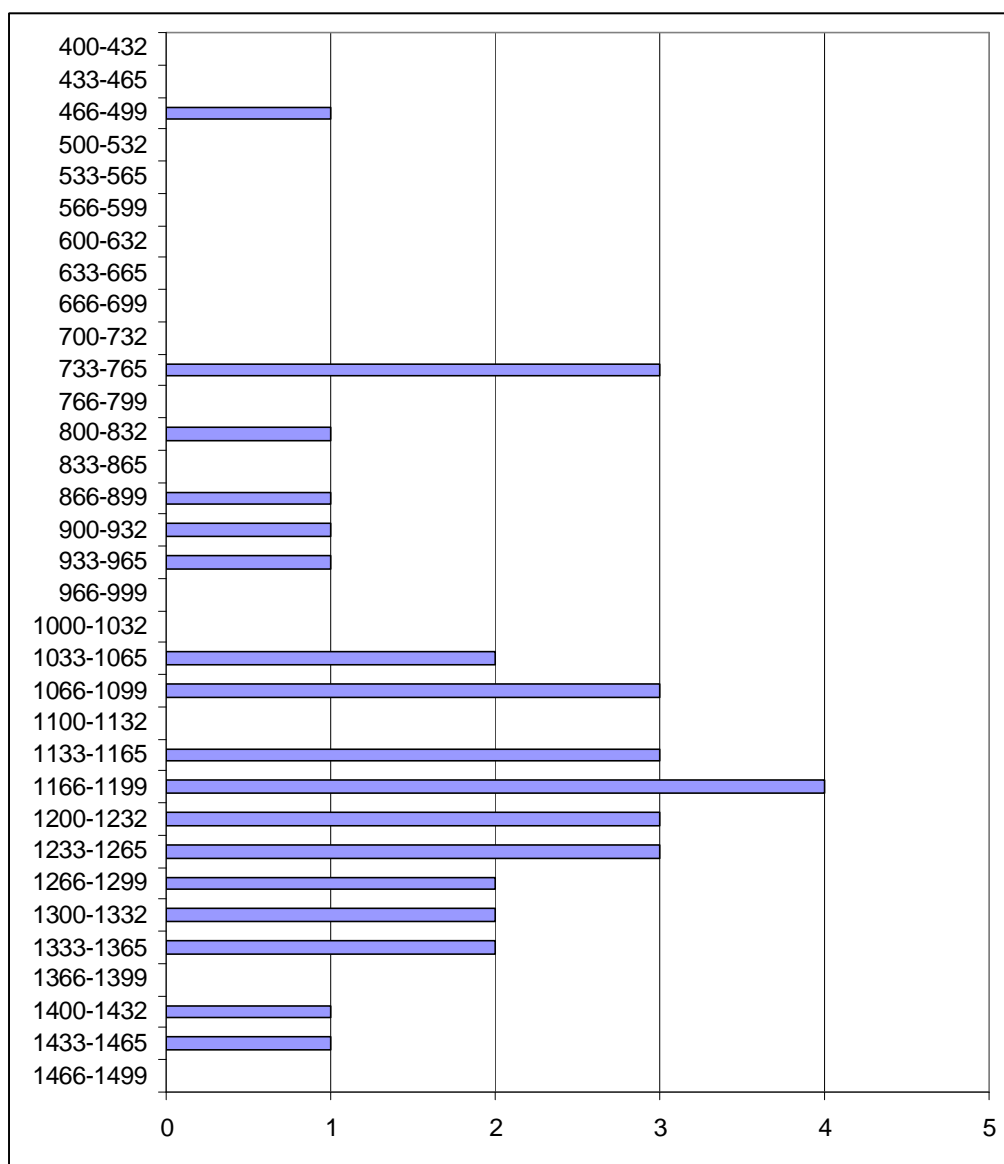


Figure 213. Mid-point chart showing chronological distribution of goose bone flutes.

### 5.9.2 Swan bone flutes

The chronological distribution of swan bone flutes is shown below in Figures 214 and 215.

The mid-point chart (Fig. 215) shows them occurring between the mid eleventh and mid thirteenth centuries only, though Figure 214 gives a broader potential date range of between the late tenth and late fourteenth centuries.

flute:	[14]						
	[31]						
	[43]						
	[60]						
	[69]						
	[73]						
	[114]						
	[116]						
year range:		900 - 999	1000 - 1099	1100 - 1199	1200 - 1299	1300 - 1399	1400 - 1499

Figure 214. Chronological distribution of swan bone flutes.

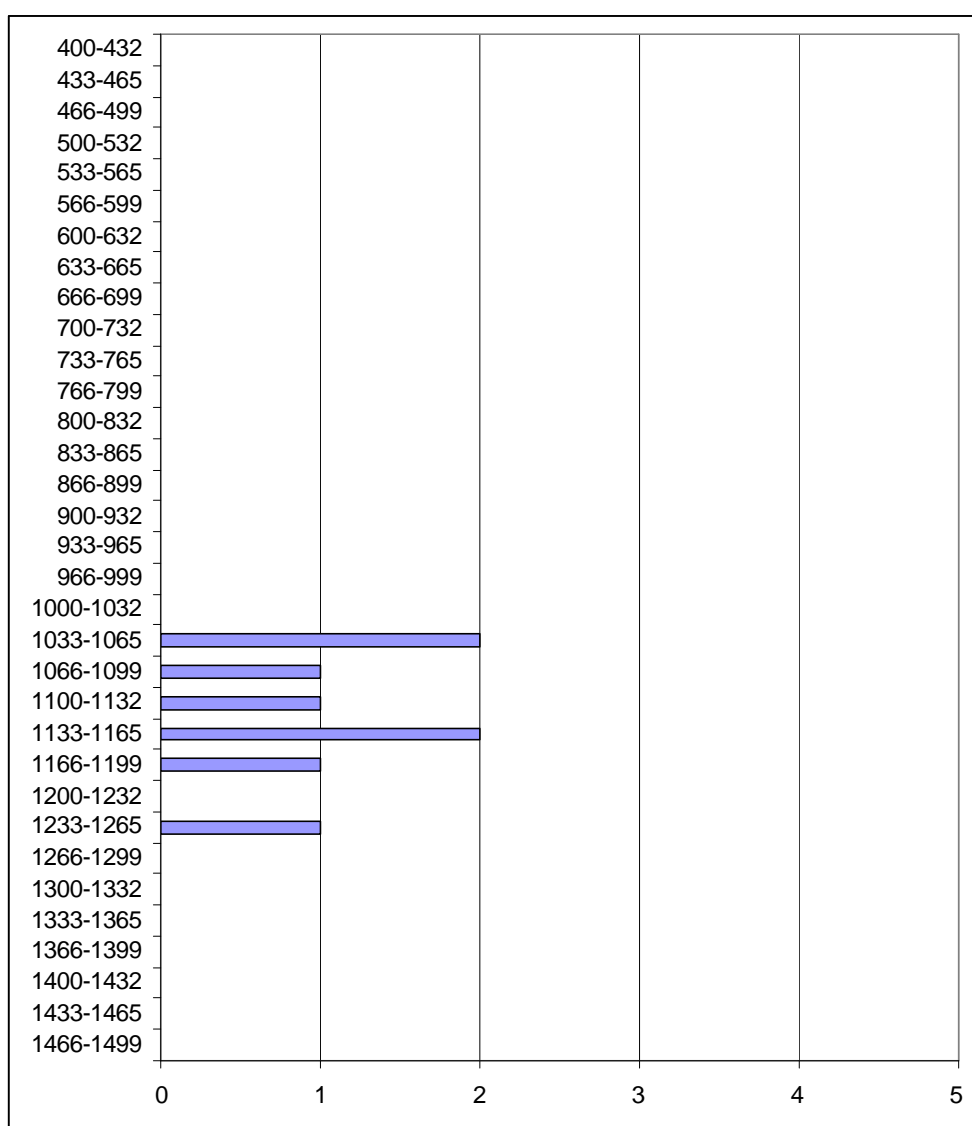


Figure 215. Mid-point chart showing chronological distribution of swan bone flutes.



### 5.9.3 Crane bone flutes

The chronological distribution of crane bone flutes is shown below in Figures 216 and 217. The mid-point chart (Fig. 217) shows them occurring between the early tenth and late twelfth centuries only, though Figure 216 gives a broader potential date range of between the early tenth and late fourteenth centuries.

flute:	[7]							
	[38]							
	[82]							
	[87]							
	[91]							
	[100]							
	[103]							
	[113]							
year range:		800 - 899	900 - 999	1000 - 1099	1100 - 1199	1200 - 1299	1300 - 1399	1400 - 1499

Figure 216. Chronological distribution of crane bone flutes.

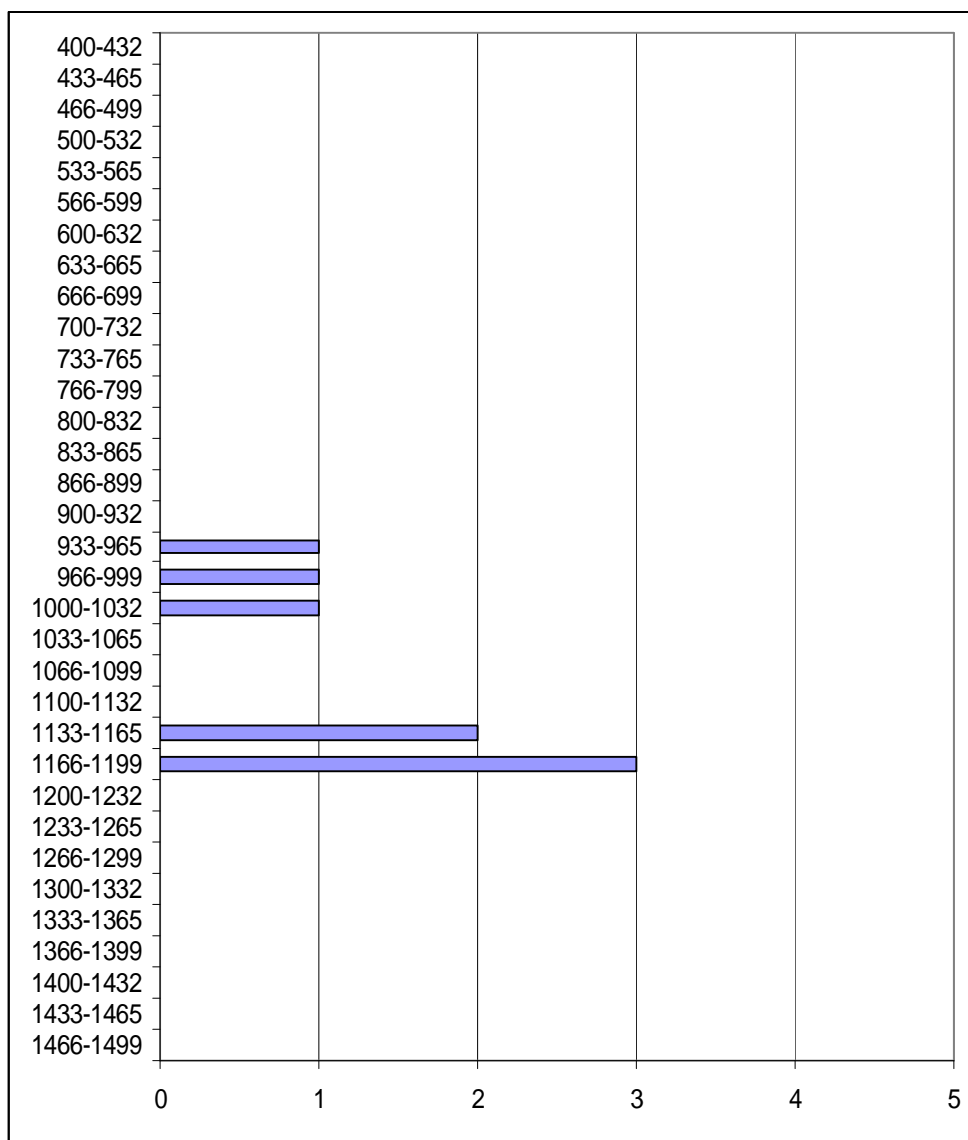


Figure 217. Mid-point chart showing chronological distribution of crane bone flutes.

#### 5.9.4 Sheep bone flutes

The chronological distribution of sheep bone flutes is shown below in Figures 218 and 219. The mid-point chart (Fig. 219) shows them occurring between the late tenth and mid fifteenth centuries only, though Figure 218 gives a broader potential date range of between the late ninth and late fifteenth centuries.

year range:		800 - 899	900 - 999	1000 - 1099	1100 - 1199	1200 - 1299	1300 - 1399	1400 - 1499
flute:	[10]							
	[16]							
	[17]							
	[18]							
	[19]							
	[20]							
	[32]							
	[40]							
	[46]							
	[51]							
	[53]							
	[61]							
	[62]							
	[66]							
	[74]							
	[77]							
	[81]							
	[86]							
	[90]							
	[92]							
	[94]							
	[99]							
	[106]							
	[111]							
year range:		800 - 899	900 - 999	1000 - 1099	1100 - 1199	1200 - 1299	1300 - 1399	1400 - 1499

Figure 218. Chronological distribution of sheep bone flutes.

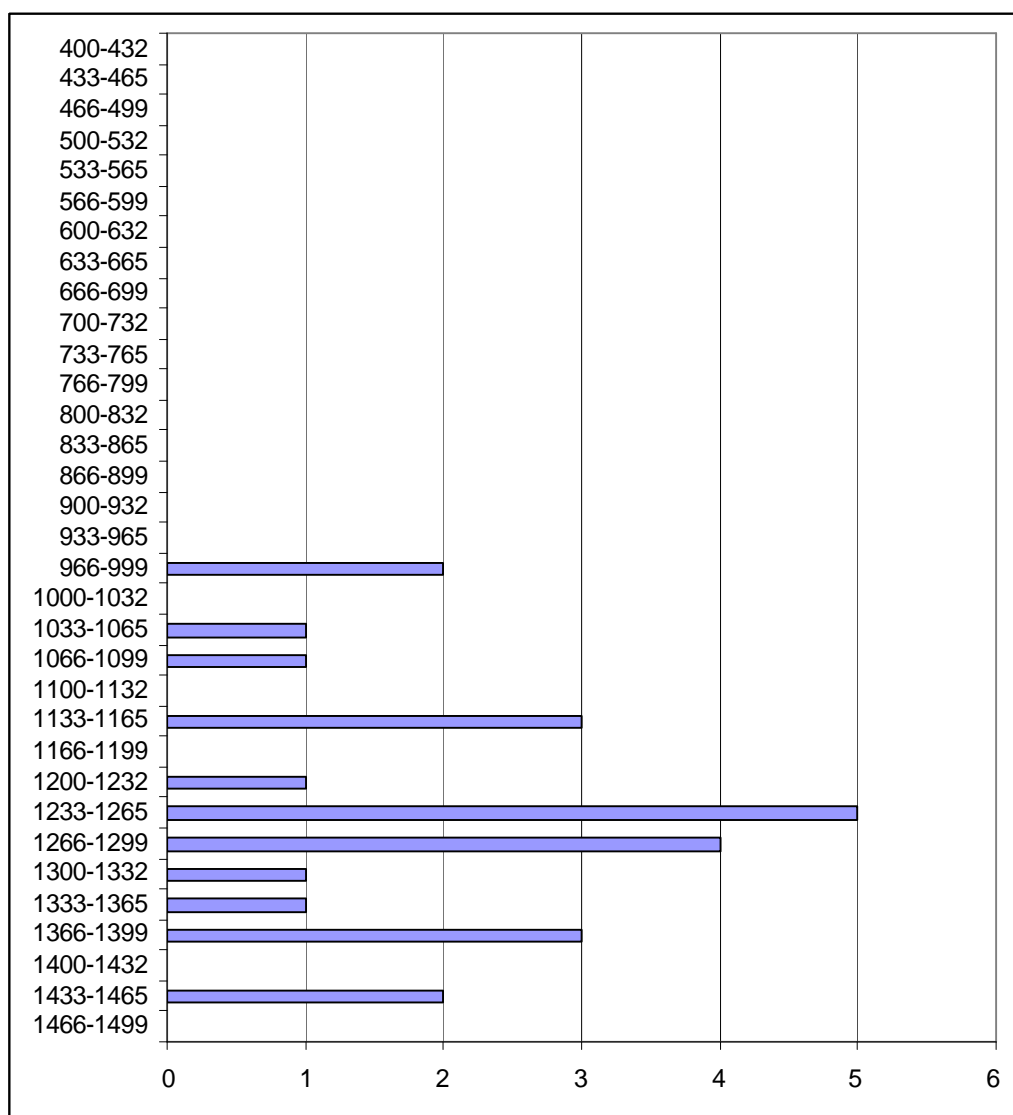


Figure 219. Mid-point chart showing chronological distribution of sheep bone flutes.

### 5.9.5 Deer bone flutes

The chronological distribution of deer bone flutes is shown below in Figures 220 and 221. The mid-point chart (Fig. 221) shows them occurring between the early thirteenth and late fourteenth centuries only, though Figure 220 gives a broader potential date range of between the early twelfth and late fifteenth centuries.

flute:	[12]					
	[29]					
	[35]					
	[48]					
	[50]					
	[98]					
	[107]					
year range:		1000 - 1099	1100 - 1199	1200 - 1299	1300 - 1399	1400 - 1499

Figure 220. Chronological distribution of deer bone flutes.

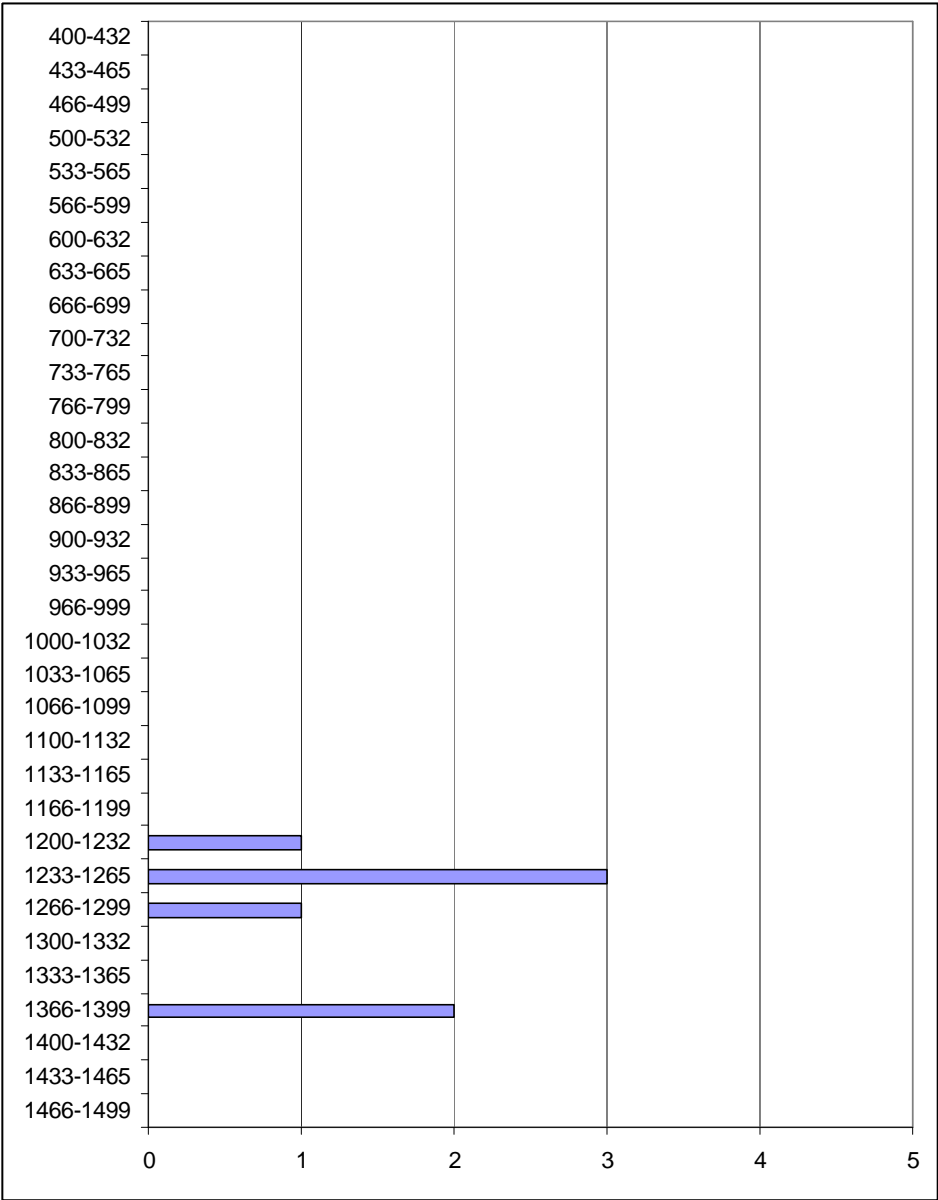


Figure 221. Mid-point chart showing chronological distribution of deer bone flutes.

### 5.9.6 All flutes

The mid-point chart for the chronological distribution of all bone flutes is shown below in Figure 222. Although there is one example of a flute from the mid fifth century, there are no other examples until the early eighth century. Numbers of flutes increase from the early ninth century to reach peaks in the mid twelfth and mid thirteenth centuries; after this the numbers of flutes decrease to a point where no flutes occur in the late fifteenth century.

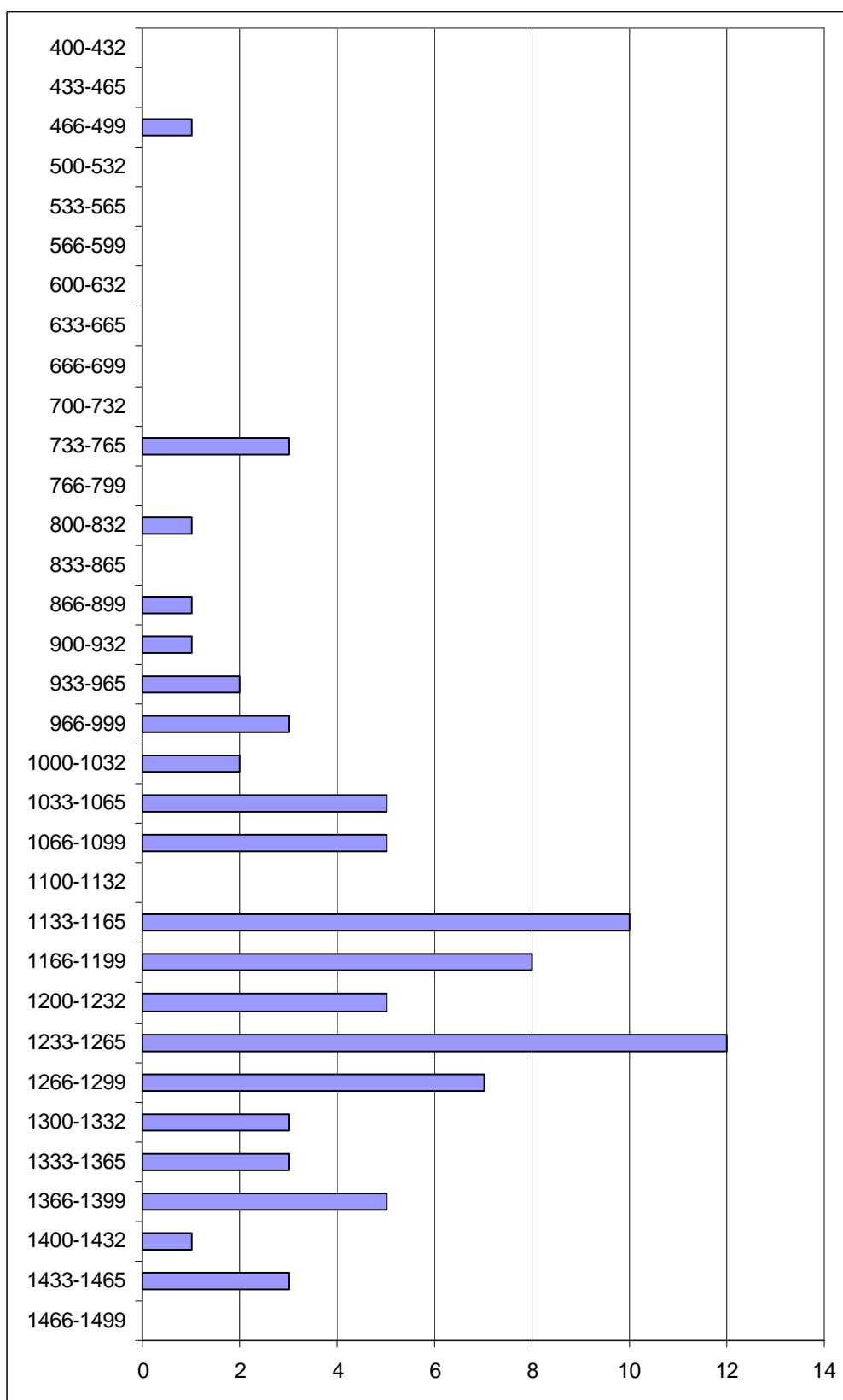


Figure 222. Mid-point chart showing chronological distribution of all flutes.

## 5.10 Distribution patterns of specific types of flutes

Where a type of flute comprises the majority of a particular species, as seen in the goose ulna flute with three toneholes, its distribution can be equated with the overall distribution of goose bone flutes shown above (Fig. 173). In addition to these distribution maps, patterns of distribution can also be plotted for the more unusual types identified in the previous chapter and discussed below.

### 5.10.1 Flutes with thumbholes

Flutes with thumbholes, as discussed and illustrated in the section 4.7.3 (Figs. 138 to 141), have been found at Bedford Castle [2], Castle Acre [10], Hertford Castle [29], Keynsham Abbey [35], London [54], Stanton Low [80] and White Castle [93]. The geographical distribution of these is shown below in Figure 223.



Figure 223. Map showing distribution of flutes with thumbholes.

Their physical distribution may or may not be indicative of a geographical trend; certainly this feature endured to the present day to the point of it being commonplace. The chronological pattern is perhaps more informative, as shown below in Figure 224. Two of the flutes, from London [54] and Stanton Low [80], are undated; of those that are dated, the occurrence of



this feature has a minimum range of 1175 to 1300 and a maximum range of 1125 to 1500. All of the dated flutes with thumbholes are from elite sites; four are from castles and one is from an ecclesiastical site.

flute:	[2]					
	[10]					
	[29]					
	[35]					
	[98]					
year range:		1000 - 1099	1100 - 1199	1200 - 1299	1300 - 1399	1400 - 1499

Figure 224. Chronological distribution of flutes with thumbholes.

### 5.10.2 Goose ulna flutes with two toneholes (Type 2a)

The most common form of goose ulna flute has three toneholes and a widespread distribution as shown above. Three goose ulna flutes are quite different in that they have two toneholes at the distal end (see section 4.8.3.1). These examples are from Bristol [5], Exeter [12] and Winchester [99], and their distribution is shown below in Figure 225.



Figure 225. Distribution of goose ulna flutes with two toneholes.

This may indicate a regional style of flute, and further finds may yield more information to support or deny this possibility. The chronological distribution is certainly interesting, as shown below in Figure 226. This shows that these flutes occur in the twelfth and thirteenth centuries only. With reference to the previous chapter's discussion of these particular flutes, it should be borne in mind that these instruments may be in a state of partial manufacture.

	<b>[5]</b> <b>[12]</b> <b>[99]</b>				
year range:		1000 - 1099	1100 - 1199	1200 - 1299	1100 - 1199

Figure 226. Chronological distribution of goose ulna flutes with two toneholes.

### 5.10.3 Flutes with two centrally placed toneholes (Type 2b)

Two similar flutes of this type have been found, both dating from 1200 to 1300 and made from the metatarsal but of different species: sheep **[106]** and deer **[107]** (section 4.8.3.3; Fig. 108). Both are from Lower Brook Street in Winchester, which at that time was connected with tanning and dyeing industries. Interestingly, the metatarsal bone did not bear meat, and has been associated with tanning and tanning pits in other locations. The close similarities in form of these two flutes, and the fact that they are from the same street and same time phase, could indicate that these particular flutes were manufactured at a similar time and by associated people, if not the same person. It is interesting to note that a further flute with two centrally placed toneholes, made from a goose humerus, comes from Exeter **[13]** and is dated 1100 – 1200.

### 5.10.4 Flutes from the same location

In addition to analysing the chronological distribution of flutes overall and then by species, a closer assessment of specific locations can be undertaken, namely those that have yielded several flutes.

Castle Acre Castle, along with the nearby Cluniac Priory, was built shortly after the Norman Conquest by William de Warenne, the first Earl of Surrey. It was located on the route from Thetford to Walsingham where the Peddlars Way, an important highway, crossed the River Nar. It is presumed that numerous pilgrims passed through the town on their way to Walsingham. The whole town was fortified with a bank, ditch and gateways, and was one of the finest examples of Norman town planning of its time. In the early twelfth century the castle was most likely to have been a fortified manor house; it was probably built into a castle keep

around 1140 during the wars of King Stephen. Two flutes of the same date range (1125 to 1175) come from Castle Acre, **[9]** and **[10]**, but from different areas of the site. The flutes are different but common types; one is made of a goose ulna and the other is made from a sheep tibia. Although sheep tibia flutes are common, this is of unusual design as it has three thumbholes.

Wolvesley Palace was a high-status residence (often called a palace) of the Bishops of Winchester. It was a fortified courtyard house within the walled city with private apartments, guest accommodation, halls and defensive structures. Peter des Roches was bishop from 1205 to 1238. In 1216 it was captured by Louis, son of Philip II of France, and it was recaptured the following year. Henry III knew the place well, and spent eighteen Christmases there. In 1258 and 1265 it was almost besieged in connection with troubles between Henry III and his barons, and it was captured by Simon De Montfort in 1265. Four flutes have been found at this site. Although one of these **[102]** may be residual from previous Saxon occupation the remaining three goose ulna flutes, **[105]**, **[108]** and **[109]**, have a close date range, namely 1200-1265, 1200-1299 and 1300-1332. It is interesting to note that although Wolvesley Palace was an elite residence, the flutes found there are of a common type, and are not made from the bones of what could be considered elite birds or animals.

Brook Street, previously known as Tanner Street, was an area within Winchester that was primarily occupied by tanners, and from the twelfth century onwards was an area of textile manufacture. Some of the houses there were substantial and important. The five flutes from Brook Street are dated: 1175-1200, 1200-1225, 1200-1300, 1200-1300 and 1375-1425 respectively (**[103]**, **[104]**, **[106]**, **[107]** and **[110]**). There is one goose bone flute, one sheep bone flute, one crane bone flute and two deer bone flutes.

Lincoln was a successful urban centre in the north of England, with considerable local and national trade. It was occupied by a complex series of timber buildings from the late ninth century to the late twelfth century. The first buildings in the Flaxengate area, from where some of the flutes were found, coincide with the Danish conquest of Lincoln in the late ninth century. In the mid to late tenth century workshops were constructed on the site, which may be connected to Edmund's reconquest of the Danelaw in 942. In the mid to late eleventh century, intensive industrial activity ceased, which may be connected to the Norman Conquest. Four flutes from Lincoln are dated: 870-1070, 900-932, 930-970 and 1140-1160 (**[38]**, **[39]**, **[40]** and **[41]**). There are two goose bone flutes, one sheep bone flute and one crane bone flute.

London, along with Winchester, was a town of major importance for trade and administration. Of the seventeen flutes found from various sites within London, only six are dated: 966-1200, 1040-1080, 1270 and after, 1000-1299, 1200-1232 and 1300-1500 ([43], [44], [46], [51], [53] and [58]). All species are represented, with nine sheep bone flutes, four goose bone flutes, two deer bone flutes, one swan bone flute and one crane bone flute.

Thetford was an important centre of settlement, trade and industry, particularly in Anglo-Saxon and Viking age England. Seven flutes found there date from 800-900, 900-1100, 1000-1100, 1075-1300, 1200-1350 and c.1200, with one flute not securely dated ([83] to [89]). There are three goose bone flutes, one sheep bone flute one crane bone flute, and two flutes that could be of either crane or swan bone.

York was a major centre of importance in the north of England. Seven flutes have been found there ([112] to [118]). Two of these flutes are dated as being late Saxon, that is 850 to 1066, one is dated as being 900 and later, and the remaining four are dated: 1000-1100, 1000-1200, 1175-1225 and 1400-1600.

West Cotton was a small hamlet in the Raunds area of Northamptonshire occupied from the mid tenth century to the mid fifteenth century. The three flutes from there are dated: 1150-1250, 1300-1450, and 1400-1500 ([90], [91] and [92]). Two of these are sheep bone flutes, and it is interesting to note, given the elite status of the bird, that one is a crane bone flute.

Exeter was an important centre in the south west of England, where many sites have been excavated with seven flutes found there, three of which are dated 1100-1200, and the others dated: 1200-1232, 1233-1265, 1266-1299 and 1400-1499 ([13] to [19]). Four of these are sheep bone flutes, one is a goose bone flute, one is a swan bone flute, and one is simply labelled as 'bird'.

#### 5.10.5 Flutes from the same context

There are three instances where two flutes have been found from the same archaeological context. Though this may at first appear to be flutes of great significance culturally, being of the same provenance, the data is unfortunately slightly vague.

Two flutes from Gloucester, [23] and [24], are from the same context, though this context is a general soil layer and is described only as 'medieval', with no clear dating.

Two of the Exeter flutes, [14] and [15], are from the same context (a robber trench) and are dated to 1100 - 1200, with no further information available due to the unknown location of the excavation archives. In addition, one of the two flutes is nowhere to be found so cannot be identified correctly.

Two flutes from Irthlingborough, [32] and [33], are from same group of pits, dated 1300 to 1400. However, it is not clear from which layer they are from or if they are from the same pit.

## 5.11 Archaeological context

In many cases the archaeological context in which a flute was found is unknown (28%). This is due to a variety of reasons, but mainly because the flutes are from old excavations where specific contexts were not recorded. Other flutes have context numbers, but no information regarding these contexts has been found either in the excavation report or in archive. The types of context where flutes have been found are shown below in Figures 227 and 228. These show flutes most commonly being found in pits (23%), dumps (17%) and occupation deposits (15%). They are also found in ditches (9%) and to a lesser extent in robber or foundation trenches and general soil layers, or in contexts that contain residual finds or are unstratified.

<b>type of context</b>	<b>number of flutes</b>	<b>percentage</b>
pit	23	20%
ditch	10	9%
dump	19	17%
occupation deposit	17	15%
robber/foundation trench	2	2%
residual or robber/foundation trench	1	1%
residual	1	1%
general soil layer	4	4%
unstratified	3	3%
unknown	32	28%

Figure 227. Table showing types of context in which flutes have been found.

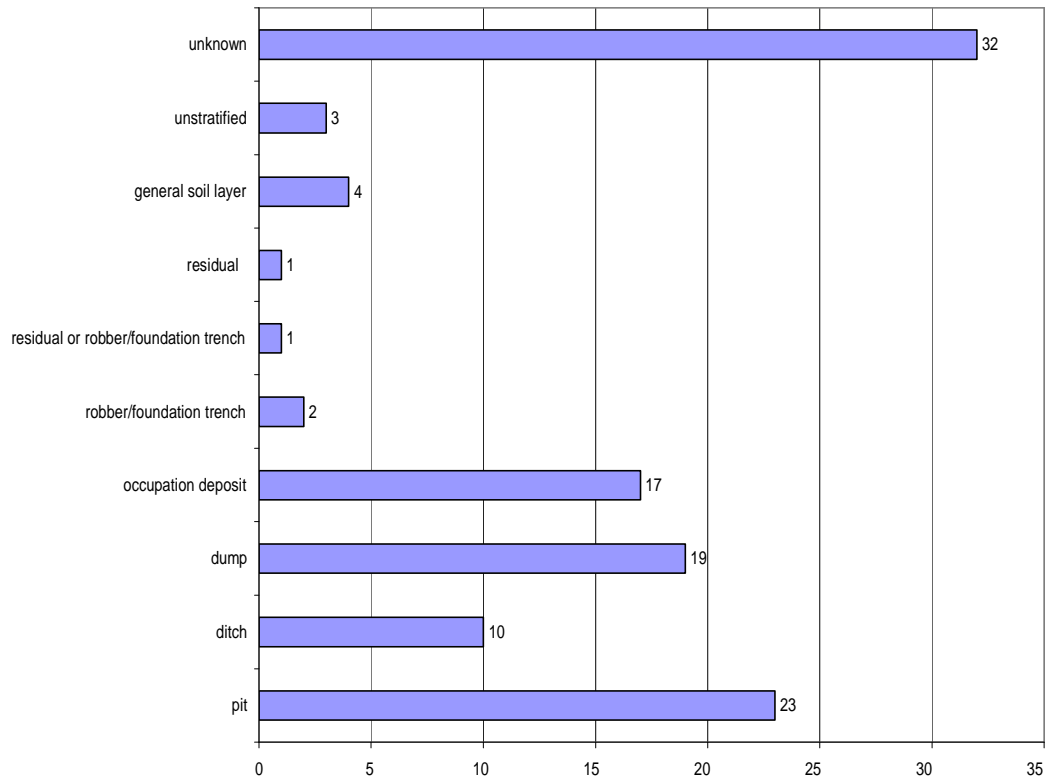


Figure 228. Chart showing types of context and number of flutes found.

## 5.12 Type of deposit

It is also useful to assess the flutes according to the type of context or deposit in which they are found, differentiating between primary, secondary and tertiary deposits. Some flutes can only be described as 'unstratified' due to lack of information. The following list gives the numbers of flutes from each type of deposit (Fig. 229). The information is also shown as a pie chart of percentages in Figure 230. Definitions of these types of deposit are subsequently given, with examples and details of the flutes found.

type of deposit	number of flutes
primary	7
secondary	43
tertiary	27
unstratified	41

Figure 229. Numbers of flutes from each type of deposit.

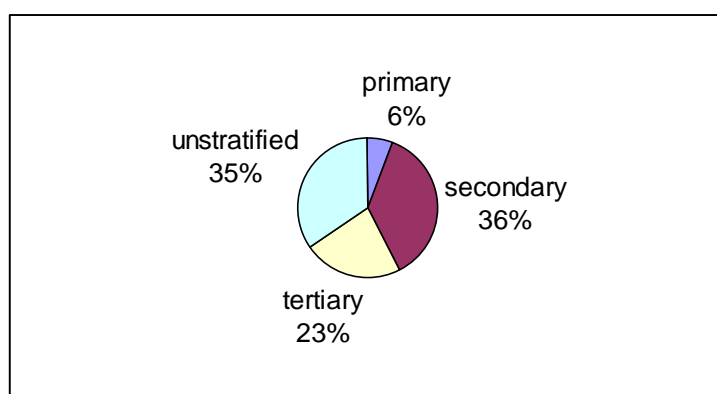


Figure 230. Pie chart showing types of deposit as percentages.

A primary deposit is a place where an object (in this case, a flute) is discarded at the location where it is used, or at a place related to the specific use of that object (Schiffer 1987, 58). The discarding or loss of the flute there can be called the 'cultural deposition' at that place (Schiffer 1987, 199).

Flutes from primary deposits give more accurate information, such as associated finds, the dating of flute styles and the use of species and skeletal element. For example, the flute from Bedford Castle [2] came from the main defensive ditch of the castle. The ditch had been cleaned out prior to the construction of a stone lining, and was filled very shortly after during a siege in c.1224. The flute from Stonar [81] came from a house that was destroyed during a French raid on the village in 1385. The roof tiles and burnt daub fell onto the floor, sealing the layer of objects that were in the house. Both of these examples are clearly and precisely dated. Other examples of flutes from primary contexts come from archaeological layers such as floors which have dates as broad as a century, [68], or are labelled simply 'medieval', [11]. These flutes are still from primary contexts, however, as they have been lost or discarded on that floor as the location of use of the flute. Only seven flutes have been found in primary deposits as listed in Figure 231.

flute:	where found:
[2]	primary silty ditch fill - siege c.1224
[11]	monastic floor layer
[72]	one of a sequence of floors
[68]	a compacted earth surface within the area of a timber building
[81]	floor of house 1 sealed in French raid
[103]	occupation layer of domestic waste
[106]	a floor

Figure 231. Flutes from primary deposits.

A secondary deposit as defined by Schiffer is a place where an object is discarded, but that is not the location where the object was used. This place could be adjacent to where a flute was used, but the fact that the flute was deposited in a different place makes it a secondary deposit (Schiffer 1987, 58). Many flutes found in secondary deposits come from pits. Forty-three flutes have been found in secondary deposits, and are listed below in Figure 232.

A tertiary deposit is a place where a discarded object in a secondary context has been subsequently moved to a further place. Schiffer's definitions deal with primary and secondary deposits only. However, the terms 'primary, secondary and tertiary' are widely used in current archaeological practice (Reynolds, pers. comm.), and part of Schiffer's definition of a secondary deposit as that of where a discarded object is removed and deposited elsewhere (Schiffer 1987, 59) can be applied to define a tertiary deposit. Contexts with descriptions such as 'surface deposit in an area of pits' **[89]** and 'redeposited road/levelling layer' **[12]** are typical of tertiary deposits. Twenty-seven flutes have been found in tertiary deposits, and are listed below in Figure 233.



<b>flute:</b>	<b>where found:</b>
[4]	a strip of clay thought to be the upcast from an adjacent narrow channel
[5]	cess pit
[7]	sealed layer above pit and below a floor
[8]	2ndary context over primary fill of SFB
[9]	late occupation layer sealed by demolition rubble
[10]	bank (unknown location) regularly built up
[13]	pit
[14]	robber trench
[15]	robber trench
[21]	pit, at 15'10" depth
[22]	large group of pits – long date range
[28]	a layer in a pit
[29]	a layer (1 of 7) in the moat
[30]	pit
[31]	pit
[32]	pit
[33]	pit
[35]	footing trench of a wall
[39]	pit in a group of pits. this period was covered with black silty loam dump
[41]	sealed demolition deposit
[44]	part of fill of a pit
[50]	upper fill of large pit
[51]	fill of pit
[53]	pit that was rapidly backfilled
[58]	middle layer of a pit
[67]	cess pit
[69]	pit
[70]	ditch that was infilled with domestic refuse
[73]	garderobe pit
[74]	garderobe pit
[79]	pit
[83]	pit
[84]	filling of a fenced-in ruined building
[85]	pit
[87]	pit
[88]	ditch
[91]	ditch
[93]	ditch
[98]	in moat
[100]	ditch
[108]	a trench filled with chippings, possibly a drainage channel
[111]	ditch
[112]	layer of clay in a pit

Figure 232. Flutes from secondary deposits.

<b>flute:</b>	<b>where found:</b>
[1]	rubble and loam north of room A
[3]	layer/spread
[12]	redeposited road/levelling layer
[23]	agricultural/general soil layer
[24]	agricultural/general soil layer
[25]	rubble/gravel/soil layer
[36]	layer of occupation material
[37]	layer of occupation material
[40]	leveling dump assoc with a group of pits
[43]	a compact stony layer, part of the surfacing of the ramp of an inlet, between the banks of two wharves
[49]	redeposited rubble
[54]	layer of dumped material making a wharf
[64]	unknown/ found among demolition debris (both descriptions present)
[71]	residual – was in grave fill, but from land with previous occupation use
[77]	dark brown loam layer between building phases
[80]	found during earth disturbance at the site
[89]	surface deposit in an area of pits
[90]	demolition rubble from building
[92]	demolition rubble from building
[94]	unknown (p-med with residual)
[96]	topsoil (p-med with residual)
[97]	yellow-brown loam layer
[99]	surface find/unstratified
[101]	yard surface
[102]	spoil/upcast from a foundation trench or residual
[105]	area of debris created by the construction of wall
[109]	from the destruction of a wall

Figure 233. Flutes from tertiary deposits.

Certain flutes come from contexts that have no definite description and are classed as 'unstratified'. In many cases their findspot is unknown, though in others it is due to the vagueness of the description in the archaeological report, such as being from the 'north side of the store shed' [66]. Forty-one flutes have been found in deposits that can be called unstratified, and are listed below in Figure 234.

<b>flute:</b>	<b>where found:</b>	<b>flute:</b>	<b>where found:</b>
[6]	unknown	[61]	unknown
[16]	unknown	[62]	unknown
[17]	unknown	[63]	unknown
[18]	unknown	[65]	north east Yard
[19]	unknown	[66]	north side of store shed
[20]	unknown	[75]	unknown
[26]	unknown	[76]	unknown
[27]	unknown	[78]	unknown
[34]	unknown	[82]	unstratified
[38]	associated with structure 9	[86]	unknown
[42]	unknown	[95]	unknown
[45]	unknown	[104]	unknown
[46]	unknown	[107]	unknown
[47]	unknown	[110]	unknown
[48]	unknown	[113]	unknown
[52]	unknown	[114]	unknown
[55]	unknown	[115]	unknown
[56]	unknown	[116]	unknown
[57]	unknown	[117]	unknown
[59]	unknown	[118]	unknown
[60]	unknown		

Figure 234. Table showing unstratified flutes.

### 5.13 Associated finds

Many flutes come from contexts containing other items such as pottery and related domestic finds, but also animal bones, shellfish, light industrial finds, evidence of weaving and spinning and general building materials. In assessing the significance of associated finds, it is necessary to discern which flutes to consider. The categorisation of flutes into those from primary, secondary and tertiary deposit types as discussed above provides an excellent system of reference. For example, flutes from primary and secondary deposits will have associated finds that bear much relevance to the date and context of use of the flute. Flutes from tertiary deposits are from contexts that are potentially so disturbed that associated finds yield little useful information for analysis.

Given the above, only the fifty flutes with associated finds from primary and secondary deposits are discussed here. Associated finds for these flutes are of two types: those from primary deposits where the flute was found, shown in Figure 235, and those from a wider context that includes the deposit where the flute was found, shown in Figure 236. An example of this second type would be when the flute was found in a pit which was part of a larger group of pits, [5] and [32]. A number of flutes from primary and secondary deposits are from contexts where the associated finds are unknown. These are: [10], [11], [22], [30], [31], [39],

[40], [69], [72], [73], [74], [84], [106] and [111]. A summary of these categories and the numbers of flutes within each is given in Figure 237. The number of flutes from clearly defined primary or secondary deposits is thirty, approximately a quarter of the total number of 118 flutes. The sixty-eight flutes from tertiary and unstratified deposits are not included in this assessment.

associated finds:											
flute:	pottery	animal bone	shellfish + fish	tile	copper alloy	wood	worked bone	slag	glass	iron	other finds:
[2]	x										stone mangonel shot
[4]	x	x	x	x	x				x	x	
[7]	x										an Andenne jar
[8]											a pin beater
[9]											hipped pin, tumbrel, die, 3 box mounts
[13]	x										
[14]	x										
[15]	x										
[28]	x	x	x		x			x	x	x	a hook, knife blades, crucible, bone comb
[29]	x			x							
[41]					x			x			copper waste
[44]	x										
[50]						x				x	wooden bowl, knife
[51]	x	x	x	x		x					
[53]							x				
[58]	x		x		x				x		ceramic spindle whorl
[67]	x	x									
[68]	x										
[79]	x								x	x	
[83]											hone, toggle/buzz bone
[85]	x										
[87]							x				
[88]	x										burnt limestone
[91]	x										
[93]	x										
[98]	x										
[100]										x	gilded pin, iron spur
[103]	x										
[108]											stone chippings
[112]											a stone marble

Figure 235. Table showing associated finds from the same archaeological context in which the flutes were found.

Figure 235 shows that the flutes being considered here are found with a variety of types of objects that are mainly domestic in nature, and that the most common type of associated find is pottery.

Figure 236 shows the associated finds from wider archaeological sequences; similarly to Figure 235, it shows that the most common associated find is pottery, and another common associated find is animal bone.

	associated finds:										
flute:	pottery	animal bone	shellfish + fish	tile	copper alloy	wood	worked bone	slag	glass	iron	other finds:
[5]											prolific domestic finds
[21]	x	x	x							x	horseshoe, buckles, cooking pots, nails, arrow head
[32]	x	x									another flute, quern fragment
[33]	x	x									another flute, quern fragment
[35]	x										silver halfpenny, glass bead
[81]	x										‘many small finds’

Figure 236. Table showing associated finds from a wider archaeological sequence that includes the deposit in which the flutes were found.

Figure 237 summarises the numbers of flutes in primary and secondary deposits as they relate to associated finds.

category of primary/secondary deposit	no. of flutes
with associated finds from a clearly defined context	30
with associated finds from a wider context	6
with unknown associated finds	14

Figure 237. Table showing the numbers of flutes in each category of primary and secondary deposits.

Associated finds can also be noteworthy when viewed alongside specific information relating to site type or flute type. For example, the crane ulna flute from Wicken Bonhunt [95], dated 1100 – 1150, was found in the same context as an iron spur and a gilded pin. It is from a time when a large building was constructed, thought to be an aisled hall or manor house, adjacent to a chapel and large cemetery. Crane is considered an elite bird, as discussed in the previous chapter, and that fact, along with the presence of an iron spur and gilded pin, support the theory that the building was one of status and significance.

## 5.14 Concluding remarks

It is clear from the above discussion that the nature of the available data is variable, and that each analysis requires clear parameters for the data assessed. The methodology set forth in Chapter 3 for categorising and standardising data has proved extremely useful in enabling the analyses to take place. Using these analyses, many facts have been established.

This chapter clearly shows the following major points:

- The survival of bone flutes is not limited by geographical and geological conditions. Flutes from areas with corrosive soil conditions are mainly found in contexts of anthropomorphic origin, such as an area of mixed domestic refuse; the effect of soil type can be negated.
- Differing methods of excavation, recovery and recording techniques has limited the consistency of data relating to bone flutes; however, all available data has been standardised and positive analyses have been possible.
- There is an increase in the number of flutes excavated in the 1970s and 1980s
- Of the 118 flutes, 22% have not been published.
- Although the flutes are from sites throughout England, there are none from the North West.
- 68% of the flutes are from urban sites and 32% are from rural sites.
- The most common species used on urban sites is goose (44%) and the second most common is sheep (26%); the most common species used on rural sites is sheep (53%) and the second most common is goose (29%).
- 80% of the flutes are from domestic sites and 20% are from elite sites.
- The most common sites where flutes are found are domestic urban sites and domestic rural sites.
- Flutes from domestic sites are commonly made from sheep and goose bones. On urban domestic sites goose is more common than sheep and swan, crane and deer are also used; on rural domestic sites sheep is more common than goose, and swan

and deer are not used at all.

- The flutes from elite secular sites are made from goose and sheep bones
- The flutes from ecclesiastical sites are made from goose, crane, sheep and deer bones.
- Flutes from castle sites, both urban and rural, are made from goose, swan, sheep and deer bones in almost equal proportions; no crane bone flutes have been found on castle sites.
- The widespread distribution of goose and sheep bone flutes can be compared to that of the distribution of all of the flutes as a whole.
- Although there is one example of a bone flute from the mid fifth century, there are no other examples until the early eighth century. Numbers of flutes then increase to reach peaks in the mid twelfth and mid thirteenth centuries; they cease to occur by the late fifteenth century.
- Goose bone flutes have the widest occurrence, from the fifth through to the fifteenth century, with most being from the eleventh to the fourteenth century.
- Swan bone flutes have a broad potential date range of between the late tenth and late fourteenth centuries.
- Crane bone flutes have a broad potential date range of between the early tenth and late fourteenth centuries.
- Sheep bone flutes have a broad potential date range of between the late ninth and late fifteenth centuries.
- Deer bone flutes have a broad potential date range of between the early twelfth and late fifteenth centuries.
- All of the dated flutes with thumbholes have a broad potential date range of 1125 to 1500 and are all from elite sites; four are from castles and one is from an ecclesiastical site.
- The flutes are most commonly found in pits (23%), dumps (17%), occupation deposits (15%) and ditches (9%).
- Most of the flutes are from secondary (36%) or unstratified (35%) deposits; 23% are from tertiary deposits and only 6% are from primary deposits.
- The finds associated with the 30 flutes from clearly defined primary or secondary deposits are mainly domestic in nature; the most common type of associated find is pottery.

These concluding points, brought together with those from Chapter 4 relating to the physical aspects of the flutes, establish a clear basis for the concluding discussion in the following final chapter.

## 6 The medieval bone flute; conclusion

This chapter reviews the thesis as a whole and combines the results of the physical, archaeological and cultural analyses from Chapters 4 and 5 to give an appraisal of the key findings, developing a fuller understanding of the material. The thesis concludes with a setting forth of future directions for research.

The subject of English medieval bone flutes has been introduced, and a thorough appraisal of previous work in related disciplines has been established. This has highlighted the need for a systematic and comparative study of English bone flutes, and has made clear the validity and necessity of this study. The value of combining the disciplines of archaeology and organology has proved great, yielding informed insight and understanding beyond that available in each separate discipline.

The primary research aim of the thesis was to establish the physical, archaeological and cultural nature of the flutes. Questions were set forth that related to this primary question, and a methodology was clearly explained in order to address this research aim. The information relating to each of the 118 flutes varies widely in quality and thoroughness; the standardisation of methodology and organization of data in the form of a gazetteer has been found to be highly effective and as such it provides a useful and valid template for any future research projects. The presentation of information in this clear accessible form has enabled the information to be available to specialists and non-specialists alike.

Chapters 4 and 5 have discussed the physical and archaeological aspects of the flutes and the key findings for each chapter, with facts, values and percentages, are set out at the end of each chapter. The cultural and social aspects of the flutes have also been addressed in these chapters from the information gleaned in the analyses.

The questions asked relating to the physical aspects of the flutes can now be answered:

❖ *What animals and birds are used to make bone flutes?*

The most commonly species to make bone flutes are goose and sheep. The bones of crane, deer and swan are also used but to a much lesser extent.

❖ *What skeletal elements are used to make bone flutes?*

The most common skeletal elements used are the sheep tibia and the goose ulna. Bones used to a much lesser extent are the sheep and deer metatarsal, the deer



tibia, the crane and swan ulna, the crane tarsometatarsus and tibiotarsus and the goose humerus. All of the mammal bone flutes are made from the rear leg of the animal.

❖ *What is the social status of these animals and birds?*

Geese and sheep were kept as domestic animals, managed in large flocks on estates or kept on a smaller scale by lower members of society. Swans were kept as semi domesticated birds in high status residences, and crane and deer were hunted by the nobility.

❖ *In what state of completeness do the flutes occur?*

38% of the 118 flutes are complete; the remaining 62% are fragments of the window end, middle section or tonehole end of the flute.

❖ *What exactly is a bone flute and what nomenclature can be used to describe it?*

Bone flutes have been described in musicological terms in Chapter 4, and a comprehensive nomenclature is proposed.

❖ *What design features occur, if any?*

The majority of flutes have windows that can be described as D-shaped. Only three examples have neat rectangular windows; these are all made from the deer metatarsal. The majority of toneholes are conical in profile, consistent with having been made with the point of a knife. Five flutes have an additional smaller hole that can be described as a 'suspension hole'. Seven flutes (all from mammal bone) have a thumbhole; two of these examples have more than one thumbhole. All flutes except one have no cut away 'beak', which is a typical feature of wooden duct flutes. Most flutes are undecorated, and the six that are have no consistency to their decorative style.

❖ *What typology can be established?*

A comprehensive typology is presented and discussed in Chapter 4, based primarily on numbers of toneholes and also on type of bone used.

The questions asked relating to the archaeological aspects of the flutes can now be answered:

❖ *Is the survival of bone flutes limited by geographical and geological conditions?*

Bone flutes have been found in regions whose soil might be considered corrosive. They survive because they occur in anthropomorphic contexts.

❖ *How has differing methods of excavation, recovery and recording affected the data relating to bone flutes?*

The changing approaches to excavation, recovery and recording has meant that

different data of varying quality is available for each flute. The methodology applied to this limited data has enabled analysis to occur.

❖ *What is the geographical distribution of the flutes?*

The flutes overall are found in all regions of England except for the North West. It is unclear why no flutes occur there.

❖ *In what types of site are bone flutes been found?*

The flutes are mainly from domestic sites such as settlements and houses, but are also found on elite sites such as castles and manor houses. The flutes are mainly from urban sites but are also found on rural sites.

❖ *What is the chronological distribution of the flutes?*

The earliest flute dates from the mid fifth century, and there are no flutes after the mid fifteenth century. Numbers of flutes increase from the early eighth century to reach peaks in the mid twelfth and mid thirteenth centuries.

❖ *In what type of archaeological context are the flutes found?*

The flutes are most commonly found in pits. They are also found in dumps, occupation deposits and ditches. No flutes have been found as grave goods.

❖ *In what type of archaeological deposit are the flutes found?*

Most of the flutes are from secondary or unstratified deposits; only six are from primary deposits.

❖ *What other objects are found alongside bone flutes?*

The flutes are most commonly found with pottery or mixed domestic finds.

Regarding the social and cultural aspects of the flutes, it is clear that the flutes were used by an extremely wide variety of people, in a range of different situations. Given that the flutes are not mentioned in manuscripts or depicted in the iconography of the time, it may be expected that the flutes were an instrument used in domestic situations. However, this thesis shows that the locations where they occur exemplify all strata of society. The variety of places where they have been found are: village, town house, manor house, bishop's palace, abbey and castle. Although the makers of the flutes remain unknown, there is clear variety in the level of craftsmanship and the level of understanding regarding how to make a bone flute. The flutes range from being crudely made to being precisely and neatly made. Some of the more neatly made flutes come from elite sites but this is not always the case.

Subsequent research can build on the content and format of this thesis with informed results. There are certain areas of research which would naturally follow

on from this thesis, which could include:

- The study of northern European medieval bone flutes, assessed according to cultural migration and historically and archaeologically documented territories.
- An assessment of the music that may have been played on medieval bone flutes.
- A comprehensive study of prehistoric bone flutes.
- The presentation of the information in this thesis in a digital format for ease of use, e.g. CD ROM.

In summary, a comparative study of English bone flutes, the first of its kind, has now been successfully presented in this thesis, which has gathered, assessed and analyzed a wide body of information relating to bone flutes, and which provides a thorough and accurate basis from which fuller investigation can be undertaken. The thesis provides evidence to raise the profile of bone flutes so that they may be considered as a valid, and socially meaningful, musical instrument.

## Part 2: Gazetteer of flutes

### List of flutes:

- [1] Acton Court
- [2] Bedford Castle
- [3] Beverley, Lurk Lane 1015
- [4] Beverley, Lurk Lane 1018
- [5] Bristol, Peter Street
- [6] Bungay Castle
- [7] Canterbury, Lady Wooton's Green
- [8] Canterbury, Marlowe Theatre
- [9] Castle Acre 61
- [10] Castle Acre 62
- [11] Coventry
- [12] Dover, Townwall Street
- [13] Exeter, B1
- [14] Exeter, B2
- [15] Exeter, B3
- [16] Exeter, B5
- [17] Exeter, B6
- [18] Exeter, B7
- [19] Exeter, Exe Bridge 100
- [20] Faccombe Netherton
- [21] Folkestone, Caesar's Camp/Castle Hill
- [22] Furnells, Raunds 492
- [23] Gloucester, Park Street 23
- [24] Gloucester, Park Street 35 and 40
- [25] Gloucester, Southgate Street
- [26] Great Massingham
- [27] Hamwih, Melbourne Street
- [28] Hamwih, Stoner Motors
- [29] Hertford Castle
- [30] Ipswich, Foundation Street/Star Lane
- [31] Ipswich, St Georges Street
- [32] Irthlingborough 39
- [33] Irthlingborough 57

- [34] Jarrow
- [35] Keynsham Abbey
- [36] King's Lynn, All Saints Street
- [37] King's Lynn, Marks and Spencers
- [38] Lincoln, Flaxengate 126
- [39] Lincoln, Flaxengate 127
- [40] Lincoln, Flaxengate 128
- [41] Lincoln, The Sessions House
- [42] London, Bank of England, Threadneedle Street
- [43] London, Billingsgate
- [44] London, Bishopsgate
- [45] London, Coleman Street
- [46] London, Crutched Friars
- [47] London, London Wall 1243
- [48] London, London Wall 1244
- [49] London, New Fresh Wharf
- [50] London, Paternoster Square
- [51] London, Pinner's Hall, Great Winchester Street
- [52] London, River Thames
- [53] London, Spitalfields
- [54] London, Thames Exchange, Upper Thames Street
- [55] London, Thames Street 273
- [56] London, Thames Street 274
- [57] London, Wandsworth/ River Thames
- [58] London, Watling Court
- [59] Ludgershall Castle 26
- [60] Ludgershall Castle 27
- [61] Ludgershall Castle 28
- [62] Ludgershall Castle 29
- [63] Ludgershall Castle 30
- [64] Lydney Castle
- [65] Lyveden goose
- [66] Lyveden ovicaprid
- [67] North Elmham Park
- [68] Northampton, Kingswell Street
- [69] Norwich, Bishopsgate
- [70] Norwich, Castle Mall
- [71] Norwich, St Faith's Lane

- [72]** Norwich, St. Martin-at-Palace Plain
- [73]** Old Sarum A2
- [74]** Old Sarum A3
- [75]** Rayleigh Castle 1909
- [76]** Rayleigh Castle 1959
- [77]** Riplingham
- [78]** Seacourt
- [79]** Southampton
- [80]** Stanton Low
- [81]** Stonar
- [82]** Swavesey
- [83]** Thetford, Brandon Road 342
- [84]** Thetford, Brandon Road 542
- [85]** Thetford, Brandon Road 758
- [86]** Thetford, Redcastle Furze
- [87]** Thetford, Site 2 North
- [88]** Thetford, St Barnabas Hospital
- [89]** Thetford, St Nicholas Street
- [90]** West Cotton, Raunds 194
- [91]** West Cotton, Raunds 10832
- [92]** West Cotton, Raunds 10849
- [93]** Westbury-by-Shenley
- [94]** Wharram Percy Area 10
- [95]** Wharram Percy North Glebe Terrace
- [96]** Wharram Percy North Manor
- [97]** Wharram Percy South Manor
- [98]** White Castle
- [99]** Wicken Bonhunt 54
- [100]** Wicken Bonhunt 106
- [101]** Winchester 2259
- [102]** Winchester 2260
- [103]** Winchester 2261
- [104]** Winchester 2262
- [105]** Winchester 2263
- [106]** Winchester 2264
- [107]** Winchester 2265
- [108]** Winchester 2266
- [109]** Winchester 2267

- [110] Winchester 2268
- [111] Yatesbury
- [112] York, Blake Street
- [113] York, Clifford Street C663
- [114] York, Clifford Street C666
- [115] York, Coppergate 7075
- [116] York, Coppergate 7076
- [117] York, Coppergate 7077
- [118] York, Coppergate 7078

List of non-flutes:

Bedford, Cauldwell Street  
Beverley, Dominican Friary  
Bristol, Anchor Road  
Colchester, Cups Hotel  
Duxford  
Hinxton Hall  
Ipswich, Buttermarket  
Lincoln, Saltergate  
Lincoln, Saint Benedicts  
London, Unknown Site  
London, Bishopsgate  
Northampton, Saint Peter's Street  
Northampton, Saint Peter's Street  
Norwich, Harvey Lane  
Norwich, Saint Benedict's Street  
Norwich, Thorpe next Norwich

Name of flute (location/site):	[1]
Acton Court	Date: 1266 - 1365





Physical information:

**Species:** goose

**Bone used:** ulna

**Extent:** fragment (tonehole end, but with edge of ramp present)

**Length:** 131.8mm

**No. of toneholes:** 3

**Window:** no, though edge of ramp present

**Evidence of manufacture?** made by knife, longitudinally scraped

**Unusual characteristics/comments:** this goose bone flute is larger than most of the known goose bone flutes in England.

Archaeological information:

**Site:** **name** Acton Court

**code** AC88

**type** elite (manor house)

**information** 'moated manor house, constructed in the 13<sup>th</sup> century on an older site as the capital messuage of the Acton family. It was inherited in 1364 by Sir John Poyntz...Until the late 15<sup>th</sup> century, no member of the Poyntz family held any position of more than local significance' (Rodwell and Bell).

**Date excavated:** 1986 – 1988

**Period:** 3.2 – 3.3

**Context:** **number** 1191

**information/description** Area 1, rubble and loam north of room A (room A is the main hall of the south range)

**associated finds** no other finds with this context number were mentioned in the report

**Small find no.:** 1269

**Illustration no. in archaeological report:** fig. 9.31, pp.368-69 (Rodwell and Bell 2004)

**Current location:** Bristol City Museum and Art Gallery

**Contact information:** City Museum & Art Gallery, Queen's Road, Bristol, BS8 1RL

[gail\\_boyle@bristol-city.gov.uk](mailto:gail_boyle@bristol-city.gov.uk) Gail Boyle (Jo Hall - assistant curator)

Tel: 0117 922 3587

**Similar flutes:** Southampton [79], London Watling Court [58]

**Bibliography:**

Rodwell, K, and Bell, R, 2004. *Acton Court: the evolution of an early Tudor courtier's house*. London: English Heritage.

<u>Name of flute (location/site):</u>  <b>Bedford</b> Bedford Castle	<b>[2]</b>  <u>Date:</u> c.1224
<u>Illustration:</u>  <p>The illustration consists of four photographs of a bone flute and two close-up photographs of the finger holes. The top photograph shows the flute from a side perspective, highlighting its tapered shape and light brown color. The second photograph shows the flute from a top-down perspective, with a 1 cm scale bar placed above it for reference. The third photograph shows the flute from a side perspective, focusing on the finger holes. The bottom photograph shows the flute from a side perspective, focusing on the mouthpiece. The two close-up photographs at the bottom show the interior of the finger holes, revealing the smooth, polished surface of the bone.</p>	

Physical information:

**Species:** deer

**Bone used:** tibia

**Extent:** fragment (window end)

**Length:** 130mm

**No. of toneholes:** T + 1 ½

**Window:** D shaped

**Evidence of manufacture?** longitudinal scraping all round, and rebate cut for thumb around thumbhole. Holes almost parallel sided, but appear to have been made by knife.

**Unusual characteristics/comments:** this flute may have had up to 5 toneholes on the front surface of the instrument. The presence of a thumbhole is also worthy of note.

Archaeological information:

**Site:** name Bedford Castle

code BC 72 48

type elite (castle, urban)

**information** Bedford Castle and the barony of Bedford were held by the de Beauchamp family. The castle was taken in 1215 by Falkes de Breaute (sheriff of many surrounding counties), who refortified it extensively. William de Breaute, brother of Falkes, held the castle in 1224 when it was besieged and subsequently dismantled by Henry III.

**Date excavated:** 1972

**Period:** Period 3 Phase B

**Context:** number 110 (area A: The Motte)

**information/description** primary silty ditch fill of the main defensive ditch. The ditch had been cleaned out prior to construction of the stone lining in Phase B, and was filled in as a result of the siege in 1224.

**associated finds** stone mangonel shot, Roman pottery rim 7 (residual), Early Middle Saxon pottery rim A6 37(residual), decorated pottery sherd C3 508 dated c.1100-c.1225 and locally made.

**Small find no.:** 264

**Catalogue/publication no.:** 1514

**Illustration no. in archaeological report:** fig.179,1514, pp.288-9 (Baker et al)

**Current location:** on display, Bedford Museum

**Contact information:** Keeper of Archaeology: Jim Inglis

Bedford Museum, Castle Lane, Bedford, MK40 3XD

01234 353323

<http://www.bedfordmuseum.org/>

(Closed on Mondays)

**Similar flutes:**

Hertford Castle [29], Castle Acre [10]

**Bibliography:**

Baker, D, Baker, E, Hassall, J, and Simco, A, 1979. Excavations in Bedford 1967 – 1977, *Bedfordshire Archaeological Journal*, **13**, 7-17, 228-9.

Name of flute (location/site):

[3]

Beverley  
Lurk Lane 1015

Date:  
c.1500 - 1600  
or earlier

Illustration:



Physical information:

**Species:** sheep  
**Bone used:** tibia  
**Extent:** fragment (tonehole end)  
**Length:** 62.3mm  
**No. of toneholes:** ½ (another cut does not perforate the bone)  
**Window:** Square-ish  
**Evidence of manufacture?** substantial cuts to form toneholes  
**Unusual characteristics/comments:** this is a very crudely manufactured flute

Archaeological information:

**Site:** **name** Lurk Lane  
**code** BLL  
**type** urban  
**information** Beverley (along with York and Lincoln) was a fairly large town in the north of England. Lurk Lane was an occupied site at the side of minster church. In Phase 9, high levels of finds of sheep metapodials indicate the practice of butchering and skinning of sheep on site.  
Main species present in Phase 9: cattle:202, sheep:230, pig:54.  
**Date excavated:** 1979 - 1982  
**Period:** IV Phase 9  
**Context:** **number** 61  
**information/description** excavation report says, 'layer/spread' – the position of the find is given but no information about the context.  
**associated finds** iron, copper alloy buckle, a lead shot, clay pipe, pottery, animal bone, shellfish  
**Small find no.:** 1015  
**Illustration no. in archaeological report:** fig.131,1163, p.195 (Armstrong Tomlinson and Evans)

Current location:

Hull and East Riding Museum  
**Contact information:** 36 High Street, Hull, HU1 1PS  
tel: 01482 613 927 Bryan Sitch or Martin Foreman  
[bryan.sitch@hullcc.gov.uk](mailto:bryan.sitch@hullcc.gov.uk)

Similar flutes:

Facombe Netherton [20], Jarrow [34], Ludgershall Castle 28 [61] and Ludgershall Castle 29 [62].

Bibliography:

Foreman, M, 1991. The Bone and Antler, in P Armstrong, D Tomlinson, and D H Evans (eds), *Excavations at Lurk Lane, Beverley 1979-82*, 183-96. Sheffield: Humberside Archaeology Unit.



Name of flute (location/site):

[4]

Beverley  
Lurk Lane 1018

Date:  
c.1500 - 1600  
or earlier

Illustration:



Physical information:

**Species:** sheep (published as 'pig')

**Bone used:** tibia

**Extent:** fragment (window end)

**Length:** 73.8mm

**No. of toneholes:** n/a

**Window:** square-ish

**Evidence of manufacture** longitudinal scraping on front surface, and the proximal end is trimmed by knife. The most prominent part of the tubercle has been trimmed off.

**Unusual characteristics/comments:** The bone is taken to be a sheep tibia, even though the flute is published as a pig tibia. The window is unusual in that it is square shaped, rather than the usual D shape.

Archaeological information:

**Site:** name Lurk Lane

code BLL

type urban

**information** Beverley (along with York and Lincoln) was a fairly large town in the north of England. Lurk Lane was an occupied site at the side of minster church. In Phase 9, high levels of finds of sheep metapodials indicate the practice of butchering and skinning of sheep on site.

Main species present in Phase 9: cattle:202, sheep:230, pig:54.

**Date excavated:** 1979

**Period:** IV Phase 9

**Context:** number 27

**information/description** a strip of clay thought to be the upcast from an adjacent narrow channel.

**associated finds** animal bone, copper alloy stud, pottery, clay pipe, brick, tile, shellfish, glass, iron.

**Small find no.:** 1018

**Illustration no. in archaeological report:** fig.131,1162, p.195 (Armstrong Tomlinson and Evans)

**Current location:** Hull and East Riding Museum

**Contact information:** 36 High Street, Hull, HU1 1PS

tel: 01482 613 927 Bryan Sitch or Martin Foreman

[bryan.sitch@hullcc.gov.uk](mailto:bryan.sitch@hullcc.gov.uk)

Similar flutes:

No other flute has a window so proportionally large. Other sheep tibia flutes include those from London Bishopsgate [44], London Crutched Friars [46], London Spitalfields [53].

Bibliography:

Foreman, M, 1991. The Bone and Antler, in P Armstrong, D Tomlinson, and D H Evans (eds), *Excavations at Lurk Lane, Beverley 1979-82*, 183-96. Sheffield: Humberside Archaeology Unit.

Name of flute (location/site):  <div style="text-align: center;"> <b>Bristol</b>          Peter Street       </div>	<b>[5]</b>
	Date: 1100 - 1299





Physical information:

**Species:** goose

**Bone used:** ulna

**Extent:** complete

**Length:** 115.8mm

**No. of toneholes:** 2

**Window:** D shaped

**Evidence of manufacture?**

**Unusual characteristics/comments:** It is unusual for goose ulna flutes to have only 2 toneholes; it is more normal for there to be 3. This flute is either complete with 2 holes, or is in a state of partial manufacture, the third most distal hole yet to be made.

Archaeological information:

**Site:** **name** Peter Street, Bristol

**code** 57/75

**type** urban

**information** this area, now known as Castle Park, was occupied in the late Saxon and Medieval period, with substantial buildings and many cess pits. There was Jewish occupation there in the 12<sup>th</sup> and 13<sup>th</sup> centuries, and there was an increased trade with France in the 13<sup>th</sup> century in connection with a growth in the wine trade.

**Date excavated:** 1975-6

**Period:** V

**Context:** **number** ZDJ II

**information/description** cess pit

**associated finds** the period V cess pits in general yielded prolific domestic finds

**Small find no.:** 486

**Illustration no. in archaeological report:** unpublished

**Current location:** Bristol City Museum and Art Gallery

**Contact information:** City Museum & Art Gallery, Queen's Road, Bristol, BS8 1RL

[gail\\_boyle@bristol-city.gov.uk](mailto:gail_boyle@bristol-city.gov.uk) Gail Boyle (Jo Hall - assistant curator)

Tel: 0117 922 3587

**Similar flutes:**

Folkestone, Caesar's Camp/Castle Hill [21], London, Wandsworth/ River Thames [57], and Winchester 2262 [104]

**Bibliography:**

Boore, E J, 1982. Excavations at Peter Street, Bristol 1975-1976 *Bristol and Avon Archaeology* 1, 7-11.

Bristol Urban Archaeological Database entry, Event Number 319.

<u>Name of flute (location/site):</u>  <p style="text-align: center;">Bungay Castle</p>	<p style="text-align: right;"><b>[6]</b></p> <hr/> <u>Date:</u> 1150 – 1299
<u>Illustration:</u>  <p style="text-align: center;">NO PICTURE AVAILABLE</p>	
<p style="text-align: center;"><u>Physical information:</u></p> <p> <b>Species:</b> bird  <b>Bone used:</b> unknown  <b>Extent:</b> fragment  <b>Length:</b> unknown  <b>No. of toneholes:</b> unknown  <b>Window:</b> unknown  <b>Evidence of manufacture?</b> unknown  <b>Unusual characteristics/comments:</b> unknown </p>	
<p style="text-align: center;"><u>Archaeological information:</u></p> <p> <b>Site:</b> <b>name</b> Bungay Castle, Suffolk  <b>code</b> n/a  <b>type</b> elite (castle, rural)  <b>information</b> keep thought to be constructed after 1157 (Braun 1937)  <b>Date excavated:</b> 1934-5 (Braun 1937)  <b>Period:</b> n/a  <b>Context:</b> <b>number</b> unknown  <b>information/description</b> Bungay castle was built in a natural river loop, taking advantage of the local topography to create an easily defensible site. It was the power base for the Bigods, along with Framlingham and Walton. Prior to this, Norwich was the only royal stronghold in East Anglia (Creighton 2002)  <b>associated finds</b> unknown  <b>Small find no.:</b> unknown  <b>Illustration no. in archaeological report:</b> not illustrated in report </p>	
<p> <b>Current location:</b> not known – not at Ipswich Museum, and Christopher Reeve, the curator of Bungay museum, does not know its whereabouts. </p>	
<p><u>Similar flutes:</u></p>	
<p><u>Bibliography:</u></p> <p> Braun, H, 1937. The Keep of Bungay Castle, in Suffolk, <i>The Journal of the British Archaeological Association</i> <b>42</b>, 156-167.  Crane, F, 1972. <i>Extant Medieval Musical Instruments: A Provisional Catalogue by Types</i>. Iowa: University of Iowa Press.  Creighton, O H, 1972. <i>Castles and landscapes</i>. London: Continuum.  Megaw, J V S, 1960. Penny Whistles and Prehistory, <i>Antiquity</i>, <b>34</b>, 11. </p>	

Name of flute (location/site):  <div style="text-align: center;"> <b>Canterbury</b>  Lady Wooton's Green </div>	<div style="text-align: right;"><b>[7]</b></div> <hr/> Date: 1150 - 1299
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Illustration:



Physical information:

**Species:** crane

**Bone used:** tarsometatarsus

**Extent:** complete

**Length:** 184 mm

**No. of toneholes:** 3

**Window:** D shaped

**Evidence of manufacture?** longitudinal scrape marks on almost all surfaces, and the ends are neatly trimmed.

**Unusual characteristics/comments:** the toneholes are recessed

Archaeological information:

**Site: name:** Lady Wooton's Green (sometimes the flute is referred to as being from Rose Lane – this is incorrect)

**code:** C XX B

**type** urban

**information:** Canterbury was an important fortified cathedral town, on the route between London and Dover. It became a place of pilgrimage in the late 12<sup>th</sup> century with the shrine of St. Thomas Becket. Lady Wooton's Green is an extra-mural site, lying between the Cathedral and St. Augustine's Abbey. The town walls at this time were the pre-existing Roman walls, which were rebuilt and refortified in the 14<sup>th</sup> and 15<sup>th</sup> centuries.

**Date excavated:** 1951

**Context: number** Trench III, layer 5

**information/description** sealed black sticky occupation layer below medieval gravel floor (of the earliest of a sequence of buildings on the site). This layer is above a pit which contained cooking pot sherds dated 1150-1200.

**associated finds** Found with a nearly complete Andenne jar of C12/13 (Belgian import)

**Small find no.:** 22

**Illustration no. in archaeological report:** fig. 66, No. 22, p.186 (Frere et al.)

Current location:

on display, Museum of Canterbury

**Contact information:**

Museum of Canterbury, Stour Street, Canterbury, Kent

Tel: 01227 475 202

Email: [museums@canterbury.gov.uk](mailto:museums@canterbury.gov.uk)

Similar flutes:

Thetford Site 2 North [87], West Cotton 10832 [91]

**Bibliography:**

- Frere, S S, Bennet, P, Rady, J, Stow, S, 1987. *Canterbury Excavations Intra- and Extra- Mural Sites 1949-55 and 1980-84 The Archaeology of Canterbury, Volume VIII*, 33-7, 186-7. Canterbury: Kent Archaeological Society for Canterbury Archaeological Trust.
- Crane, F, 1972. *Extant Medieval Musical Instruments: A Provisional Catalogue by Types*. Iowa: University of Iowa Press.
- Lawson, T, and Killingray, D, 2004. *An Historical Atlas of Kent*. Chichester: Phillimore & Co. Ltd.
- MacGregor, A, 1985. *Bone Antler Ivory & Horn. The technology of Skeletal Materials Since the Roman Period*. London and Sydney: Croom Helm.
- Megaw, J V S, 1968. Problems and non-problems in palaeo-organology: a musical miscellany, in *Studies in Ancient Europe. Essays presented to Stuart Piggott*, 355. Leicester: Leicester University Press.
- Megaw, J V S, 1968. The Earliest Musical Instruments in Europe, *Archaeology*, **21**, 124-132.
- Megaw, J V S, 1968. An End blown Flute from Medieval Canterbury, *Medieval Archaeology*, **12**, 149-150.

<p>Name of flute (location/site):</p> <p>Canterbury Marlowe Theatre</p>	<p>[8]</p> <p>Date: 450 - 550</p>
<p>Illustration:</p> 	

### Physical information:

**Species:** goose

**Bone used:** ulna

**Extent:** fragment (tonehole end)

**Length:** 69mm

**No. of toneholes:** 1 ½

**Evidence of manufacture?** the upper and lower tonehole edges are defined by transverse cuts, and there area around the toneholes is chamfered. There is some fine longitudinal scraping present.

**Unusual characteristics/comments:** this is the earliest flute found in England to date. Assuming that the window is in the now absent end, then there are two interesting points to note. The bone is used in the opposite orientation to that normally used, i.e. it uses the flared end of the ulna at the distal end of the instrument. Also, the toneholes are not placed at the end of the instrument, but in the middle, and they are cut on the concave surface of the bone.

### Archaeological information:

**Site: name** Marlowe Theatre

**code** MT

**type** rural

**information** Structure S30 was one of at least 6 structures built in the first phase of settlement. They were laid out in 2 rows and were aligned with the north-west/south-eastern Roman road. The site was occupied for between 25 and 50 years, and was then abandoned for between 30 and 40 years.

**Date excavated:** 1950

**Period:** 6I/II

**Context: number:** 404H

**information/description:** Fill of S30 - found in secondary context over primary fill of Structure S30 (a hut/sunken structure)

**associated finds:** Found along with a pin beater, thought to have been deposited after the structure was abandoned.

**Small find no.:** MT 956

**Illustration no. in archaeological report:** fig.504,1034, p.1146 (Blockley 1995b)

**Current location:** Museum of Canterbury

**Contact information:**

Museum of Canterbury, Stour Street, Canterbury, Kent

tel: 01227 475 202

email: museums@canterbury.gov.uk

**Similar flutes:**

York Coppergate 7077 [117] has similarly placed toneholes and flared bone.

Old Sarum A2 [73] has similar marks to define the toneholes.

No other goose ulna flute is used in this orientation.

**Bibliography:**

Blockley, K, Blockley, M, Blockley, P, Frere, S S, and Stow, S, 1995a. *The Archaeology of Canterbury, Volume V. Excavations in the Marlowe Car Park and Surrounding Areas*, 330-334. Canterbury: Canterbury Archaeological Trust.

Blockley, K, Blockley, M, Blockley, P, Frere, S S, and Stow, S, 1995b. *The Archaeology of Canterbury, Volume V. Excavations in the Marlowe Car Park and Surrounding Areas. Part II: The Finds*, 1146-7. Canterbury: Canterbury Archaeological Trust.

<u>Name of flute (location/site):</u>  Castle Acre 61	<div data-bbox="1252 181 1299 226">[9]</div> <div data-bbox="1093 257 1299 369"><u>Date:</u> 1125 -1175</div>
<u>Illustration:</u> 	



Physical information:

**Species:** goose  
**Bone used:** ulna  
**Extent:** fragment (window end)  
**Length:** 61.6mm  
**No. of toneholes:** n/a  
**Window:** D shaped  
**Evidence of manufacture?** some longitudinal scraping present, especially visible on the back of the instrument  
**Unusual characteristics/comments:**

Archaeological information:

**Site:** **name** Castle Acre Castle  
**code** n/a  
**type** elite (castle, urban)  
**information** Castle Acre Castle, along with the nearby Cluniac Priory, was built shortly after the Norman Conquest by William de Warenne, 1<sup>st</sup> Earl of Surrey. It was on the route from Thetford to Walsingham, and was where the Peddlars Way (an important highway) crossed the River Nar. The town undoubtedly benefited from the numerous pilgrims passing through. The whole town was fortified with a bank, ditch and gateways, and was one of the finest examples of Norman town planning of its time. In the early 12<sup>th</sup> century the castle was most likely to have been a fortified manor house; it was probably built into a castle keep c.1140 during the wars of King Stephen.  
**Date excavated:** 1973 - 75  
**Period:** phase IIIs  
**Context:** **number** unknown  
**information/description** late occupation of the reduced keep, sealed by demolition rubble  
**associated finds** a hipped pin, a die, a tumbrel, 3 decorated box-mounts  
**Small find no.:** 61  
**Illustration no. in archaeological report:** fig.47,61, p.252 (Coad and Streeten)

**Current location:** Norwich Castle Museum

**Contact information:**

Archaeology Curator: Dr Tim Pestell (Anglo-Saxon)

tim.pestell@norfolk.gov.uk

01603 493658

Shirehall, Market Avenue, Norwich, Norfolk, NR1 3JQ

<http://www.museums.norfolk.gov.uk/default.asp?Document=200.21.30>

**Similar flutes:** this seems to be typical of many goose bone flutes, and as such, would have probably had three toneholes at the distal end of the instrument, as seen in the flutes from Southampton [79], Acton Court [1] and London Watling Court [58].

**Bibliography:**

Creighton, O H, 1972, 2002. *Castles and landscapes*. London: Continuum.

Lawson, G, 1982. *Note on the Musical Instruments*, in J G Coad and A D F Streeten, *Excavations at Castle Acre Castle, Norfolk, 1972-1977*, Archaeological Journal, **139**, 254.

MacGregor, A, 1985. *Bone Antler Ivory & Horn. The technology of Skeletal Materials Since the Roman Period*, 150. London and Sydney: Croom Helm.

[www.english-heritage.org.uk](http://www.english-heritage.org.uk)

<u>Name of flute (location/site):</u>  Castle Acre 62	<div data-bbox="1235 181 1300 226">[10]</div> <div data-bbox="1106 271 1270 338"><u>Date:</u> 1125 -1175</div>
<p><u>Illustration:</u></p> <div data-bbox="301 439 1291 1444"></div>	

### Physical information:

**Species:** sheep

**Bone used:** tibia

**Extent:** complete (chipped distal end)

**Length:** 178.5mm

**No. of toneholes:** 3T + 2

**Window:** rough D shaped-oval

**Evidence of manufacture?** Transverse lines near thumbholes suggest marking out prior to manufacture. Much longitudinal scraping on all surfaces.

**Unusual characteristics/comments:** Three thumbholes present – it is unusual to have even one. Also, there is a distinct cut away area at the proximal end, unseen in other bone flutes.

### Archaeological information:

**Site:** name Castle Acre Castle

code n/a

type elite (castle, urban)

**information** Castle Acre Castle, along with the nearby Cluniac Priory, was built shortly after the Norman Conquest by William de Warenne, 1<sup>st</sup> Earl of Surrey. It was on the route from Thetford to Walsingham, and was where the Peddlars Way (an important highway) crossed the River Nar. The town undoubtedly benefited from the numerous pilgrims passing through. The whole town was fortified with a bank, ditch and gateways, and was one of the finest examples of Norman town planning of its time. In the early 12<sup>th</sup> century the castle was most likely to have been a fortified manor house; it was probably built into a castle keep c.1140 during the wars of King Stephen.

**Date excavated:** 1973 - 75

**Period:** Period II or III

**Context:** number unknown

**information/description** Period II or III bank (no reference found to where in the bank, or to any other finds). The bank in the upper ward was regularly heightened.

**associated finds** unknown

**Small find no.:** 62

**Assigned number:** L.1984.11.26 A2664

**Previous number:** NWHCM:L1982.6

**Illustration no. in archaeological report:** fig.47,62, p.252 (Coad and Streeten)

**Current location:** Norwich Castle Museum

**Contact information:**

Archaeology Curator: Dr Tim Pestell (Anglo-Saxon)

tim.pestell@norfolk.gov.uk

01603 493658

Shirehall, Market Avenue, Norwich, Norfolk, NR1 3JQ

<http://www.museums.norfolk.gov.uk/default.asp?Document=200.21.30>

**Similar flutes:**

No other flutes have this configuration of toneholes; other sheep tibia flutes include London Thames Exchange [54] and London Bishopsgate [44]

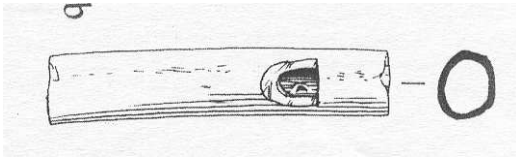
**Bibliography:**

Creighton, O H, 1972, 2002. *Castles and landscapes*. London: Continuum.

Lawson, G, 1982. *Note on the Musical Instruments*, in J G Coad and A D F Streeten, *Excavations at Castle Acre Castle, Norfolk, 1972-1977*, Archaeological Journal, **139**, 254.

MacGregor, A, 1985. *Bone Antler Ivory & Horn. The technology of Skeletal Materials Since the Roman Period*, 150. London and Sydney: Croom Helm.

[www.english-heritage.org.uk](http://www.english-heritage.org.uk)

Name of flute (location/site):  <div style="text-align: center;">Coventry</div>	[11]
	Date: Medieval
Illustration:  	
<div style="text-align: center;"><u>Physical information:</u></div> <p> <b>Species:</b> goose  <b>Bone used:</b> ulna  <b>Extent:</b> fragment (window end)  <b>Length:</b> 45mm  <b>No. of toneholes:</b> 0  <b>Window:</b> D shaped  <b>Evidence of manufacture?</b>  <b>Unusual characteristics/comments:</b> </p>	
<div style="text-align: center;"><u>Archaeological information:</u></div> <p> <b>Site:</b> name Coventry Cathedral  code  type ecclesiastical, urban  information this was a Benedictine Priory and Church  <b>Date excavated:</b> 2000  <b>Period:</b>  <b>Context:</b> number 26  information/description monastic floor layer  associated finds unknown  <b>Small find no.:</b> 253  <b>Illustration no. in archaeological report:</b> fig.71.b (Rylatt and Mason 2003, 128) </p>	
<u>Current location:</u>	
<u>Similar flutes:</u> London New Fresh Wharf [49], King's Lynn All Saints Street [36], King's Lynn Marks and Spencers [37]	
<u>Bibliography:</u> Rylatt, M, and Mason, P, 2003. <i>The Archaeology of the Medieval Cathedral and Priory of St Mary, Coventry</i> . Coventry: Coventry City Council, 126, 128.	

Name of flute (location/site):

[12]

Dover  
Townwall Street

Date:  
1100 - 1400

Illustration:



Physical information:

**Species:** deer

**Bone used:** tibia

**Extent:** fragment

**Length:** 72.7mm

**No. of toneholes:** 3

**Window:** n/a

**Evidence of manufacture?** some longitudinal scraping, and the end is trimmed.

**Unusual characteristics/comments:** There are some scrape marks inside; these could have occurred during manufacture, or during post-excavation cleaning. The tibia is large, and may have been that of a deer.

Archaeological information:

**Site:** **name** Dover Townwall Street

**code** TWD95

**type** urban

**information** Dover was an important Medieval town for the passage of travellers, merchants and pilgrims between England and France/ continental Europe. The castle there was substantially rebuilt between 1180 and 1256, causing an increase in the town's population by the influx of migrant craftsmen and workers. In 1216 the castle was besieged for three months by the French during the troubles with King John and his barons – the hundreds of troops stationed in Dover would have had a huge impact on the town and its suburbs. From 1260, Dover was one of the Cinque Ports, providing ships and men for the King in exchange for rights and privileges.

Townwall Street was in St. James's District, a suburb of the main town that was between the main town and the Norman castle on the adjacent hill. The area was occupied intensely between the second half of the 12<sup>th</sup> century and the end of the 13<sup>th</sup> century, thought to be coincidental with the construction of the castle. The houses were insubstantially built, densely spaced and frequently renewed, indicating habitation by poorer townsfolk: sailors, fishermen and their families. Most of the occupation of the site occurred 1275-1350.

**Date excavated:** 1996

**Period:** n/a

**Context:** **number** 671, section 45

**information/description** a layer of a road surface. Although associated with pottery dated c.1325-1400, this is not an accurate indicator of date. The road surface outside the houses, and the levelling layers within the frequently renewed houses were often one and the same, with material re-deposited from one to another on a regular basis.

**associated finds** flint pebbles, oyster shells, peg tile fragments, pot sherds, small chalk lumps, small carbon specks, occasional limpet shell.

**Small find no.:** 1690

**Illustration no. in archaeological report:** fig.206 (Parfitt et al. forthcoming)

**Current location:** Canterbury Archaeological Trust, Dover Office

**Contact information:**

**Similar flutes:**

Wicken Bonhunt 54 [99]

**Bibliography:**

Parfitt, K, 2000. Townwall Street Dover *Current Archaeology* **168**, XIV/12, 474-6.

Riddler forthcoming Dover

Parfitt, K, Corke, B, and Cotter, J, 2007. *Excavations off Townwall Street, Dover*, 1996.

<u>Name of flute (location/site):</u>  <div>Exeter B1</div>	<div>[13]</div> <u>Date:</u> 1100 - 1200
<u>Illustration:</u> 	

Physical information:

**Species:** goose

**Bone used:** humerus

**Extent:** almost complete (no obvious window present, but there is a large fragment missing at one end where it may have been). The maximum length of bone has been used.

**Length:** 124.6mm

**No. of toneholes:** 2

**Window:** There is no window, and the two places where fragments are missing are too small to be the location of such. The v-shaped notch is a naturally broken area, and not made by knife.

**Evidence of manufacture?** longitudinally scraped on all sides

**Unusual characteristics/comments:** the goose humerus is an unusual choice of bone – usually it is the ulna that is used. Also, there are only two (centrally placed) toneholes.

Archaeological information:

**Site:** name Trichay Street

code TS

type urban

information Trichay Street was in the centre of town

**Date excavated:** 1972-3

**Period:** n/a

**Context:** number TS 347

information/description Pit – dendro date for timber in fill is after 1056

associated finds associated with pottery 464-93

**Small find no.:** B1

**museum accession number:** 300/1988.B1

**Illustration no. in archaeological report:** fig.195,1, p.350 (B1) (Allan 1984)

**Current location:** Royal Albert Memorial Museum, Exeter

**Contact information:**

Thomas Cadbury / Oliver Blackmore

Royal Albert Memorial Museum, Queen Street, Exeter, EX4 3RX

Tel: 01392 665858

Fax:01392 421252

email: ramm@exeter.gov.uk

thomas.cadbury@exeter.gov.uk

**Similar flutes:**

Hamwih Stoner Motors [28], York Coppergate 7078 [118]

**Bibliography:**

Megaw, J V S, 1984. Bone Musical Instruments from Medieval Exeter, in J P Allan, *Medieval and Post-Medieval Finds from Exeter, 1971-1980. Exeter Archaeological Reports: Volume 3*, 349-351. Exeter: Exeter City Council and the University of Exeter.



Name of flute (location/site):  <div style="text-align: center;"> <b>Exeter</b>            B2         </div>	<b>[14]</b>
	Date: 1100 - 1200
Illustration: 	

Physical information:

**Species:** swan/crane

**Bone used:** ulna

**Extent:** fragment (middle section)

**Length:** 137.5mm

**No. of toneholes:** 2 ½

**Window:** ramp only

**Evidence of manufacture?** surface is slightly deteriorated, but there are still signs of longitudinal scraping

**Unusual characteristics/comments:** The toneholes are cut into the concave surface of the bone. There is a slight possibility that it could be crane rather than swan, but with the absence of diagnostic features on the bone, this identification cannot be made. The tubercles where feathers were attached can still be felt.

Archaeological information:

**Site:** name Queen Street

code QS

type urban

information Queen Street was in the centre of town

**Date excavated:** 1978

**Period:** n/a

**Context:** number QS 49

information/description robber trench – no specific information found in Exeter RAMM museum archives

associated finds associated with pottery 553-94

**Small find no.:** B2

**museum accession number:** 300/1988.B2

**Illustration no. in archaeological report:** fig.195,2 p.350 (B2) (Allan 1984)

**Current location:** Royal Albert Memorial Museum, Exeter

**Contact information:** Thomas Cadbury

Royal Albert Memorial Museum, Queen Street, Exeter, EX4 3RX

Tel: 01392 665858

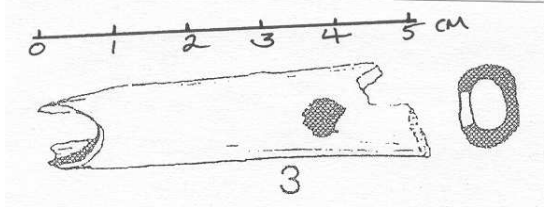
[thomas.cadbury@exeter.gov.uk](mailto:thomas.cadbury@exeter.gov.uk)

**Similar flutes:**

Lincoln Flaxengate 126 [38] (broken across window at proximal end in a similar way), Old Sarum A2 [73] (complete)

**Bibliography:**

Megaw, J V S, 1984. Bone Musical Instruments from Medieval Exeter, in J P Allan, *Medieval and Post-Medieval Finds from Exeter, 1971-1980. Exeter Archaeological Reports: Volume 3*, 349-351. Exeter: Exeter City Council and the University of Exeter.

<u>Name of flute (location/site):</u>  <div style="text-align: center;"> <b>Exeter</b>  B3 </div>	<div style="text-align: right; border: 1px solid black; padding: 2px;"><b>[15]</b></div> <div style="border: 1px solid black; padding: 2px;"> <u>Date:</u>  1100 - 1200 </div>
<u>Illustration:</u>  	
<div style="text-align: center;"><u>Physical information:</u></div> <p> <b>Species:</b> bird (?goose)  <b>Bone used:</b> ulna  <b>Extent:</b> fragment (middle section)  <b>Length:</b> 53mm  <b>No. of toneholes:</b> 1, possibly 2  <b>Window:</b> n/a  <b>Evidence of manufacture?</b> unknown  <b>Unusual characteristics/comments:</b> it is difficult to confirm species identification or to comment on the flute without seeing it. The break to the left of the picture above may be the edge of the window, or could be a natural break. </p>	
<div style="text-align: center;"><u>Archaeological information:</u></div> <p> <b>Site:</b> name Queen Street  code QS  type urban  information Queen Street was in the centre of town  <b>Date excavated:</b> 1978  <b>Period:</b> n/a  <b>Context:</b> number QS49  information/description unknown  associated finds associated with pottery 553-94  <b>Small find no.:</b> QS49 B3  <b>Illustration no. in archaeological report:</b> fig.195,3 p.350 (B3) (Allan 1984) </p>	
<b>Current location:</b> unknown, not at Royal Albert Memorial Museum, Exeter with the other Exeter flutes.	
<b>Similar flutes:</b> unknown	
<b>Bibliography:</b> Megaw, J V S, 1984. Bone Musical Instruments from Medieval Exeter, in J P Allan, <i>Medieval and Post-Medieval Finds from Exeter, 1971-1980. Exeter Archaeological Reports: Volume 3</i> , 349-351. Exeter: Exeter City Council and the University of Exeter.	

Name of flute (location/site):  <div style="text-align: center;">Exeter B5</div>	<div style="text-align: right;">[16]</div> <hr/> Date: 1200 - 1232
Illustration:  	

Physical information:

**Species:** ovicaprid

**Bone used:** tibia

**Extent:** complete

**Length:** 102.1mm

**No. of toneholes:** 3

**Window:** D shaped

**Evidence of manufacture?** possible file marks evident on front surface, distal end, with parallel marks less than 1mm apart.

**Unusual characteristics/comments:** A very small instrument, which suggests that it may have been for a child. Tuning is apparently c', c'', d+, f, d, a+ (Megaw 1984). Deep incised groove around distal end, possibly for suspension. Surface appears highly polished.

Archaeological information:

**Site:** name Trichay Street

code TS

type urban

information Trichay Street was in the centre of town

**Date excavated:** 1972-3

**Period:** n/a

**Context:** number TS191

information/description unknown – no records found in Exeter RAMM museum archives

associated finds associated with pottery 888 - 921

**Small find no.:** B5

**museum accession number:** 300/1988.B5

**Illustration no. in archaeological report:** fig.195,5 p.350 (B5) (Allan 1984)

**Current location:** Royal Albert Memorial Museum, Exeter

**Contact information:** Thomas Cadbury

Royal Albert Memorial Museum, Queen Street, Exeter, EX4 3RX

Tel: 01392 665858

[thomas.cadbury@exeter.gov.uk](mailto:thomas.cadbury@exeter.gov.uk)

**Similar flutes:**

Old Sarum A3 [74], or for a larger sheep tibia flute: London Thames Exchange [54]

**Bibliography:**

Megaw, J V S, 1984. Bone Musical Instruments from Medieval Exeter, in J P Allan, *Medieval and Post-Medieval Finds from Exeter, 1971-1980. Exeter Archaeological Reports: Volume 3*, 349-351. Exeter: Exeter City Council and the University of Exeter.



Name of flute (location/site):  Exeter B6	[17]
	Date: 1266 - 1299

Illustration:



Physical information:

**Species:** ovicaprid

**Bone used:** tibia

**Extent:** fragment (tonehole end)

**Length:** 100.2mm

**No. of toneholes:** 2

**Window:** n/a

**Evidence of manufacture?** there is a mark inside the bone visible through the most distal tonehole, that may have been made by the knife point as the hole was made.

**Unusual characteristics/comments:** the distal end of this flute is still with the solid epiphysis of bone in place. This could indicate that the flute is in a state of partial manufacture. It is unusual for the toneholes to be differently sized – this could also reflect partial manufacture.

Archaeological information:

**Site:** name Goldsmith Street

code GS

type settlement – urban

information Goldsmith Street was in the centre of town

**Date excavated:** 1971-2

**Period:** n/a

**Context:** number GS 157

information/description unknown – no records found in Exeter RAMM museum archives

associated finds associated with pottery 553-94

**Small find no.:** B6

**museum accession number:** 300/1988.B6

**Illustration no. in archaeological report:** fig.195,6 p.350 (B6) (Allan 1984)

**Current location:** Royal Albert Memorial Museum, Exeter

**Contact information:** Thomas Cadbury

Royal Albert Memorial Museum, Queen Street, Exeter, EX4 3RX

Tel: 01392 665858

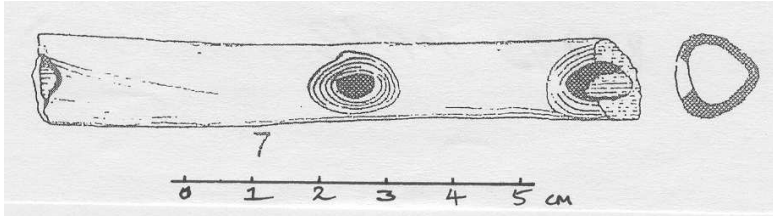
[thomas.cadbury@exeter.gov.uk](mailto:thomas.cadbury@exeter.gov.uk)

**Similar flutes:**

West Cotton, Raunds 194 [90] (though the epiphysis has an opened end, rather than closed as seen in this case).

**Bibliography:**

Megaw, J V S, 1984. Bone Musical Instruments from Medieval Exeter, in J P Allan, *Medieval and Post-Medieval Finds from Exeter, 1971-1980. Exeter Archaeological Reports: Volume 3*, 349-351. Exeter: Exeter City Council and the University of Exeter.

<u>Name of flute (location/site):</u>  <div style="text-align: center;">Exeter B7</div>	<div style="text-align: right;"><b>[18]</b></div> <hr/> <u>Date:</u> 1233 - 1265
<u>Illustration:</u> 	
<div style="text-align: center;"><u>Physical information:</u></div> <p><b>Species:</b> sheep  <b>Bone used:</b> tibia  <b>Extent:</b> fragment (tonehole end)  <b>Length:</b> 89mm  <b>No. of toneholes:</b> 1 ½  <b>Window:</b> n/a  <b>Evidence of manufacture?</b> Holes are deeply countersunk  <b>Unusual characteristics/comments:</b> in Allan (1984) it is suggested that this may be a dog tibia. This would be an unusual and unlikely choice of bone, and without concrete confirmation of this identification, the flute is taken to be made from a sheep tibia.  Given that the illustration indicates that the bone is already forming its distinctive triangular shape at the broken end, then there would not have been much more bone present; this fragment represents possibly 2/3 of the whole instrument. The placement of toneholes is therefore central on the instrument, and the window would have been in the now missing broken end.</p>	
<div style="text-align: center;"><u>Archaeological information:</u></div> <p><b>Site:</b> name Exe Bridge  code EB  type urban  <b>information</b> This was a small area of settlement on one side of the bridge, with a church and some industrial activity.  <b>Date excavated:</b> 1975 - 1979  <b>Period:</b> n/a  <b>Context:</b> number EB 828  <b>information/description</b> unknown – no records found in Exeter RAMM museum archives  <b>associated finds</b> unknown  <b>Small find no.:</b> B7  <b>Illustration no. in archaeological report:</b> fig.195,7 p.350 (B7) (Allan 1984)</p>	
<b>Current location:</b> Unknown - not at Exeter Royal Albert Memorial Museum with the other Exeter flutes.	
<b>Similar flutes:</b> unknown	
<b>Bibliography:</b> Megaw, J V S, 1984. Bone Musical Instruments from Medieval Exeter, in J P Allan, <i>Medieval and Post-Medieval Finds from Exeter, 1971-1980. Exeter Archaeological Reports: Volume 3</i> , 349-351. Exeter: Exeter City Council and the University of Exeter.	



<u>Name of flute (location/site):</u>  <p style="text-align: center;"><b>Exeter</b> Exe Bridge 100</p>	<p style="text-align: right;"><b>[19]</b></p> <hr/> <u>Date:</u> 1400 - 1499
<u>Illustration:</u>  <p style="text-align: center;">NO ILLUSTRATION AVAILABLE</p>	
<p style="text-align: center;"><u>Physical information:</u></p> <p> <b>Species:</b> sheep  <b>Bone used:</b> metatarsal  <b>Extent:</b> fragment  <b>Length:</b> 88mm  <b>No. of toneholes:</b> 2  <b>Window:</b> unknown  <b>Evidence of manufacture?</b> unknown  <b>Unusual characteristics/comments:</b> Megaw suggests that this may be a notched flute. Without seeing the artefact, this will be difficult to confirm, though this type of flute would be most unusual for this time period.       </p>	
<p style="text-align: center;"><u>Archaeological information:</u></p> <p> <b>Site:</b> name Exe Bridge  code EB  type urban  <b>information</b> This was a small area of settlement on one side of the bridge, with a church and some industrial activity.  <b>Date excavated:</b> 1975 - 1979  <b>Period:</b>  <b>Context:</b> number EB 100  <b>information/description</b> unknown – no records found in Exeter RAMM museum archives  <b>associated finds</b> unknown  <b>Small find no.:</b> EB 100 (the other Exeter flutes all have catalogue/small find numbers. This one does not, so is identified by its context number)  <b>Illustration no. in archaeological report:</b> not illustrated in report       </p>	
<b>Current location:</b> Unknown - not at Exeter Royal Albert Memorial Museum with the other Exeter flutes.	
<b>Similar flutes:</b> unknown	
<b>Bibliography:</b> Megaw, J V S, 1984. Bone Musical Instruments from Medieval Exeter, in J P Allan, <i>Medieval and Post-Medieval Finds from Exeter, 1971-1980. Exeter Archaeological Reports: Volume 3</i> , 349-351. Exeter: Exeter City Council and the University of Exeter.	

<p>Name of flute (location/site):</p> <p style="text-align: center;">Facombe Netherton</p>	<p style="text-align: right;"><b>[20]</b></p> <hr/> <p>Date: c.1280 - 1356</p>
<p><u>Illustration:</u></p> <div style="text-align: center;">  </div>	

Physical information:

**Species:** ovicaprid

**Bone used:** tibia

**Extent:** fragment (middle section)

**Length:** 45.5mm

**No. of toneholes:** 1 ½

**Window:** n/a

**Evidence of manufacture?** toneholes made by transverse cuts rather than by using the point of a knife in a drilling motion.

**Unusual characteristics/comments:** very crudely made, with toneholes not neatenened after manufacture.

Archaeological information:

**Site:** name Facombe Netherton

**code** n/a

**type** rural / elite (manorial site)

**information** The suite is a manorial complex, with stables, dairy, kitchen, bakehouse, brewhouse, granary, etc, abandoned after 1356 (probably due to death of rector). Coin finds indicate considerable activity in and around the manor house during the first half of the 14<sup>th</sup> century.

**Date excavated:** 1967 – 1980

**Period:** 8

**Context:** number 1107

**information/description** No information found relating to context no. 1107 in excavation report.

**associated finds** unknown

**Small find no.:** SF 779

**Illustration no. in archaeological report:** fig.17 p.449 (Fairbrother)

**Current location:** British Museum, in store

(Facombe Netherton unregistered collection of Saxon and Medieval material)

**Contact information:** Peter Rea 0207 323 8629

[prea@thebritishmuseum.ac.uk](mailto:prea@thebritishmuseum.ac.uk)

**Similar flutes:**

Ludgershall Castle 29 [62]

**Bibliography:**

Fairbrother, J R, 1990. *Facombe Netherton: excavations of a Saxon and medieval manorial complex Volumes I and II. British Museum Occasional Paper No. 74.* London: British Museum.

Name of flute (location/site):

[21]

Folkestone  
Caesar's Camp/Castle Hill

Date:

Medieval

Illustration:



### Physical information:

**Species:** goose

**Bone used:** ulna

**Extent:** complete (though may have been longer initially)

**Length:** 93mm

**No. of toneholes:** 2

**Window:** D shaped

**Evidence of manufacture?** longitudinally scraped on most surfaces

**Unusual characteristics/comments:** this is an unusual flute in that it appears to have had two stages of manufacture. Both toneholes are different; one neatly and the other very crude made. Also, the distal end, though at first glance appearing to be broken, is actually trimmed by knife. It could be that the flute was originally longer (i.e. utilising the maximum useable length of bone) and had crudely made toneholes. After breaking at the (then) second tonehole, it was trimmed to make the break neat, and another tonehole made. Thus the instrument was made playable again.

Another thing to note is the unusually thick wall of the goose bone, which is quite straight in nature rather than curved.

### Archaeological information:

**Site:** name Caesar's Camp/Castle Hill

**code** none

**type** elite (castle, urban)

**information** The castle occupied a strategic position on the south-east coast, at a natural gap in the otherwise inaccessible cliffs – the first such gap to the west of Dover. The bones of a young falcon, remains of fallow deer and assorted Medieval finds suggest that it is a Medieval castle site, constructed before or at the time of the Norman conquest, or during the reign of Stephen (Pitt-Rivers 1883). It is probably the castle mentioned in a document of 1137 (Lawson and Killingray 2004, 53).

**Date excavated:** 1878 (donated to Pitt Rivers Museum 1884)

**Period:** n/a

**Context:** number found 13ft deep, in pit 2 ('M' on PL.XVI)

**information/description** Pit 2 is one of 2 pits in the inner area of the earthworks. It is 15'10" (4.825m) deep. The other pit was not excavated fully due to its great depth; it is thought to have been a well.

**associated finds** At various depths: pottery sherds, small finds of iron (horseshoe, buckles, 2 cooking pots, nails, arrow head), oysters, animal remains.

**Small find no.:** Pitt Rivers Accession Number: 1884.111.24

**Illustration no. in archaeological report:** Pl. XX, No. 35 (Pitt-Rivers 1883)

**Pitt Rivers Illustration:** PR 404 Q F.43

**Current location:** Pitt Rivers Museum, Oxford

**Contact information:** Pitt Rivers Museum, South Parks Road, Oxford OX1 3PP

Phone: 01865 270927 Fax: 01865 270943

Email: <mailto:prm@prm.ox.ac.uk>

### Similar flutes:

No other goose ulna flute has been modified/re-cut. Complete goose ulna flutes include: Southampton [79], London Watling Court [58], London Bank of England [42], Thetford Brandon Road 542 [84]

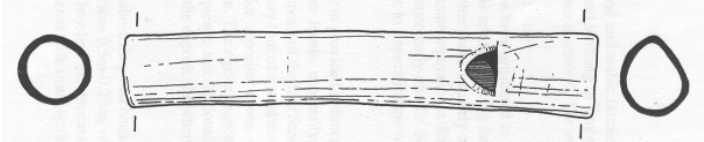
### Bibliography:

Crane, F, 1972. *Extant Medieval Musical Instruments: A Provisional Catalogue by Types*, 38. Iowa: University of Iowa Press.

Lawson, T, and Killingray, D, 2004. *An Historical Atlas of Kent*. Chichester: Phillimore & Co. Ltd.

Megaw, J V S, 1960. Penny Whistles and Prehistory, *Antiquity*, **34**, 11.

Pitt-Rivers, A H L F, 1883. Excavations at Caesar's Camp near Folkestone, *Archaeologia*, **47**, 439, 456, 464, and Pl. XX, No. 35.

<u>Name of flute (location/site):</u>  <p style="text-align: center;">Furnells, Raunds 492</p>	<p style="text-align: right;"><b>[22]</b></p> <hr/> <u>Date:</u> early Saxon – 1500
<u>Illustration:</u>  	
<p style="text-align: center;"><u>Physical information:</u></p> <p> <b>Species:</b> goose  <b>Bone used:</b> ulna  <b>Extent:</b> complete?  <b>Length:</b> 51mm  <b>No. of toneholes:</b> 0  <b>Window:</b> D shaped  <b>Evidence of manufacture?</b>  <b>Unusual characteristics/comments:</b> </p>	
<p style="text-align: center;"><u>Archaeological information:</u></p> <p> <b>Site:</b> name Furnells Manor                    code PRN 3014                    type rural                    <b>information</b> Finds suggest that the household was wealthy, had an interest in the arts, and locked up their valuables  <b>Date excavated:</b> 1977 - 87  <b>Period:</b> n/a  <b>Context:</b> number SP62                    <b>information/description</b> SP62 is a large group of pits in the north east corner of the site. Some pits contain early Saxon pottery, while others are undated and could be anything up to 1500AD (Chapman, pers. comm.)                    <b>associated finds</b> unknown  <b>Small find no.:</b> 492  <b>Illustration no. in archaeological report:</b> fig.7.3, 2 Audouy (in press)       </p>	
<u>Current location:</u> not in Northampton Archaeology store with the other finds from Furnells	
<u>Similar flutes:</u> this could have been a goose ulna flute with no toneholes, similar to Winchester 2263 [105] and Rayleigh Castle 1909 [75], or could have had three toneholes similar to Southampton [79] and many others.	
<u>Bibliography:</u> Audouy, M, in press. <i>Raunds, the origin and growth of a midland village c450-1500. Excavations in north Raunds, Northamptonshire 1977-87</i> [full publication details unknown] NB: G Lawson wrote report on this in the 1980s – have asked him if he has a copy, as the Northampton Archaeology's original is in storage and is difficult to access.	

Name of flute (location/site):  <div style="text-align: center;">           Gloucester            Park Street 23         </div>	<b>[23]</b>
	Date: Medieval
Illustration: 	

Physical information:

**Species:** goose

**Bone used:** ulna

**Extent:** fragment (tonehole end)

**Length:** 37.5mm

**No. of toneholes:** 1 ½

**Window:** n/a

**Evidence of manufacture?** longitudinal scraping all round. There is a cut mark at the distal end on the front surface, where the bone has been neatly trimmed.

**Unusual characteristics/comments:** there is a small hole at the distal end, approximately 3.5mm in diameter (tapering to 2mm at the bore of the instrument), which may have been used for suspension.

Archaeological information:

**Site:** name: Park Street

code: 2/84

type urban

**information** site is about 1/4 of a mile to the north of the Roman walled town, on the road leading to the military site at Kingsholm

**Date excavated:** 1984

**Period:** phase IXb

**Context:** number 83

**information/description** 'agricultural layer, garden soil, general layer'

**associated finds** pottery (many fabric types represented, from Roman to Medieval)

**Small find no.:** 23

**Illustration no. in archaeological report:** unpublished

**Current location:** Gloucester Folk Museum

**Contact information:**

Gloucester Folk Museum, 99-103 Westgate Street, Gloucester GL1 2PG

Susan Byrne [susan.byrne@gloucester.gov.uk](mailto:susan.byrne@gloucester.gov.uk)

01452 396 128

**Similar flutes:**

This flute would probably have had three front toneholes, similar to the goose ulna flutes from Southampton [79], Gloucester Southgate Street [25] and Acton Court [1] No other goose ulna flute has a 'suspension hole' on the rear surface, though some other sheep tibia flutes do.

**Bibliography:**

unpublished



<u>Name of flute (location/site):</u>  <p style="text-align: center;">Gloucester Park Street 35 and 40</p>	<p style="text-align: right;"><b>[24]</b></p> <hr/> <u>Date:</u> <p style="text-align: right;">Medieval</p>
<u>Illustration:</u> 	

Physical information:

**Species:** crane

**Bone used:** tibiotarsus

**Extent:** Complete (though broken below the window. It is unclear if this is a clean break or if a small fragment may have fitted in where the two pieces join)

**Length:** 196.7mm (in 2 sections, one of 132mm and the other 64.7mm)

**No. of toneholes:** 3

**Window:** D shaped

**Evidence of manufacture?** proximal end trimmed, though not neatly, slight longitudinal scraping visible. Toneholes made by a scooping longitudinal cut followed by a twisting drilling action.

**Unusual characteristics/comments:** this is not made from a dog bone, as mentioned in Sermon 1997. Close examination of dog bones in the Natural History Museum Mammal Section revealed no similarity. Consultation with the NHM Bird Group, Tring, led to the identification of the bone as crane tibiotarsus.

Archaeological information:

**Site:** name: Park Street

code: 4/84

type urban

**information** site is about 1/4 of a mile to the north of the Roman walled town, on the road leading to the military site at Kingsholm

**Date excavated:** 1984

**Period:** phase IXb

**Context:** number 83

**information/description** 'agricultural layer, garden soil, general layer'

**associated finds** pottery (many fabric types represented, from Roman to Medieval)

**Small find no.:** 35 & 40 (this is not SF 23, as mentioned in Sermon – SF 23 is a separate flute [23])

**Illustration no. in archaeological report:** fig.2 p.51 (Sermon 1997)

**Current location:** on display, Gloucester Folk Museum

**Contact information:**

Gloucester Folk Museum, 99-103 Westgate Street, Gloucester GL1 2PG

Susan Byrne [susan.byrne@gloucester.gov.uk](mailto:susan.byrne@gloucester.gov.uk)

01452 396 128

**Similar flutes:**

York Clifford Street C663 [113]

**Bibliography:**

Sermon, R, 1997. Two Medieval Whistles from Gloucester, *Glevensis*, **30**, 51-52.

Name of flute (location/site):

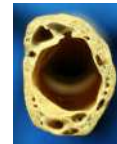
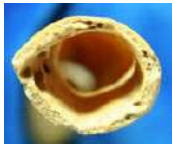
[25]

Gloucester  
Southgate Street

Date:

Medieval

Illustration:



Physical information:

**Species:** goose

**Bone used:** ulna

**Extent:** Complete

**Length:** 140mm

**No. of toneholes:** 3

**Window:** D shaped

**Evidence of manufacture?** longitudinal scraping visible on all sides. Toneholes made by a scooping longitudinal cutting action, and a twisting drilling action. There is a slight chamfer/recess at the second and third hole. There are also cut marks above the window.

**Unusual characteristics/comments:** Sermon played the flute in 1997, and obtained the following series of notes: e'', f#'', a'', c#'' (no overblowing was performed).

Archaeological information:

**Site:** **name:** Southgate Street

**code:** 3/89

**type:** urban

**information:** The site is just beyond the Southgate of the City, and the excavations provided evidence for growth/ activity in the suburbs to the south of the city from Roman to Post Medieval times.

**Date excavated:** 1989 by Gloucester Archaeology

**Period:** n/a

**Context:** **number** 498 trench III

**information/description:** demolition rubble, mixed rubble, gravel, soil. It was within/below another layer described as having, 'the first real sign of Medieval building activity'

**associated finds:** unknown

**Small find no.:** 5561

**Illustration no. in archaeological report:** fig.1 p.51 (Sermon 1997)

Current location:

on display, Gloucester Folk Museum

Contact information:

Gloucester Folk Museum, 99-103 Westgate Street, Gloucester GL1 2PG

Susan Byrne [susan.byrne@gloucester.gov.uk](mailto:susan.byrne@gloucester.gov.uk)

01452 396 128

Similar flutes:

Southampton [79], London Watling Court [58]

Bibliography:

Sermon, R, 1997. Two Medieval Whistles from Gloucester, *Glevensis*, **30**, 51-52.

Name of flute (location/site):

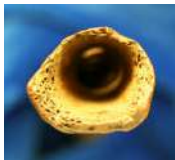
[26]

Great Massingham

Date:

Medieval

Illustration:



Physical information:

**Species:** sheep  
**Bone used:** tibia  
**Extent:** fragment (almost complete)  
**Length:** 174.5mm  
**No. of toneholes:** 4  
**Window:** missing, presumed to have been D shaped  
**Evidence of manufacture?** just discernable longitudinal scraping and chatter marks  
**Unusual characteristics/comments:** this flute has a suspension hole on the back distal end, which is an uncommon feature. The holes are slightly recessed.

Archaeological information:

**Site:** **name** Great Massingham, King's Lynn  
**code** n/a  
**type** settlement, rural  
**information** Great Massingham was mentioned as a parish in the Domesday book, and an Augustinian abbey was built there in the 11<sup>th</sup> century  
**Date excavated:** 1995 (given to the museum by Mr. R. Gibson)  
**Period:** n/a  
**Context:** **number** unknown  
**information/description** unknown  
**associated finds** unknown  
**Small find no.:** n/a  
**Record number:** KILLM:1995.1251  
**Assigned number:** A832  
**Illustration no. in archaeological report:** unpublished

Current location:

King's Lynn Town House Museum

Contact information:

Town House Museum, 46 Queen Street, King's Lynn, Norfolk, PE30 01553773450  
Tim Thorpe [tim.thorpe@norfolk.gov.uk](mailto:tim.thorpe@norfolk.gov.uk)

Similar flutes:

Other flutes with suspension holes: West Cotton Raunds 194 [90], White Castle [98], other sheep tibia flutes: London Thames Exchange [54].

Bibliography:

Norfolk museums database <http://noah.norfolk.gov.uk> (mentions letters and drawings on file – these do not give any further information)

<u>Name of flute (location/site):</u>  <p style="text-align: center;">Hamwic Melbourne Street</p>	<p style="text-align: right;"><b>[27]</b></p> <hr/> <u>Date:</u> <p style="text-align: right;">Saxon</p>
<u>Illustration:</u> 	



Physical information:

**Species:** goose

**Bone used:** ulna

**Extent:** fragment (tonehole end)

**Length:** 81.5mm

**No. of toneholes:** 1 ½

**Window:** n/a

**Evidence of manufacture?** longitudinally scraped all round, with chatter marks

**Unusual characteristics/comments:** the surviving complete tonehole is square in shape, with cuts to mark its position. The second partial tonehole is round, with a definite chamfer that is similar to a ramp, though given its position it is unlikely that it is the window. Taking into account the fact that the toneholes are usually at the opposite end of the instrument to the window, and that there is no window present in this 'blank' end, it is unclear what form the instrument would take, or where the window would be. The projected maximum length of useable bone would mean that the window would be extremely close to the centrally placed toneholes, which would be most unusual for a goose ulna flute. The surface of the bone has a smooth patina.

Archaeological information:

**Site:** name Hamwih Melbourne Street

code SOU 4 (SRC IV)

type urban

information Hamwih was an undefended merchants' settlement, with occupation, trade and industry. It was 'probably the largest densely-populated town in 8<sup>th</sup>-century England' (Holdsworth), and was a flourishing international port.

**Date excavated:** 1972

**Period:** n/a

**Context:** number Area D 3-8, level 14

information/description this area was trowelled in 50mm layers. It is not known whereabouts in this layer the flute was found.

associated finds unknown

**Small find no.:** item number 226 (old numbers are: CW16 and F247)

**Illustration no. in archaeological report:** fig.21,7 p.46 (Holdsworth 1976), fig.15,1.7, p.76 (Holdsworth 1980)

**Current location:**

Southampton Museum of Archaeology

**Contact information:**

God's House Tower, Town Quay, Southampton

023 80 635 904

Duncan Brown

**Similar flutes:**

no other flutes have this tonehole arrangement

**Bibliography:**

Holdsworth, P, 1976. Saxon Southampton: A New Review, *Medieval Archaeology*, 20, 46-47.

Holdsworth, P, 1980. *Excavations at Melbourne Street, Southampton, 1971-76. Research Report* 33, 25-28. London: The Council for British Archaeology.

MacGregor, A, 1985. *Bone Antler Ivory & Horn. The technology of Skeletal Materials Since the Roman Period*. London and Sydney: Croom Helm.



Name of flute (location/site):	<b>[28]</b>
Hamwic Stoner Motors	Date: Middle Saxon



### Physical information:

**Species:** goose

**Bone used:** tibiotarsus

**Extent:** fragment (tonehole end)

**Length:** 87.9mm

**No. of toneholes:** 3

**Window:** not present

**Evidence of manufacture?** holes made by twisting a knife blade. Bony protuberance has been trimmed off.

**Unusual characteristics/comments:** it is unusual for a goose tibiotarsus to be used – the normal choice of bone would be the ulna. The holes are very small. There is no window, and the available working length of bone has little if any additional length. This could represent an unfinished flute.

### Archaeological information:

**Site:** **name** Hamwih Stoner Motors

**code** SOU 99

**type** urban

**information** Hamwih was an undefended merchants' settlement, with occupation, trade and industry. It was 'probably the largest densely-populated town in 8<sup>th</sup>-century England' (Holdsworth), and was a flourishing international port.

**Date excavated:** 1982

**Period:** n/a

**Context:** **number** 319

**information/description** from a layer in a pit (feature 280) – a large, typical Hamwih pit, 2.7metres in diameter and 3 metres deep, on the frontage of St Mary's Street. The pit cuts 2 post holes that belong to the (earlier) structure A.

**associated finds** other finds from this pit: nails, fragment of red vessel glass, a hook, a copper pin, furnace lining, a crucible, 2 knife blades, a bone comb, flint, unworked stone, ceramic building material, daub, pottery, iron objects, slag, shell and animal bone.

**Small find no.:** item number 197

**Illustration no. in archaeological report:** unpublished

### **Current location:**

Southampton Museum of Archaeology

### **Contact information:**

God's House Tower, Town Quay, Southampton

023 80 635 904

Duncan Brown

### **Similar flutes:**

only one other flute is made from a goose tibiotarsus: York, Coppergate 7077 [117]

### **Bibliography:**

Holdsworth, P, 1976. Saxon Southampton: A New Review, *Medieval Archaeology*, 20, 46-47.

Name of flute (location/site):

[29]

Hertford Castle

Date:

1200 – 1400

or

1300 - 1500

Illustration:



### Physical information:

**Species:** deer

**Bone used:** tibia

**Extent:** fragment (middle/tonehole section)

**Length:** 185mm

**No. of toneholes:** T + 5 (approx 5mm diameter at 20mm intervals)

**Window:** only one side (approx. 4.5mm) and the lower edge (approx. 6.5mm) are present. There is a gently sloping ramp area of between 5 and 10mm in length.

**Evidence of manufacture?** some longitudinal scratches present. Two further depressions marking possible rejected tonehole locations. The distal end shows marks where the end has been trimmed by knife.

**Unusual characteristics/comments:** this flute has a thumbhole, but it is set very low on the flute, just above the lower two front toneholes. The flute is broken at the back and is missing the part where the thumbhole might more naturally be placed, i.e. at the rear of the upper toneholes. However, there is an edge of a removed area present at around this place, which may indicate an area of recess surrounding a second upper thumbhole. No thumbhole edge is present, so this is speculation only.

The flute is published as possibly being pig tibia, but it is more likely to be a deer or large sheep. Fallow deer tibia and metatarsals have been found on the site, consistent with hunting practices of the time. The date given is late 17<sup>th</sup> – 18<sup>th</sup> century, but consultation with the excavation report gives a date of either 13<sup>th</sup> – 14<sup>th</sup>, or 14<sup>th</sup> -15<sup>th</sup> century (to be clarified by specialist identification of the pot fragment, if possible). It is also illustrated upside down.

### Archaeological information:

**Site:** **name** Hertford Castle (Express Dairy and 40 Castle Street)

**code** HAT 27

**type** elite (castle, urban)

**information** Hertford is situated on a crossing point of the river Lea; it was the site of two Saxon burghs, and the first castle was built there in the 11<sup>th</sup> century. It was subsequently enlarged and renovated at various points until the 15<sup>th</sup> century. In the 13<sup>th</sup> century it was involved in the events of King John's baronial revolt, and in the 14<sup>th</sup> and 15<sup>th</sup> centuries it was frequently visited by royal and noble visitors (as guests or prisoners).

The castle was bounded by a double moat on three sides, with the river forming the fourth side. The space between moats was quite narrow, but was larger where the excavation occurred, forming an outer bailey. The inner moat was at least 16-18m wide and 4m deep; the full depth and profile was never established. The moats were connected to the river, and given that the castle was kept in good repair, it is assumed that they would have been regularly cleaned. Few finds came from the silty layers of the ditch fill, and the dating was noted as problematical by the excavators.

**Date excavated:** 1988 and 1990

**Period:** Phase II

**Context:** **number** BW Layer 1, Trench 3 (is equivalent to LN5)

**information/description** Fill of inner castle moat. This is a grey silty layer, one of a series of 7 silty layers that make up the fill of the moat.

**associated finds** pottery fragment, tile

**Small find no.:** unknown

**Illustration no. in archaeological report:** fig.14, p.29 (Zeepvat and Cooper-Reade 1996)

**Current location:**

Hertford Museum

**Contact information:**

18 Bull Plain, Hertford, SG14 1DT

(01992) 582686

Sarah Taylor

**Similar flutes:**

Bedford Castle **[2]** (deer bone flute), Castle Acre 62 **[10]** (large sheep bone flute with 3 thumbholes)

**Bibliography:**

Excavation archives, Hertford Museum

Zeepvat, R J, and Cooper-Reade, H, 1996. Excavations within the Outer Bailey of Hertford Castle. *Hertfordshire Archaeology*, **12**, 15-40.

Name of flute (location/site):

**[30]**

Ipswich  
Foundation Street/Star Lane

Date:

633 - 999  
(mid 7<sup>th</sup> - 1. 9<sup>th</sup>)

Illustration:



### Physical information:

**Species:** goose

**Bone used:** ulna

**Extent:** complete

**Length:** 135.5mm

**No. of toneholes:** 4

**Window:** D shaped/sub triangular, in opposite orientation to that normally seen

**Evidence of manufacture?** the cut marks that made the toneholes are visible – they seem to be a combination of firm slanting almost vertical cuts that mark the limits of the tonehole, and scooping cuts that remove the material along the length of the tonehole.

**Unusual characteristics/comments:** The maximum possible length of bone is used, and the toneholes are on the concave surface

The window is 'pointing' the opposite way, and is set quite a distance from the proximal end of the instrument. As such it would be very difficult to fabricate a block to fit this long windway area, and the air stream would not hit the (normal) curved edge of the window. These observations, coupled with the fact that there are four toneholes rather than the usual three, suggests that the flute was made by someone who knew some general facts about how to make a bone flute, but who didn't understand how these facts related to the functioning of the instrument. It is unlikely that this instrument would have worked, and the lack of surface wear suggests that it was discarded or lost soon after manufacture.

### Archaeological information:

**Site:** **name** Foundation Street/ Star Lane

**code** IAS 5801

**type** urban

**information** Ipswich was an important centre of trade, both international and local. Foundation Street is an area in the town of Ipswich adjacent to a ford in the river that has numerous pits dating from Middle Saxon through to Post-Medieval. The specific dating of the pits caused many problems for the excavators due to residual material and contamination.

**Date excavated:** 1979

**Period:** n/a

**Context:** **number** 0022

**information/description** a Middle Saxon (mid 7th century – mid 9th century) pit with possible contamination of later material

**associated finds** unknown

**Small find no.:** none given as yet

**Ian Riddler's reference number:** IR712

**Illustration no. in archaeological report:** unpublished

**Current location:** The Archaeological Service, Suffolk County Council (temporarily with Ian Riddler)

**Contact information:** Environment and Transport Department, Shire Hall, Bury St Edmunds, Suffolk, IP33 2AR

tel: 01284 352 440

Keith Wade


#### Similar flutes:

This can be compared to flutes from Southampton [79], London Bank of England [42] and Thetford Brandon Road 542 [84], all typical goose ulna flutes with 3 toneholes.

#### Bibliography:

Lawson, G. (1993) in EAA 62 refers to report in preparation (Suffolk Arch Unit)

Riddler, I. (forthcoming)

<p>Name of flute (location/site):</p> <p style="text-align: center;">Ipswich St Georges Street</p>	<p style="text-align: right;"><b>[31]</b></p> <hr/> <p>Date: 1000 - 1199</p>
<p><u>Illustration:</u></p> 	



Physical information:

**Species:** swan

**Bone used:** ulna

**Extent:** fragment (window end)

**Length:** 95mm

**No. of toneholes:** n/a

**Window:** D shaped with no ramp

**Evidence of manufacture?** transverse cut marking the upper border of the window

**Unusual characteristics/comments:** The D shaped window is very narrow, in comparison to those of other swan bone flutes. The proximal end is slightly crushed, with cracks apparent, but overall is intact.

Archaeological information:

**Site:** name St Georges Street

code IAS 9802

type urban

**information** Ipswich was an important centre of trade, both international and local. St Georges Street is an area of settlement just outside and to the north-west of the main town of Ipswich, surrounding the church of St George.

**Date excavated:** 1983

**Period:** IV

**Context:** number 0044

**information/description** pit 13, which is part of pit 17; the two pits are intercut it is not possible to clearly distinguish between the two.

**associated finds** unknown

**Small find no.:** none given as yet

**Ian Riddler's reference number:** IR713

**Illustration no. in archaeological report:** unpublished

**Current location:**

The Archaeological Service, Suffolk County Council

**Contact information:**

Environment and Transport Department, Shire Hall, Bury St Edmunds, Suffolk, IP33 2AR

tel: 01284 352 440

Keith Wade

**Similar flutes:**

Similar fragments of swan bone flute: London Billingsgate [43]

Complete swan bone flutes: Norwich Bishopsgate [69], Old Sarum A2 [73]

**Bibliography:**

Lawson, G, 1993. in EAA 62 refers to report in preparation (Suffolk Arch Unit)  
Riddler, I, forthcoming.

Name of flute (location/site):

[32]

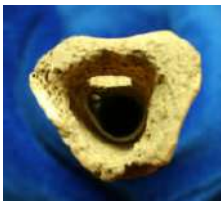
Irthlingborough

39

Date:

1300 - 1399

Illustration:



Physical information:

**Species:** ovicaprid

**Bone used:** tibia

**Extent:** complete

**Length:** 141.3mm

**No. of toneholes:** 2

**Window:** D shaped

**Evidence of manufacture?** exterior surfaces worked by knife, cut marks still clear around distal end.

**Unusual characteristics/comments:** The form of this flute is unusual in that it has just two toneholes. The Castle Acre sheep tibia flute also has two toneholes, but has three thumbholes in addition. Other similar sheep tibia flutes have four or five toneholes (London Thames Exchange)

Archaeological information:

**Site:** name Irthlingborough

code ILS01

type rural / elite (manorial site)

**information** This is a manorial farm site. The manor house was constructed in the 13<sup>th</sup> century or earlier, with the addition of minor boundary walls and farm buildings (a malthouse/barn, dovecote and possible kitchen/bakehouse) by the early 14<sup>th</sup> century. Finds suggest that these farm buildings had been abandoned by the end of the 14<sup>th</sup> century, and that the manor house had also fallen into disuse.

**Date excavated:** 2001

**Period:** n/a

**Context:** number Pit 435, southern pits

**information/description** Pit 435 is in the southern of two areas of 'intercut quarry pits' associated with the farm buildings. It had near vertical sides and a flat bottom, and was between 0.85 and 1.2m deep. The fill was 'a mixture of darker soils containing occupation debris and steeply inclined dumps of redeposited natural orange sands and smaller limestone' (Chapman et al). This area of pits became a yard during the lifetime of the farm buildings.

**associated finds** finds from these pits include domestic pottery, another flute, animal bone and part of a quern, remnants of boundary walls and limestone surfaces.

**Small find no.:** 39

**Illustration no. in archaeological report:** fig.10,1, p.97 (Chapman et al. 2003)

**Current location:**

Northamptonshire Archaeology

**Contact information:**

2 Bolton House, Wootton Hall Park, Northampton, NN3 8BE

Tel : 01604 700493/4

Tora Hylton / Andy Chapman

**Similar flutes:** The sheep tibia flute from Castle Acre [10] also has two toneholes at the distal end, but has three thumbholes in addition. Other similar sheep tibia flutes have four or five toneholes, e.g. London Thames Exchange [54]

**Bibliography:**

Chapman, A, Atkins, R, and Lloyd, R, 2003. A medieval manorial farm at Lime Street Irthlingborough, Northamptonshire, *Northamptonshire Archaeology*, **31**, 71-103.

Name of flute (location/site):	[33]
Irthlingborough 57	Date: 1300 - 1399



Physical information:

**Species:** goose

**Bone used:** ulna

**Extent:** fragment (tonehole end)

**Length:** 49.6mm

**No. of toneholes:** 1 ½

**Window:** n/a

**Evidence of manufacture?** the end is neatly trimmed, and cut marks are evident around the toneholes

**Unusual characteristics/comments:** the toneholes are irregular in shape and seem crudely made.

Archaeological information:

**Site:** name Irthlingborough

code ILS01

type rural / elite (manorial site)

**information** This is a manorial farm site. The manor house was constructed in the 13<sup>th</sup> century or earlier, with the addition of minor boundary walls and farm buildings (a malthouse/barn, dovecote and possible kitchen/bakehouse) by the early 14<sup>th</sup> century. Finds suggest that these farm buildings had been abandoned by the end of the 14<sup>th</sup> century, and that the manor house had also fallen into disuse.

**Date excavated:** 2001

**Period:** n/a

**Context:** number Pit 325, southern pits

**information/description** Pit 325 is in the southern of two areas of 'intercut quarry pits' associated with the farm buildings. It had near vertical sides and a flat bottom, and was between 0.85 and 1.2m deep. The fill was 'a mixture of darker soils containing occupation debris and steeply inclined dumps of redeposited natural orange sands and smaller limestone' (Chapman et al). This area of pits became a yard during the lifetime of the farm buildings.

**associated finds** Finds from these pits include domestic pottery, another flute, animal bone and part of a quern, remnants of boundary walls and limestone surfaces.

**Small find no.:** 57

**Illustration no. in archaeological report:** fig.10,2, p.97 (Chapman et al. 2003)

Current location:

Northamptonshire Archaeology

Contact information:

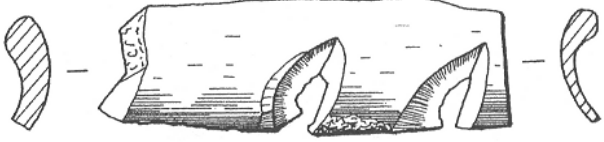
[REDACTED]

Similar flutes:

Gloucester Park Street 23 [23] (similar goose ulna flute fragment)  
this flute would probably originally have had three front toneholes, like the flutes from Southampton [79] and Acton Court [1]

Bibliography:

Chapman, A, Atkins, R, and Lloyd, R, 2003. A medieval manorial farm at Lime Street Irthlingborough, Northamptonshire, *Northamptonshire Archaeology*, **31**, 71-103.

<u>Name of flute (location/site):</u>  <p style="text-align: center;">Jarrow</p>	<p style="text-align: right;"><b>[34]</b></p> <hr/> <u>Date:</u> Medieval
<u>Illustration:</u>  	
<p style="text-align: center;"><u>Physical information:</u></p> <p><b>Species:</b> ovicaprid  <b>Bone used:</b> metapodial  <b>Extent:</b> fragment (tonehole section)  <b>Length:</b> 40mm  <b>No. of toneholes:</b> 2  <b>Window:</b> not present  <b>Evidence of manufacture?</b>  <b>Unusual characteristics/comments:</b> it is unusual for the toneholes to be cut obliquely like this. Usually they are circular, made by the twisting point of a knife.</p>	
<p style="text-align: center;"><u>Archaeological information:</u></p> <p><b>Site:</b> <b>name</b> Jarrow Slake  <b>code</b> JS 73  <b>type</b> elite (monastic site)  <b>information</b> Jarrow was the site of an important Anglo Saxon and subsequent medieval monastery. The area of Jarrow Slake is a combination of the areas to the north, east and south of the church, the monastery and the general area known as the 'Guardianship'.  <b>Date excavated:</b> 1973  <b>Period:</b>  <b>Context:</b> <b>number</b> Area IV W, Layer 16 EPM JS 73 OI 164  <b>information/description</b> Area IV West was an area to the south of the church and monastery, and had 'several phases of riverside structures and activity dated to the period from the Conquest through the Later Medieval period and into the Later Post-Medieval period' (Cramp 205, 317)  <b>associated finds</b> unknown  <b>Small find no.:</b> WB44  <b>Museum accession number:</b> JARBW 1999.10201  <b>Illustration no. in archaeological report:</b> fig. 31.5.4, WB44 (Cramp 2006, 279)</p>	
<p><b><u>Current location:</u></b>  Bede's World Museum  <b><u>Contact information:</u></b>  Bede's World, Church Bank, Jarrow, Tyne &amp; Wear, NE32 3DY  Telephone: 0191 489 2106  Email: <a href="mailto:visitor.info@bedesworld.co.uk">visitor.info@bedesworld.co.uk</a></p>	
<p><b><u>Similar flutes:</u></b>  unknown</p>	
<p><b><u>Bibliography:</u></b>  Cramp, R, 2005. <i>Wearmouth and Jarrow Monastic Sites, Volume 1</i>. Swindon: English Heritage.  Cramp, R, 2006. <i>Wearmouth and Jarrow Monastic Sites, Volume 2</i>. Swindon: English Heritage.</p>	

<p>Name of flute (location/site):</p> <p style="text-align: center;">Keynsham Abbey</p>	<p style="text-align: right;"><b>[35]</b></p> <p>Date: 1266-1366 l.13<sup>th</sup>– mid 14<sup>th</sup></p>
<p><u>Illustration:</u></p> 	

### Physical information:

**Species:** Deer (fallow)

**Bone used:** metatarsal

**Extent:** complete (proximal end repaired with plaster of Paris)

**Length:** 164mm

**No. of toneholes:** 5 + thumbhole

**Window:** rectangular

**Evidence of manufacture?**

**Unusual characteristics/comments:** Thumbhole present, and rectangular window. When it was excavated it was in fragments. It was glued together, then re-glued with Unibond and coated with a sealer. The broken proximal end was augmented with plaster of Paris and a plasticine block was fitted so that it could be played (a practice no longer condoned).

### Archaeological information:

**Site:** name Keynsham Abbey

code KA

type elite (religious house)

**information** Keynsham Abbey was founded c.1167, close to the river Avon and mid way between Bath and Bristol. It was dissolved in 1539. It was of the Victorine order, and had similarities with Glastonbury Abbey and Bristol cathedral. It was an extensive building complex of high status. Rescue excavations were undertaken by the Folk House Archaeological Club, Bristol, in the grounds of the subsequently constructed Abbotsford House, Keynsham, which is now the A4 Keynsham bypass.

**Date excavated:** 1964

**Period:** n/a

**Context:** number n/a

**information/description** Found in a footing trench of part of a thick wall. It was found in a lower level, 5 ft from the surface.

**associated finds** (of the wall):

- Edward III silver halfpenny minted in London and dated 1344-51,
- a glass bead (found inside the wall at a higher level than the flute, and not easily dateable)
- sherds of pottery (from Western France and dated to the late 13<sup>th</sup> century)

**Small find no.:**

BO 12/1

(numbering of B.Lowe's catalogue, i.e. page 12, item 1. BO refers to bone as the material code)

**Illustration no. in archaeological report:**

fig.1, p.48 (Barrett 1969), fig. 78c, p.149 (MacGregor 1985)

**Current location:**

Keynsham Town Hall, basement.

**contact information:**

Mrs Barbara Lowe, The Keynsham Society

0117 986 3510 (home)

**contact information (archive):**

Roman Baths Museum, Bath, BA1 1LZ

Susan Fox/Stephen Clews

[Stephen\\_Clews@bathnes.gov.uk](mailto:Stephen_Clews@bathnes.gov.uk)

01225 477 779



**Similar flutes:**

White Castle [98]

**Bibliography:**

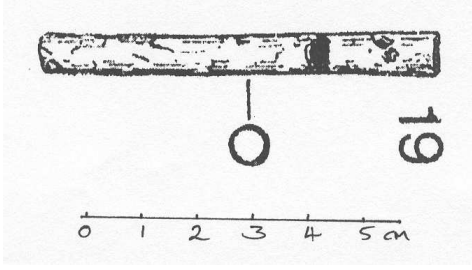
Barrett, J H, 1969. A Fipple Flute or Pipe from the site of Keynsham Abbey, *Galpin Society Journal*, **22**, 47-50.

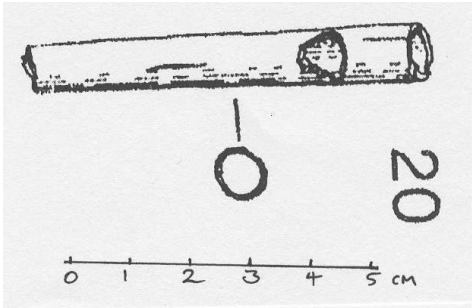
Crane, F, 1972. *Extant Medieval Musical Instruments: A Provisional Catalogue by Types*. Iowa: University of Iowa Press.

Lowe, B J, et al, 1987. Keynsham Abbey: Excavations 1961-1985, *Somerset Archaeology and Natural History*, 81 -103.

Lowe, B J, 1995. The demise of Keynsham's Great House, *North Wansdyke Past and Present, Journal of Keynsham and Saltford Local History Society*, **7**, 3-11.

MacGregor, A, 1985. *Bone Antler Ivory & Horn. The technology of Skeletal Materials Since the Roman Period*, 148-151. Croom Helm.

<u>Name of flute (location/site):</u>  <p style="text-align: center;">King's Lynn All Saints Street</p>	<p style="text-align: right;"><b>[36]</b></p> <hr/> <u>Date:</u> c.1150 - 1200
<u>Illustration:</u>  	
<p style="text-align: center;"><u>Physical information:</u></p> <p><b>Species:</b> goose  <b>Bone used:</b> ulna  <b>Extent:</b> could be either a fragment (window end) or the complete length  <b>Length:</b> 72mm  <b>No. of toneholes:</b> 0  <b>Window:</b> D shaped  <b>Evidence of manufacture?</b>  <b>Unusual characteristics/comments:</b> it is unclear if this is a neatly trimmed short whistle, or a broken full length flute broken above the toneholes.</p>	
<p style="text-align: center;"><u>Archaeological information:</u></p> <p><b>Site:</b> name All Saints Street  code AS  type urban  <b>information</b> Area of 4 tenement properties, delimited by wattle fences. Remains of sheds and byres. No dwellings discovered, but properties show signs of intense occupation associated with keeping domestic animals and other activities.  <b>Date excavated:</b> 1963 - 1970  <b>Period:</b> Period Ic, Wattle Phase  <b>Context:</b> number layer 12 (excavation report doesn't state where found on site)  <b>information/description</b> Thick amorphous layer of occupation material.  <b>associated finds</b> Layer rich in finds, particularly local pottery (Grimston Thetford-type ware).  <b>Small find no.:</b> 133  <b>Illustration no. in archaeological report:</b> fig.143, no.19, p.313 (Clarke and Carter 1977)</p>	
<p><b>Current location:</b> unknown – not at King's Lynn Museum, Norwich Castle Museum, or in the Gressenhall Archaeological Store.</p>	
<p><b>Similar flutes:</b>  King's Lynn Marks and Spencers [37], Rayleigh Castle 1909 [75]</p>	
<p><b>Bibliography:</b>  Clarke, H, and Carter, A., 1977. <i>Excavations in King's Lynn 1963-1970. Society for Medieval Archaeology Monograph Series, No. 7</i>, 313-4. London: Society for Medieval Archaeology.</p>	

<p>Name of flute (location/site):</p> <p style="text-align: center;">King's Lynn Marks and Spencers</p>	<p style="text-align: right;"><b>[37]</b></p> <p>Date: 1300 - 1400</p>
<p>Illustration:</p> 	
<p style="text-align: center;"><u>Physical information:</u></p> <p><b>Species:</b> goose  <b>Bone used:</b> ulna  <b>Extent:</b> fragment (window end)  <b>Length:</b> 68mm  <b>No. of toneholes:</b> 0  <b>Window:</b> D shaped  <b>Evidence of manufacture?</b> unknown  <b>Unusual characteristics/comments:</b> this appears to be broken at the distal end of the flute, though without examining it first hand it is difficult to confirm this.</p>	
<p style="text-align: center;"><u>Archaeological information:</u></p> <p><b>Site:</b> name Marks &amp; Spencers  code MS  type urban  information  <b>Date excavated:</b> 1963 - 1970  <b>Period:</b> Period II  <b>Context:</b> number layer DE7  <b>information/description</b> Black occupation material with patches of mixed or clean silt; max depth 2 ½ feet.  <b>associated finds</b> finds from wattle phases III and IV listed together on p.12: many finds including pottery, copper alloy, lead, iron, roof furniture, glass, bone and stone. Finds from this specific layer are unknown.  <b>Small find no.:</b> 43  <b>Illustration no. in archaeological report:</b> fig.143, no.20, p.313 (Clarke and Carter 1977)</p>	
<p><b>Current location:</b> unknown – not at King's Lynn Museum, Norwich Castle Museum, or in the Gressenhall Archaeological Store.</p>	
<p><b>Similar flutes:</b>  King's Lynn All Saints Street <b>[36]</b>, Rayleigh Castle 1909 <b>[75]</b></p>	
<p><b>Bibliography:</b>  Clarke, H, and Carter, A., 1977. <i>Excavations in King's Lynn 1963-1970. Society for Medieval Archaeology Monograph Series, No. 7</i>, 313-4. London: Society for Medieval Archaeology.</p>	

Name of flute (location/site):  <div style="text-align: center;">           Lincoln            Flaxengate 126         </div>	<b>[38]</b>
	Date: c.930/40 - 970
Illustration: 	

Physical information:

**Species:** crane

**Bone used:** ulna

**Extent:** fragment (middle section)

**Length:** 175mm

**No. of toneholes:** 1

**Window:** D shaped (ramp only)

**Evidence of manufacture?** longitudinal scraping on all surfaces, tubercles of feather attachment smoothed off and not prominent.

**Unusual characteristics/comments:** slight patina on surface

Archaeological information:

**Site:** name Flaxengate/Grantham Street

**code -**

**inventory number** F75 B76

**type** urban

**information** Lincoln was a successful urban centre with considerable local and national trade. It was occupied by a complex series of timber buildings from the late 9<sup>th</sup> century to the late 12<sup>th</sup> century. The first buildings in Flaxengate coincide with the Danish conquest of Lincoln in the late 9<sup>th</sup> century. In the mid to late 10<sup>th</sup> century workshops were constructed on the site; this may be connected to Edmund's reconquest of the Danelaw in 942. In the mid to late 11<sup>th</sup> century, intensive industrial activity ceased. This may be connected to the Norman conquest.

**Date excavated:** 1972 – 1976 Lincoln Archaeological Trust

**Period:** III

**Context:** number associated with structure 9 and earlier activity

**information/description** structure 9 had stone footings, unlike the other contemporary buildings, and was set well away from the street frontage on a different alignment. It may have had a specific function, such as grain storage, and may have been ancillary to building 10 on the street frontage.

**associated finds** unknown

**Catalogue no. in publication:** 126

**Illustration no. in archaeological report:** fig.13, p.16 (Mann 1982)

Current location:

on display, The Collection, Lincoln

Contact information:

The Collection, Danes Terrace, Lincoln, LN2 1 LP

Tel: 01522 550990

Fax: 01522 550991

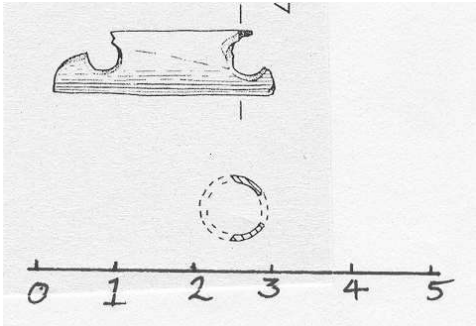
Email: [thecollection@lincolnshire.gov.uk](mailto:thecollection@lincolnshire.gov.uk)

Similar flutes:

Old Sarum A2 [73], Wicken Bonhunt 106 [100]

Bibliography:

Mann, J, 1982. *Early Medieval Finds from Flaxengate. 1: Objects of Antler, bone, Stone, Horn, Ivory, Amber and Jet. The Archaeology of Lincoln 14/1*, 1-68. London: The Council for British Archaeology.

<u>Name of flute (location/site):</u>  <p style="text-align: center;">Lincoln Flaxengate 127</p>	<p style="text-align: right;"><b>[39]</b></p> <hr/> <u>Date:</u> 1140 - 1160
<u>Illustration:</u>  	
<p style="text-align: center;"><u>Physical information:</u></p> <p> <b>Species:</b> goose  <b>Bone used:</b> ulna  <b>Extent:</b> fragment (middle section)  <b>Length:</b> 27mm  <b>No. of toneholes:</b> 2 x ½  <b>Thumbhole present?</b>  <b>Window:</b> n/a  <b>Evidence of manufacture?</b>  <b>Decoration present?</b>  <b>Surface wear?</b> Smooth and polished as if from use.  <b>Unusual characteristics/comments:</b> this appears to be the middle section of a typical goose ulna flute; it would probably have had 3 front toneholes. </p>	
<p style="text-align: center;"><u>Archaeological information:</u></p> <p> <b>Site:</b> name Flaxengate/Grantham Street  code -  <b>inventory number</b> F75 B76  <b>type</b> urban  <b>information</b> Lincoln was a successful urban centre with considerable local and national trade. It was occupied by a complex series of timber buildings from the late 9<sup>th</sup> century to the late 12<sup>th</sup> century. The first buildings in Flaxengate coincide with the Danish conquest of Lincoln in the late 9<sup>th</sup> century. In the mid to late 10<sup>th</sup> century workshops were constructed on the site; this may be connected to Edmund's reconquest of the Danelaw in 942. In the mid to late 11<sup>th</sup> century, intensive industrial activity ceased. This may be connected to the Norman conquest. </p> <p> <b>Date excavated:</b> 1972 – 1976 Lincoln Archaeological Trust  <b>Period:</b> XI  <b>Context:</b> number Pit F733 (ATK)  <b>information/description</b> Pit F733 was one of 6 pits in a group along the side of the road (new road surface up to 4m wide, slightly cambered), extensive dark grey silty loam dump covered the period XI deposits.  <b>associated finds</b> unknown  <b>Catalogue no. in publication:</b> 127  <b>Illustration no. in archaeological report:</b> fig.14,127 p.16 (Mann 1982) </p>	

**Current location:**

unknown, not at The Collection with the other Flaxengate flutes

**Contact information:**

The Collection, Danes Terrace, Lincoln, LN2 1 LP

Tel: 01522 550990

Fax: 01522 550991

Email: [thecollection@lincolnshire.gov.uk](mailto:thecollection@lincolnshire.gov.uk)

**Similar flutes:**

complete goose ulna flutes with 3 front toneholes: Southampton [79], Thetford  
Brandon Road 542 [84]

**Bibliography:**

Mann, J, 1982. *Early Medieval Finds from Flaxengate. 1: Objects of Antler, bone, Stone, Horn, Ivory, Amber and Jet. The Archaeology of Lincoln 14/1*, 1-68. London: The Council for British Archaeology.

Name of flute (location/site):

[40]

Lincoln  
Flaxengate 128

Date:  
870 - 1070

Illustration:





### Physical information:

**Species:** sheep

**Bone used:** tibia

**Extent:** fragment (window end)

**Length:** 54.8mm

**No. of toneholes:** 0

**Window:** D shaped

**Evidence of manufacture?** Decorative lines seem to have been made by knife rather than a saw. The ramp appears to have been made in one cut, and there seem to be whiskers of bone fibres on the underside of the ramp that haven't been removed during manufacture. The end is neatly trimmed.

**Unusual characteristics/comments:** Decorated with dots and criss-cross lines; bone flutes are usually undecorated. Short distance to window from proximal end. Smooth and polished from possible wear, though there is consolidant in some of the cracks, and it is not clear if this coats the surface also. The groove at the proximal end above the window does not seem deep enough to be functional, and is more likely to be purely decorative.

### Archaeological information:

**Site:** name Flaxengate/Grantham Street

code -

inventory number F75 B44

type urban

**information** Lincoln was a successful urban centre with considerable local and national trade. It was occupied by a complex series of timber buildings from the late 9<sup>th</sup> century to the late 12<sup>th</sup> century. The first buildings in Flaxengate coincide with the Danish conquest of Lincoln in the late 9<sup>th</sup> century. In the mid to late 10<sup>th</sup> century workshops were constructed on the site; this may be connected to Edmund's reconquest of the Danelaw in 942. In the mid to late 11<sup>th</sup> century, intensive industrial activity ceased. This may be connected to the Norman conquest.

**Date excavated:** 1972 – 1976 Lincoln Archaeological Trust

**Period:** III – VII?

**Context:** number E6

**information/description** levelling dump assoc with a group of pits at the western end of the site

**associated finds** unknown

**Catalogue no. in publication:** 128

**Illustration no. in archaeological report:** fig.14,128 p.16 (Mann 1982)

**Current location:** The Collection, Lincoln

**Contact information:**

The Collection, Danes Terrace, Lincoln, LN2 1 LP

Tel: 01522 550990

Fax: 01522 550991

Email: thecollection@lincolnshire.gov.uk

**Similar flutes:**

Similarly to this flute, Exeter B5 [16] has a groove round the proximal end, and is made from a small sheep tibia.

No other flutes are decorated in this way, though some whittle tang knife handles are (Huddle forthcoming). If this were a knife handle there would be no air space to allow functioning as a flute.

**Bibliography:**

Huddle, J, forthcoming. Bone Knife Handles, in E Shepherd Popescu, Norwich Castle: Excavation and Historical Survey 1987-98. Part II: c.1345 to modern.

Mann, J, 1982. *Early Medieval Finds from Flaxengate. 1: Objects of Antler, bone, Stone, Horn, Ivory, Amber and Jet. The Archaeology of Lincoln 14/1*, 1-68. London: The Council for British Archaeology.

Name of flute (location/site):

[41]

Lincoln  
The Sessions House

Date:  
900 - 932

Illustration:



Physical information:

**Species:** goose  
**Bone used:** ulna  
**Extent:** fragment (tonehole end)  
**Length:** 68.5mm  
**No. of toneholes:** 3  
**Window:** n/a  
**Evidence of manufacture?**  
**Unusual characteristics/comments:**

Archaeological information:

**Site:** **name** The Sessions House  
**code** SES97  
**type** urban  
**information** Lincoln was a successful urban centre with considerable local and national trade. It was occupied by a complex series of timber buildings from the late 9<sup>th</sup> century to the late 12<sup>th</sup> century. It became part of the Danelaw in the late 9<sup>th</sup> century and was re-conquered by Edmund in 942.  
**Date excavated:** 1997  
**Period:** n/a  
**Context:** **number** 142, trench 6  
**information/description** this is a sealed demolition deposit, thought to be from the rear yards of properties that faced Pottergate (a medieval street no longer extant). The deposit is above earlier Roman layers, and is cut by a (early-mid to late) 10<sup>th</sup> century kiln. It is possible that the construction of this kiln coincides with Edmund's reconquest of Lincoln from the Danes in 942.  
**associated finds** copper waste, slag, residual Roman pottery.  
**Small find no.:** 35  
**Illustration no. in archaeological report:** unpublished

Current location:

on display, The Collection, Lincoln

Contact information:

The Collection, Danes Terrace, Lincoln, LN2 1 LP  
tel: 01522 550990  
email: [thecollection@lincolnshire.gov.uk](mailto:thecollection@lincolnshire.gov.uk)  
Antony Lee [antony.lee@lincolnshire.gov.uk](mailto:antony.lee@lincolnshire.gov.uk)

Similar flutes:

Southampton [79], London Watling Court [58], London Bank of England [42], Thetford Brandon Road 542 [84]

Bibliography:

unpublished

Name of flute (location/site):	[42]
<p style="text-align: center;">London Bank of England, Threadneedle St</p>	<p>Date: unknown, presumed Medieval</p>



Physical information:

**Species:** goose

**Bone used:** ulna

**Extent:** complete

**Length:** 130.4mm

**No. of toneholes:** 3

**Window:** oval

**Evidence of manufacture?** longitudinally scraped on all surfaces, ends neatly trimmed. Holes made by cutting across the bone rather than using the point of a knife in a twisting drilling action.

**Unusual characteristics/comments:**

The toneholes and windows are crudely made, though the amount of longitudinal scraping suggests time and care spent in preparing the bone.

Archaeological information:

**Site:** **name** Bank of England, Threadneedle St, Bank, London, EC2

**code** n/a

**type** urban

**information** this is a large site between Threadneedle St and Lothbury, in the centre of the medieval city. At the time when this flute was excavated (1920s and 30s), the area of Bank was being rebuilt. Many of the finds come from the waterlogged fill of the River Walbrook, which crossed the site from north to south. The site included the medieval church of St Christopher le Stocks.

**Date excavated:** 1928 - 1934

**Period:** n/a

**Context:** **number** n/a

**information/description** Museum records note that this is Roman, though it should be noted that this is an estimate and not based on archaeological evidence. It would seem more likely to date to the 12-14<sup>th</sup> centuries, and has no parallel with any known Roman instrument.

**associated finds** unknown

**Small find no.:** n/a

**Museum of London accession no:** 14026

**Illustration no. in archaeological report:** unpublished

Current location:

on display, Roman Gallery, Museum of London (LW.GAL.R.8)

Contact information:

Museum of London, 150 London Wall, London, EC2Y 5HN

[www.museumoflondon.org.uk](http://www.museumoflondon.org.uk)

Tel: 020 7814 5735

John Clark

Similar flutes:

Southampton [79], London Watling Court [58], London Bank of England [42], Thetford Brandon Road 542 [84]

Bibliography:

Clark, J, 2006. personal communication.

<u>Name of flute (location/site):</u>  London Billingsgate	<div data-bbox="1225 143 1295 201">[43]</div> <div data-bbox="1091 201 1295 344"><u>Date:</u> 1040 - 1080</div>
<u>Illustration:</u>  The illustration shows four bone flutes arranged horizontally on a blue background. A scale bar with a 'cm' label and five alternating blue and white segments is positioned above the second flute from the top. The flutes vary in length and preservation. The bottom-most flute has a small inset image showing its cross-section, which is triangular in shape.	

Physical information:

**Species:** swan

**Bone used:** ulna

**Extent:** fragment (window end)

**Length:** 191mm

**No. of toneholes:** ½

**Window:** D shaped

**Evidence of manufacture?** Some longitudinal scraping.

**Unusual characteristics/comments:** Toneholes are cut into the concave surface.

Archaeological information:

**Site:** name Billingsgate market lorry park, Lower Thames Street, EC3

code BIG82

type urban

**information** this site is a waterfront site, lying between Lower Thames Street and the River Thames. It was first mentioned as a centre of international trade in Ethelred's law code of c.1000, when it was receiving imports of fish, blubber-fish, wood, wool, vinegar, fat, pepper and pigs. A series of waterfronts were constructed there between the 11<sup>th</sup> and 13<sup>th</sup> centuries; the first waterfronts were constructed c.1040, and they were replaced c.1055. Further work (Period V) occurred in 1080. The site of New Fresh Wharf site lies immediately to the east.

**Date excavated:** 1982 - 83

**Period:** IV.3

**Context:** number 7595

**information/description** this is a compact stony layer, part of the surfacing of the ramp of an inlet, between the banks of two wharves.

**associated finds** unknown

**Small find no.:** 5268 (code BIG82/243 is incorrect)

**LAARC code:** BIG82[75/95]<5268>

**Illustration no. in archaeological report:** fig.3.88, p.207 (Alan 1991)

Current location:

LAARC

Contact information:

Museum of London Archaeological Archive, 46 Eagle Wharf Road, Hackney, London, N1 7EE

tel: 0207 566 9319 Cath Maloney (archive)

[cmaloney@museumoflondon.org.uk](mailto:cmaloney@museumoflondon.org.uk)

tel: 0207 566 9310 Adam Corsini (finds)

Similar flutes:

Old Sarum A2 [73], Norwich Bishopsgate [69]

Bibliography:

Pritchard, F, 1991. Small Finds, in A G Vince (ed), *Aspects of Saxon-Norman London 2: Finds and Environmental Evidence*. Middlesex Archaeological Society Special Paper No. 12, 207. London: Middlesex Archaeological Society.

Schofield, J, and Maloney, C (eds), 1988. *Archaeology in the City of London 1907-1991. A Guide to Records of Excavations by the Museum of London and Its Predecessors*, 177-179. London: Museum of London.

*BIG82 Archive Report*, Museum of London Archaeological Archive



Name of flute (location/site):

**[44]**

London  
250 Bishopsgate

Date:  
1300 - 1500

Illustration:





Physical information:

**Species:** sheep

**Bone used:** tibia

**Extent:** complete

**Length:** 151.3mm

**No. of toneholes:** 3

**Window:** rough D shape

**Evidence of manufacture?**

**Unusual characteristics/comments:** the three toneholes are placed centrally on the instrument

Archaeological information:

**Site:** **name** 250 Bishopsgate, EC2

**code** STE95

**type** urban / elite (monastic)

**information** this site is the priory and hospital precinct of St Mary Spital (Spitalfields)

**Date excavated:** 1996

**Period:** n/a

**Context:** **number** 689

**information/description** part of the fill of a quarry pit, cut in the 13<sup>th</sup> century, but filled in the following two centuries. The pit was in Area A, in the SW part of the site, which was not adjacent to the monastic buildings.

**associated finds** 14<sup>th</sup> and 15<sup>th</sup> century pottery

**Small find no.:** 172

**Illustration no. in archaeological report:** unpublished

Current location:

On display, Bishopsgate

Contact information:

Museum of London Archaeological Service, 46 Eagle Wharf Road, Hackney, London, N1 7EE

tel: 0207 410 2228 Vince Gardner (archive: MoLAS) vinceg@molass.org.uk

tel: 0207 566 9310 Adam Corsini (finds: LAARC)

Similar flutes:

Great Massingham [26], London Spitalfields [53], London Thames Exchange [54], Stanton Low [80]

Bibliography:

Thomas, C, and Dunwoodie, L, 1997. *250 Bishopsgate, London E1. A Post-Excavation Assessment*. London: MoLAS.

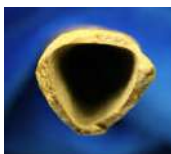
Name of flute (location/site):

[45]

London  
Coleman Street

Date:  
unknown,  
presumed  
Medieval

Illustration:



### Physical information:

**Species:** ovicaprid

**Bone used:** tibia

**Extent:** complete

**Length:** 145.6mm

**No. of toneholes:** 1

**Window:** D shaped/triangular

**Evidence of manufacture?** Some long scraping marks, and some large chatter marks present on the front surface. The protuberances at the triangular distal end have been cut away and trimmed. There is an incised groove at the proximal end above the window but it is too shallow to be functional. The tonehole appears to have been made by first cutting across the bone, and then using the point of the knife in a twisting action.

**Unusual characteristics/comments:**

The tonehole is set extremely close to the window, and is at the proximal end rather than the (usual) distal end of the instrument. In addition, the window is at the 'small' end of the tibia, instead of at the larger triangular end, as seen in the majority of ovicaprid tibia flutes. The distal end is not trimmed across in a straight line; rather, it has a concave curve. All of the above observations may point to the flute having been made in the usual orientation initially (i.e. with the window at the larger triangular end of the bone), but after some unforeseen breakage, the bone was turned around and re-made, the break at the window being trimmed and neatened, and the toneholes becoming the window and the existing tonehole. This cannot be a certain explanation, but must be considered as a possibility.

### Archaeological information:

**Site:** name Coleman St, Bank, City of London

code n/a

type urban

**information** Coleman Street was a street within the city wall, which ran from north to south, from London Wall to Gresham Street. It was the main north-south route inside the city wall, parallel to modern Moorgate (a street that came into existence after the medieval period).

**Date excavated:** acquired by Museum of London 1920

**Period:** n/a

**Context:** number n/a

**information/description** no information is known about the site or context, and the flute is presumed to be Medieval.

**associated finds** unknown

**Small find no.:** n/a

**Museum of London accession no:** A22674

**Illustration no. in archaeological report:** unpublished

### Current location:

In store, Museum of London (LW.GEN.44.12)

### Contact information:

Museum of London, 150 London Wall, London, EC2Y 5HN

[www.museumoflondon.org.uk](http://www.museumoflondon.org.uk)

John Clark

Tel: 020 7814 5735

### Similar flutes:

London Paternoster Square [50] (window at smaller end of tibia)

### Bibliography:

Clark, J, 2006. personal communication.

<p>Name of flute (location/site):</p> <p style="text-align: center;">London Crutched Friars</p>	<p style="text-align: right;"><b>[46]</b></p> <p>Date: unknown, presumed Medieval</p>
<p>Illustration:</p> 	

Physical information:

**Species:** ovicaprid

**Bone used:** tibia

**Extent:** complete

**Length:** 126.5mm

**No. of toneholes:** 0

**Window:** D shaped

**Evidence of manufacture?** no longitudinal scraping, ends trimmed neatly by knife. Large ramp area with cut marks.

**Unusual characteristics/comments:** Large ramp area. No toneholes at all the front of the instrument is placed on the 'side' of the bone, as seen in the Riplingham flute.

Archaeological information:

**Site:** **name** Crutched Friars, Aldgate, London EC3

**code** n/a

**type** urban

**information** Crutched Friars is a street on the east side of the City of London, inside the medieval city wall. Friars of the Cross had a small house there, after which the street was named. No record exists of where on the site the flute was found. Crutched Friars is near modern day Fenchurch Street station.

**Date excavated:** 1913

**Period:** n/a

**Context:** **number** n/a

**information/description** Museum records note that this is Anglo-Saxon, though it should be noted that this is an estimate and not based on archaeological evidence.

**associated finds** half of a 13<sup>th</sup> century tile was found on the same site

**Small find no.:** n/a

**Museum of London accession no:** A12293

**Illustration no. in archaeological report:** unpublished

**Current location:** in store, Museum of London (LW.GEN.44.23)

**Contact information:**

Museum of London, 150 London Wall, London, EC2Y 5HN

[www.museumoflondon.org.uk](http://www.museumoflondon.org.uk)

John Clark

Tel: 020 7814 5735

**Similar flutes:**

Riplingham [77] (same orientation of bone),

London Paternoster Square [50] (similar large flute with no toneholes)

**Bibliography:**

Clark, J, 2006. personal communication.

Name of flute (location/site):

[47]

London  
London Wall 1243

Date:

unknown,  
presumed  
Medieval

Illustration:



### Physical information:

**Species:** crane

**Bone used:** tibiotarsus

**Extent:** fragment (middle and window end)

**Length:** 132.9mm

**No. of toneholes:** 2 ½

**Window:** oval

**Evidence of manufacture?** longitudinal scraped with many chatter marks.

Toneholes have been made but cutting across the bone, rather than by a twisting motion by the point of a knife. Crudely manufactured.

**Unusual characteristics/comments:** Many longitudinal cracks present that have been consolidated. Broken across third tonehole. The holes have been made in a very curved surface of the bone, rather than in a flat surface. Consultation with the NHM Bird Group, Tring, led to the provisional identification of the bone as swan/crane ulna based on image only. However, the flute was examined by Alan Pipe of MoLAS at the Museum of London on request, who offers the almost certain identification of crane tibiotarsus.

### Archaeological information:

**Site:** **name** London Wall, London EC2

**code** n/a

**type** urban

**information** London Wall was a street running along the inside of, and parallel to, the medieval city wall, from Bishopsgate in the east to Cripplegate in the west. Many finds made in the 19<sup>th</sup> century, of Roman and later date, probably came from a large building site (the warehouse of Gooch and Cousens) in the area to the east of Moorgate, south of London Wall, an area that includes the upper valley of the Walbrook and the waterlogged fill of the stream. The street of London Wall still exists, but is diverted at its western end past the Museum of London.

**Date excavated:** before 1908

**Period:** n/a

**Context:** **number** unknown

**information/description** presumed to be 'Roman' when originally catalogued by the Museum of London, though it should be noted that this is an estimate and not based on archaeological evidence.

**associated finds** unknown

**Small find no.:** n/a

**Museum of London accession no:** 1243

**Original London Guildhall Museum reference number:** 208

**Illustration no. in archaeological report:** plate XXXIV, 13 (1908 London Guildhall Museum Catalogue)

### Current location:

In store, Museum of London (LW.GEN.29.7)

### Contact information:

Museum of London, 150 London Wall, London, EC2Y 5HN

[www.museumoflondon.org.uk](http://www.museumoflondon.org.uk)

Tel: 020 7814 5735

John Clark

### Similar flutes:

North Elmham Park [67], Gloucester Park Street 35 and 40 [24]

### Bibliography:

Library Committee of the Corporation of the City of London, 1908. *Catalogue of the Collection of London Antiquities in the Guildhall Museum (second edition)*, 42.

London: Library Committee of the Corporation of the City of London.

Clark, J, 2006. personal communication



Name of flute (location/site):	[48]
<p style="text-align: center;">London London Wall 1244</p>	<p>Date: unknown, presumed Medieval</p>





### Physical information:

**Species:** ?deer

**Bone used:** metatarsal

**Extent:** complete (upper part of window missing)

**Length:** 120.3mm

**No. of toneholes:** 4

**Window:** wide D with no upper margin

**Evidence of manufacture?** no longitudinal scraping

**Unusual characteristics/comments:** This is an unusual instrument in that all the toneholes and the window are bordered by small gouged marks, likely to have been made by rodent teeth after deposition (O'Connor 2000, p. 48, 50). The distal end of the instrument still has the solid epiphysis of bone present, and there appears to be a possible pink residue around the window area that may be the result of plasticine put in place to make the instrument playable (a practice sometimes done in the 1960s).

### Archaeological information:

**Site:** **name** London Wall, London EC2

**code** n/a

**type** urban

**information** London Wall was a street running along the inside of, and parallel to, the medieval city wall, from Bishopsgate in the east to Cripplegate in the west. Many finds made in the 19<sup>th</sup> century, of Roman and later date, probably came from a large building site (the warehouse of Gooch and Cousens) in the area to the east of Moorgate, south of London Wall, an area that includes the upper valley of the Walbrook and the waterlogged fill of the stream. The street of London Wall still exists, but is diverted at its western end past the Museum of London.

**Date excavated:** before 1908

**Period:** n/a

**Context:** **number** n/a

**information/description** presumed to be 'Roman' when originally catalogued by the Museum of London, though it should be noted that this is an estimate and not based on archaeological evidence.

**associated finds** unknown

**Small find no.:** n/a

**Museum of London accession no:** 1244

**Original London Guildhall Museum reference number:** 209

**Illustration no. in archaeological report:** plate XXXIV, 14 (1908 London Guildhall Museum Catalogue)

### Current location:

In store, Museum of London (LW.GEN.29.7)

### Contact information:

Museum of London, 150 London Wall, London, EC2Y 5HN

[www.museumoflondon.org.uk](http://www.museumoflondon.org.uk)

Tel: 020 7814 5735

John Clark

### Similar flutes:

none similar

### Bibliography:

1908. *Catalogue of the Collection of London Antiquities in the Guildhall Museum (second edition)*, 42. London: Library Committee of the Corporation of the City of London.

Clark, J. (2006) personal communication

O'Connor, T, 2000. *The Archaeology of Animal Bones*. Stroud: Sutton Publishing.

<p>Name of flute (location/site):</p> <p style="text-align: center;"><b>London</b> New Fresh Wharf, Lower Thames St</p>	<p style="text-align: right;"><b>[49]</b></p> <p>Date: unphased, presumed Medieval</p>
<p>Illustration:</p> 	

Physical information:

**Species:** goose (domestic greylag)

**Bone used:** ulna

**Extent:** complete

**Length:** 125.4mm

**No. of toneholes:** 0

**Window:** D shaped

**Evidence of manufacture?** No longitudinal scraping. Ends neatly trimmed.

**Unusual characteristics/comments:** Highly polished, with smooth patina and rounded surfaces on ends, suggesting much use. It is more common for goose ulna flutes to have three toneholes, though there are some examples of them with none. Archive notes tell of a plasticine block being inserted, and the flute sounding the note of e'', with an overblown note easily achieved.

Archaeological information:

**Site:** name New Fresh Wharf, Lower Thames Street, EC4

code NFW74

type urban

**information** This area is immediately adjacent to the medieval London Bridge and was of strategic and commercial importance in the 9<sup>th</sup> to 12<sup>th</sup> centuries. It was the waterfront area between Thames Street and the River Thames, next to the waterfront at Billingsgate. Two churches were present by the 12<sup>th</sup> century: those of St. Botolph and St. Manus the Martyr.

**Date excavated:** 1974 - 78

**Period:** 0

**Context:** number 75, Area 1

**information/description** an irregular layer of (redeposited) rubble that formed the coarse initial surface layer of Hammond's Key alley after the great fire of London of 1666.

**associated finds** large stones, gravel, mortar, sandy loam, some chalk blocks.

**Small find no.:** 175

**Illustration no. in archaeological report:** fig.219, 946 (Egan 1998)

Current location:

on display, Museum of London (LW.GAL.ML.17.5)

Contact information:

Museum of London Archaeological Archive, 46 Eagle Wharf Road, Hackney, London, N1 7EE

tel: 0207 566 9319 Cath Maloney (archive)

[cmaloney@museumoflondon.org.uk](mailto:cmaloney@museumoflondon.org.uk)

Similar flutes:

Rayleigh Castle 1909 [75], Kings Lynn All Saints Street [36], Kings Lynn Marks and Spencers [37] (all goose ulna flutes with no toneholes)

Bibliography:

Egan, G, 1998. *The Medieval Household. Daily Living c.1150 – c.1450 Medieval Finds from Excavations in London*. London: Museum of London, The Stationery Office.

Schofield, J, and Maloney, C (eds), 1998. *Archaeology in the City of London 1907-1991. A guide to records of excavations by the Museum of London and its predecessors*. London: Museum of London.

*NFW74 Archive Report*, Museum of London Archaeological Archive.

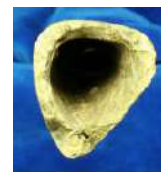
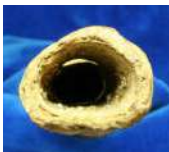
Name of flute (location/site):

**[50]**

London  
Paternoster Square

Date:  
1270 and after  
Medieval

Illustration:



Physical information:

**Species:** fallow deer

**Bone used:** tibia

**Extent:** complete

**Length:** 191.5mm

**No. of toneholes:** 0

**Window:** rough D shape

**Evidence of manufacture?** some marks around proximal end.

**Unusual characteristics/comments:** Crack along right hand side, and a few chips off ridge of bone along front surface. No toneholes, which is unusual, and the flute is roughly made.

Archaeological information:

**Site:** **name** Paternoster Square, EC4 (former Stonemason's Yard ramp)

**code** PSU99

**type** urban

**information** this was an open area close to the old St. Paul's Cathedral, used for digging cess pits

**Date excavated:** 1999 - 2001

**Period:** n/a

**Context:** **number** 52

**information/description** the upper fill of a large, timber lined square cess pit (2.2 x 1.8m). The lower fill contained pottery dated 1240 - 1270

**associated finds** wooden bowl, knife

**Small find no.:** 9

**LAARC code:** PSU99[52]<9>

**Illustration no. in archaeological report:** unpublished

Current location:

LAARC

Contact information:

Museum of London Archaeological Service, 46 Eagle Wharf Road, Hackney, London, N1 7EE

tel: 0207 410 2228 Vince Gardner (archive: MoLAS) vinceg@molas.org.uk

tel: 0207 566 9310 Adam Corsini (finds: LAARC)

Similar flutes:

ovicaprid tibia flute with no toneholes: London Crutched Friars [46]

ovicaprid tibia flute with bone in 'opposite' orientation: London Coleman Street [45]

Bibliography:

Cowan, C, 1999. *Paternoster Square Ramp London EC4. An Archaeological Excavation Report*. London: MoLAS.

Holder, N, 2002. *Paternoster Square (former Stonemasons Yard Ramp) London EC4. City of London. A post-excavation assessment*, 29-30. London: MoLAS.

<p>Name of flute (location/site):</p> <p style="text-align: center;">London Pinner's' Hall, Great Winchester Street</p>	<p style="text-align: right;"><b>[51]</b></p> <p>Date: 966 - 1200</p>
<p><u>Illustration:</u></p> 	



### Physical information:

**Species:** ovicaprid

**Bone used:** metatarsal

**Extent:** fragment (middle section)

**Length:** 45.4mm

**No. of toneholes:** 1 ½

**Window:** n/a

**Evidence of manufacture?** No evidence of surface being worked. Toneholes roughly made.

**Unusual characteristics/comments:** Bone has started to deteriorate to reveal its internal structure. Longitudinal crack from tonehole.

### Archaeological information:

**Site:** **name** Pinnars' Hall, Great Winchester Street, 8 Austin Friars Square, 105-108 Old Broad Street, EC2

**code** GWS89

**type** urban

**information** In the early medieval period the site was open ground with rubbish and cess pits (wattle and timber lined), and 3 barrel lined wells, all provisionally dated from the late 10<sup>th</sup> to 12<sup>th</sup> centuries. The pits indicate that the area was the site of, or was close to, an area of occupation. Finds from the pits in general include: pottery, bone and metal objects, a hanging lamp, two bone ice skates, complete jugs and pots, and crucibles used in metal working. The Augustinian Friary was founded on the site in 1253.

**Date excavated:** 1990

**Period:**

**Context:** **number** 779 (fill of pit 780), Area C

**information/description** this pit is below a structural pillar or arch of the Augustinian Priory, so is from the earlier phase of occupation, and not that of the priory itself.

**associated finds** pottery, animal bone, tile, oyster shell, mussel shell, charcoal, wood, ragstone pieces and mortar fragments.

**Small find no.:** 285

**Illustration no. in archaeological report:** unpublished

### Current location:

LAARC

### Contact information:

Museum of London Archaeological Archive, 46 Eagle Wharf Road, Hackney, London, N1 7EE

tel: 0207 566 9319 Cath Maloney (archive)

[cmaloney@museumoflondon.org.uk](mailto:cmaloney@museumoflondon.org.uk)

tel: 0207 566 9310 Adam Corsini (finds)

### Similar flutes:

none similar

### Bibliography:

Filer, J, 1991. Excavation Round-up 1990: Part 1, City of London, *London Archaeologist*, **6**, **10**, 274.

Rosborough, C, 1990. *Archaeological excavations at Pinnars' Hall, 105-108 Old Broad Street and 8 Austin Friars Square*. Interim Report

Schofield, J and Maloney, C (eds), 1998. *Archaeology in the City of London 1907-1991. A guide to records of excavations by the Museum of London and its predecessors*. London: Museum of London.

*GWS89 Archive Report*, Museum of London Archaeological Archive.

<p>Name of flute (location/site):</p> <p style="text-align: center;">London River Thames</p>	<p style="text-align: right;"><b>[52]</b></p> <p>Date: unknown, presumed Medieval</p>
<p>Illustration:</p> 	



Physical information:

**Species:** ovicaprid

**Bone used:** tibia

**Extent:** fragment (tonehole end)

**Length:** 80.4mm

**No. of toneholes:** 4

**Window:** not present

**Evidence of manufacture?** no longitudinal scraping visible. Cross cuts may indicate lines for tonehole placement, but other non-'placement' lines also present.

**Unusual characteristics/comments:** the area where the flute is broken looks at first glance to be the start of a fifth tonehole; it is a natural break. It is unusual for a bone flute to have any decoration present.

Archaeological information:

**Site:** name River Thames, London

code n/a

type urban

**information** The River Thames is the main river through London, and as such would have been an important site for trade and settlement. It is unclear whereabouts on the River this flute was found, but river currents and tide may mean that any item is unlikely to be found in the vicinity where it first went into the river. It may have been found on the tidal foreshore or by dredging.

**Date excavated:** acquired by the museum in 1913.

**Period:** n/a

**Context:** number n/a

**information/description** Museum records note that this is 'Roman', though it should be noted that this is an estimate and not based on archaeological evidence. It is more likely to be Medieval.

**associated finds** unknown

**Small find no.:** n/a

**Museum of London accession no:** A5894

**Illustration no. in archaeological report:** unpublished

Current location:

Roman Gallery, Museum of London (LW.GAL.R.8)

Contact information:

Museum of London, 150 London Wall, London, EC2Y 5HN

[www.museumoflondon.org.uk](http://www.museumoflondon.org.uk)

Tel: 020 7814 5735

John Clark

Similar flutes:

broken distal half of flute from ovicaprid tibia: Dover, Townwall Street [12], Wicken Bonhunt 54 [99]

Bibliography:

Clark, J, 2006. personal communication.

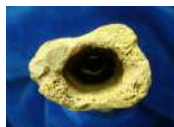
Name of flute (location/site):

[53]

London  
Spitalfields

Date:  
1000 - 1299

Illustration:



Physical information:

**Species:** sheep

**Bone used:** tibia

**Extent:** complete

**Length:**

**No. of toneholes:** 4

**Window:**

**Evidence of manufacture?** distal end trimmed by knife, longitudinal scraping all round, slight recesses where toneholes are.

**Unusual characteristics/comments:** suspension hole on front at proximal end

Archaeological information:

**Site:** name Spitalfields Ramp (280 Bishopsgate)

code SRP 98

type urban

information this is an area of occupation with timber buildings

**Date excavated:** 1998

**Period:** n/a

**Context:** number 15426, area 10

**information/description** a pit that was rapidly backfilled. It was probably either a large deep post pit or was a pit for a corner post of building 6. It was one of a series of postholes and cuts associated with the area of timber buildings.

**associated finds** worked bone (possibly 'sawn with chamfer')

**Small find no.:** 442

**Illustration no. in archaeological report:** unpublished

Current location:

LAARC

Contact information:

Museum of London Archaeological Service, 46 Eagle Wharf Road, Hackney, London, N1 7EE

tel: 0207 410 2228 Vince Gardner (archive: MoLAS) vinceg@molass.org.uk

tel: 0207 566 9310 Adam Corsini (finds: LAARC)

Similar flutes:

Great Massingham [26], London Bishopsgate [44], London Thames Exchange [84], Stanton Low [80]

Bibliography:

Thomas, C, 2000. *280 Bishopsgate and the Spitalfields Ramp. Spitalfields E1. An Archaeological Fieldwork Report*. London: MoLAS

Thomas, C, Aitken, R, Bowsher, D, Daykin, A, Harward, C, Holder, N, McKenzie, M, Pitt, K, and Thrale, P, 2003. *280 Bishopsgate and the Spitalfields Ramp. Spitalfields E1. A post-excavation assessment report*. London: MoLAS

Name of flute (location/site):

[54]

London  
Thames Exchange, Upper Thames Street

Date:  
unphased

Illustration:



### Physical information:

**Species:** ovicaprid

**Bone used:** tibia

**Extent:** complete

**Length:** 167mm

**No. of toneholes:** T + 4

**Window:** rough oval/D

**Evidence of manufacture?** No scrape marks on surface, light nicks at lower rhs, possible knife edge mark when twisted on tonehole.

**Unusual characteristics/comments:** Awkward to play unless fingers fall across front. Alternatively, one hand could play with the thumb and 2 fingers, and the other hand could play with the other 2 fingers. Has thumbhole.

### Archaeological information:

**Site: name** Thames Exchange, 78 Upper Thames Street and Bull Wharf Lane, London, EC4

**code** TEX88

**type** urban

**information** this is an extensive waterfront site on the north shore of the River Thames. In Saxon times the land was reclaimed with a series of embankments, and it was the site of beach markets. After the Norman Conquest, it was an area of wharves, strongly connected with the import and storage of wine. Many French finds support this, and the area is still known as 'Vintry'. A large warehouse was built there in the 12<sup>th</sup> century, one of London's first, and there were three large cranes on the quayside to lift the large barrels of wine (Milne).

**Date excavated:** 1988 - 89

**Period:** n/a

**Context: number** 3105, Area D, Block 6

**information/description** this is a layer of dumped material associated with the construction of structure 476. This structure is one of a sequence of revetments built progressively southwards, reclaiming land and forming embankments and wharves on the north shore of the River Thames.

**associated finds** unknown

**Small find no.:** 1243

**Illustration no. in archaeological report:** fig.219, p.288 (Egan 1998)

**Current location:** LAARC

**Contact information:**

Museum of London Archaeological Archive, 46 Eagle Wharf Road, Hackney, London, N1 7EE

tel: 0207 566 9319 Cath Maloney (archive)

[cmaloney@museumoflondon.org.uk](mailto:cmaloney@museumoflondon.org.uk)

tel: 0207 566 9310 Adam Corsini (finds)

**Similar flutes:**

Great Massingham [26], London Bishopsgate [44], London Thames Exchange [84], Stanton Low [80]

**Bibliography:**

Egan, G, 1998. *The Medieval Household. Daily Living c.1150 – c.1450 Medieval Finds from Excavations in London*. London: Museum of London, The Stationery Office.

Milne, G, 1989. *Discovering London's Ancient Harbours. Archaeological Excavations on the Thames Exchange Site 1988-89: A preliminary summary*.

London: Museum of London Archaeological Archive (unpublished report)

TEX88 Archive Report. 1988. Museum of London Archaeological Archive.

<p>Name of flute (location/site):</p> <p style="text-align: center;">London Thames Street 273</p>	<p style="text-align: right;"><b>[55]</b></p> <p>Date: unphased, presumed Medieval</p>
<p>Illustration:</p> 	

### Physical information:

**Species:** sheep

**Bone used:** tibia

**Extent:** fragment (middle section and tonehole end)

**Length:** 142.3mm

**No. of toneholes:** 2

**Window:** ramp present, 7mm long

**Evidence of manufacture?** Instead of being drilled by knifepoint, the toneholes appear to have been made by sawing across the bone with two parallel cuts to create a groove. This is the only example of this type of tonehole manufacture. Saws were used by boneworkers but not butchers in medieval times.

**Unusual characteristics/comments:** The tonehole itself would have been difficult to cover effectively with the fingertips, suggesting that the fingers were placed so that the middle pads of the fingers covered the holes. Another unusual feature is that there are only two toneholes, which are placed centrally on the instrument. This is not common, but is seen in other flutes.

### Archaeological information:

**Site:** name Thames Street

code n/a

type urban

**information** Thames Street is the former name of what is now Upper Thames Street (upriver of London Bridge) and Lower Thames Street (downstream of London Bridge), running parallel to the City waterfront from Blackfriars in the west, to the Tower of London in the east. The area between Thames Street and the river was reclaimed in the medieval period between c.1000 and 1450, and was occupied by wharves and warehouses. Excavations such as New Fresh Wharf and Billingsgate (NFW74 and BIG82) were in this same area and recovered the medieval timber waterfront revetments and rubbish backfills. Finds made during the 19<sup>th</sup> century are likely to have come from the building of Victorian warehouses in the same waterfront area.

**Date excavated:** 1909

**Period:** n/a

**Context:** number unknown

**information/description** no exact information is available about where it was found. George Fabian Lawrence collected/excavated this flute in 1909, after which and in the same year, it was purchased by Henry Balfour. He bequeathed it to the Pitt Rivers Museum in 1939.

**associated finds** unknown

**Small find no.:** n/a

**Accession no.:** 1938.34.273

**Accession book entry:** [Balfour 4] - Bone whistle, or flute, with two stops. Dug up in Thames St., LONDON, E.C., 1909. Purch. 1909 (Lawrence).

**Illustration no. in archaeological report:** unpublished

### Current location:

Pitt Rivers Museum, Oxford

**Contact information:** Pitt Rivers Museum, South Parks Road, Oxford OX1 3PP

tel: 01865 284656

email: [xena.mcgreevy@prm.ox.ac.uk](mailto:xena.mcgreevy@prm.ox.ac.uk)

Xena McGreevy/Merina deAlarcom

### Similar flutes:

other flutes with two toneholes, centrally placed: Winchester 2264 [106] and Winchester 2265 [107]

### Bibliography:

Clark, J, 2006. personal communication



<p>Name of flute (location/site):</p> <p style="text-align: center;">London Thames Street 274</p>	<p style="text-align: right;"><b>[56]</b></p> <p>Date: unphased, presumed Medieval</p>
<p>Illustration:</p>  <p>The illustration consists of four main photographs of a bone flute, arranged vertically. The top photo shows the flute with a scale bar. The second photo shows the flute with finger holes and a scale bar. The third photo shows the flute with a label. The fourth photo shows the flute with a scale bar. Below the main images are two close-up photos of the flute's ends.</p>	



Physical information:

**Species:** sheep

**Bone used:** tibia

**Extent:** complete

**Length:** 149.5mm

**No. of toneholes:** 3

**Window:** D shaped

**Evidence of manufacture?**

**Unusual characteristics/comments:** The window is placed very close to the proximal end, making a very short windway. The holes are slightly recessed.

Archaeological information:

**Site:** **name** Thames Street

**code** n/a

**type** urban

**information** Thames Street is the former name of what is now Upper Thames Street (upriver of London Bridge) and Lower Thames Street (downstream of London Bridge), running parallel to the City waterfront from Blackfriars in the west, to the Tower of London in the east. The area between Thames Street and the river was reclaimed in the medieval period between c.1000 and 1450, and was occupied by wharves and warehouses. Excavations such as New Fresh Wharf and Billingsgate (NFW74 and BIG82) were in this same area and recovered the medieval timber waterfront revetments and rubbish backfills. Finds made during the 19<sup>th</sup> century are likely to have come from the building of Victorian warehouses in the same waterfront area.

**Date excavated:** 1909

**Period:** n/a

**Context:** **number** unknown

**information/description** no exact information is available about where it was found. George Fabian Lawrence collected/excavated this flute in 1909, after which and in the same year, it was purchased by Henry Balfour. He bequeathed it to the Pitt Rivers Museum in 1939.

**associated finds** unknown

**Small find no.:** n/a

**Accession no.:** 1938.34.274

**Accession book entry:** [Balfour 4] - Bone whistle, or flute, with three stops. Dug up in Thames St., LONDON, E.C., 1909. Purch. 1909 (Lawrence).

**Illustration no. in archaeological report:** unpublished

**Current location:**

Pitt Rivers Museum, Oxford

**Contact information:** Pitt Rivers Museum, South Parks Road, Oxford OX1 3PP

tel: 01865 284656

email: [xena.mcgreevy@prm.ox.ac.uk](mailto:xena.mcgreevy@prm.ox.ac.uk)

Xena McGreevy/Merina deAlarcom

**Similar flutes:**

Great Massingham [26], London Bishopsgate [44], London Thames Exchange [84], Stanton Low [80]

**Bibliography:**

Clark, J, 2006. personal communication

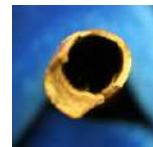
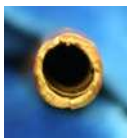
Name of flute (location/site):

[57]

London  
Wandsworth, River Thames

Date:  
unknown,  
presumed  
Medieval

Illustration:



Physical information:

**Species:** goose

**Bone used:** ulna

**Extent:** complete

**Length:** 110.5mm

**No. of toneholes:** 2

**Window:** D shaped

**Evidence of manufacture?** slight longitudinal scraping around the toneholes, distal end trimmed by knife.

**Unusual characteristics/comments:** most goose ulna flutes have three toneholes. The window is very large.

Archaeological information:

**Site:** **name** Wandsworth, River Thames, London

**code** n/a

**type** rural

**information** the original village of Wandsworth centred on Wandsworth High Street, close to where the river Wandle enters the Thames to the west of London. The flute may come from anywhere in this area, though it is more likely to be from somewhere near Wandsworth Bridge. River currents and tide may mean that it is unlikely to have been found in the vicinity where it first went into the river. It may have been found on the tidal foreshore or by dredging. Wandsworth became part of the built-up area of London in the mid 19<sup>th</sup> century.

**Date excavated:** before 1908

**Period:** n/a

**Context:** **number** n/a

**information/description** presumed to be 'Medieval' when originally catalogued by the Museum of London, though it should be noted that this is an estimate and not based on archaeological evidence.

**associated finds** unknown

**Small find no.:** n/a

**Museum of London accession no:** 1242

**Original London Guildhall Museum reference number:** 207

**Illustration no. in archaeological report:** plate XXXIV, 12 (1908 London Guildhall Museum Catalogue)

Current location:

Museum of London Medieval Gallery (LW.GAL.ML.17.5)

Contact information:

Museum of London, 150 London Wall, London, EC2Y 5HN

[www.museumoflondon.org.uk](http://www.museumoflondon.org.uk)

Tel: 020 7814 5735

John Clark

Similar flutes:

Bristol Peter Street [5], Winchester 2262 [104] (goose ulna flutes with 2 toneholes)

Bibliography:

1908. *Catalogue of the Collection of London Antiquities in the Guildhall Museum (second edition)*, 42. London: Library Committee of the Corporation of the City of London.

Clark, J, 2006. personal communication.

Name of flute (location/site):

[58]

London  
Watling Court

Date:  
1200-1232

Illustration:



Physical information:

**Species:** goose

**Bone used:** ulna

**Extent:** complete

**Length:** 110mm

**No. of toneholes:** 3

**Window:** large neat D shaped

**Evidence of manufacture?** Longitudinal scrape marks, some chatter marks, ends trimmed with clear knife cuts, slight chamfer on toneholes.

**Unusual characteristics/comments:** Apparently produces notes g' a' c" e" f"  
(Foot)

Archaeological information:

**Site:** name Watling Court, 10-14a Bow Lane, 39-53 Cannon Street, 19-28 Watling St, EC4

**code** WAT78

**type** urban

**information** this is an inland site with several medieval pits and wells

**Date excavated:** 1978

**Period:** XIV subgroup 15

**Context:** number 4084

**information/description** found in a rectangular cess pit with near vertical sides (pit no. 4090), that was cut into the surface of an alley. It was in one of the middle layers of the pit, with 4 layers below and 3 layers above, and consisted of humic silt.

**associated finds** fish scales, copper pins, copper buckle, ceramic spindle whorl, glass, charcoal, pottery sherds

**Small find no.:** Accession no: 244

**Illustration no. in archaeological report:** Fig.219, 945 p.288 (Egan 1998)

Current location:

LAARC

Contact information:

Museum of London Archaeological Archive, 46 Eagle Wharf Road, Hackney, London, N1 7EE

tel: 0207 566 9319 Cath Maloney (archive)

[cmaloney@museumoflondon.org.uk](mailto:cmaloney@museumoflondon.org.uk)

tel: 0207 566 9310 Adam Corsini (finds)

Similar flutes:

Southampton [79], London Bank or England [42], Thetford Brandon Road 542 [84]

Bibliography:

Egan, G, 1998. *The Medieval Household. Daily Living c.1150 – c.1450 Medieval Finds from Excavations in London*, 287-288. London: Museum of London, The Stationery Office.

Foot, S, 1980. *Bone medieval fipple flute*. London: Museum of London Archaeological Archive (unpublished archives report)

Schofield, J and Maloney, C (eds), 1988. *Archaeology in the City of London 1907-1991. A Guide to Records of Excavations by the Museum of London and Its Predecessors*. London: Museum of London.

*WAT78 Archive Report*. 1978. Museum of London Archaeological Archive

Name of flute (location/site):

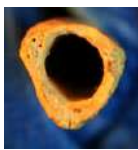
[59]

Ludgershall Castle  
26

Date:

1800 onwards,  
but much  
residual  
material from  
1100-1400

Illustration:



Physical information:

**Species:** goose

**Bone used:** ulna

**Extent:** complete

**Length:** 75.8mm

**No. of toneholes:** 2

**Window:** D shaped

**Evidence of manufacture?**

**Unusual characteristics/comments:** this flute is unusual in that it appears to have a window and a tonehole, each at a similar distance from their respective ends.

Archaeological information:

**Site:** **name** Ludgershall Castle, Wiltshire

**code** LUD 65

**type** elite (castle, rural)

**information** This was a castle and hunting lodge, adjacent to a village and situated near a dense belt of royal forest along the Hants/Wilts border. The site was developed from the 12<sup>th</sup> to 14<sup>th</sup> century as a sophisticated royal residence designed increasingly for comfort and privacy. (p.82-3, Creighton)

**Date excavated:** 1965

**Period:** 10

**Context:** **number** J23, B05, 67(in triangle) – though it is unclear what these numbers refer to, and no references to them were immediately obvious in the archive.

**information/description** North Enclosure

**associated finds** unknown

**Small find no.:** number in report: 26

**Illustration no. in archaeological report:** not illustrated in Ellis, 2000

Current location:

Wiltshire Heritage Museum, Devizes

**Contact information:**

41 Long Street, Devizes, Wiltshire, SN10 1NS

tel: 01380 727 369

Paul Robinson

Similar flutes:

Norwich St. Martin-at-Palace-Plain [72]

Bibliography:

Creighton, O H, 1972. *Castles and landscapes*. London: Continuum.

Ellis, P, 2000. *Ludgershall Castle, Wiltshire: a report on the excavations by Peter Addyman, 1964-1972. Wiltshire Archaeological and Natural History Society monograph series*; 2. Devizes: Wiltshire Archaeological and Natural History Society.



<p>Name of flute (location/site):</p> <p style="text-align: center;">Ludgershall Castle 27</p>	<p style="text-align: right;"><b>[60]</b></p> <hr/> <p>Date: 1500 - 1800, but much residual material from 1100 - 1400</p>
<p>Illustration:</p> 	



Physical information:

**Species:** goose

**Bone used:** ulna

**Extent:** fragment (middle section)

**Length:** 83.2mm

**No. of toneholes:** 1 ½

**Window:** not present

**Evidence of manufacture?**

**Unusual characteristics/comments:** There is a neat recess around complete tonehole, though not around the one that is broken.

Archaeological information:

**Site:** **name** Ludgershall Castle, Wiltshire

**code** LUD 67

**type** elite (castle, rural)

**information** This was a castle and hunting lodge, adjacent to a village and situated near a dense belt of royal forest along the Hants/Wilts border. The site was developed from the 12<sup>th</sup> to 14<sup>th</sup> century as a sophisticated royal residence designed increasingly for comfort and privacy. (p.82-3, Creighton)

**Date excavated:** 1967

**Period:** 9

**Context:** **number** E. sector, baulk C20/C21, B013, 187(in triangle), '7 on drawing # 51', '14 on drawing # 62' – though it is unclear what these numbers refer to, and no references to them were immediately obvious in the archive.

**information/description** North Enclosure

**associated finds** unknown

**Small find no.:** number in report: 27

**Illustration no. in archaeological report:** fig.6.48, 27 (Ellis 2000)

Current location:

Wiltshire Heritage Museum, Devizes

Contact information:

41 Long Street, Devizes, Wiltshire, SN10 1NS

tel: 01380 727 369

Paul Robinson

Similar flutes:

Bibliography:

Creighton, O H, 1972. *Castles and landscapes*. London: Continuum.

Ellis, P, 2000. *Ludgershall Castle, Wiltshire: a report on the excavations by Peter Addyman, 1964-1972. Wiltshire Archaeological and Natural History Society monograph series; 2*. Devizes: Wiltshire Archaeological and Natural History Society.

<p>Name of flute (location/site):</p> <p style="text-align: center;">Ludgershall Castle 28</p>	<p style="text-align: right;"><b>[61]</b></p> <p>Date: 1800 onwards, but much residual material from 1100 – 1400</p>
<p>Illustration:</p> 	

Physical information:

**Species:** ovicaprid

**Bone used:** tibia

**Extent:** fragment (middle section)

**Length:** 73.8mm

**No. of toneholes:** 1

**Window:** not present

**Evidence of manufacture?** Crudely cut toneholes in thick walled bone. Ellis suggests cuts may indicate working of the instrument.

**Unusual characteristics/comments:**

Archaeological information:

**Site:** **name** Ludgershall Castle, Wiltshire

**code** LUD 64

**type** elite (castle, rural)

**information** This was a castle and hunting lodge, adjacent to a village and situated near a dense belt of royal forest along the Hants/Wilts border. The site was developed from the 12<sup>th</sup> to 14<sup>th</sup> century as a sophisticated royal residence designed increasingly for comfort and privacy. (p.82-3, Creighton)

**Date excavated:** 1964

**Period:** 10

**Context:** **number** P24, 3 (in circle), B04, 74(in triangle) – though it is unclear what these numbers refer to, and no references to them were immediately obvious in the archive.

**information/description** North Enclosure

**associated finds** unknown

**Small find no.:** number in report: 28

**Illustration no. in archaeological report:** fig.6.48, 28 (Ellis 2000)

Current location:

Wiltshire Heritage Museum, Devizes

Contact information:

41 Long Street, Devizes, Wiltshire, SN10 1NS

tel: 01380 727 369

Paul Robinson

Similar flutes:

Beverley Lurk Lane 1015 [3], Facombe Netherton [20]

Bibliography:

Creighton, O H, 1972. *Castles and landscapes*. London: Continuum.

Ellis, P, 2000. *Ludgershall Castle, Wiltshire: a report on the excavations by Peter Addyman, 1964-1972. Wiltshire Archaeological and Natural History Society monograph series*; 2. Devizes: Wiltshire Archaeological and Natural History Society.

<p>Name of flute (location/site):</p> <p style="text-align: center;">Ludgershall Castle 29</p>	<p style="text-align: right;"><b>[62]</b></p> <p>Date: 1500 - 1800, but much residual material from C12-14</p>
<p><u>Illustration:</u></p> 	

Physical information:

**Species:** ovicaprid

**Bone used:** tibia

**Extent:** fragment (middle section)

**Length:** 32.5mm

**No. of toneholes:** 1

**Window:** not present

**Evidence of manufacture?** Upper and lower tonehole edges defined by transverse cuts.

**Unusual characteristics/comments:** the tonehole is solid and does not go through to the internal bore

Archaeological information:

**Site:** **name** Ludgershall Castle, Wiltshire

**code** LUD 68

**type** elite (castle, rural)

**information** This was a castle and hunting lodge, adjacent to a village and situated near a dense belt of royal forest along the Hants/Wilts border. The site was developed from the 12<sup>th</sup> to 14<sup>th</sup> century as a sophisticated royal residence designed increasingly for comfort and privacy. (p.82-3, Creighton)

**Date excavated:** 1968

**Period:** 9

**Context:** **number** H21, B020, 3(in circle) – though it is unclear what these numbers refer to, and no references to them were immediately obvious in the archive.

**information/description** North Enclosure

**associated finds** unknown

**Small find no.:** number in report: 29

**Illustration no. in archaeological report:** fig.6.48, 29 (Ellis 2000)

Current location:

Wiltshire Heritage Museum, Devizes

Contact information:

41 Long Street, Devizes, Wiltshire, SN10 1NS

tel: 01380 727 369

Paul Robinson

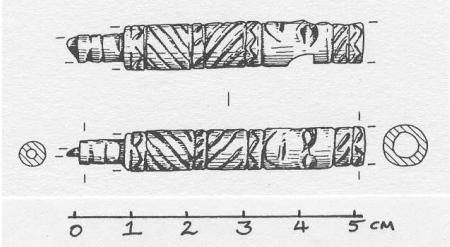
Similar flutes:

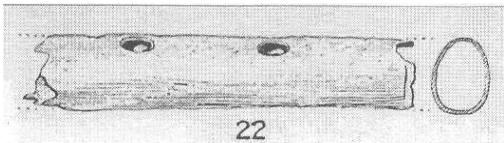
Beverley Lurk Lane 1015 [3], Facombe Netherton [20]

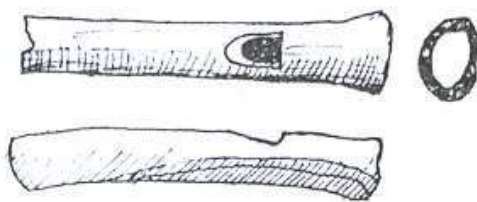
Bibliography:

Creighton, O H, 1972. *Castles and landscapes*. London: Continuum.

Ellis, P, 2000. Ludgershall Castle, Wiltshire: a report on the excavations by Peter Addyman, 1964-1972. *Wiltshire Archaeological and Natural History Society monograph series*; 2. Devizes: Wiltshire Archaeological and Natural History Society.

Name of flute (location/site):  Ludgershall Castle 30	<div>[63]</div> Date: 1500 - 1800, but much residual material from 1100 - 1400
Illustration: 	
<div>Physical information:</div> <p> <b>Species:</b> unknown  <b>Bone used:</b> unknown  <b>Extent:</b> fragment (window end)  <b>Length:</b>  <b>No. of toneholes:</b> 0  <b>Window:</b> D shaped  <b>Evidence of manufacture?</b> Highly decorated  <b>Unusual characteristics/comments:</b> Has tenon at proximal end as if to join to another section. Decoration of this extent and sophistication is extremely rare, as is the creation of a tenon. Possibly also functioned as a stylus/parchment pricker (Robinson, pers.comm.). </p>	
<div>Archaeological information:</div> <p> <b>Site:</b> name Ludgershall Castle, Wiltshire  code LUD  type elite (castle, rural)  information This was a castle and hunting lodge, adjacent to a village and situated near a dense belt of royal forest along the Hants/Wilts border. The site was developed from the 12<sup>th</sup> to 14<sup>th</sup> century as a sophisticated royal residence designed increasingly for comfort and privacy. (p.82-3, Creighton)  <b>Date excavated:</b> 1964 - 1972  <b>Period:</b> 9  <b>Context:</b> number unknown  information/description North Enclosure  associated finds unknown  <b>Small find no.:</b> number in report: 30  <b>Illustration no. in archaeological report:</b> fig.6.48, 30 (Ellis 2000) </p>	
<b>Current location:</b> unknown - lost on site of excavation	
<b>Similar flutes:</b> the decoration is similar to that seen on two knife handles from Norwich dated to the 16 <sup>th</sup> /17 <sup>th</sup> century (Huddle forthcoming).	
<b>Bibliography:</b> Creighton, O H, 1972. <i>Castles and landscapes</i> . London: Continuum. Ellis, P, 2000. <i>Ludgershall Castle, Wiltshire: a report on the excavations by Peter Addyman, 1964-1972</i> . Wiltshire Archaeological and Natural History Society monograph series; 2. Devizes: Wiltshire Archaeological and Natural History Society. Huddle, J, forthcoming. Bone Knife Handles, in E Shepherd Popescu, <i>Norwich Castle: Excavation and Historical Survey 1987-98. Part II: c.1345 to modern</i> . Robinson, P, 2005. personal communication.	

<u>Name of flute (location/site):</u>  <p style="text-align: center;">Lydney Castle</p>	<p style="text-align: center;"><b>[64]</b></p> <hr/> <u>Date:</u> 1100 - 1300
<u>Illustration:</u>  	
<p style="text-align: center;"><u>Physical information:</u></p> <p> <b>Species:</b> bird  <b>Bone used:</b> ulna  <b>Extent:</b> fragment (middle section)  <b>Length:</b> 52mm  <b>No. of toneholes:</b> 2 ½  <b>Window:</b> n/a  <b>Evidence of manufacture?</b> unknown  <b>Unusual characteristics/comments:</b> without seeing the flute it is difficult to make and assessment. </p>	
<p style="text-align: center;"><u>Archaeological information:</u></p> <p> <b>Site:</b> name Lydney Castle, Gloucester  code -  type elite (castle, rural)  <b>information</b> the castle is a typical Norman motte and bailey castle, that overlooks the main road into South Wales and the Severn estuary. Casey mentions no found documentary evidence to support its construction or use.  <b>Date excavated:</b> 1929 - 30  <b>Period:</b> n/a  <b>Context:</b> number no specific context is given  <b>information/description</b> found among demolition debris  <b>associated finds</b> Finds from the site in general are compared with those from Rayleigh Castle and Folkestone Caesar's Camp.  <b>Small find no.:</b> unknown  <b>Illustration no. in archaeological report:</b> pl.XXXVI,2,20 p.254 (Casey 1931) </p>	
<p> <b>Current location:</b> Not known – not found in Lord Bledisloe's private collection at Lydney Park Estate with the other finds from Lydney. </p>	
<p> <b>Similar flutes:</b>  this may have been a goose ulna flute similar to those from Southampton [79], London Watling Court [58], London Bank of England [42] and Thetford Brandon Road 542 [84] </p>	
<p> <b>Bibliography:</b>  Casey, D A, 1931. Lydney Castle, <i>Antiquaries Journal</i>, II, 254.  MacGregor, A, 1985. <i>Bone Antler Ivory &amp; Horn. The technology of Skeletal Materials Since the Roman Period</i>. London and Sydney: Croom Helm.  Megaw, J V S, 1960. Penny Whistles and Prehistory, <i>Antiquity</i>, 34, 6-13. </p>	

<u>Name of flute (location/site):</u>  <p style="text-align: center;">Lyveden goose</p>	<p style="text-align: right;"><b>[65]</b></p> <hr/> <u>Date:</u> c.1240
<u>Illustration:</u>  	
<p style="text-align: center;"><u>Physical information:</u></p> <p> <b>Species:</b> goose  <b>Bone used:</b> ulna  <b>Extent:</b> fragment (window end)  <b>Length:</b> 55mm  <b>No. of toneholes:</b> n/a  <b>Window:</b> D shaped  <b>Evidence of manufacture?</b> unknown  <b>Unusual characteristics/comments:</b> this seems to be the proximal end of a typical goose ulna flute, with typical D shaped window. </p>	
<p style="text-align: center;"><u>Archaeological information:</u></p> <p> <b>Site:</b> name Lyveden  code n/a  type rural  information DMV with an industrial complex, that includes a potter's workshop, associated yards and pits, kilns, potbank and storeshed. The industry occurred c.1240 – 1310. Prior to this in the 12<sup>th</sup> century was an industrial phase of iron working.  <b>Date excavated:</b> 1968 - 70  <b>Period:</b> L.I.P.1  <b>Context:</b> number unknown  information/description north east Yard  associated finds no other finds referred to from this context and period  <b>Small find no.:</b> unknown  <b>Illustration no. in archaeological report:</b> fig.19d, p.66 (Bryant and Steane) </p>	
<p> <b>Current location:</b>  unknown – not at the Daventry secure store with the other Lyveden finds </p>	
<p> <b>Similar flutes:</b>  Rayleigh castle 1909 [75], Folkestone Caesar's Camp/Castle Hill [21]; for complete flutes, see Southampton [79], London Watling Court [58], London Bank of England [42] and Thetford Brandon Road 542 [84] </p>	
<p> <b>Bibliography:</b>  Bryant G F, and Steane, J M, 1971. Excavations at the deserted medieval settlement at Lyveden: a third interim report, <i>Journal of the Northampton Museums and Art Gallery</i>, 9, 3-94. </p>	



Name of flute (location/site):	<b>[66]</b>
Lyveden ovicaprid	Date: 1250 - 1310



Physical information:

**Species:** ovicaprid

**Bone used:** tibia

**Extent:** fragment (tonehole end)

**Length:** 56.5mm

**No. of toneholes:** 2 ½

**Window:** n/a

**Evidence of manufacture?** incised grooves running round flute, though these are made by knife, rather than the instrument having being turned. End neatly trimmed.

**Unusual characteristics/comments:** There are cut recesses for the toneholes.

It is unusual for a flute to have any form of decoration present.

Archaeological information:

**Site:** name Lyveden

**code** n/a

**type** rural

**information** DMV with an industrial complex, that includes a potter's workshop, associated yards and pits, kilns, potbank and storeshed. The industry occurred c.1240 – 1310. Prior to this in the 12<sup>th</sup> century was an industrial phase of iron working.

**Date excavated:** 1968 - 70

**Period:** L.I.P.2 and L.I.P.3

**Context:** number unknown

**information/description** north side of storeshed

**associated finds** no other finds referred to from this context and period

**Small find no.:** unknown

**Illustration no. in archaeological report:** fig.19b, p.66 and plate 18, p.67 (Bryant and Steane)

Current location:

secure store, Daventry

Contact information:

Sally Halson 01327 302520

Similar flutes:

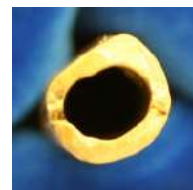
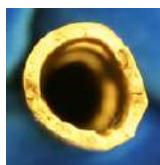
none other with such decoration

Bibliography:

Bryant G F and Steane, J M, 1971. Excavations at the deserted medieval settlement at Lyveden: a third interim report, *Journal of the Northampton Museums and Art Gallery*, 9, 3-94.

Name of flute (location/site):	[67]
<p style="text-align: center;">North Elmham Park Building P</p>	<p>Date: 950-1000</p>

Illustration:



Physical information:

**Species:** crane

**Bone used:** tibiotarsus

**Extent:** fragment (tonehole end)

**Length:** 94.5mm

**No. of toneholes:** 4 + ½ (one much smaller) average 6x4mm, smallest one 2mm diameter. Wade Martins (1973) comments on the smallest hole, suggesting that it is not a tonehole and may have been made by mistake.

**Window:** not present

**Evidence of manufacture?** end neatly trimmed by knife. Coarse scrape marks on back and right hand side, otherwise unscraped.

**Unusual characteristics/comments:** Wade Martins (1973) identifies this as being made from a sheep bone. However, it is the tibiotarsus of a crane (with only a slight possibility of being a swan tibiotarsus) as confirmed by David Waterhouse, the Natural History department of Norwich Castle Museum.

Archaeological information:

**Site:** name North Elmham Park

code NEP 1963

type elite

**information** North Elmham was the site of the bishopric of East Anglia in the 10<sup>th</sup> and 11<sup>th</sup> centuries, which moved to Norwich in 1095. The site is a 10<sup>th</sup> century large wooden hall, probably erected in the middle of the 10<sup>th</sup> century that was possibly a bishop's palace.

**Date excavated:** 1968

**Period:** Period II, Phase 2

**Context:** number feature 294 of Building P (an unusual L shaped building)

**information/description** feature 294 was one of two cess pits in yard.

Both had two post holes for seats, suggesting the use as a latrine. They were built against the outside wall, close to the doorway, and were filled with domestic refuse and cess. Feature 294 is not cut by any other feature, yet the flute is broken with no other half found. This suggests that breakage occurred before deposition.

**associated finds** Flute found with late Saxon pottery (Thetford ware sherds) and animal bones

**Small find no.:** 359

**Illustration no. in archaeological report:** fig.260,12, p. 488 (Wade-Martins 1980)

**Current location:** Norwich Castle Museum

**Contact information:**

Shirehall, Market Avenue, Norwich, Norfolk, NR1 3JQ

01603 493658

Archaeology Curator: Dr Tim Pestell (Anglo-Saxon)

[tim.pestell@norfolk.gov.uk](mailto:tim.pestell@norfolk.gov.uk)

**Similar flutes:**

Gloucester Park Street 35 and 40 [24], York Clifford Street 663 [113]

**Bibliography:**

Wade-Martins, P, 1973. A 10<sup>th</sup> – century bone flute from North Elmham, Norfolk, *Galpin Society Journal*, **26**, 142-3.

Wade-Martins, P (ed), 1980. *Excavations in North Elmham Park, 1967-1972. Vols. 1 & 2 East Anglian archaeology Report no.9, Norfolk*. Gressenhall: Norfolk Archaeological Unit for the Scolle Committee for Archaeology in East Anglia.

<u>Name of flute (location/site):</u>  Northampton Kingswell Street	<b>[68]</b>
	<u>Date:</u> 1000 - 1200
<u>Illustration:</u> 	

Physical information:

**Species:** goose

**Bone used:** ulna

**Extent:** complete

**Length:** 67mm

**No. of toneholes:** 0

**Window:** rough oval

**Evidence of manufacture?** Longitudinal scrape marks present

**Unusual characteristics/comments:** This flute is quite short, using only about a half of the possible length of bone. The visible cut marks at either end indicate that this is its intended length. Alternatively, it may have been longer originally and subsequently shortened, as appears to have occurred with the goose ulna flute from Folkestone.

Archaeological information:

**Site:** **name** Northampton, Kingswell Street

**code** NKS 05

**type** urban

**information** this was an area within the defensive perimeter of the town, but one that was not densely occupied. At this time, there was a timber building and some pits (J Brown, Pers. comm.).

**Date excavated:** 2005

**Period:** Phase 2

**Context:** **number** 22

**information/description** a compacted earth surface within the area of the timber building, which could be a floor.

**associated finds** Stamford ware pottery

**Small find no.:** 16

**Illustration no. in archaeological report:** unpublished

Current location:

Northamptonshire Archaeology

Contact information:

2 Bolton House, Wootton Hall Park, Northampton, NN3 8BE

tel: 01604 700493/4

Tora Hylton / Jim Brown

Similar flutes:

Westbury-by-Shenley [93], Rayleigh Castle 1909 [75], Folkestone [21]

Bibliography:

Leaf (forthcoming 2008) Northampton Kingswell Street volume



Name of flute (location/site):  <p style="text-align: center;">Norwich Bishopsgate</p>	[69]
	Date: 1100 - 1275
Illustration: 	

Physical information:

**Species:** swan

**Bone used:** ulna

**Extent:** complete

**Length:** 257mm

**No. of toneholes:** 4

**Thumbhole present?** no

**Window:** D shaped

**Evidence of manufacture?** some longitudinal scraping

**Unusual characteristics/comments:** Both the museum record and Lawson and Margeson (1993) mention an area of wear on the back of the flute, which was not clearly visible by eye or hand lens. There are recesses at the toneholes for the fingers. The absolute maximum length of bone has been used, including some of the tubercle of the bone at the wider proximal end.

Archaeological information:

**Site:** **name** World's End Lane, off Bishopsgate

**code** 156N/158

**type** urban

**information** In phase II this was an area with several pits, 2 of which were used for bell casting and 3 of which were as a result of quarrying activity.

**Date excavated:** 1971 - 72

**Period:** Phase II

**Context:** **number** Pit 618 layer 64

**information/description** In infill of a pit formed by quarrying of gravel and building sand.

**associated finds** unknown

**Small find no.:** -

**museum record number:** NWHCM:1971.588.158:A

**assigned number:** 588.971

**museum image number:** nathist\archaeol\md00036.jpg

**Illustration no. in archaeological report:** no.1756 (Margeson), fig.24,23 p.41 (Atkin and Evans 2002)

Current location:

on display, Norwich Castle Museum

Contact information:

Shirehall, Market Avenue, Norwich, Norfolk, NR1 3JQ

01603 493658

Archaeology Curator: Dr Tim Pestell (Anglo-Saxon)

[tim.pestell@norfolk.gov.uk](mailto:tim.pestell@norfolk.gov.uk)

Similar flutes:

Old Sarum A2 [73], Wicken Bonhunt 106 [100]

Bibliography:

Atkin, M and Evans, D H, 2002. *Excavations in Norwich 1971-78 Part III*, 11, 26-29, 40-41. East Anglian Archaeology Report No. 100.

Lawson, G and Margeson, S, 1993. Musical Instruments, in S Margeson, *Norwich households. Medieval and Post-Medieval Finds from Norwich Survey Excavations 1971-78*, 211-3. East Anglian Archaeology Report No. 58.

Norfolk online database <http://noah.norfolk.gov.uk>



Name of flute (location/site):

[70]

Norwich  
Castle Mall

Date:  
1300-1332

Illustration:



Physical information:

**Species:** ovicaprid

**Bone used:** metatarsal

**Extent:** fragment (tonehole end?)

**Length:** 86.7mm

**No. of toneholes:** 1 ½

**Window:** not present

**Evidence of manufacture?** no tool marks visible on the bone surface

**Unusual characteristics/comments:** There is a slight indentation in line with the two toneholes, which appears to be the start of new tonehole.

There remains only a small amount of workable bone at the smaller end, this may or may not provide room for a window. It is possible that the window was at the larger end, with the toneholes situated in the middle of the instrument.

Archaeological information:

**Site:** name Castle Mall

**code**

**locality** SMR:777N

**type** urban

**information** this is the site of the current Castle Mall shopping centre

**Date excavated:** 1989 - 91

**Period:** phase 3

**Context:** number 11268, Ditch 2

**information/description** this is the filling of the cemetery boundary ditch of St John de Berstrete, just on the outside of the castle precinct. It was maintained as a boundary during the 13<sup>th</sup> century, but was infilled with quantities of domestic refuse in the early 14<sup>th</sup> century.

**associated finds** unknown

**Small find no.:** 5474

**Museum record number:** NWHCM:L2001.1.5474:A

**Museum Image ref. no:** archaeol\md00039.jpg

**Illustration no. in archaeological report:** fig. 7.35 (Shepherd Popescu forthcoming)

Current location:

Norwich Castle Museum

Contact information:

Shirehall, Market Avenue, Norwich, Norfolk, NR1 3JQ

01603 493658

Archaeology Curator: Dr Tim Pestell (Anglo-Saxon) [tim.pestell@norfolk.gov.uk](mailto:tim.pestell@norfolk.gov.uk)

context information:

Cambridgeshire County Council Archaeological Field Unit

Fulbourn Community Centre Site, Haggis Gap, Fulbourn, Cambridge, CB1 5HD

<http://edweb.camcnty.gov.uk/afu>

01223 576201

Liz Popescu [elizabeth.popescu@cambridgeshire.gov.uk](mailto:elizabeth.popescu@cambridgeshire.gov.uk)

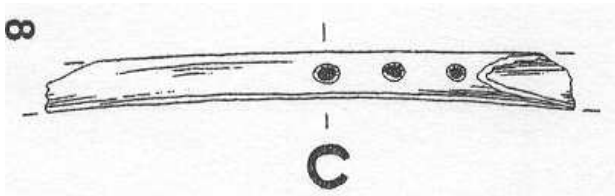
Similar flutes:

Winchester 2264 [106]

Bibliography:

Norfolk Online Access to Heritage <http://noah.norfolk.gov.uk/>

Lawson, G in E Shepherd Popescu, forthcoming. Bone ?reed-pipe, in *Norwich Castle: Excavations and Historical Survey, 1987-98. Part I: Anglo-Saxon to c.1345.* mentioned in... Lawson, G, 1995. Flute, in P Andrews, *Excavations at Redcastle Furze, Thetford, 1988-9. East Anglian Archaeology Report, No.72*, Norfolk Museums Service, Field Archaeology Division.

<u>Name of flute (location/site):</u>  <p style="text-align: center;">Norwich St. Faith's Lane</p>	<p style="text-align: center;"><b>[71]</b></p> <hr/> <u>Date:</u> <p style="text-align: center;">900 - 1200</p>
<u>Illustration:</u> 	
<p style="text-align: center;"><u>Physical information:</u></p> <p><b>Species:</b> goose  <b>Bone used:</b> ulna/tibiotarsus/humerus?(examination of the bone would confirm ID)  <b>Extent:</b> fragment (middle section)  <b>Length:</b> 89mm (diameter 8-9mm)  <b>No. of toneholes:</b> 3; they are 3mm diameter and 7mm apart.  <b>Window:</b> part of the ramp apparently survives, though it is not evident in the illustration  <b>Evidence of manufacture?</b> toneholes appear to have been made by knife  <b>Unusual characteristics/comments:</b> it is suggested that this was a child's flute, and the exterior is highly polished, suggesting much use before deposition (Soden 2002).</p>	
<p style="text-align: center;"><u>Archaeological information:</u></p> <p><b>Site:</b> <b>name</b> St. Faith's Lane, Norwich  <b>code</b> 373N  <b>type</b> urban  <b>information</b> During the 10<sup>th</sup> to 12<sup>th</sup> centuries, the site fronted onto a street, with both domestic and industrial activity taking place. It went into decline and possible abandonment, and in the 13<sup>th</sup> century was incorporated into the Franciscan Friary precinct, when it was used as a cemetery.  <b>Date excavated:</b> 1997 - 98  <b>Period:</b> Phase 3  <b>Context:</b> <b>number</b> 335  <b>information/description</b> grave 113 (though most probably it is residual)  <b>associated finds</b> unknown  <b>Small find no.:</b> 253  <b>Illustration no. in archaeological report:</b> fig.16,8 (Soden 2002)</p>	
<p><b>Current location:</b> unknown – not at Norwich Castle Museum.  Northampton Archaeology may still have it.</p>	
<p><b>Similar flutes:</b>  unknown</p>	
<p><b>Bibliography:</b>  Soden, I, 2002. <i>Life and death on a Norwich Backstreet AD900-1066, Excavations in St.Faith's Lane, Norwich</i> 1998, 54, 55, 61. Northampton: Northamptonshire Archaeology.</p>	

Name of flute (location/site):  <div style="text-align: center;"> <b>Norwich</b>          St. Martin-at-Palace Plain       </div>	<div style="text-align: right;"><b>[72]</b></div> <hr/> Date: 1370 - 1450
Illustration: 	

Physical information:

**Species:** goose

**Bone used:** humerus

**Extent:** complete

**Length:** 98mm

**No. of toneholes:** 1

**Window:** D shaped

**Evidence of manufacture?** very slight longitudinal scraping, ends trimmed neatly by knife.

**Unusual characteristics/comments:** this flute is unusual in that it appears to have a window and a tonehole, each at a similar distance from the ends

Archaeological information:

**Site:** **name** St. Martin-at-Palace Plain, Norwich ('Calthorpe House')

**code** Site 34

**locality number** SMR:34N

**type** urban

**information** this is a large waterfront site on relatively high ground above the river marsh, adjacent to Whitefriars Bridge and on the street of St. Martin-at-Palace Plain. The church of St. Martin-at-Palace Plain was on the opposite side of this street. The area was close to the pre-conquest market in Tombland, and the cathedral and precinct was built nearby in 1094. Occupation from the 11<sup>th</sup> century centred on commercial development; pottery finds indicate much trade with the Low Countries and Germany, and some trade with France and Scandinavia. In the 12<sup>th</sup> century, the area's commercial activity declined, and it became an area of industrial activity, with tradesmen living and working there (including dyers and tanners). At this time, tenement boundaries were replanned, and a large stone house built. This house fell into disuse, but a further stone house (building 3132) was built nearby in the 14<sup>th</sup> century.

**Date excavated:** 1962 (A trial excavation was undertaken in 1962 (site 34), and a more extensive excavation in 1981. The flute was found in the 1962 excavation.)

**Period:** III phase 2

**Context:** **number** below 'floor' 6 (probably context no.13)

**information/description** this is part of a sequence of floors excavated in 1962. The 1981 excavations revealed that these floors were part of a wing of building 3132 a stone house that fronted onto the street. The dating of the flute comes from this later excavation.

**associated finds** unknown

**Small find no.:** n/a

**museum record number:** NWHCM:1963.1(1):A

**Museum assigned number:** 1.963(1)

**Illustration no. in archaeological report:** fig.84,38 p.106 (Ayers 1987)

**Current location:** Norwich Castle Museum

**Contact information:** Shirehall, Market Avenue, Norwich, Norfolk, NR1 3JQ

tel: 01603 493658

Archaeology Curator: Dr Tim Pestell (Anglo-Saxon) [tim.pestell@norfolk.gov.uk](mailto:tim.pestell@norfolk.gov.uk)

**Similar flutes:**

Ludgershall Castle 26 [59]

**Bibliography:**

Ayers, B, 1987. *Excavations at St. Martin-at-Palace Plain, Norwich, 1981. East Anglian Archaeology Report No.37*, 51,106. Norfolk Archaeological Unit, Norfolk Museums Service.

Crane, F, 1972. *Extant Medieval Musical Instruments: A Provisional Catalogue by Types*, 38. Iowa: University of Iowa Press.

Megaw, J V S, 1968.The Earliest Musical Instruments in Europe, *Archaeology*, **21**, 149.

Norfolk Online Access to Heritage <http://noah.norfolk.gov.uk/>

Name of flute (location/site):	[73]
Old Sarum A2	Date: 1100 -1220



Physical information:

**Species:** swan

**Bone used:** ulna

**Extent:** complete

(distal end may be missing a small amount from original total length)

**Length:** 208.5mm

**No. of toneholes:** 4

**Window:** D shaped

**Evidence of manufacture?** Transverse cuts above and below window and around T2 suggest marking out prior to manufacture. Longitudinal scrapes along all sides and length. Tubercles smoothed off but still able to be felt.

**Unusual characteristics/comments:** High degree of polish from use. Has been fitted with a block of resinous material, although no record of this event has been noted. No discolouration of the bone has occurred.

Archaeological information:

**Site:** name Old Sarum

code OS

type elite (castle, urban)

**information** Old Sarum was built centrally within the pre-existing Iron Age hill fort, adjacent to cathedral (suggesting common patronage). The castle was built in 1100, and the courtyard and royal palace were built in 1130. In c.1219, the town relocated to a site outside the earthworks, the site of modern day Salisbury.

**Date excavated:** 1909 - 1915

**Period:** n/a

**Context:** number n/a

**information/description** Found in garderobe pit no. 5, in the angle between the Kitchen Tower and the Great Chamber of the Courtyard House.

**associated finds** unknown

**Small find no.:** OS A2

**Illustration no. in archaeological report:** fig.3,7 p.21 (MacGregor in Saunders 2001)

Current location:

Salisbury & South Wiltshire Museum

Contact information:

The King's House, 65 The Close, Salisbury, Wiltshire, SP1 2EN

Tel: 01722 332151

[museum@salisburymuseum.org.uk](mailto:museum@salisburymuseum.org.uk)

Peter Saunders

Similar flutes:

Norwich Bishopsgate [69], Wicken Bonhunt 106 [100]

Bibliography:

Crane, F, 1972. *Extant Medieval Musical Instruments: A Provisional Catalogue by Types*. Iowa: University of Iowa Press.

Creighton, O H, 1972. *Castles and landscapes*. London: Continuum.

MacGregor, A, 2001. Objects of Bone, Antler and Ivory, in P Saunders (ed), *Salisbury Museum Medieval Catalogue Part 3*, 18-21. Salisbury and South Wiltshire Museum.

Megaw, J V S, 1960. Penny Whistles and Prehistory, *Antiquity*, **34**, 11.



Name of flute (location/site):  <div style="text-align: center;">           Old Sarum            A3         </div>	<b>[74]</b>
	Date: 1100 -1220
Illustration: 	

Physical information:

**Species:** sheep  
**Bone used:** femur  
**Extent:** complete  
**Length:** 89mm  
**No. of toneholes:** 3  
**Window:** D shaped  
**Evidence of manufacture?**  
**Unusual characteristics/comments:**

Archaeological information:

**Site:** **name** Old Sarum  
**code** OS  
**type** elite (castle, urban)  
**information** Old Sarum was built centrally within the pre-existing Iron Age hill fort, adjacent to cathedral (suggesting common patronage). The castle was built in 1100, and the courtyard and royal palace were built in 1130. In c.1219, the town relocated to a site outside the earthworks, the site of modern day Salisbury.  
**Date excavated:** 1910  
**Period:** n/a  
**Context:** **number** n/a  
**information/description** possibly from garderobe pits nos. 1-7  
**associated finds** unknown  
**Small find no.:** OS A3  
**Illustration no. in archaeological report:** fig.3,8 p.21 (Saunders 2001)

Current location:

Salisbury & South Wiltshire Museum

Contact information:

The King's House, 65 The Close, Salisbury, Wiltshire, SP1 2EN  
Tel: 01722 332151  
[museum@salisburymuseum.org.uk](mailto:museum@salisburymuseum.org.uk)  
Peter Saunders

Similar flutes:

Exeter B5 [16] (similar appearance), otherwise none other known from this species and element

Bibliography:

Crane, F, 1972. *Extant Medieval Musical Instruments: A Provisional Catalogue by Types*. Iowa: University of Iowa Press.

Creighton, O H, 1972. *Castles and landscapes*. London: Continuum.

MacGregor, A, 2001. Objects of Bone, Antler and Ivory, in P Saunders (ed), *Salisbury Museum Medieval Catalogue Part 3*, 18-21. Salisbury and South Wiltshire Museum.

Megaw, J V S, 1960. Penny Whistles and Prehistory, *Antiquity*, **34**, 11.

Name of flute (location/site):

[75]

Rayleigh Castle  
1909

Date:

c.1070  
– c.1350

Illustration:



Physical information:

**Species:** goose

**Bone used:** ulna

**Extent:** complete

**Length:** 78mm

**No. of toneholes:** 0

**Window:** D shaped

**Evidence of manufacture?** both ends trimmed neatly by knife, and a cut is visible above the window.

**Unusual characteristics/comments:** this is definitely complete, as opposed to being broken and shortened from a longer length with toneholes. The surface appears highly polished.

Archaeological information:

**Site:** name Rayleigh Castle, Essex

**code** n/a

**type** elite (castle, urban)

**information** typical Norman motte and bailey castle, built shortly after the Norman Conquest, mentioned in the Domesday book, and with many periods of development.

**Date excavated:** 1909 - 1910

**Period:** n/a

**Context:** number (Francis does not mention where on the site it was found)

**information/description** unknown

**associated finds** bone and antler finds (were very scarce, but included a toggle/buzz bone, an antler handle, whetstones, and 7 silver pennies of Stephen)

**Small find no.:** unknown

**Illustration no. in archaeological report:** fig.5,5 p.170 (Francis 1912)

Current location:

on display, Southend Museum

Contact information:

Central Museum, Victoria Avenue, Southend on Sea, Essex, SS2 6EW

tel: 01702 434449

Ken Crowe

Similar flutes:

London New Fresh Wharf [49], King's Lynn All Saints Street [36], King's Lynn Marks and Spencers [37]

Bibliography:

Bedwin, O (ed), 1996. *The Archaeology of Essex. Proceedings of the Writtle Conference*. Chelmsford: Essex County Council Planning Department.

Buckley, D G, 1980. *Archaeology in Essex to AD 1500*. London: Council for British Archaeology.

Crane, F, 1972. *Extant Medieval Musical Instruments: A Provisional Catalogue by Types*. Iowa: University of Iowa Press.

Creighton, O H, 1972. *Castles and landscapes*. London: Continuum.

Francis, E B, 1912. Rayleigh Castle: New Facts in its History and Recent Explorations on its Site. *Transactions of the Essex Archaeological Society*, **12**, 171.

Helliwell, L and Macleod, D G, 1981. *Documentary evidence and report on Excavations 1959-61 on behalf of the Rayleigh Mount Local Committee of the National Trust*. Rayleigh: Rayleigh Mount Local Committee.

Megaw, J V S, 1960. Penny Whistles and Prehistory, *Antiquity*, **34**, 11.

Name of flute (location/site):	[76]
Rayleigh Castle 1959	Date: c.1270 – c.1350

Illustration:



Physical information:

**Species:** large goose or small crane/swan

**Bone used:** ulna

**Extent:** fragment (middle section)

**Length:** 62.5mm

**No. of toneholes:** 1, and 2 x ½

**Window:** n/a

**Evidence of manufacture?** holes neatly made by knife with a chamfer that is more pronounced on one side, some longitudinal scraping present

**Unusual characteristics/comments:** lines across the instrument to mark the position of toneholes

Archaeological information:

**Site:** name Rayleigh Castle, Essex

**code** n/a

**type** elite (castle, urban)

**information** typical Norman motte and bailey castle, built shortly after the Norman Conquest, mentioned in the Domesday book, and with many periods of development.

**Date excavated:** 1959 - 1961

**Period:** D - E

**Context:** number R2/AC2

**information/description** unknown – no further information on what this context is from the excavation note books.

**associated finds** unknown

**Small find no.:** unknown – none recorded

**Illustration no. in archaeological report:** not illustrated, but mentioned on p.28, no.68 (Helliwell and Macleod 1981)

**Current location:**

Southend Museum

**Contact information:**

Central Museum, Victoria Avenue, Southend on Sea, Essex, SS2 6EW

tel: 01702 434449

Ken Crowe

**Similar flutes:**

large goose ulna flutes: Acton Court [1], Gloucester Southgate Street [25];  
small crane/swan ulna flutes: Winchester 2261 [103], Lincoln Flaxengate 126 [38],  
Old Sarum A2 [73] (also has marking out lines), Norwich Bishopsgate [69]

**Bibliography:**

Helliwell, L and Macleod, D G, 1981. *Documentary evidence and report on Excavations 1959-61 on behalf of the Rayleigh Mount Local Committee of the National Trust*, 28. Rayleigh: Rayleigh Mount Local Committee.

excavation field notebooks, Southend Museum (no information gleaned)



Name of flute (location/site):	[77]
Riplingham	Date: 1250 – 1300
Illustration:	
 <p>The illustration consists of four photographs of a bone flute. The top photograph shows the complete flute from a lateral perspective. The second photograph shows the flute from a lateral perspective with three finger holes visible. The third photograph shows a cross-section of the flute, labeled 'BONE 2'. The fourth photograph shows an end view of the flute, labeled 'BONE 3'. A 1 cm scale bar is positioned between the top two photographs. The bottom two photographs are labeled 'BONE 2' and 'BONE 3' respectively.</p>	

Physical information:

**Species:** sheep

**Bone used:** tibia

**Extent:** almost complete (proximal end with window is missing)

**Length:** 100mm

**No. of toneholes:** 3

**Window:** lower edge possibly present

**Evidence of manufacture?** no scraping, but a section is made flat on the tonehole surface into which all three holes are made.

**Unusual characteristics/comments:** This is not described as a flute in the report, which says, 'part of one side.....has been cut away to form a flat surface. Three countersunk holes have been bored through this flattened surface, presumably for attachment to some unknown object as a handle'. The distal end appears broken, but in fact is extremely smooth. The face of the bone where the toneholes are made is the 'side' of the bone, and not the obvious 'front' surface used in the manufacture of bone flutes.

Archaeological information:

**Site:** name Riplingham

code n/a

type rural

**information** Riplingham is a DMV on the Yorkshire Wolds, with peak use in the 13<sup>th</sup> century and subsequent partial use to the present. A manor house, grange, farm and group of cottages survive.

**Date excavated:** 1956 - 57

**Period:** Pre-Period II, not possible to connect with Period I

**Context:** number C I 17

**information/description** This context is in Building 2, which fronted onto the south side of one of the village streets. It is a dark brown loam layer between building phases. The building was occupied until the mid 14<sup>th</sup> century, when the village was in decline.

**associated finds** pottery sherds

**Small find no.:** unknown

**Illustration no. in archaeological report:** fig.30,2, p.665 (Wacher 1966)

**Current location:**

Hull and East Riding Museum

**Contact information:**

36 High Street, Hull, HU1 1PS

tel: 01482 613 927

[bryan.sitch@hullcc.gov.uk](mailto:bryan.sitch@hullcc.gov.uk)

Bryan Sitch or Martin Foreman

**Similar flutes:**

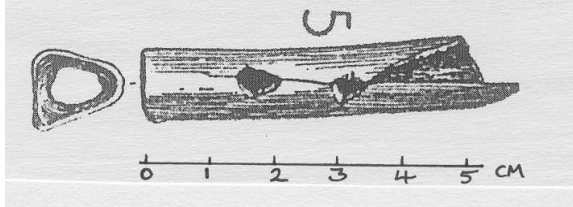
another flute with the front of the instrument in the 'side' of the bone is from London Crutched Friars [46]

**Bibliography:**

Wacher, J, 1966. Excavations at Riplingham East Yorkshire 1956-7, *The Yorkshire Archaeological Journal*, **41**, 608-665.

(Mentioned in Beverley Lurk Lane report 1991)



<u>Name of flute (location/site):</u>  <p style="text-align: center;">Seacourt</p>	<p style="text-align: right;"><b>[78]</b></p> <hr/> <u>Date:</u> pre- 1400
<u>Illustration:</u> 	
<p style="text-align: center;"><u>Physical information:</u></p> <p> <b>Species:</b> bird  <b>Bone used:</b> ulna  <b>Extent:</b> fragment (tonehole end?)  <b>Length:</b> 59mm  <b>No. of toneholes:</b> 2  <b>Window:</b> not present  <b>Evidence of manufacture?</b> unknown  <b>Unusual characteristics/comments:</b> from the illustration, it appears that this is an end of a flute. If it is the distal end, with 2 toneholes, then the ulna is used in the opposite orientation to that normally used, i.e. with the flared end of the ulna at the distal end of the flute. However, it may be that this fragment is the proximal end of the flute, with a crudely shaped window and chip of bone missing (appearing like another hole). First hand examination of the flute would clarify this. </p>	
<p style="text-align: center;"><u>Archaeological information:</u></p> <p> <b>Site:</b> name Seacourt, Berkshire  code unknown  type rural  information deserted medieval village on the original western approach road to Oxford  <b>Date excavated:</b> 1939 (site as a whole was excavated 1937-39 and 1958-59)  <b>Period:</b> n/a  <b>Context:</b> number unknown  information/description unstratified  associated finds unknown  <b>Small find no.:</b> unknown  <b>Illustration no. in archaeological report:</b> fig.32,5 p.183 (Biddle 1962) </p>	
<p> <b>Current location:</b>  Ashmolean Museum, Oxford  <b>Contact information:</b>  all British artefacts are likely to be in store until the museum re-opens in 2008/9  <a href="mailto:alison.roberts@ashmus.ox.ac.uk">alison.roberts@ashmus.ox.ac.uk</a>, <a href="mailto:arthur.macgregor@ashmus.ox.ac.uk">arthur.macgregor@ashmus.ox.ac.uk</a>  Alison Roberts 01865 288 271 </p>	
<p> <b>Similar flutes:</b> unknown  <b>Bibliography:</b>  Biddle, M, 1962. The deserted Medieval Village of Seacourt, Berkshire, <i>Oxoniensa</i>, 26/27, 183-4.  Crane, F, 1972. <i>Extant Medieval Musical Instruments: A Provisional Catalogue by Types</i>. Iowa: University of Iowa Press. </p>	

Name of flute (location/site):	[79]
Southampton High Street C	Date: 1270 - 1300



Physical information:

**Species:** goose

**Bone used:** ulna

**Extent:** complete

**Length:** 121mm

**No. of toneholes:** 3

**Window:** D to oval shaped

**Evidence of manufacture?** slight longitudinal scraping

**Unusual characteristics/comments:** Window is very large, and reproductions using these dimensions produced an instrument that was extremely difficult to sound. A subsequent reproduction made with a smaller window produced sound far more easily.

In the original artefact, there is a plasticine block still in place, presumably remaining from the time when Megaw examined the instrument for the 1975 report.

Archaeological information:

**Site:** name High Street C

**code** SOU 161

**type** urban

**information** This area is on the main north-south road through the town of Southampton, and was in the well-to-do part of town.

**Date excavated:** 1966 onwards

**Period:** n/a

**Context:** number pit 205

**information/description** this pit is between 2 cesspits at the back of house 1, which had a stone built vault and well chamber. This house possibly belonged to a merchant (Brown, pers. comm). The pit is dated to c.1300, with earlier material present.

**associated finds** local glazed wares (glazed jug, polychrome glazed Saintonge jug rim), vessel glass, iron.

**Small find no.:** item number 157

**Catalogue number in publication:** 1934 (Platt and Coleman-Smith 1975)

**Illustration no. in archaeological report:**

fig.248, 1934 p. 273 (Platt and Coleman-Smith 1975),

fig.79,b p.149 (MacGregor 1985)

**Current location:**

on display, Medieval Gallery, Southampton Museum of Archaeology

**Contact information:**

God's House Tower, Town Quay, Southampton

023 80 635 904

Duncan Brown

**Similar flutes:**

London Watling Court [58], London Bank of England [42]

**Bibliography:**

Brown, D, 2005. personal communication.

MacGregor, A, 1985. *Bone Antler Ivory & Horn. The technology of Skeletal Materials Since the Roman Period*. London and Sydney: Croom Helm.

Megaw, J V S, 1975. The Bone Pipe, in C Platt and R Coleman-Smith, *Excavations in Medieval Southampton Volume 2*, 252-3. Leicester: Leicester University Press.

Platt, C, 1973. *Medieval Southampton. The port and trading community, A.D. 1000-1600*. London and Boston: Routledge and Keegan Paul.

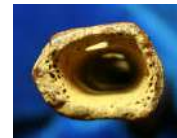
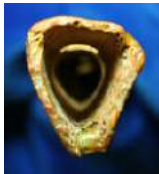
Platt, C, and Coleman-Smith, R, 1975a. *Excavations in Medieval Southampton*

1953-1969 Volume 1 *The excavation reports*. Leicester: Leicester University Press.

Platt, C and Coleman-Smith, R, 1975b. *Excavations in Medieval Southampton* 1953-1969 Volume 2 *The finds*, 273-4. Leicester: Leicester University Press.

Name of flute (location/site):	[80]
Stanton Low	Date: medieval

Illustration:



Physical information:

**Species:** sheep

**Bone used:** tibia

**Extent:** complete

**Length:** 145.5mm

**No. of toneholes:** T + 6

**Window:** D shaped

**Evidence of manufacture?** longitudinal scratches on surface

**Unusual characteristics/comments:** this flute has a thumbhole. The most distal tonehole is slightly offset, and may have served as a suspension hole (though these are most often on the back of the instrument)

Archaeological information:

**Site: name** Stanton Low

**code** n/a

**information** DMV with maintained surviving church near the River Ouse, part of modern day Milton Keynes.

The village was established in the 10<sup>th</sup> to 11<sup>th</sup> centuries, and was called 'Stantone' in the Domesday survey. It had a church and a manor house at the western end of the village, and a mill, a fishery, a dovecote, crofts and houses. It was enclosed and deserted in the 15<sup>th</sup> century, and most of the village was destroyed during gravel extraction prior to the development of Milton Keynes in the 20<sup>th</sup> century (Croft 1993).

**type** rural

**Date excavated:** 1984 by detectorist J.Coulson

**Period:** n/a

**Context: number** n/a

**information/description** found during earth disturbance at the site, between the lake and the River Ouse, 0.3 miles from the village itself.

**associated finds** unknown

**Small find no.:** n/a

**Bucks museum accession number:** 1987.166.1

**Illustration no. in archaeological report:** unpublished

Current location:

Buckinghamshire Museum Resource Centre

Contact information:

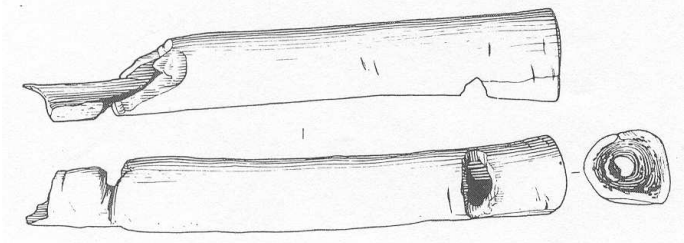
Museum Resource Centre, Tring Road, Halton, Buckinghamshire, HP22 5PJ  
01296 6245195  
Brett Thorne

Similar flutes:

Great Massingham [26] is a similar instrument but with a suspension hole on the back; London Thames Exchange [54] is a similar sheep tibia flute with thumbhole.

Bibliography:

Croft, R A, 1993. *The Changing Landscape of Milton Keynes*. Aylesbury: The Buckinghamshire Archaeological Society, Monograph No. 5.

<u>Name of flute (location/site):</u>  <p style="text-align: center;">Stonar, Nr. Sandwich</p>	<p style="text-align: right;"><b>[81]</b></p> <hr/> <u>Date:</u> <p style="text-align: right;">1385</p>
<u>Illustration:</u>  	
<p style="text-align: center;"><u>Physical information:</u></p> <p><b>Species:</b> sheep  <b>Bone used:</b> tibia  <b>Extent:</b> fragment (window end)  <b>Length:</b> 90mm  <b>No. of toneholes:</b> ½  <b>Window:</b> crude oval  <b>Evidence of manufacture?</b> The window is crudely cut, and shows no ramp - possible indication of manufacture in progress.  <b>Unusual characteristics/comments:</b> this seems very crudely made. It appears that the window has been cut in the opposite face to that normally used for a sheep tibia flute – examination of the flute would confirm this.</p>	
<p style="text-align: center;"><u>Archaeological information:</u></p> <p><b>Site:</b> name Stonar  code unknown  type settlement, rural  <b>information</b> Stonar was raided by the French in 1385, and was almost completely razed. The settlement was subsequently abandoned.  <b>Date excavated:</b> 1970  <b>Period:</b> n/a  <b>Context:</b> number Area 6A  <b>information/description</b> floor of House 1. The context was sealed by a destruction level of roofing tiles and burnt daub when the house was destroyed by fire during a French raid in 1385.  <b>associated finds</b> destruction levels contained many small finds, including a wide range of imported and local pottery  <b>Small find no.:</b> 170  <b>Illustration no. in archaeological report:</b> fig.1, p.267 (Megaw 1983)</p>	
<p><b>Current location:</b>  unknown – not with Canterbury Archaeological Trust</p>	
<p><b>Similar flutes:</b>  unknown</p>	
<p><b>Bibliography:</b>  Megaw, J V S, 1983. The Pipe, in N MacPherson-Grant, A note on a fragmentary bone end-blown pipe from a medieval house site at Stonar, near Sandwich, <i>Archaeologia Cantiana</i>, <b>99</b>, 266-268.</p>	

Name of flute (location/site):

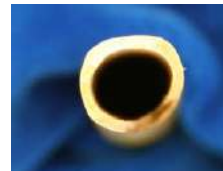
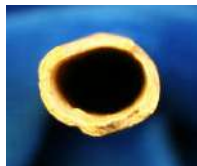
[82]

Swavesey

Date:

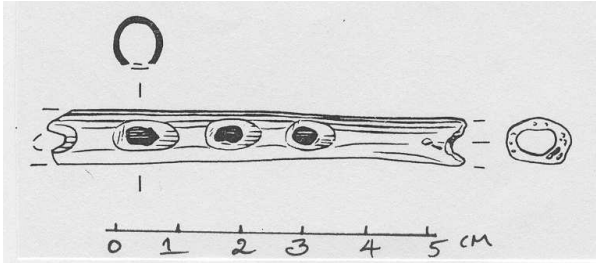
presumed  
900 - 1400

Illustration:

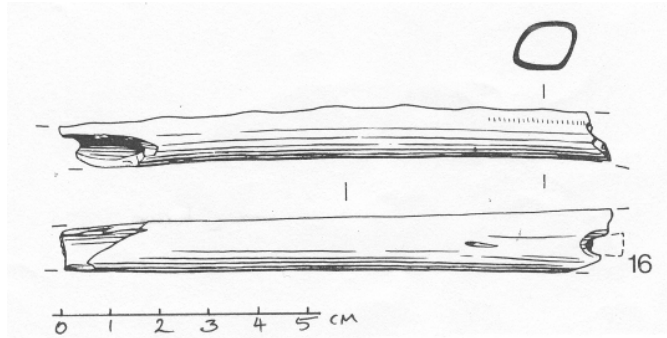


<p style="text-align: center;"><u>Physical information:</u></p> <p><b>Species:</b> crane  <b>Bone used:</b> ulna  <b>Extent:</b> fragment (middle section)  <b>Length:</b>  <b>No. of toneholes:</b> ½  <b>Window:</b> lower edge of ramp present  <b>Evidence of manufacture?</b>  <b>Unusual characteristics/comments:</b> the tonehole has a cut away chamfer around it.</p>
<p style="text-align: center;"><u>Archaeological information:</u></p> <p><b>Site:</b> name Swavesey, Black Horse Lane  code  type rural  <b>information</b> this is an area of settlement, on a gravel 'island' in a wet and poorly drained area. It had two main phases of occupation: late Iron Age and medieval. In the medieval period, there was a 'castle' and defensive enclosure (11<sup>th</sup> – 13<sup>th</sup> centuries), though the settlement appears to have been mainly low-status and domestic. Features of the site include a series of ditches, groups of postholes possibly representing structures, pits of varying sizes (some rubbish pits, some quarry pits) and some narrow linear features that may be fence lines. Most of the finds suggest occupation from 900 - 1400  <b>Date excavated:</b> 1995 - 98  <b>Period:</b> n/a  <b>Context:</b> number 3004  <b>information/description</b> a surface cleaning layer, so unstratified  <b>associated finds</b> unknown  <b>Small find no.:</b> 99/085  <b>Illustration no. in archaeological report:</b> not illustrated in Roberts 2001.</p>
<p><b><u>Current location:</u></b>  not with CCC AFU; on loan to G Lawson  <b>Contact information:</b>  Cambridgeshire County Council Archaeological Field Unit  Fulbourn Community Centre Site, Haggis Gap, Fulbourn, Cambridge, CB1 5HD  <a href="http://edweb.camcnty.gov.uk/afu">http://edweb.camcnty.gov.uk/afu</a>  01223 576201  Liz Popescu <a href="mailto:elizabeth.popescu@cambridgeshire.gov.uk">elizabeth.popescu@cambridgeshire.gov.uk</a></p>
<p><b><u>Similar flutes:</u></b>  Wicken Bonhunt 106 [100], Old Sarum A2 [73]</p>
<p><b><u>Bibliography:</u></b>  Roberts, J, 2001. <i>Post-excavation assessment of archaeological work at Black Horse Lane, Swavesey</i>, 1999. Cambridgeshire County Council Archaeological Field Unit Report PXA 31.</p>



<u>Name of flute (location/site):</u>  <p style="text-align: center;"><b>Thetford</b> Brandon Road 342</p>	<p style="text-align: right;"><b>[83]</b></p> <hr/> <u>Date:</u> 1000 - 1200
<u>Illustration:</u>  	
<p style="text-align: center;"><u>Physical information:</u></p> <p> <b>Species:</b> goose  <b>Bone used:</b> ulna  <b>Extent:</b> fragment (tonehole end)  <b>Length:</b> 67mm  <b>No. of toneholes:</b> 3 ½  <b>Window:</b> Not present  <b>Evidence of manufacture?</b> All toneholes are recessed.  <b>Unusual characteristics/comments:</b> Lawson (1993) mentions high degree of polish suggesting much use before deposition. </p>	
<p style="text-align: center;"><u>Archaeological information:</u></p> <p> <b>Site:</b> name Brandon Road  code  type urban  <b>information</b> hearths and ovens around the site suggest minor industrial activity; rubbish pits and cess pits may indicate an increase in population.  <b>Date excavated:</b> 1966  <b>Period:</b> Period IV  <b>Context:</b> number (2959) K25 F19  <b>information/description</b> pit, part of a group of pits that 'may have been associated with cellared building L nearby'. A few worked bones come from this and neighbouring pits; though not sufficient evidence to support the presence of a bone working industry, it is possible that it occurred.  <b>associated finds</b> a hone and a toggle/buzz bone  <b>Small find no.:</b> SF342  <b>Illustration no. in archaeological report:</b> fig.161.15, p.163 (Dallas 1993) </p>	
<u>Current location:</u> unknown (not at Norwich Castle or Thetford Museums)	
<u>Similar flutes:</u> unknown	
<u>Bibliography:</u> Lawson, G, 1993. Note on bone flutes, in C Dallas, <i>Excavations in Thetford by B.K. Davison between 1964 and 1970, East Anglian Archaeology Report, no.62</i> , 159-60, 163. Field Archaeology Division, Norfolk Museums Service.	

Name of flute (location/site):		[84]
<p style="text-align: center;"><b>Thetford</b> Brandon Road 542</p>		Date: c. 1200
<p><u>Illustration:</u></p>		
<p style="text-align: center;"><u>Physical information:</u></p> <p><b>Species:</b> goose  <b>Bone used:</b> ulna  <b>Extent:</b> complete (distal end chipped)  <b>Length:</b> 115mm  <b>No. of toneholes:</b> 3  <b>Window:</b> Crude D shaped  <b>Evidence of manufacture?</b> Transverse cut marks may indicate manufacture planning.  <b>Unusual characteristics/comments:</b> Toneholes are on the concave surface. Lawson (1993) mentions slight wear suggesting little use before deposition.</p>		
<p style="text-align: center;"><u>Archaeological information:</u></p> <p><b>Site:</b> name Brandon Road  code  type urban  <b>information</b> hearths and ovens around the site suggest minor industrial activity; two drying ovens nearby were filled in at the same time. Rubbish pits and cess pits may indicate an increase in population.  <b>Date excavated:</b> 1966  <b>Period:</b> Period IV  <b>Context:</b> number J26 F6 (C), cellared building L, in filling of c.1200  <b>information/description</b> Building L was constructed in 11<sup>th</sup> century (possibly 2<sup>nd</sup> half), and was deliberately filled in c.1200. 'The surrounding stake holes suggest that it may have been a fenced-in ruin before that date.'  <b>associated finds</b> unknown  <b>Small find no.:</b> SF542  <b>Illustration no. in archaeological report:</b> fig.161.17 p.163 (Dallas 1993)</p>		
<p><b>Current location:</b>  unknown (not at Norwich Castle or Thetford Museums)</p>		
<p><b>Similar flutes:</b>  London Watling Court [58], Southampton [79], Acton Court [1]</p>		
<p><b>Bibliography:</b>  Lawson, G, 1993. Note on bone flutes, in C Dallas, <i>Excavations in Thetford by B.K. Davison between 1964 and 1970, East Anglian Archaeology Report, no.62</i>, 159-60, 163. Field Archaeology Division, Norfolk Museums Service.</p>		

<u>Name of flute (location/site):</u>  <div style="text-align: center;">Thetford Brandon Road 758</div>		<div style="text-align: right;"><b>[85]</b></div>
		<u>Date:</u> 1200 - 1400
<u>Illustration:</u> 		
<div style="text-align: center;"><u>Physical information:</u></div> <p> <b>Species:</b> crane/swan  <b>Bone used:</b> ulna  <b>Extent:</b> fragment (middle section)  <b>Length:</b> 111mm  <b>No. of toneholes:</b> 0  <b>Window:</b> ramp intact  <b>Evidence of manufacture?</b> unknown  <b>Unusual characteristics/comments:</b> first hand examination of the flute may confirm species identification, especially as the foramen appears to be present.       </p>		
<div style="text-align: center;"><u>Archaeological information:</u></div> <p> <b>Site:</b> name Brandon Road  code  type urban  <b>information</b> Brandon Road area at that time was involved in much industrial activity: malting and brewing, cloth dyeing, tentering and pottery production.  <b>Date excavated:</b> 1966  <b>Period:</b> Early Period V  <b>Context:</b> number (2351) K26 F6  <b>information/description</b> Early Period V pit  <b>associated finds</b> associated with late C11–12 pottery (but period V is C13-14...)  <b>Small find no.:</b> SF758  <b>Illustration no. in archaeological report:</b> fig.161.16, p.163 (Dallas 1993)       </p>		
<u>Current location:</u> unknown (not at Norwich Castle or Thetford Museums)		
<u>Similar flutes:</u> complete swan bone flutes: Norwich Bishopsgate [69], Wicken Bonhunt 106 [100], Old Sarum A2 [73]; similar fragment: Swavesey [82]		
<u>Bibliography:</u> Lawson, G, 1993. Note on bone flutes, in C Dallas, <i>Excavations in Thetford</i> by B.K. Davison between 1964 and 1970, <i>East Anglian Archaeology Report</i> , no.62, 159-60, 163. Field Archaeology Division, Norfolk Museums Service.		

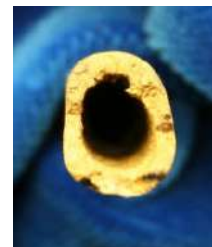
Name of flute (location/site):

[86]

Thetford  
Redcastle Furze

Date:  
1200 – 1366

Illustration:



Physical information:

**Species:** ovicaprid

**Bone used:** metacarpal (Lawson's identification, 1995)

**Extent:** fragment (tonehole end)

**Length:** 85.5mm

**No. of toneholes:** 2 ½

**Window:** Not present

**Evidence of manufacture?** overall surface shaped by knife, and visible trimming by knife at the surviving end.

**Unusual characteristics/comments:** the placement of the toneholes leave little space at the missing end for the flute's window, taking into account the projected overall length of the original bone from which the instrument was made. Lawson notes that the surface is very scratched, though this may be due to the archaeological layer being disturbed.

Archaeological information:

**Site:** name Redcastle Furze

code 24822

type rural

**information** Thetford had undergone a rapid decline in importance in C11+12, with subsequent occupation mainly on the northern bank of the river. Redcastle Furze site was a small farm complex, probably the property of the canons of the priory of the Holy Sepulchre (250m E of the site). It was abandoned in mid C14 due to either change in fortunes of the order or the black death.

**Date excavated:** 1988 - 89

**Period:** Period VII

**Context:** number layer 1761 (can't find any mention of this context no. in report)

information/description unknown

associated finds unknown

**Small find no.:** SF 1174

**Norfolk Museums Service accession no.:** 1994.4

**Illustration no. in archaeological report:** fig.87,14 p.116 (Andrews 1995)

Current location:


(not at Norwich Castle or Thetford Museums)  
with G Lawson

Similar flutes:

no other similar flutes

Bibliography:

Lawson, G, 1995. Flute, in P Andrews, *Excavations at Redcastle Furze, Thetford, 1988-9. East Anglian Archaeology Report, No.72*, 116. Norfolk Museums Service, Field Archaeology Division.

Name of flute (location/site):  <div style="text-align: center;"> <b>Thetford</b>          Site 2 North       </div>	<div style="text-align: right;"><b>[87]</b></div> <hr/> Date: 800 - 900
Illustration:  	

Physical information:

**Species:** crane

**Bone used:** tarsometatarsus

**Extent:** complete

**Length:** 191mm

**No. of toneholes:** 3

**Window:** D shaped

**Evidence of manufacture?** Toneholes cut with knife (irreg. walls, tapering cross section evident).

**Unusual characteristics/comments:** Residue of plasticine present within windway area.

Archaeological information:

**Site:** name site 2 North

code Site 2N

type urban

**information** this site was an area with many pits and huts. Thetford was an important centre by 870, when it was a winter base for the Vikings (Andrews 1995)

**Date excavated:** 1948 - 49

**Period:** n/a

**Context:** number PN57

**information/description** found in the lower filling of a large pit (2.6m deep and average 1.4m across)

**associated finds** a bone tubular object (now lost)

**Small find no.:** 1030 (original small find number given by Klocker)

**museum record number:** NWHCM:1950.12.1039:A

**assigned number:** 12.950(1030)

**Illustration no. in archaeological report:** fig.200,108, p.183 (Rogerson and Dallas 1984)

Current location:

Norwich Castle Museum

(it may return to Thetford Ancient House Museum when it reopens).

**Contact information:**

Shirehall, Market Avenue, Norwich, Norfolk, NR1 3JQ

01603 493658

Archaeology Curator: Dr Tim Pestell (Anglo-Saxon)

tim.pestell@norfolk.gov.uk

Similar flutes:

Canterbury Lady Wootton's Green [7], West Cotton 10832 [91]

**Bibliography:**

Andrews, P, 1995. *Excavations at Redcastle Furze, Thetford, 1988-9. East Anglian Archaeology Report, No.72.* Norfolk Museums Service, Field Archaeology Division.

Crane, F, 1972. *Extant Medieval Musical Instruments: A Provisional Catalogue by Types*, 38. Iowa: University of Iowa Press.

Lawson, G, 1984. Flutes, in A Rogerson and C Dallas, *Excavations in Thetford 1948-59 and 1973-80. East Anglian Archaeology* 22, 182-3. The Norfolk Archaeological Unit, Norfolk Museums Service.

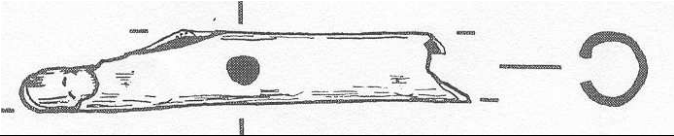
MacGregor, A, 1985. *Bone Antler Ivory & Horn. The technology of Skeletal Materials Since the Roman Period.* London and Sydney: Croom Helm.

Megaw, J V S, 1960. *Penny Whistles and Prehistory*, *Antiquity*, **34**, 10-11.

Megaw, J V S, 1968. *An End blown Flute from Medieval Canterbury*, *Medieval Archaeology*, **12**, 149.

Norfolk Online Access to Heritage <http://noah.norfolk.gov.uk/>



<u>Name of flute (location/site):</u>  <p style="text-align: center;"><b>Thetford</b> St. Barnabas' Hospital</p>	<p style="text-align: right;"><b>[88]</b></p> <hr/> <u>Date:</u> 800 – 900 or c.1020 - 1080
<u>Illustration:</u> 	
<p style="text-align: center;"><u>Physical information:</u></p> <p><b>Species:</b> bird (goose/crane/swan)  <b>Bone used:</b> ulna  <b>Extent:</b> fragment (middle section)  <b>Length:</b> 58mm  <b>No. of toneholes:</b> 1 ½  <b>Window:</b> n/a  <b>Evidence of manufacture?</b> Lightly worked by knife.  <b>Unusual characteristics/comments:</b> Museum number is recorded as 1030:A but should in fact be 1039:A. The flute is noted as being of a crane ulna, but swan or goose should also be considered. First hand examination would confirm the species identification.</p>	
<p style="text-align: center;"><u>Archaeological information:</u></p> <p><b>Site:</b> <b>name</b> St. Barnabas' Hospital  <b>code</b> Site 1092  <b>type</b> urban  <b>information</b> Site 1092 was an industrial area on the edge of town (Crabtree 1994)  <b>Date excavated:</b> 1977  <b>Period:</b> n/a  <b>Context:</b> <b>number</b> ditch 63 above pit P158  <b>information/description</b> Ditch 63 cuts across two major defensive ditches and also contains burnt limestone. The dating is given as 9<sup>th</sup> century, though Stamford ware is dated c.1020-1080.  <b>associated finds</b> burnt limestone, pottery (5 Stamford ware, 28 Early Medieval ware, 63 St. Neots ware, 152 Thetford ware)  <b>Small find no.:</b> 82 (original small finds number given by Knocker)  <b>Museum assigned number:</b> 12.950(1039)  <b>Museum record number:</b> NWHCM:1950.12.1039:A  <b>Illustration no. in archaeological report:</b> fig.200,109 p.183 (Rogerson and Dallas 1984)</p>	
<u>Current location:</u> unknown (not at Norwich Castle or Thetford Museums)	
<u>Similar flutes:</u> unknown	
<u>Bibliography:</u> Crabtree, P J, 1994. Animal exploitation in East Anglian villages, in J Rackham (ed), <i>Environment and Economy in Anglo-Saxon England</i> . Council for British Archaeology Research Report 89. Lawson, G, 1984. Flutes, in A Rogerson and C Dallas, <i>Excavations in Thetford 1948-59 and 1973-80</i> . <i>East Anglian Archaeology</i> 22, 55-59, 182-3. The Norfolk Archaeological Unit, Norfolk Museums Service. Norfolk Online Access to Heritage <a href="http://noah.norfolk.gov.uk/">http://noah.norfolk.gov.uk/</a>	

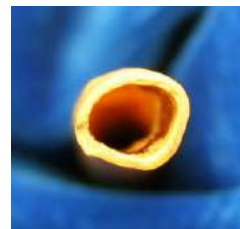
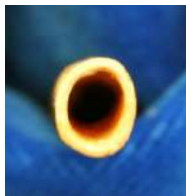
Name of flute (location/site):

[89]

Thetford  
St Nicholas Street

Date:  
1600 – 1800  
or earlier

Illustration:



Physical information:

**Species:** goose

**Bone used:** ulna

**Extent:** complete

**Length:** 84mm

**No. of toneholes:** 1

**Window:** D shaped

**Evidence of manufacture?**

**Unusual characteristics/comments:** There is only one tonehole, which is unusual. In addition, it is unusually placed along the length of the flute. A goose ulna flute would usually have three toneholes at its distal end (or occasionally none at all). It could be in a partial state of manufacture, or could be complete and unusual in form.

Archaeological information:

**Site:** **name** St Nicholas Street

**code** site 1134

**type** urban

**information** At this time, Thetford was for the most part 'economically and physically stagnant', though it was previously an important centre of settlement.

**Date excavated:** 1990

**Period:** VI

**Context:** **number** trench 1, layer 709

**information/description** found in a surface deposit in an area of pits near an inhabited area. Very few 18<sup>th</sup> century small finds: 'unlikely to reflect abandonment of the area but was probably the result of the introduction of night-soil collection and perhaps also the disposal of domestic refuse in areas other than backyards' (Andrews and Penn, p.35). As it is a surface find, it may be residual.

**associated finds** a hone and a toggle

**Small find no.:** SF 367

**Illustration no. in archaeological report:** fig.43,10 p.45 (Andrews and Penn 1999)

Current location:

(not at Norwich Castle or Thetford Museums)  
with G Lawson

Similar flutes:

none other with one tonehole in this particular placement

Bibliography:

Andrews, P, and Penn, K, 1999. *Excavations in Thetford, North of the River, 1989-90. East Anglian Archaeology Report, no.87*, 45-46. Field Archaeology Division, Norfolk Museums Service.

Name of flute (location/site):	[90]
West Cotton, Raunds 194	Date: 1300 - 1450

Illustration:



### Physical information:

**Species:** ovicaprid

**Bone used:** tibia

**Extent:** fragment (tonehole end)

**Length:** 96.5mm

**No. of toneholes:** 2, + 2 x ½, plus one hole possibly for suspension

**Window:** n/a

**Evidence of manufacture?** surface has scratches from tools used in manufacture (knife) but also possibly incurred through deposition.

**Unusual characteristics/comments:** The instrument still has the epiphysis of the bone in place, a part that is usually removed in manufacture. Only one other flute found so far has the epiphysis in place (Exeter B6) but it is solid. In this case, which is not clear from the illustration in the report, the epiphysis has a hole through it as a continuation of the flute's bore.

Also, the presence of a suspension hole is unusual. It is sometimes seen on other instruments (Great Massingham), but is by no means common. Lawson notes much surface wear around toneholes, suggesting that the instrument was well used before deposition.

### Archaeological information:

**Site:** name West Cotton, Raunds

code WC85

type rural

information DMV – small hamlet occupied from the mid 10<sup>th</sup> century to the mid 15<sup>th</sup> century

**Date excavated:** 1985 - 89

**Period:** phase 4

**Context:** number 343

information/description demolition rubble from Medieval tenement D building 11

associated finds the rubble over building D11 also contained a nine-mens morris board, scratched on an irregular piece of limestone

**Small find no.:** 194

**Illustration no. in archaeological report:** fig.47, p.172 (Chapman)

### Current location:

Northamptonshire Archaeology

### Contact information:

2 Bolton House, Wootton Hall Park, Northampton, NN3 8BE

tel: 01604 700493/4

Tora Hylton / Andy Chapman

### Similar flutes:

Exeter B6 [17]

### Bibliography:

Lawson, G, forthcoming. Musical instruments, in A Chapman, *Raunds, West Cotton: a study of Medieval settlement dynamics. Excavation 1985-9*. English Heritage Monograph.

Windell, D, Chapman, A, and Woodiwiss, J, 1990. *From barrows to bypass. Excavations at West Cotton Raunds Northamptonshire 1985 - 1989*, 39. Northampton: Northamptonshire Archaeology Unit, English Heritage.

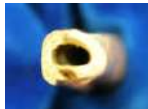
Name of flute (location/site):

[91]

West Cotton, Raunds  
10832

Date:  
c.1150-1250

Illustration:



Physical information:

**Species:** crane

**Bone used:** tarsometatarsus

**Extent:** fragment (tonehole end, though almost complete)

**Length:** 167.5mm

**No. of toneholes:** 3

**Window:** not present

**Evidence of manufacture?** the distal end (nearest to the toneholes) has been trimmed by knife, and the two longitudinal ridges of bone have been slightly scraped.

**Unusual characteristics/comments:** Lawson (tentatively) identifies this as a reed pipe, and also being made from a deer metatarsal. Comparison with the reference collection at the Natural History Museum Bird Group, Tring, shows it to be a crane tarsometatarsus.

Archaeological information:

**Site:** name Raunds, West Cotton

code WC85

type rural

**information** DMV – small hamlet occupied from the mid 10<sup>th</sup> century to the mid 15<sup>th</sup> century. In reference to the fact that this flute was made from deer bone, it should be noted that all species of deer were present at the site. Both red and roe deer were used in small quantities at this time (fallow deer remains were only found in later deposits), suggesting that the forest laws that prohibited their use was ignored. They were used for butchery/food and crafts.

**Date excavated:** 1985 - 89

**Period:** Ph 1-2/0

**Context:** number 4594, LSD11

**information/description** ditch fill of fairly shallow Late Saxon ditch system (ditch 11), sealed in the mid 13<sup>th</sup> century.

**associated finds** later 12<sup>th</sup> century pottery found in final fills of the ditch

**Small find no.:** 10832

**Illustration no. in archaeological report:** fig.49 p.172 (Chapman forthcoming)  
fig.28,5 p.39 (Windell et al.)

**Current location:**

Northamptonshire Archaeology

**Contact information:**

2 Bolton House, Wootton Hall Park, Northampton, NN3 8BE

tel: 01604 700493/4

Tora Hylton / Andy Chapman

**Similar flutes:**

Canterbury Lady Wootton's Green [7], Thetford Site 2 North [87]

**Bibliography:**

Lawson, G, forthcoming. Musical instruments, in A Chapman, *Raunds, West Cotton: a study of Medieval settlement dynamics. Excavation 1985-9*. English Heritage Monograph.

Windell, D, Chapman, A, and Woodiwiss, J, 1990. *From barrows to bypass. Excavations at West Cotton Raunds Northamptonshire 1985 - 1989*, 39. Northampton: Northamptonshire Archaeology Unit, English Heritage.



Name of flute (location/site):

**[92]**

West Cotton, Raunds  
10849

Date:

1400 - 1500

Illustration:





Physical information:

**Species:** ovicaprid

**Bone used:** tibia

**Extent:** fragment (window end)

**Length:** 27mm

**No. of toneholes:** n/a

**Window:** upper edge present.

**Evidence of manufacture?** the end is neatly trimmed, and there are tool marks around the window.

**Unusual characteristics/comments:** the proximal end of the bone is slightly lower at the back of the instrument, in the style of a recorder 'beak'.

Archaeological information:

**Site:** name West Cotton, Raunds

code WC85

type rural

information DMV – small hamlet occupied from the mid 10<sup>th</sup> century to the mid 15<sup>th</sup> century

**Date excavated:** 1985 - 89

**Period:** Ph 4-5

**Context:** number 539

information/description demolition rubble from building 5 tenement B

associated finds unknown

**Small find no.:** 10849

**Illustration no. in archaeological report:** fig.48, p.172 (Chapman)

Current location:

Northamptonshire Archaeology

Contact information:

2 Bolton House, Wootton Hall Park, Northampton, NN3 8BE

tel: 01604 700493/4

Tora Hylton / Andy Chapman

Similar flutes:

in its complete form this flute could have had 2, 3, 4 or 5 toneholes (like Irthlingborough 39 [32], London Thames Exchange [54], Stanton Low [80])

Bibliography:

Lawson, G. 'Musical instruments' in Chapman, A. (forthcoming) *Raunds, West Cotton: a study of Medieval settlement dynamics. Excavation 1985-9*. English Heritage Monograph.

Windell, D, Chapman, A and Woodiwiss, J, 1990. *From Barrows to Bypass. Excavations at West Cotton, Raunds, Northamptonshire, 1985-1989*. Northampton: Northamptonshire County Council.

Name of flute (location/site):

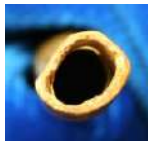
[93]

Westbury-by-Shenley

Date:

1233 - 1365

Illustration:



Physical information:

**Species:** goose

**Bone used:** ulna

**Extent:** complete

**Length:** 107.3mm

**No. of toneholes:** 0

**Window:** Crude oval

**Evidence of manufacture?** both ends neatly trimmed by knife, no chatter marks, but one strip of parallel scrape marks visible.

**Unusual characteristics/comments:** there are no toneholes, so it may be a signalling whistle. A longitudinal crack is present.

Archaeological information:

**Site:** name Westbury-by-Shenley, Buckinghamshire

code MK 636

type rural

**information** Westbury is a deserted medieval settlement near to current day Milton Keynes. Prior to desertion, it had crofts, hollow ways, and ridge and furrow cultivation.

**Date excavated:** 1989 - 90

**Period:** period 5 phase 2

**Context:** number G:5027 53065 53559 5/2

**information/description** ditch in area G along the southern side of the hollow way. It is a shallow, flat bottomed, L-shaped ditch, 26m long that respects the line of an earlier nearby Romano British ditch.

**associated finds** pottery

**Small find no.:** 14160

**Illustration no. in archaeological report:** fig.183 p.392 (Ivens et al. 1995)

Current location:

in store, Buckinghamshire Museum Resource Centre

Contact information:

Museum Resource Centre, Tring Road, Halton, Bucks, HP22 5PJ

01296 6245195

Brett Thorne

Similar flutes:

Rayleigh Castle 1909 [75]

Bibliography:

Riddler, I, 1995. in R Ivens, P Busby, and N Shepherd, *Tattenhoe and Westbury. Two Deserted Medieval Settlements in Milton Keynes*, 392. Buckinghamshire Archaeological Society Monograph Series No.8.

Name of flute (location/site):

[94]

Wharram Percy  
Area 10

Date:

Medieval/  
post medieval

Illustration:



Physical information:

**Species:** sheep  
**Bone used:** tibia  
**Extent:** fragment (middle section)  
**Length:** 39.3mm  
**No. of toneholes:** 2  
**Window:** Not present  
**Evidence of manufacture** no scraping evident, toneholes made by knife  
**Unusual characteristics/comments:**

Archaeological information:

**Site:** **name** Wharram Percy  
**code** n/a  
**type** settlement - rural  
**information** DMV  
**Date excavated:** 1948 onwards  
**Period:** VII  
**Context:** **number** Area 10  
**information/description**  
no context information found.  
Though period VII is post medieval,  
much residual material from  
previous periods is present in this  
area.



**associated finds** unknown

**Small find no.:** SF 850

**Illustration no. in archaeological report:** fig.70,34 p.129 (Hurst 1979)

Current location:

on display, Malton Museum  
(part of the Wharram Percy exhibition, which ends October 2006)

**Contact information:**

Old Town Hall, Market Place, Malton, North Yorkshire, YO17 7LP.  
(museum open Easter – October)  
01653 695 136 Mrs. Pat Wiggle

final housing place to be Hull and East Riding Museum

**Contact information:**

36 High Street, Hull, HU1 1PS  
tel: 01482 613 927  
Bryan Sitch or Martin Foreman [bryan.sitch@hullcc.gov.uk](mailto:bryan.sitch@hullcc.gov.uk)

Similar flutes:

Wharram Percy North Glebe Terrace [95], Yatesbury [111]

Bibliography:

Hurst, J G, 1979. *Wharram. A Study of Settlement on the Yorkshire Wolds*, 128-9.  
London: Society for Medieval Archaeology Monograph No. 8.

Beresford, M, and Hurst, J, 1990. *Wharram Percy. Deserted Medieval Village*.  
London: Batsford and English Heritage.

MacGregor, A, 1985. *Bone Antler Ivory & Horn. The technology of Skeletal Materials Since the Roman Period*, 150. London and Sydney: Croom Helm.



Name of flute (location/site):

[95]

Wharram Percy  
North Glebe Terrace

Date:  
medieval

Illustration:



<p style="text-align: center;"><u>Physical information:</u></p> <p><b>Species:</b> sheep  <b>Bone used:</b> tibia  <b>Extent:</b> fragment (middle section)  <b>Length:</b> 44mm  <b>No. of toneholes:</b> 1, + 2 x ½  <b>Window:</b> n/a  <b>Unusual characteristics/comments:</b> longitudinal scrape marks visible</p>
<p style="text-align: center;"><u>Archaeological information:</u></p> <p><b>Site:</b> <b>name</b> Wharram Percy, North Glebe Terrace  <b>code</b> Site 77  <b>type</b> rural  <b>information</b> this is a very disturbed area, with 15<sup>th</sup> – 16<sup>th</sup> century pottery and earlier material present. This makes close dating of finds difficult.  <b>Date excavated:</b> 1958, 1970s  <b>Period:</b>  <b>Context:</b> <b>number</b> 101/M7 (context 101, grid M7)  <b>information/description</b>  <b>associated finds</b> unknown  <b>Small find no.:</b> 4  <b>Illustration no. in archaeological report:</b></p>
<p><b>Current location:</b>  WYAS Archaeological Services  <b>Contact information:</b>  PO Box 30, Nepshaw Lane South, Morley, Leeds, LS27 0UG  0113 383 7500 ext.7511  <a href="http://www.arch.wyjs.org.uk">www.arch.wyjs.org.uk</a>  Ann Clarke</p>
<p><b>Similar flutes:</b>  Wharram Percy Area 10 [94], Yatesbury [111]</p>
<p><b>Bibliography:</b>  Leaf (forthcoming) in Wharram Monograph XI</p>

Name of flute (location/site):

[96]

Wharram Percy  
North Manor

Date:

Medieval/  
post medieval

Illustration:





Physical information:

**Species:** ovicaprid

**Bone used:** tibia

**Extent:** fragment (middle section)

**Length:** 49.3mm

**No. of toneholes:** 1 ½

**Window:** n/a

**Evidence of manufacture** holes are irregular and made by knife

**Unusual characteristics/comments:** it is unusual for a bone flute to be broken longitudinally. However, as it is broken through the toneholes, their profile can be seen.

Archaeological information:

**Site:** name Wharram Percy North Manor

code 60

type rural

information DMV

**Date excavated:** 1948 onwards

**Period:** MP 6

**Context:** number 1

information/description topsoil – a post medieval layer, with much residual material present

associated finds unknown

**Small find no.:** SF193

**Illustration no. in archaeological report:** fig.131,11, p.253 (Rahtz and Watts 2004)

Current location:

WYAS Archaeological Services

**Contact information:**

PO Box 30, Nepshaw Lane South, Morley, Leeds, LS27 0UG

0113 383 7500 ext.7511

[www.arch.wyjs.org.uk](http://www.arch.wyjs.org.uk)

Ann Clarke

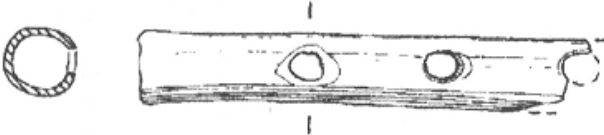
Similar flutes:

Wharram Percy North Glebe Terrace [95], Yatesbury [111]

Bibliography:

Beresford, M, and Hurst, J, 1990. *Wharram Percy. Deserted Medieval Village*. London: B.T. Batsford Ltd/ English Heritage.

Rahtz, P A and Watts, L, 2004. *Wharram: a study of settlement on the Yorkshire Wolds; v. 9. The North manor area and North-West enclosure, 252-3*. York: York Archaeological Publications.

<u>Name of flute (location/site):</u>  <p style="text-align: center;">Wharram Percy South Manor</p>	<p style="text-align: right;"><b>[97]</b></p> <hr/> <u>Date:</u> Middle Saxon
<u>Illustration:</u>  	
<p style="text-align: center;"><u>Physical information:</u></p> <p> <b>Species:</b> goose  <b>Bone used:</b> ulna  <b>Extent:</b> fragment (tonehole end)  <b>Length:</b> 50mm  <b>No. of toneholes:</b> 2 ½  <b>Window:</b> not present  <b>Evidence of manufacture?</b> unknown  <b>Unusual characteristics/comments:</b> </p>	
<p style="text-align: center;"><u>Archaeological information:</u></p> <p> <b>Site:</b> <b>name</b> Wharram Percy South Manor  <b>code</b> 59  <b>type</b> rural settlement  <b>information</b> in the Middle Saxon period there were ditches, buildings and a smithing complex  <b>Date excavated:</b> 1981-90  <b>Period:</b> Phase 3 (securely dated – Middle Saxon)  <b>Context:</b> <b>number</b> 127/17 (context 127, grid 17)  <b>information/description</b> yellow-brown loam layer  <b>associated finds</b> unknown  <b>Small find no.:</b> SF467  <b>Illustration no. in archaeological report:</b> fig 71.110 (MacGregor 2000, 153) </p>	
<p> <b>Current location:</b>  WYAS Archaeological Services  <b>Contact information:</b>  PO Box 30, Nepshaw Lane South, Morley, Leeds, LS27 0UG  0113 383 7500 ext.7511  <a href="http://www.arch.wyjs.org.uk">www.arch.wyjs.org.uk</a>  Ann Clarke </p>	
<p> <b>Similar flutes:</b>  London Watling Court <b>[58]</b>, Southampton <b>[79]</b>, Acton Court <b>[1]</b> (all goose ulna flutes with three toneholes) </p>	
<p> <b>Bibliography:</b>  MacGregor, A, 2000. Bone and Antler Objects in P A Stamper and R A Croft, <i>The South Manor Area. Wharram. A Study of Settlement on the Yorkshire Wolds, VIII.</i> York: York Archaeological Publications 10, 148-54. </p>	

Name of flute (location/site):

[98]

White Castle

Date:

1260 - 1300

Illustration:



### Physical information:

**Species:** deer

**Bone used:** metatarsal

**Extent:** complete

**Length:** 191mm

**No. of toneholes:** 5 + 2 thumbholes

**Window:** rectangular (chipped ramp) 5 x 8mm

**Evidence of manufacture?** Ends trimmed by knife with chamfer at proximal end.

**Unusual characteristics/comments:** The front and side surfaces are covered with a decoration of dots, which is most unusual. There is a substantial crack running down the front surface of the instrument, with traces of consolidant present. At the rear of the instrument is a small hole at the proximal end, approx 2.5mm in diameter, which may have been used for suspension. Longitudinal scraping marks visible on all sides.

### Archaeological information:

**Site:** name White Castle

**code** n/a

**type** elite (castle, rural)

**information** Llantilio Castle, along with Skenfrith and Grosmont, was one of three defensive castles on the England/ South Wales border. They were brought together into one defensive unit in the late 1130s by King Stephen. In the



1180s Llantilio Castle was rebuilt in stone, and it became known as White Castle because of the white plaster rendering on its walls. In the early thirteenth century the lord of the three castles, Hubert de Burgh, built modern stone castles at Grosmont and Skenfrith, which were used as residences by nobility. White Castle's defences remained unchanged, and it appears to have been mainly a military outpost.

In the 1260s the Welsh threatened the area around White Castle, whose defences were out of date. The castle was improved with a large new gatehouse area, a curtain wall, and a deep water-filled moat. The Welsh never attacked, and political changes in the late thirteenth century meant that the three castles decreased in military importance. They were abandoned and in ruins by the sixteenth century.

**Date excavated:** 1929

**Period:** n/a

**Context:** number n/a

**information/description** found at the bottom of the moat

**associated finds** found with late C13 pottery

**Small find no.:** n/a

**Illustration no. in archaeological report:** no excavation report, but illustrated in Megaw 1961 and 1963

### Current location:

National Museum of Wales, Cardiff

### Contact information:

National Museum and Gallery, Cathays Park, Cardiff CF10 3NP

tel: 029 2039 7951

Nigel Blackamoor

**Similar flutes:**

deer metatarsal flute: Keynsham Abbey [35]

another flute with a suspension hole: West Cotton Raunds 194 [90]

**Bibliography:**

Harrison, F, and Rimmer, J, 1964. *European musical instruments*. London: Studio Vista.

MacGregor, A, 1985. *Bone Antler Ivory & Horn. The technology of Skeletal Materials Since the Roman Period*. London and Sydney: Croom Helm.

Megaw, J V S, 1961. An End blown Flute or Flageolet from White Castle, *Medieval Archaeology*, **5**, 176-180.

Megaw, J V S, 1963. A Medieval Bone Pipe from White Castle, Monmouthshire, *Galpin Society Journal*, **16**, 85-93.

Megaw, J V S, 1968. Problems and non-problems in palaeo-organology: a musical miscellany, in J M Coles and D D A Simpson, *Studies in Ancient Europe. Essays presented to Stuart Piggott*, 355. Leicester: Leicester University Press.

Megaw, J V S, 1968. The Earliest Instruments in Europe, *Archaeology*, **21**, 124-32.

Moeck, 1967. pp 36, 54, Fig.31

Taylor, A J, 1961. White Castle in the Thirteenth Century: A Reconsideration. *Medieval Archaeology*, **5**, 169-175.

Name of flute (location/site):

[99]

Wicken Bonhunt  
54

Date:

1000 - 1100

Illustration:



Physical information:

**Species:** ovicaprid

**Bone used:** tibia

**Extent:** fragment (tonehole end)

**Length:** 64.8mmmm

**No. of toneholes:** 3 ½

**Window:** not present

**Evidence of manufacture?** distinct knife cuts around the distal end

**Unusual characteristics/comments:** there is a strange cutaway bit at one side of the distal end, which may have been a suspension hole.

Archaeological information:

**Site:** name Wicken Bonhunt

code BNT 71

type rural

**information** a Middle Saxon settlement, which in the 11<sup>th</sup> century was a demesne farm rather than a village, with 1 building (a small dwelling or shed), four long plots and an enclosure.

**Date excavated:** 1970 – 71

**Period:**

**Context:** number probably Ditch G1

**information/description** recorded as a surface find and not securely stratified.

**associated finds** other surface finds include spindle whorls, bronze wire, knife handles, knives.

**Small find no.:** 54

**Museum accession number:** 1997-76-408

**Illustration no. in archaeological report:** fig.27, p.54 (Bradley and Hooper)  
NB. This illustration is not a close likeness to the flute.

Current location:

Saffron Walden Museum

**Contact information:** Museum Street, Saffron Walden, Essex, CB10 1JL

01799 510333/510334

Lynne Morrison

Context information:

The Archaeological Service, Suffolk County Council, Environment and Transport Department, Shire Hall, Bury St Edmunds, Suffolk, IP33 2AR

tel: 01284 352 440

Keith Wade, [keith.wade@et.suffolkcc.gov.uk](mailto:keith.wade@et.suffolkcc.gov.uk)

Similar flutes:

Dover Townwall Street [12]

Bibliography:

Bradley, R, and Hooper, B, 1974. Trial Excavation on a Saxon Site at Bonhunt, Essex, 1970-71, *Essex Journal* **9** (2), 38-56.

Wade, K, 1980. A settlement site at Bonhunt Farm, Wicken Bonhunt, Essex, in D G Buckley, *Archaeology in Essex to AD 1500*, 96-102. London: Council for British Archaeology.



<p>Name of flute (location/site):</p> <p style="text-align: center;">Wicken Bonhunt 106</p>	<p style="text-align: right;"><b>[100]</b></p> <hr/> <p>Date: 1100 - 1150</p>
<p>Illustration:</p> 	



Physical information:

**Species:** crane  
**Bone used:** ulna  
**Extent:** virtually complete  
**Length:** 205mm  
**No. of toneholes:** 3 ½  
**Window:** D shaped  
**Evidence of manufacture?** longitudinally scraped with chatter marks  
**Unusual characteristics/comments:** the fourth tonehole is broken, in a similar way to that seen on the swan ulna flute Old Sarum A2

Archaeological information:

**Site:** **name** Wicken Bonhunt  
**code** BNT 71  
**type** rural/ elite (manorial site)  
**information** in the 11<sup>th</sup> century, Wicken Bonhunt was a small Middle Saxon farm. In the early 12<sup>th</sup> century, the site was completely reorganized; a large building was constructed, thought to be an aisled hall or manor house, which stayed in use until the 13<sup>th</sup> century when its ditches were filled. Adjacent to this was a chapel and large cemetery.  
**Date excavated:** 1971 - 73  
**Period:**  
**Context:** **number** Ditch D2  
**information/description** this ditch is contemporary with the first phase of building A (the aisled building), and was filled earlier than the ditches mentioned above.  
**associated finds** in ditches D1 and D2: gilded pin (SF8), iron spur (SF27)  
**Small find no.:** 106  
**Museum accession number:** 1997-76-409  
**Illustration no. in archaeological report:** unpublished

Current location:

Saffron Walden Museum

**Contact information:** Museum Street, Saffron Walden, Essex, CB10 1JL  
01799 510333/510334

Lynne Morrison

Context information:

The Archaeological Service, Suffolk County Council, Environment and Transport Department, Shire Hall, Bury St Edmunds, Suffolk, IP33 2AR

tel: 01284 352 440

Keith Wade, [keith.wade@et.suffolkcc.gov.uk](mailto:keith.wade@et.suffolkcc.gov.uk)

Similar flutes:

similar swan ulna flutes: Norwich Bishopsgate [69], Old Sarum A2 [73]; similar crane ulna flutes: Lincoln Flaxengate 126 [38], Swavesey [82]

Bibliography:

Wade, K, 1980. A settlement site at Bonhunt Farm, Wicken Bonhunt, Essex, in D G Buckley, *Archaeology in Essex to AD 1500*, 96-102. London: Council for British Archaeology.

Lawson, G, 1993. Note on bone flutes, in C Dallas, *Excavations in Thetford by B. K. Davison between 1964 and 1970*. East Anglian Archaeology Report 62, Norfolk Museums Service, Field Archaeology Division. (mentions report as 'forthcoming')

Lawson, G, 1984. Flutes, in A Rogerson and C Dallas, 1984 *Excavations in Thetford 1948-59 and 1973-80*. East Anglian Archaeology 22, The Norfolk Archaeological Unit, Norfolk Museums Service. (mentions report in preparation)

Name of flute (location/site):

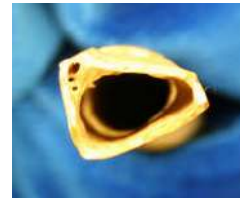
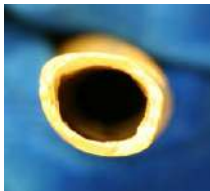
[101]

Winchester  
2259

Date:

1067 - 1071

Illustration:



Physical information:

**Species:** goose

**Bone used:** humerus

**Extent:** complete

**Length:** 102mm

**No. of toneholes:** 3

**Window:** D shaped (large)

**Evidence of manufacture?** there is a cut defining the top edge of the window. The surface of the bone is largely unworked and in its natural form, though there are some cut marks to remove the ridge of bone, and at the ends.

**Unusual characteristics/comments:** The toneholes are set very close together, and the choice of humerus is unusual (most made from the ulna). There is a chip of bone missing on the back surface at the proximal end, which may have been caused by a player's teeth.

Archaeological information:

**Site:** name Castle Yard

code CY

type elite (castle, urban)

**information** Winchester Castle was built more or less immediately after the Norman Conquest between Christmas 1066 and February 1067, over a considerable amount of Saxon occupation with well ordered street plans. At this time, the bailey was occupied and the chapel was being constructed. The yard is to the north of the Great Hall, in the northern tip of the castle.

**Date excavated:** 1967 - 71

**Period:** Final phase 25 (P.ph. 522)

**Context:** number Trench XXIV, context no. 182, Area E, Lane 4.

**information/description** from a grey stony yard surface

**associated finds** bits of oyster shell, chalk and charcoal.

**Small find no.:** CY 318

**Catalogue no:** 2259

**Illustration no. in archaeological report:** fig.204, 2259, p.722 (Biddle 1990a)

Current location:

on display, Winchester City Museum

Contact information:

Historic Resources Centre, 75 Hyde Street, Winchester, SO23 7DW

tel: 01962 848269

Geoff Denford

Similar flutes:

other goose humerus flutes: Exeter B1 [13], Norwich, St. Martin-at-Palace Plain [72], York, Coppergate 7078 [118]

Bibliography:

Biddle, M, 1990a. *Object and Economy in Medieval Winchester i. Winchester Studies 7ii*, 721. Oxford: Clarendon Press.

Biddle, M, 1990b. *Object and Economy in Medieval Winchester ii. Winchester Studies 7ii*, 1174-1175. Oxford: Clarendon Press.

Name of flute (location/site):

[102]

Winchester  
2260

Date:

Saxon or  
c.1110

Illustration:



### Physical information:

**Species:** ovicaprid

**Bone used:** tibia?

**Extent:** fragment (tonehole end)

**Length:** 71.5mm

**No. of toneholes:** ½

**Window:** n/a

**Evidence of manufacture?** Highly decorated with plain bands and cross-hatching (made by knife, not with a saw). The complete end has a chamfer on the inside.

**Unusual characteristics/comments:** The placement of the (very neat and circular) tonehole is unusual, in that there are no other toneholes near the (presumed) complete distal end of the instrument.

### Archaeological information:

**Site:** name Wolvesey Palace

code WP

type elite (Bishop's palace)

**information** this is the high-status residence (palace) of the Bishops of Winchester. William Giffard was the bishop from 1107-1129. It was in the south-east corner of the walled city, and became more elaborate over time up until the 15<sup>th</sup> century. It was a fortified courtyard house, built with private apartments, guest accommodation, halls and defensive structures. At this time it was in the early phases of construction, and flint, mortar and imported stone were used. The west hall, where room 42 was situated, was the largest known domestic (non-monastic) structure in England; it housed the bishop's private apartments, and was where royalty stayed on their frequent visits to Winchester.

**Date excavated:** 1969

**Period:** Final phase 317 (P.ph. 1212)

**Context:** number room 42, layer 31

**information/description** this context is spoil/upcast from a foundation trench created during the construction of the West hall in c.1110. The flute may have been lost at the time, or may be residual from earlier Saxon occupation of the site.

**associated finds** unknown

**Small find no.:** WP 1988

**Catalogue no.:** 2260

**Illustration no. in archaeological report:** fig.204, 2260, p.722 (Biddle 1990)

### Current location:

Winchester Historic Resources Centre

### Contact information:

75 Hyde Street, Winchester, SO23 7DW

tel: 01962 848269

Geoff Denford

### Similar flutes:

there are no flutes similar in form to this

### Bibliography:

Biddle, M, 1986. *Wolvesey. The Old Bishop's Palace, Winchester*. London: Historic Buildings and Monuments Commission for England.

Biddle, M, 1990a. *Object and Economy in Medieval Winchester i. Winchester Studies 7ii*, 721. Oxford: Clarendon Press.

Biddle, M, 1990b. *Object and Economy in Medieval Winchester ii. Winchester Studies 7ii*, 1201-21 Oxford: Clarendon Press.



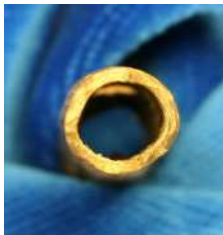
Name of flute (location/site):

[103]

Winchester  
2261

Date:  
1066 - 1199

Illustration:



Physical information:

**Species:** crane

**Bone used:** ulna

**Extent:** fragment (middle/tonehole section)

**Length:** 74mm

**No. of toneholes:** 2 ½

**Window:** -

**Evidence of manufacture?** slight rebate made around toneholes, longitudinal scratches on surface

**Unusual characteristics/comments:** the toneholes are made at the opposite end of the bone to that normally used, i.e. the end that is slightly flared.

Archaeological information:

**Site:** name Brook Street

code BS

type urban

**information** this site is on Lower Brook Street (previously Tanner Street). In the 10<sup>th</sup> and 11<sup>th</sup> centuries Tanner Street was an area occupied mainly by tanners, and in the 12<sup>th</sup> century it was an area of textile manufacture.

For part of the 12<sup>th</sup> and 13<sup>th</sup> centuries, the adjacent houses I, IX and X probably formed a single property, extending to the edge of the church of St Mary. It was a substantial and important property, belonging to St. Denis Priory. In this large property, there was one main hall (House I) dating to c.1150, which was extended and enlarged in c.1200 and c.1250. House X was a timber built industrial structure built in the early 12<sup>th</sup> century, which possibly belonged to the owner of House I (Keene).

**Date excavated:** 1970

**Period:** Final phase 77 (P.ph 481)

**Context:** number Trench I context no. 769

**information/description** an occupation layer of varied domestic waste associated with a timber phase of House X.

**associated finds** much Winchester ware (apparently out of use at that date) and lots of residual material dating from within the previous 100 years

**Small find no.:** BS 5460

**Catalogue no:** 2261

**Illustration no. in archaeological report:** fig.204, 2261, p.722 (Biddle 1990a)

**Current location:**

Winchester Historic Resources Centre

**Contact information:**

75 Hyde Street, Winchester, SO23 7DW

tel: 01962 848269

Geoff Denford

**Similar flutes:**

Rayleigh Castle 1959 [76]

**Bibliography:**

Biddle, M, 1990a. *Object and Economy in Medieval Winchester i. Winchester Studies 7ii*, 721. Oxford: Clarendon Press.

Biddle, M, 1990b. *Object and Economy in Medieval Winchester ii. Winchester Studies 7ii*, 1162-5. Oxford: Clarendon Press.

Keene, D, 1985. *Survey of Medieval Winchester ii. Parts II and III. Appendices, Index. Winchester Studies 2*, 758. Oxford: Clarendon Press.

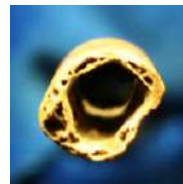
Name of flute (location/site):

[104]

Winchester  
2262

Date:  
1200 - 1232

Illustration:





Physical information:

**Species:** goose

**Bone used:** ulna

**Extent:** complete

**Length:** 128.9mm

**No. of toneholes:** 2

**Window:** D shaped

**Evidence of manufacture?** some longitudinal scraping present, incised line marks top of window.

**Unusual characteristics/comments:** Only two toneholes present. Cut chamfer/recess around toneholes.

Archaeological information:

**Site:** name Brook Street Site C

code BSSC

type urban

**information** this site is on Lower Brook Street (previously Tanner Street). In the 10<sup>th</sup> and 11<sup>th</sup> centuries Tanner Street was an area occupied mainly by tanners, and in the 12<sup>th</sup> century it was an area of textile manufacture. House III was a major town house with a timber frontage and a large stone hall set back from and at right angles to the street. The house is said to probably be of late 13<sup>th</sup> century date (Keene), though this particular phase is dated to the early 13<sup>th</sup> century (Biddle 1990b)

**Date excavated:** 1963 - 64

**Period:** phase 68

**Context:** number Trench XVIII context no. 32

**information/description** part of House III

**associated finds** unknown. From the same phase of this house came a spindle-whorl, an eyed weaving implement, sewing equipment, a knife, a hone, a buckle and a copper alloy lighting fitting.

**Small find no.:** BSSC 298

**Catalogue no:** 2262

**Illustration no. in archaeological report:** fig.204, 2262, p.722 (Biddle 1990)

Current location:

on display, Winchester City Museum

Contact information:

Winchester Historic Resources Centre, 75 Hyde Street, Winchester, SO23 7DW

tel: 01962 848269

Geoff Denford

Similar flutes:

Bristol Peter Street [5], London Wandsworth [57] (goose ulna flutes with 2 toneholes)

Bibliography:

Biddle, M, 1990a. *Object and Economy in Medieval Winchester i. Winchester Studies 7ii*, 721. Oxford: Clarendon Press.

Biddle, M, 1990b. *Object and Economy in Medieval Winchester ii. Winchester Studies 7ii*, 1158. Oxford: Clarendon Press.

Keene, D, 1985. *Survey of Medieval Winchester ii. Parts II and III. Appendices, Index. Winchester Studies 2*, 757. Oxford: Clarendon Press.

<u>Name of flute (location/site):</u>  Winchester 2263	<b>[105]</b>  <u>Date:</u> 1200 - 1265
<u>Illustration:</u> 	

Physical information:

**Species:** goose

**Bone used:** ulna

**Extent:** complete

**Length:** 71.9mm

**No. of toneholes:** 0

**Window:** D shaped

**Evidence of manufacture?** very neatly trimmed at each end. Longitudinally scraped on all sides (lightly), with some chatter marks.

**Unusual characteristics/comments:** No toneholes. Above window are cuts - identified as teeth marks by Megaw, but close inspection shows that the marks were made by knife.

Archaeological information:

**Site:** name Wolvesey Palace

code WP

type elite (Bishop's palace)

**information** this is the high-status residence (palace) of the Bishops of Winchester. It was a fortified courtyard house, with private apartments, guest accommodation, halls and defensive structures. It was in the south-east corner of the walled city, and became more elaborate over time up until the 15<sup>th</sup> century. By the 13<sup>th</sup> century it was in its final form. Peter des Roches was bishop from 1205 to 1238. In 1216 Wolvesey Palace was captured by Louis, son of Philip II of France; it was recaptured the following year. Henry III knew the place well, and spent 18 Christmases there. In 1258 and 1265 it was almost besieged in connection with troubles between Henry III and his barons, and it was captured by Simon De Montfort in 1265.

**Date excavated:** 1963 - 74

**Period:** Final phase 352 (P.ph. 978)

**Context:** number Room 1, context no. 217

**information/description** area of debris created by the construction of wall CXXIII (a small partition wall in room 1). Room 1 was a small room next to the latrine block at the north end of the West Hall.

**associated finds** stone chippings and bits of architectural stone

**Small find no.:** WP 3363

**Catalogue no:** 2263

**Illustration no. in archaeological report:** fig.204, 2263, p.722 (Biddle 1990)

Current location:

on display, Winchester City Museum

Contact information:

Winchester Historic Resources Centre, 75 Hyde Street, Winchester, SO23 7DW

tel: 01962 848269

Geoff Denford

Similar flutes:

Rayleigh Castle 1909 [75]

Bibliography:

Biddle, M, 1986. *Wolvesey. The Old Bishop's Palace, Winchester*. London: Historic Buildings and Monuments Commission for England.

Biddle, M, 1990a. *Object and Economy in Medieval Winchester i. Winchester Studies 7ii*, 721. Oxford: Clarendon Press.

Biddle, M, 1990b. *Object and Economy in Medieval Winchester ii. Winchester Studies 7ii*, 1201-21. Oxford: Clarendon Press.

<p>Name of flute (location/site):</p> <p style="text-align: center;">Winchester 2264</p>	<p style="text-align: right;"><b>[106]</b></p> <p>Date: 1200 - 1300</p>
<p><u>Illustration:</u></p> 	

Physical information:

**Species:** sheep

**Bone used:** metatarsal

**Extent:** complete but for broken window end

**Length:** 98mm

**No. of toneholes:** 2

**Window:** upper half and side of window broken away

**Evidence of manufacture?** longitudinally scraped on most surfaces with some chatter marks, trimmed by knife at both ends.

**Unusual characteristics/comments:** Two toneholes set together at centre of instrument.

Archaeological information:

**Site:** name Brook Street Site B

code BSSB

type urban

**information** this site is an area to the west of Lower Brook Street (previously Tanner Street), between Butlers Lane (to the north) and St Pancras Lane (to the south). The excavation sought to find the Church of St Mary in Tanner Street; it didn't, but did reveal two houses (House XII and another) and an area of floors and cobbling. In the 10<sup>th</sup> and 11<sup>th</sup> centuries Tanner Street was an area occupied mainly by tanners, and from the 12<sup>th</sup> century it became an area of textile manufacture. House XII was modified many times and rebuilt in the 13<sup>th</sup> century. It was connected with the leather making and dyeing industries.

**Date excavated:** 1963

**Period:** Phase 4

**Context:** number Trench III context no. 5

information/description a grey coloured floor.

associated finds unknown

**Small find no.:** BSSB 1

**Catalogue no:** 2264

**Illustration no. in archaeological report:** fig.204, 2264, p.722 (Biddle 1990)

Current location:

Winchester Historic Resources Centre

Contact information:

75 Hyde Street, Winchester, SO23 7DW

tel: 01962 848269

Geoff Denford

Similar flutes:

Winchester 2265 [107], Norwich Castle Mall [70]

Bibliography:

Biddle, M, 1990a. *Object and Economy in Medieval Winchester i. Winchester Studies 7ii*. *Artefacts from Medieval Winchester*, 718-723. Oxford: Clarendon Press.

Biddle, M, 1990b. *Object and Economy in Medieval Winchester ii. Winchester Studies 7ii*, 1158. Oxford: Clarendon Press.

Keene, D, 1985. *Survey of Medieval Winchester ii. Parts II and III. Appendices, Index. Winchester Studies 2*, 758, 765. Oxford: Clarendon Press.



Name of flute (location/site):

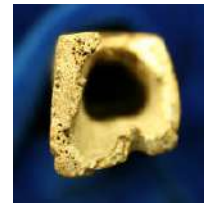
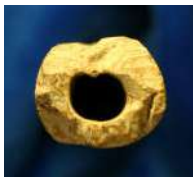
[107]

Winchester  
2265

Date:

1200 - 1300

Illustration:



### Physical information:

**Species:** deer, fallow

**Bone used:** metatarsal

**Extent:** complete but for broken window end

**Length:** 148.5mm

**No. of toneholes:** 2

**Window:** side of window present

**Evidence of manufacture?** some of the surface is lightly scraped, with longitudinal scratches and chatter marks. In other areas the external protuberances of bone have been removed by big knife cuts.

**Unusual characteristics/comments:** Two toneholes set together at centre of instrument.

### Archaeological information:

**Site:** name Brook Street

code BS

type urban

**information** this site is on Lower Brook Street (previously Tanner Street). It was previously an area occupied by tanners, but from the 12<sup>th</sup> century it was an area of textile manufacture.

For part of the 12<sup>th</sup> and 13<sup>th</sup> centuries, the adjacent houses I, IX and X probably formed a single property, extending to the edge of the church of St Mary. It was a substantial and important property, belonging to St. Denis Priory. In this large property, there was one main hall (House I) dating to c.1150, which was extended and enlarged in c.1200 and c.1250. House X was a timber built industrial structure built in the early 12<sup>th</sup> century, which possibly belonged to the owner of House I. it was reconstructed in stone in the 13<sup>th</sup> century, when it may have been used as a dyehouse (Keene).

**Date excavated:** 1967

**Period:** Final phase 78 (P.ph. 460)

**Context:** number Trench I context no. 391

**information/description** from a stone and timber phase of House X, the yard of which had a stone water channel, hearths, occupation debris and pits (including some wicker lined pits). Part of the yard was used for tanning.

**associated finds** large quantities of domestic and light industrial (textile and metalworking) finds, mostly residual.

**Small find no.:** BS 1407

**Catalogue no:** 2265

**Illustration no. in archaeological report:** fig.205, 2265, p.723 (Biddle 1990)

### Current location:

Winchester Historic Resources Centre

### Contact information:

75 Hyde Street, Winchester, SO23 7DW

tel: 01962 848269

Geoff Denford

### Similar flutes:

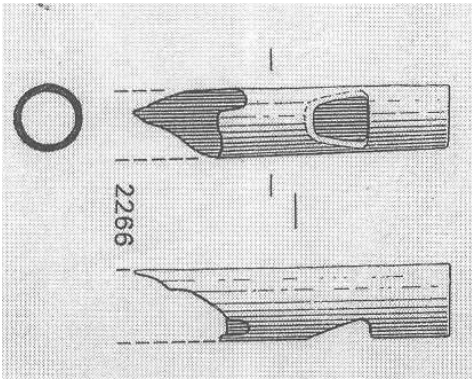
Winchester 2264 [106]

### Bibliography:

Biddle, M, 1990a. *Object and Economy in Medieval Winchester i. Winchester Studies 7ii*, 721. Oxford: Clarendon Press.

Biddle, M, 1990b. *Object and Economy in Medieval Winchester ii. Winchester Studies 7ii*, 1162-5. Oxford: Clarendon Press.

Keene, D, 1985. *Survey of Medieval Winchester ii. Parts II and III. Appendices, Index. Winchester Studies 2*, 758. Oxford: Clarendon Press.

<u>Name of flute (location/site):</u>  <p style="text-align: center;">Winchester 2266</p>	<p style="text-align: right;"><b>[108]</b></p> <hr/> <u>Date:</u> 1200 - 1299
<u>Illustration:</u>  <div style="text-align: center;">  </div> <p style="text-align: center;">illustration taken from fig.205, 2266, p.723 (Biddle 1990a)</p>	
<p style="text-align: center;"><u>Physical information:</u></p> <p><b>Species:</b> goose  <b>Bone used:</b> ulna  <b>Extent:</b> fragment (window end)  <b>Length:</b> 34mm  <b>No. of toneholes:</b> 0  <b>Window:</b> D shaped  <b>Evidence of manufacture?</b>  <b>Unusual characteristics/comments:</b> Megaw comments that the external surface is highly polished. The proximal end of the instrument may be very circular in shape; in which case the flute uses the middle of the ulna, and not the maximum length. Using the maximum useable length of the bone would give a characteristic slight flare and shape to this proximal end. Without the original instrument to examine, these are thoughts rather than observations.</p>	



### Archaeological information:

**Site:** name Wolvesey Palace

code WP

type elite (Bishop's palace)

**information** this is the high-status residence (palace) of the Bishops of Winchester. It was in the south-east corner of the walled city, and became more elaborate over time up until the 15<sup>th</sup> century. It was a fortified courtyard house, with private apartments, guest accommodation, halls and defensive structures. By the 13<sup>th</sup> century it was in its final form. Peter des Roches was bishop from 1205 to 1238 ( it was probably he who remodelled the East Hall), and John of Pontoise was bishop from 1282 to 1304. In 1216 Wolvesey Palace was captured by Louis, son of Philip II of France; it was recaptured the following year. Henry III knew the place well, and spent 18 Christmases there. In 1258 and 1265 it was almost besieged in connection with troubles between Henry III and his barons, and it was captured by Simon De Montfort in 1265.

**Date excavated:** 1963 - 74

**Period:** Final phase 173 (P.ph. 5772)

**Context:** number Room 32c, 447

**information/description** this is a room in a masons' workshop in the East Hall, created in the 13<sup>th</sup> century, and characterised by stone dust and chippings on a roughly cobbled floor. Context 447 is a trench within this room, filled with chippings, that was a possible drainage channel.

**associated finds** yellow stone chippings, no other small finds

**Small find no.:** WP 3417

**Catalogue no:** 2266

**Illustration no. in archaeological report:** fig.205, 2266, p.723 (Biddle 1990a)

#### **Current location:**

unknown – last record states loan from Winchester Historic Resources Centre to G. Lawson 1984

#### **Similar flutes:**

this could have been a goose ulna flute with no toneholes, similar to Winchester 2263 [105] and Rayleigh Castle 1909 [75], or could have had three toneholes similar to Southampton [79]

#### **Bibliography:**

Biddle, M, 1986. *Wolvesey. The Old Bishop's Palace, Winchester*. London: Historic Buildings and Monuments Commission for England.

Biddle, M, 1990a. *Object and Economy in Medieval Winchester i. Winchester Studies 7ii*, 721. Oxford: Clarendon Press.

Biddle, M, 1990b. *Object and Economy in Medieval Winchester ii. Winchester Studies 7ii*, 1201-21. Oxford: Clarendon Press.

Name of flute (location/site):

[109]

Winchester  
2267

Date:  
1300 - 1332

Illustration:



Physical information:

**Species:** goose

**Bone used:** ulna

**Extent:** fragment (middle section)

**Length:** 93.5mm

**No. of toneholes:** 2 ½

**Window:** lower edge only

**Evidence of manufacture?** longitudinal scrapings, some chatter marks

**Unusual characteristics/comments:** there are some wisps of bone still present on the internal edge of one of the toneholes.

Archaeological information:

**Site:** name Wolvesey Palace

**code** WP

**type** elite (Bishop's palace)

**information** this is the high-status residence (palace) of the Bishops of Winchester. It was a fortified courtyard house, with private apartments, guest accommodation, halls and defensive structures. It was in the south-east corner of the walled city, and became more elaborate over time up until the 15<sup>th</sup> century. By the 13<sup>th</sup> century it was in its final form, though repairs were regularly undertaken. Many visits of royalty were recorded: Edward I and Queen Margaret (1306), Queen Isabella (1310) Edward III and Queen Philippa (1330). William Edendon was the bishop there between 1304 and 1366.

**Date excavated:** 1963 - 74

**Period:** Final phase 366 (P.ph. 964)

**Context:** number Room 1 context no. 160

**information/description** from the destruction of Wall CXXIII (a small partition wall in room 1). Room 1 was a small room next to the latrine block at the north end of the West Hall.

**associated finds** orange mortar, pottery (Roman and later) oyster shells, nails, bottle glass, snail shells, roof tile.

**Small find no.:** WP 3017

**Catalogue no:** 2267

**Illustration no. in archaeological report:** fig.205, 2267, p.723 (Biddle 1990)

Current location:

Winchester Historic Resources Centre

Contact information:

75 Hyde Street, Winchester, SO23 7DW

tel: 01962 848269

Geoff Denford

Similar flutes:

Acton Court [1]

Bibliography:

Biddle, M, 1986. *Wolvesey. The Old Bishop's Palace, Winchester*. London: Historic Buildings and Monuments Commission for England.

Biddle, M, 1990a. *Object and Economy in Medieval Winchester i. Winchester Studies 7ii*, 721. Oxford: Clarendon Press.

Biddle, M, 1990b. *Object and Economy in Medieval Winchester ii. Winchester Studies 7ii*, 1201-21. Oxford: Clarendon Press.

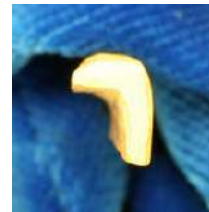
Name of flute (location/site):

[110]

Winchester  
2268

Date:  
1366 – 1432

Illustration:



Physical information:

**Species:** sheep/deer

**Bone used:** metatarsal

**Extent:** fragment (sliver of window end)

**Length:** 73.5mm

**No. of toneholes:** 0

**Window:** side wall of rectangular window present

**Evidence of manufacture?** Square window carefully made, and 3 incised grooves around proximal end. Some longitudinal scratches visible, otherwise smooth.

**Unusual characteristics/comments:** A crack is present across the instrument.

Archaeological information:

**Site:** name Brook Street

code BS

type urban

**information** this site is on Lower Brook Street (previously Tanner Street). In the 10<sup>th</sup> and 11<sup>th</sup> centuries Tanner Street was an area occupied mainly by tanners, and in the 12<sup>th</sup> century it became an area of textile manufacture. House XI is on the corner of Tanner Street and St. Pancras Lane, and had an additional passageway running parallel to St. Pancras Lane that bordered its southern side that led to the north door of St. Mary's church. In the early 14<sup>th</sup> century, a row of four single-room cottages was built on the site, fronting onto St. Pancras Lane. The room that was adjacent to Tanner Street had a water channel and was possibly used as a dye house. In the early 15<sup>th</sup> century the property is recorded as belonging to the fraternity of the Fray and Kalendar. The cottages had minor reconstructions into the late 15<sup>th</sup> and early 16<sup>th</sup> centuries (Keene).

**Date excavated:** 1966

**Period:** Final phase 62 (P.ph. 644)

**Context:** number Trench III context 222

**information/description** part of House XI, when it was rebuilt in stone. It is unclear what the specific context is.

**associated finds** unknown

**Small find no.:** BS 633

**Catalogue no:** 2268

**Illustration no. in archaeological report:** fig.205, 2268, p.723 (Biddle 1990)

Current location:

Winchester Historic Resources Centre

Contact information:

75 Hyde Street, Winchester, SO23 7DW

tel: 01962 848269

Geoff Denford [gdenford@winchester.gov.uk](mailto:gdenford@winchester.gov.uk)

Similar flutes:

the square window is unusual, and is also seen on Keynsham Abbey [35] and White Castle [98] flutes (of a similar date)

Bibliography:

Biddle, M, 1990a. *Object and Economy in Medieval Winchester i. Winchester Studies 7ii*, 721. Oxford: Clarendon Press.

Biddle, M, 1990b. *Object and Economy in Medieval Winchester ii. Winchester Studies 7ii*, 1162-5. Oxford: Clarendon Press.

Keene, D, 1985. *Survey of Medieval Winchester ii. Parts II and III. Appendices, Index. Winchester Studies 2*, 759, 763-4. Oxford: Clarendon Press.

Name of flute (location/site):

[111]

Yatesbury

Date:

1300 - 1500

Illustration:



Physical information:

**Species:** ovicaprid

**Bone used:** tibia

**Extent:** fragment (middle section)

**Length:** 49.1mm

**No. of toneholes:** 1 and 2x ½

**Window:** n/a

**Evidence of manufacture?**

**Unusual characteristics/comments:** it is unusual for a bone flute to be broken longitudinally. However, as it is broken through the toneholes, their profile can be seen.

Archaeological information:

**Site:** **name** Yatesbury Manor Farm

**code** YMF2

**type** rural

**information** a rural village with manorial site in North Wiltshire, part of the Compton Bassett Area Research Project

**Date excavated:** 1995

**Period:**

**Context:** **number** 32, trench C, field 2

**information/description** ditch with many cuts and re-cuts

**associated finds** unknown

**Small find no.:** 10

**Illustration no. in archaeological report:** unpublished

Current location:

c/o Andrew Reynolds, UCL

Contact information:

Institute of Archaeology, 31-34 Gordon Square, London, WC1H 0PY  
0207 679 3000

Similar flutes:

Wharram Percy Area 10 [94]

Bibliography:

Reynolds, A, 1994. The Compton Bassett Area Research Project – first interim report, *Institute of Archaeology Bulletin*, **31**, 169-198.



Name of flute (location/site):

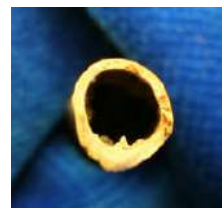
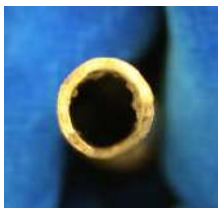
[112]

York  
Blake Street

Date:

900 – 1100  
and later

Illustration:





Physical information:

**Species:** goose

**Bone used:** ulna

**Extent:** fragment (middle section)

**Length:** 94.6mm

**No. of toneholes:** 1 ½

**Window:** ramp present

**Evidence of manufacture?** longitudinally scraped on all surfaces

**Unusual characteristics/comments:** the ramp and toneholes are out of alignment

Archaeological information:

**Site: name** York, 9 Blake Street

**code** 1975.6

**type** urban

**information** Blake Street is near a main road that runs by the river, within the town of York. It is near the Minster, a couple of monasteries, and St Leonard's Hospital. There were some structures on the street frontage, but their purpose is undefined as yet.

**Date excavated:** 1975

**Period:** 6

**Context: number** 4204

**information/description** layer of clay in a pit

**associated finds** a stone marble

**Small find no.:** 2233

**Illustration no. in archaeological report:** unpublished

**Current location:** York Archaeological Trust

**Contact information:**

York Archaeological Trust, 47 Aldwark, York, YO1 7BX

Tel: 01904 619 264

Christine McDonald

**Similar flutes:**

this flute would probably have had 3 toneholes, similar to Southampton [79] or Acton Court [1]

**Bibliography:**

unpublished

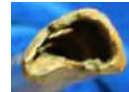
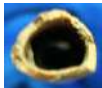
Name of flute (location/site):

[113]

York  
Clifford Street C663

Date:  
975 - 1100

Illustration:



### Physical information:

**Species:** crane

**Bone used:** tibiotarsus

**Extent:** fragment (middle section)

**Length:** 194mm

**No. of toneholes:** 3

**Window:** Not present

**Evidence of manufacture?** end trimmed by knife, some longitudinal scraping, especially on the back, chamfer around toneholes.

**Unusual characteristics/comments:** Consultation with the NHM Bird Group, Tring, led to the identification of the bone as crane tibiotarsus.

### Archaeological information:

**Site:** name Clifford Street

code n/a

type urban

**information** Anglo-Scandinavian York was a major centre, and had trading links with Anglo-Saxon England, Ireland, Scandinavia and Europe (MacGregor et al 1999).

**Date excavated:** 1884?

**Period:** n/a

**Context:** number n/a

**information/description** excavations in 1884 yielded much material, suggesting that the deposit represents the debris of nearby workshops

**associated finds** from the deposit in general: combs, pins, tools, ornaments of bone, beads of amber and glass, unfinished and waste bone work and pieces of unworked amber. (Waterman 1959 p.68)

**Small find no.:** C663

**Illustration no. in archaeological report:** Fig 19.11, p.92 (Waterman 1959)

### Current location:

Yorkshire Museum and Gardens

### Contact information:

Museum Gardens, York, YO1 7FR

01904 687687

Andrew Morrison [andrew.morrison@ymt.org.uk](mailto:andrew.morrison@ymt.org.uk)

### Similar flutes:

Other crane tibiotarsus flutes: Gloucester Park Street 35+40 [24], North Elmham Park [67].

### Bibliography:

Crane, F, 1972. *Extant Medieval Musical Instruments: A Provisional Catalogue by Types*, 39. Iowa: University of Iowa Press.

MacGregor, A, 1985. *Bone Antler Ivory & Horn. The technology of Skeletal Materials Since the Roman Period*. London and Sydney: Croom Helm.

MacGregor, A, Mainman A J and Rogers, N S H, 1999. *Bone, Antler Ivory and Horn from Anglo-Scandinavian and Medieval York. The Archaeology of York. The Small Finds 17/12*, 2006. York: Council for British Archaeology.

Megaw, J V S, 1960. Penny Whistles and Prehistory, *Antiquity*, **34**, 11.

Waterman, D M, 1959. Late Saxon, Viking and Early Medieval Finds from York, *Archaeologia*, **97**, 59-105.

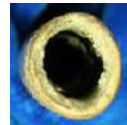
Name of flute (location/site):

[114]

York  
Clifford Street C666

Date:  
975 - 1100

Illustration:



Physical information:

**Species:** swan

**Bone used:** ulna

**Extent:** fragment (tonehole end)

**Length:** 116.8mm

**No. of toneholes:** 3

**Window:** Not present

**Evidence of manufacture?** longitudinal scraping all round, beneath patina. End neatly trimmed.

**Unusual characteristics/comments:** surface has a smooth patina, suggesting wear through much use. Consultation with the NHM Bird Group, Tring, led to confirmation of the bone as swan ulna, from an extremely large swan.

Archaeological information:

**Site:** name Clifford Street

code n/a

type urban

**information** Anglo-Scandinavian York was a major centre, and had trading links with Anglo-Saxon England, Ireland, Scandinavia and Europe (MacGregor et al 1999).

**Date excavated:** 1884?

**Period:** n/a

**Context:** number n/a

**information/description** excavations in 1884 yielded much material, suggesting that the deposit represents the debris of nearby workshops

**associated finds** from the deposit in general: combs, pins, tools, ornaments of bone, beads of amber and glass, unfinished and waste bone work and pieces of unworked amber. (Waterman 1959 p.68)

**Small find no.:** C666

**Illustration no. in archaeological report:** Fig 19.10, p.92 (Waterman 1959)

Current location:

Yorkshire Museum and Gardens

Contact information:

Museum Gardens, York, YO1 7FR

01904 687687

Andrew Morrison [andrew.morrison@ymt.org.uk](mailto:andrew.morrison@ymt.org.uk)

Similar flutes:

York Clifford Street 663 [113] (though [113] is made from a crane tibiotarsus)

Bibliography:

Crane, F, 1972. *Extant Medieval Musical Instruments: A Provisional Catalogue by Types*, 39. Iowa: University of Iowa Press.

MacGregor, A, 1985. *Bone Antler Ivory & Horn. The technology of Skeletal Materials Since the Roman Period*. London and Sydney: Croom Helm.

MacGregor, A, Mainman A J, and Rogers, N S H, 1999. *Bone, Antler Ivory and Horn from Anglo-Scandinavian and Medieval York. The Archaeology of York. The Small Finds 17/12*, 2006. York: Council for British Archaeology.

Megaw, J V S, 1960. Penny Whistles and Prehistory, *Antiquity*, **34**, 11.

Waterman, D M, 1959. Late Saxon, Viking and Early Medieval Finds from York, *Archaeologia*, **97**, 59-105.

Name of flute (location/site):

[115]

York  
Coppergate 7075

Date:  
1050 - 1100

Illustration:



Physical information:

**Species:** goose

**Bone used:** ulna

**Extent:** fragment (window end)

**Length:** 57.8mm

**No. of toneholes:** 0

**Window:** D shaped

**Evidence of manufacture?** some longitudinal scraping, chatter marks above window

**Unusual characteristics/comments:** the upper edge of the window is marked by a distinct transverse cut.

Archaeological information:

**Site:** name 16-22 Coppergate

**code** 1979.7

**type** urban

**information** Medieval York was a major centre of trade and industry, similar to Winchester, London or Norwich. Coppergate is a street whose property boundaries were laid out in the late 9<sup>th</sup> century/early 10<sup>th</sup> century, with tenements distinguishable by the mid 10<sup>th</sup> century. Finds suggest that metalworking and other trades were carried out commercially at this time. Occupation continued throughout the medieval period. Around the time of period 5Cr, the previous sunken buildings on Coppergate were replaced by ground level structures.

**Date excavated:** 1979

**Period:** P5Cr

**Context:** number 18744, area II

**information/description** unable to find specific reference to this context.

At the rear of the site where the flute was found, approximately contemporary levels (dump deposits) were associated with and sealed a post-built structure (timber dated to 1014-54). These levels were covered by a series of Norman period dumps.

**associated finds** many items of: iron, bone, antler, amber, flint, stone, lead alloy, slag, glass and leather.

**Small find no.:** sf6045

**catalogue number in report:** 7075

**York Archaeological Trust number:** 18744 sf6045 (P5Cr)

**Illustration no. in archaeological report:** fig.935, 7075 p.1977 (MacGregor et al. 1999)

**Current location:**

York Archaeological Trust

**Contact information:**

York Archaeological Trust, 47 Aldwark, York, YO1 7BX

Tel: 01904 619 264

Christine McDonald

**Similar flutes:**

Castle Acre 61 [9], Lyveden goose [65]

**Bibliography:**

MacGregor, A, Mainman A J and Rogers, N S H, 1999. *Bone, Antler Ivory and Horn from Anglo-Scandinavian and Medieval York. The Archaeology of York. The Small Finds 17/12, 1977-8.* York: Council for British Archaeology.  
Ottaway, P, and Rogers, N, 2002. *Craft, industry and everyday life: finds from medieval York. Archaeology of York v. 17, Small finds; 15.* York: Council for British Archaeology.



<u>Name of flute (location/site):</u>  <p style="text-align: center;">York Coppergate 7076</p>	[116]
	<u>Date:</u> 1000 - 1200
<u>Illustration:</u> 	



Physical information:

**Species:** swan

**Bone used:** ulna

**Extent:** complete, but damaged at both ends

**Length:** 181mm

**No. of toneholes:** 1

**Window:** D shaped

**Evidence of manufacture?** some longitudinal scraping, especially on the convex side where the tubercles were.

**Unusual characteristics/comments:** There are four shallow cuts at the proximal end of the flute behind the window. These could be marking out positions of toneholes that were not used, prior to the bone being turned around and the holes made on the opposite side.

Archaeological information:

**Site:** name 16-22 Coppergate

code 1979.7

type urban

**information** Medieval York was a major centre of trade and industry, similar to Winchester, London or Norwich. Coppergate is a street whose property boundaries were laid out in the late 9<sup>th</sup> century/early 10<sup>th</sup> century, with tenements distinguishable by the mid 10<sup>th</sup> century. Finds suggest that metalworking and other trades were carried out commercially at this time. Occupation continued throughout the medieval period. In period 6, 'no remains surviving at street frontage, but area to rear increasingly built up above later lump deposits. New methods of building and rubbish disposal, leading to reduction in organic content of deposits' (MacGregor et al)

**Date excavated:** 1979

**Period:** Period 6 phase a

**Context:** number 18366 (B6a5)

**information/description** tenement B sequence 5

**associated finds** leather shoes, nails, knives, glass fragments, iron objects, slag

**Small find no.:** sf5316

**catalogue number:** 7076

**York Archaeological Trust number:** 18366 sf5316 (B6a5) (P6)

**Illustration no. in archaeological report:** fig.935, 7076 p.1977 (MacGregor et al. 1999)

**Current location:**

York Archaeological Trust

**Contact information:**

York Archaeological Trust, 47 Aldwark, York, YO1 7BX

Tel: 01904 619 264

Christine McDonald

**Similar flutes:**

the four cut indentations of this flute are similar to the toneholes of the swan ulna flutes from Norwich Bishopsgate [69] and Old Sarum A2 [73]

**Bibliography:**

Hall, R, 1984. *The excavations at York. The Viking dig*, 115-6. Bristol and London: The Bodley Head.

MacGregor, A, Mainman A J, and Rogers, N S H, 1999. *Bone, Antler Ivory and Horn from Anglo-Scandinavian and Medieval York. The Archaeology of York. The Small Finds 17/12*, 1977-8. York: Council for British Archaeology.

Ottaway, P, and Rogers, N, 2002. *Craft, industry and everyday life: finds from medieval York. Archaeology of York v. 17, Small finds; 15*. York: Council for British Archaeology.

Name of flute (location/site):

**[117]**

York  
Coppergate 7077

Date:  
1175 - 1225

Illustration:



### Physical information:

**Species:** goose (or domestic fowl/pheasant)

**Bone used:** tibiotarsus

**Extent:** fragment (tonehole end)

**Length:** 60.3mm

**No. of toneholes:** 1 ½

**Window:** not present

**Evidence of manufacture?** cut marks near the complete tonehole, where the crest of bone has been removed

**Unusual characteristics/comments:** an unusual choice of bone, this being the only known flute made from a tibiotarsus. Also, given that the fragment represents about half of the useable length of bone, then there remains little length in which to place a window and further toneholes.

### Archaeological information:

**Site:** name 16-22 Coppergate

code 1977.7

type urban

**information** Medieval York was a major centre of trade and industry, similar to Winchester, London or Norwich. Coppergate is a street whose property boundaries were laid out in the late 9<sup>th</sup> century/early 10<sup>th</sup> century, with tenements distinguishable by the mid 10<sup>th</sup> century. Finds suggest that metalworking and other trades were carried out commercially at this time. Occupation continued throughout the medieval period. In period 6, 'no remains surviving at street frontage, but area to rear increasingly built up above later lump deposits. New methods of building and rubbish disposal, leading to reduction in organic content of deposits' (MacGregor et al)

**Date excavated:** 1977

**Period:** Period 6 phase e

**Context:** number 5238 (C6e5, D6a20), area IV

**information/description** tenement C sequence 5 and tenement D sequence 20

**associated finds** objects of: iron, leather, copper alloy, glass, bone, lead alloy, tile, stone,

**Small find no.:** sf1426

**catalogue number:** 7077

**York Archaeological Trust number:** 18366 sf5316 (B6a5) (P6)

**Illustration no. in archaeological report:** fig.935, 7077 p.1977 (MacGregor et al. 1999)

### Current location:

York Archaeological Trust

### Contact information:

York Archaeological Trust, 47 Aldwark, York, YO1 7BX

Tel: 01904 619 264

Christine McDonald

### Similar flutes:

only one other flute is made from a goose tibiotarsus: Hamwic Stoner Motors [28]

### Bibliography:

MacGregor, A, Mainman A J, and Rogers, N S H, 1999. *Bone, Antler Ivory and Horn from Anglo-Scandinavian and Medieval York. The Archaeology of York. The Small Finds 17/12, 1977-8.* York: Council for British Archaeology.  
Ottaway, P. and Rogers, N. (2002) *Craft, industry and everyday life: finds from medieval York. Archaeology of York v. 17, Small finds; 15.* York: Council for British Archaeology.

<u>Name of flute (location/site):</u>  York Coppergate 7078	<b>[118]</b>  <u>Date:</u> 1400 - 1600
<u>Illustration:</u>  <p>The illustration consists of four photographs of a bone flute and two cross-sections. The top photograph shows the flute from a side perspective, highlighting its curved shape and a small hole near the right end. Below this is a white scale bar with a black 'cm' label and a black rectangular marker. The second photograph shows the flute from a side perspective, focusing on the two finger holes. The third photograph shows the flute from a side perspective, focusing on the mouthpiece area. The fourth photograph shows the flute from a side perspective, focusing on the base. The two cross-sections at the bottom show the internal bore of the flute, which is circular and slightly irregular in shape.</p>	

Physical information:

**Species:** goose

**Bone used:** humerus

**Extent:** fragment (window end)

**Length:** 63.1mm

**No. of toneholes:** 0

**Window:** D shaped

**Evidence of manufacture?** exterior is unworked by knife, though there are cuts below the window, and a definite cut marking the top of the window.

**Unusual characteristics/comments:** The shape of the proximal end above the window means that any block inserted into the end would find it difficult to direct the player's breath against the ramp.

Archaeological information:

**Site:** name 16-22 Coppergate

code 1978.7

type urban

**information** Medieval York was a major centre of trade and industry, similar to Winchester, London or Norwich. Coppergate is a street whose property boundaries were laid out in the late 9<sup>th</sup> century/early 10<sup>th</sup> century, with tenements distinguishable by the mid 10<sup>th</sup> century. Finds suggest that metalworking and other trades were carried out commercially at this time. Occupation continued throughout the medieval period. In period 6, 'no remains surviving at street frontage, but area to rear increasingly built up above later lump deposits. New methods of building and rubbish disposal, leading to reduction in organic content of deposits' (MacGregor et al) A stone built structure was built in the centre/rear of tenement A, which was more substantial than any previous structures.

**Date excavated:** 1978

**Period:** Period 6 phase z

**Context:** number 13119 (A6z14), area II

**information/description** tenement A sequence 14

**associated finds** glass fragment, copper alloy fragment, stone spindle whorl, bone riveted mount, flint core

**Small find no.:** sf3565

**catalogue number:** 7078

**York Archaeological Trust number:** 13119 sf3565 (A6z14) (P6)

**Illustration no. in archaeological report:** not illustrated

**Current location:**

York Archaeological Trust

**Contact information:**

York Archaeological Trust, 47 Aldwark, York, YO1 7BX

Tel: 01904 619 264

Christine McDonald

**Similar flutes:**

other goose humerus flutes: Exeter, B1 [13], Norwich, St. Martin-at-Palace Plain [72], Winchester 2259 [101]

**Bibliography:**

MacGregor, A, Mainman A J, and Rogers, N S H, 1999. *Bone, Antler Ivory and Horn from Anglo-Scandinavian and Medieval York*. The Archaeology of York. The Small Finds 17/12, 1977-8. York: Council for British Archaeology.

## List of non-flutes

The following 'non-flutes' are objects that have either been published as flutes, or are artefacts seen at museums during research trips that were viewed as potentially being flutes. All of them are considered not to be flutes, and are listed here for reference.

### Bedford, Cauldwell Street

This is not a flute, though is published as such; the presence of a D shaped hole may have caused it to be identified as a flute originally. However, there is no ramp present at the distal edge of this hole. In addition, it has extensive drilled and sawn pierced decoration that would not only inhibit its function as a flute, but are features of a kind otherwise unknown on bone flutes. It may be a reliquary.

Site code: BCS71 24

Small find number: 1538

Bone used: ovicaprid metacarpal

Location: Bedford Museum

Published in: Baker, D, Baker, E, Hassall, J, Simco, A, 1979. Excavations in Bedford 1967 – 1977, *Bedfordshire Archaeological Journal*, **13**, 65-67, 291.

### Beverley, Dominican Friary

This object has one hole on the flat side of the bone, positioned part way along the shaft. This hole is oval and is presumed not to be a window. The purpose of the object is unknown.

Site code: BDF82

Small find number: unknown

Bone used: ovicaprid metacarpal

Location: Hull and East Riding Museum, Hull

Published in: Armstrong, S J, 1987, Objects of bone, in P Armstrong and D Tomlinson, *Excavations at Dominican Priory, Beverley, 1960-1983*.

*Humberside County Council, Humberside Heritage Publication No. 13*, 41.

Hull: Humberside Leisure Services.

### Bristol, Anchor Road

This undated object appears to be a stylus with a duct flute as part of its handle.

Site code: Anchor Road

Departmental register no: G 2071

Bone used: unknown

Location: Bristol City Museum and Art Gallery

Published in: unpublished

### Colchester, Cups Hotel

This tubular object has two holes in alignment along its shaft, although neither of them are taken to be a window. It was found in a topsoil layer so is not securely dated. It may be part of a hinge.

Site code: CPS 73

Small find number: 119

Bone used: ovicaprid tibia/femur?

Location: Museum Resource Centre, Colchester Museums

Published in: Crummy, N, 1988. *The post-Roman small finds from excavations in Colchester 1971-85, Colchester Archaeological Report 5*, 45, 47. Colchester Archaeological Trust Ltd.

### Duxford

This is a Late Iron Age tubular object, with one hole that pieces both sides. It is likely to be a toggle of some kind.

Site code: DUXHR 02

Small find number: 72

Bone used: ovicaprid metacarpal

Location: Cambridgeshire County Council Archaeological Field Unit

Published in: unknown

### Hinxton Hall

This late Saxon object is complete in length, neatly trimmed at both ends, but with fragments missing. It is a plain tubular object with no holes. It could have an unknown function, or be an object in a state of partial manufacture.

Site code: unknown

Small find number: unknown

Bone used: crane tibiotarsus

Location: Cambridgeshire County Council Archaeological Field Unit

Published in: unpublished

### Ipswich, Buttermarket

This pair of crane tarsometatarsus objects have been erroneously identified as being made from the deer metatarsal. They are reed pipes (with the reed missing) in a distinct pair rather than duct flutes, and as such are important instruments without English parallel.

Site code: unknown (Ipswich Buttermarket)

Small find number: unknown

Bone used: crane tarsometatarsus

Location: with G. Lawson, McDonald Institute, Cambridge

Published in: Lawson, G, 1999. Getting to Grips with music's prehistory: experimental approaches to function, design and operational wear in excavated musical instruments, in A Harding (ed), *Experiment and Design: Archaeological Studies in Honour of John Coles*, 136. Oxford: Oxbow Books.

### Lincoln, Saltergate

This object is a goose humerus tubular object with an incised groove at one end. It is complete in length and has no holes; it is not taken to be a flute.

Site code: unknown (Lincoln Saltergate)

Small find number: unknown

Bone used: goose humerus

Location: The Collection, Lincoln

Published in: unpublished



### Lincoln, Saint Benedicts

This tubular object is a fragment of a longer object and has two incised lines around the bone. It has no holes present and is not taken to be a flute.

Site code: SB85

Small find number: 155

Bone used: swan ulna

Location: The Collection, Lincoln

Published in: unpublished

### London, Unknown Site

This object is very unusual. It is broken across what appears to be a large tonehole, with the other complete end having an incised groove. One possible explanation is that the incised groove is used to tie the bone to a bag, and that the bone is the chanter of a bagpipe or bladder pipe. If this were the case, then there would be very few toneholes, as the extant broken tonehole is very close to the end of the original bone length.

Site code: unknown

Museum of London accession no: 26236

Dove Collection no: C4

Bone used: ovicaprid metatarsal

Location: in store, Museum of London (LW.GEN.44.17)

Published in: unpublished

### London, Bishopsgate

This is a seventeenth century knife with a duct flute as part of its handle.

Site code: STE95

Small find number: 83

Bone used: unknown

Location: LAARC

Published in: unknown

### Northampton, Saint Peter's Street

This is a small tubular object made from a goose ulna, neatly trimmed at one end and broken at the other end. It has no toneholes or window at its complete end, and is not taken to be a flute.

Site code: unknown (St. Peter's Street, Northampton)

Small find number: 3231

Bone used: goose ulna

Location: Northampton Central Museum and Art Gallery

Published in: Williams, J H, 1979. *St. Peter's Street Northampton. Excavations 1973 – 1976*, 317. Northampton Development Corporation.

### Northampton, Saint Peter's Street

This is a small tubular object made from a goose ulna, neatly trimmed at both ends. It has no toneholes or window present, and is not taken to be a flute.

Site code: unknown (St. Peter's Street, Northampton)

Small find number: 1471

Bone used: goose ulna

Location: Northampton Central Museum and Art Gallery

Published in: Williams, J H, 1979. *St. Peter's Street Northampton. Excavations 1973 – 1976*, 317. Northampton Development Corporation.

### Norwich, Harvey Lane

This object is erroneously listed on Norwich Museum's database as being made of a bird bone. It is made from a large metatarsal, possibly from a cow, and has holes that go through both sides of the object.

Site code: unknown

Museum record number: NWHCM:1894.76.736.7:A

Bone used: large deer or cow metatarsal

Location: Norwich Castle Museum

Published in: unpublished

### Norwich, Saint Benedict's Street

This seventeenth century artefact is unusual and its function is unclear. It is turned rather than carved, and appears to be a duct flute, yet is clearly designed to attach to another structure with a larger internal bore/space. It could be a mouthpiece for another object, which is likely to be a musical instrument due to the cut D shaped mouthpiece.

Site code: 153N/2

Museum record number: NWHCM:1972.117.34:A

Bone used: unknown

Location: Norwich Castle Museum

Published in: Lawson, G. and Margeson, S. (1993) 'Musical Instruments' in Margeson, S. *Norwich households. Medieval and Post-Medieval Finds from Norwich Survey Excavations 1971-78* pp. 211-3 East Anglian Archaeology Report No 58.

### Norwich, Thorpe next Norwich

This is an object referred to by Megaw and Crane (Megaw 1960, 11; Crane 1972), but extensive searching has not clarified what flute this is.

## Bibliography

Allan, J P, 1984. *Medieval and Post-Medieval Finds from Exeter, 1971-1980*.

*Exeter Archaeological Reports: Volume 3*, 349-351. Exeter: Exeter City Council and the University of Exeter.

Almond, R, 2003. *Medieval Hunting*. Stroud: Sutton Publishing Limited.

Andrews, P, 1995. *Excavations at Redcastle Furze, Thetford, 1988-9 East Anglian Archaeology Report, No.72*. Norfolk Museums Service, Field Archaeology Division.

Andrews, P, and Penn, K, 1999. *Excavations in Thetford, North of the River, 1989-90. East Anglian Archaeology Report, no.87*, 45-46. Dereham: Field Archaeology Division, Norfolk Museum Service.

Armstrong, E A, 1958. *The Folklore of Birds: An Enquiry into the Origin and Distribution of some Magico-religious Traditions*. London: Collins.

Astill, G and Grant, A, 1988. *The Countryside of Medieval England*. Oxford: Blackwell.

Atkin, M and Evans, D H, 2002. *Excavations in Norwich 1971-78 Part III. East Anglian Archaeology Report No. 100*. Norwich: Norwich Survey.

Audouy, M, in press. *Raunds, the origin and growth of a midland village c450-1500. Excavations in north Raunds, Northamptonshire 1977-87*.

Ayers, B, 1987. *Excavations at St. Martin-at-Palace Plain, Norwich, 1981. East Anglian Archaeology Report No.37*, 51,106. Dereham: Norfolk Archaeological Unit, Norfolk Museums Service.

Backhouse, J, 2000. *Medieval Rural Life in the Luttrell Psalter*. London: The British Library.

Baker, D, Baker, E, Hassall, J, and Simco, A, 1979. Excavations in Bedford 1967 – 1977, *Bedfordshire Archaeological Journal*, **13**, 288-9.

- Baker, P, 2002 (third edition). *Techniques of Archaeological Excavation*. London and New York: Routledge.
- Barrett, J H, 1969. A Fipple Flute or Pipe from the site of Keynsham Abbey, *Galpin Society Journal*, **22**, 47-50.
- Bedwin, O (ed), 1996. *The Archaeology of Essex. Proceedings of the Writtle Conference*. Chelmsford: Essex County Council Planning Department.
- Bell, N, 2001. *Music in Medieval Manuscripts*. London: The British Library.
- Bendrey, R, 2003. The Identification of Fallow Deer (Dama dama) Remains from Roman Monkton, the Isle of Thanet, Kent, in I Riddler (ed), *Materials of Manufacture. The choice of materials in the working of bone and antler in northern and central Europe during the first millennium AD*, 15-18. Oxford: Archaeopress. BAR International Series 1193.
- Benko, S E, 1983. *Anglo-Saxon Musical Instruments*. Unpublished PhD thesis, State University of New York at Stony Brook.
- Beresford, M, and Hurst, J, 1990. *Wharram Percy. Deserted Medieval Village*. London: Batsford and English Heritage.
- Biddle, M, 1962. The deserted Medieval Village of Seacourt, Berkshire, *Oxoniensa*, **26/27**, 183-4.
- Biddle, M, 1990a. *Object and Economy in Medieval Winchester i. Winchester Studies 7ii. Artefacts from Medieval Winchester, 718-723*. Oxford: Clarendon Press.
- Biddle, M, 1990b. *Object and Economy in Medieval Winchester ii. Winchester Studies 7ii*. Oxford: Clarendon Press.
- BIG82 Archive Report*, Museum of London Archaeological Archive.
- Birkhead, M and Perrins, C, 1986. *The Mute Swan*. Beckenham: Croom Helm.
- Birrell, J R, 1982. 'Who Poached the King's Deer? A Study in Thirteenth-Century Crime', *Midland History*, **7**, 9-25.

- Blockley, K, Blockley, M, Blockley, P, Frere, S S, and Stow, S, 1995a. *The Archaeology of Canterbury, Volume V. Excavations in the Marlowe Car Park and Surrounding Areas*, 330-334. Canterbury: Canterbury Archaeological Trust.
- Blockley, K, Blockley, M, Blockley, P, Frere, S S, and Stow, S, 1995b. *The Archaeology of Canterbury, Volume V. Excavations in the Marlowe Car Park and Surrounding Areas. Part II: The Finds*, 1146-7. Canterbury: Canterbury Archaeological Trust.
- Boeles, P C J A, 1951. *Friesland Tot de Elfde Eeuw* [2<sup>nd</sup> edition] The Hague ('s-Gravenhage:Nijhoff) Pts. XXX 16-17, XXXI 2-3.
- Boisseau, S and Yalden, D W, 1998. The Former Status of the Crane *Grus Grus* in Britain, *Ibis*, **140**, 482-500.
- Boore, E J, 1982. Excavations at Peter Street, Bristol 1975-1976, *Bristol and Avon Archaeology*, **1**, 7-11.
- Bosmans, W, 1991. *Eenhandsfluit en Trom in de Lage Landen. The Pipe and Tabor in the Low Countries*. Peer: Alamire.
- Brade, C, 1975. *Die mittelalterlichen Kernspaltflöten Mittel-und Nordeuropas*. Neumünster: Karl Wachholtz Verlag.
- Brade, C, 1978. *Das Archäologische Fundmaterial III der Ausgrabung Haithabu*. Neumuenster: Karl Wachholtz Verlag.
- Brade, C, 1982. The Prehistoric Flute – Did it Exist?, *Galpin Society Journal*, **35**, 138-150.
- Bradley, R, and Hooper, B, 1974. Trial Excavation on a Saxon Site at Bonhunt, Essex, 1970-71, *Essex Journal*, **9 (2)**, 38-56.
- Braun, H, 1937. The Keep of Bungay Castle, in Suffolk, *The Journal of the British Archaeological Association*, **42**, 156-167.
- Brothwell, D R, 1981. *Digging up Bones*. London: British Museum (Natural History) and Ithaca, New York: Cornell University Press.

- Bryant G F, and Steane, J M, 1971. Excavations at the deserted medieval settlement at Lyveden: a third interim report, *Journal of the Northampton Museums and Art Gallery*, **9**, 3-94.
- Buckley, A, 1998. Hearing the Past: Essays in Historical Ethnomusicology and the Archaeology of Sound, *British Journal of Ethnomusicology* **9/2**, 152-5.
- Buckley, D G, 1980. *Archaeology in Essex to AD 1500*. London: Council for British Archaeology.
- Buisson, D, 1990. Les Flutes Paleolithiques d'Isturitz (Pyrenees Atlantiques), *La Pluridisciplinarite en Archeologie Musical*, 259 – 275.
- Cantor, N F, 1999. *The Pimlico Encyclopedia of The Middle Ages*. London: Pimlico.
- Care Evans, A, 1989. *The Sutton Hoo Ship Burial*. London: British Museum Publications.
- Carver, M O H, 1986. Contemporary Artefacts Illustrated in Late Saxon Manuscripts, *Archaeologia*, **108**, 117-145.
- Carver, M, 2005. Key Ideas in Excavation, in C Renfrew and P Bahn, *Archaeology. The Key Concepts*, 106-110. London and New York: Routledge.
- Casey, D A, 1931. Lydney Castle, *Antiquaries Journal*, **II**, 254.
- Chapman, A, forthcoming. *Raunds, West Cotton: a study of Medieval settlement dynamics. Excavation 1985-9*. English Heritage Monograph.
- Chapman, A, Atkins, R, and Lloyd, R, 2003. A medieval manorial farm at Lime Street Irthlingborough, Northamptonshire, *Northamptonshire Archaeology*, **31**, 71-103.
- Cherry, J, 1991. Leather, in J Blair and N Ramsey, *English Medieval Industries*, 295-318. London: The Hambledon Press.
- Clarke, H, 1984. *The Archaeology of Medieval England*. Oxford: Basil Blackwell Ltd.

- Clarke, H, and Carter, A., 1977. *Excavations in King's Lynn 1963-1970. Society for Medieval Archaeology Monograph Series, No. 7*, 313-4. London: Society for Medieval Archaeology.
- Clutton-Brock, J, 1999. *A Natural History of Domesticated Mammals*. Cambridge: Cambridge University Press (second edition).
- Coad, J G, and Streeten, A D F, 1982. Excavations at Castle Acre Castle, Norfolk, 1972-1977, *Archaeological Journal*, **139**, 241-54.
- Cocker, M, and Mabey, R, 2005. *Birds Britannica*. London: Chatto and Windus.
- Cohen, A and Serjeantson, D, 1986. *A Manual for the Identification of Bird Bones from Archaeological Sites*. London: Archetype Publications.
- Cowan, C, 1999. *Paternoster Square Ramp London EC4. An Archaeological Excavation Report*. London: MoLAS.
- Cowgill, J., Neergaard, M. de, Griffiths, N. (1987, 2000). *Knives and Scabbards. Medieval Finds from Excavations in London: 1*. London: Museum of London.
- Crabtree, P J, 1994. Animal exploitation in East Anglian villages, in J Rackham (ed), *Environment and Economy in Anglo-Saxon England*. London: Council for British Archaeology, CBA Research Report 89.
- Cramp, R, 2005. *Wearmouth and Jarrow Monastic Sites, Volume 1*. Swindon: English Heritage.
- Cramp, R, 2006. *Wearmouth and Jarrow Monastic Sites, Volume 2*. Swindon: English Heritage.
- Crane, F, 1972. *Extant Medieval Musical Instruments: A Provisional Catalogue by Types*. Iowa: University of Iowa Press.
- Crawford, S J (ed.), 1921. *Exameron Anglice, or the OE Hexameron*. Hamburg: Bibliothek der Angelsächsischen Prosa 10.
- Creighton, O H, 1972, 2002. *Castles and landscapes*. London: Continuum.



Croft, R A, 1993. *The Changing Landscape of Milton Keynes*. Aylesbury: The Buckinghamshire Archaeological Society, Monograph No. 5.

Crummy, N, 1988. *The post-Roman small finds from excavations in Colchester 1971-85, Colchester Archaeological Report 5*, 45, 47. Colchester Archaeological Trust Ltd.

Cummins, J, 1988. *The Hound and the Hawk. The Art of Medieval Hunting*. London: Phoenix Press.

Dallas, C, 1993. *Excavations in Thetford by B.K. Davison between 1964 and 1970, East Anglian Archaeology Report, no.62*. Dereham: Field Archaeology Division, Norfolk Museums Service.

d'Errico, F et al., 1998. A Middle Palaeolithic origin of music? Using cave-bear bone accumulations to assess the Divje Babe I bone 'flute' *Antiquity*, **72** No.275.

d'Errico, F et al., 2003. Archaeological Evidence for the Emergence of Language, Symbolism, and Music - An Alternative Multidisciplinary Perspective, *Journal of World Prehistory*, **17**(1).

d'Errico, F, and Lawson, G, 2006. The Sound Paradox: How to Assess the Acoustic Significance of Archaeological Evidence?, in C Scarre and G Lawson (eds), *Archaeoacoustics*, 41-57. Cambridge: McDonald Institute for Archaeological Research.

Diagram Group, 1976. *Musical Instruments of the World. An Illustrated Encyclopedia by the Diagram Group*. New York and Oxford: Facts On File Publications.

Dijkman, W, and Ervynck, A, 1998. *Antler, Bone, Horn, Ivory and Teeth. The use of Animal Skeletal Materials in Roman and Early Medieval Maastricht*. Maastricht: Archaeologica Mosana.

Dobney, K, Jacques, D and Irving, B, 1996. *Of Butchers & Breeds. Report on vertebrate remains from various sites in the City of Lincoln. Lincoln Archaeological Studies*, **5**. Lincoln: City of Lincoln Archaeology Unit.

- Dobney, K, and Jacques, D, 2002. Avian signatures for identity and status in Anglo-Saxon England, in *Proceedings of the 4<sup>th</sup> Meeting of the ICAZ Bird Working Group, Kraków, Poland, 11-15 September, 2001. Acta zoologica cracoviensia*, **45** (special issue), 7-21.
- Egan, G, 1998. *The Medieval Household. Daily Living c.1150 – c.1450 Medieval Finds from Excavations in London*. London: Museum of London, The Stationery Office.
- Ellis, P, 2000. *Ludgershall Castle, Wiltshire: a report on the excavations by Peter Addyman, 1964-1972*. Wiltshire Archaeological and Natural History Society monograph series; **2**. Devizes: Wiltshire Archaeological and Natural History Society.
- Fairbrother, J R, 1990. *Facombe Netherton: excavations of a Saxon and medieval manorial complex Volumes I and II. British Museum Occasional Paper No. 74*. London: British Museum.
- Fenlon, I, 1982. *Cambridge Music Manuscripts, 900-1700*. Cambridge: Cambridge University Press.
- Filer, J, 1991. Excavation Round-up 1990: Part 1, City of London, *London Archaeologist*, **6, 10**, 274.
- Fink, R, 1997. *Neanderthal Flute*. Greenwich Music Publishing.
- Fisher, J, 1966. *The Shell Bird Book*. London: Ebury Press and Michael Joesph.
- Foot, S, 1980. *Bone medieval fipple flute*. London: Museum of London Archaeological Archive (unpublished archives report).
- Foreman, M, 1991. The Bone and Antler, in P Armstrong, D Tomlinson and D H Evans (eds), *Excavations at Lurk Lane, Beverley 1979-82*, 183-96. Sheffield: Humberside Archaeology Unit.
- Francis, E B, 1912. *Rayleigh Castle: New Facts in its History and Recent Explorations on its Site*. Colchester: Reprinted from the "Transactions of the Essex Archaeological Society", **12**.

Frere, S S, Bennet, P, Rady, J and Stow, S, 1987. *Canterbury Excavations Intra- and Extra- Mural Sites 1949-55 and 1980-84 The Archaeology of Canterbury, Volume VIII*, 33-7, 186-7. Canterbury: Kent Archaeological Society for Canterbury Archaeological Trust.

Gerrard, C, 2003. *Medieval Archaeology*. London: Routledge.

Godden, M R, 1999, 2001. Ælfric of Eynsham in M Lapidge, J Blair, S Keynes and D Scragg, *The Blackwell Encyclopaedia of Anglo-Saxon England*, 8-9. Oxford: Blackwell Publishing Ltd.

Grant, A, 1971. The Animal Bones, in G F Bryant and J M Steane (eds), *Excavations at the Deserted Medieval Settlement at Lyveden: A Third Interim Report, Journal of the Northampton County Borough Museum and Art Gallery*, **9**, 90-93.

Greene, K, 1983 (third edition). *Archaeology. An Introduction*. London: B T Batsford Ltd.

Grieve, M, 1931, 1985. *A Modern Herbal*. London: Jonathan Cape Limited.

GWS89 *Archive Report*, Museum of London Archaeological Archive.

Hahn, J. and Münzel, S, 1995. Knochenflöten aus dem Aurignacien des Geißenklösterle bei Blaubeuren, Alb-Donau-Kreis, *Fundberichte aus Baden Württemberg* Band **20** Aufsätze. Stuttgart: E. Schweizerbart'sche Verlagsbuchhandlung (Nägele u. Obermiller).

Hall, R, 1984. *The excavations at York. The Viking dig*, 115-6. Bristol and London: The Bodley Head.

Harrison, F, and Rimmer, J, 1964. *European musical instruments*. London: Studio Vista.

Hart-Davis, D, 2005. *Fauna Britannica*. London: Angus Books Ltd.

Hawthorne, J G, and Stanley Smith, C (trans.) 1963, 1979. *Theophilus. On Divers Arts. The Foremost Medieval Treatise on Painting, Glassmaking and Metalwork*. New York: Dover.

- Helliwell, L, and Macleod, D G, 1981. *Documentary evidence and report on Excavations 1959-61 on behalf of the Rayleigh Mount Local Committee of the National Trust*. Rayleigh: Rayleigh Mount Local Committee.
- Hickmann, E, 2004. *Europe, pre- and proto-historic* [www.grovemusic.com](http://www.grovemusic.com)
- Hillson, S, 1992. *Mammal Bones and Teeth. An Introductory Guide to Methods of Identification*. London: Institute of Archaeology.
- Hinton, D A, 2000. *A Smith in Lindsey. The Anglo-Saxon Grave at Tattershall Thorpe, Lincolnshire*. London: The Society for Medieval Archaeology.
- Holder, N, 2002. *Paternoster Square (former Stonemasons Yard Ramp) London EC4. City of London. A post-excavation assessment, 29-30*. London: MoLAS.
- Holdsworth, P, 1976. Saxon Southampton: A New Review, *Medieval Archaeology*, **20**, 46-47.
- Holdsworth, P, 1980. *Excavations at Melbourne Street, Southampton, 1971-76. Research Report 33, 25-28*. London: The Council for British Archaeology.
- Hopkin, B, 1996. *Musical Instrument Design*. Tucson, Arizona: See Sharp Press.
- Hurst, J G, 1979. *Wharram. A Study of Settlement on the Yorkshire Wolds*, 128-9. London: Society for Medieval Archaeology Monograph No. 8.
- Ivens, R, Busby, P, and Shepherd, N, 1995. *Tattenhoe and Westbury. Two Deserted Medieval Settlements in Milton Keynes*. Buckinghamshire Archaeological Society Monograph Series No.8.
- Jenkins, J, 1970. *Ethnic Musical Instruments*. London: Hugh Evelyn for the International Council of Museums.
- Keene, D, 1985. *Survey of Medieval Winchester. Parts II and III Appendices, Index. Winchester Studies 2*. Oxford: Clarendon Press.
- Kilmartin House Trust, 1997. *The Kilmartin Sessions. The Sounds of Ancient Scotland*. Kilmartin, Argyll, Kilmartin House Trust (CD).

Kitson, P, 1994. Swans and Geese in Old English Riddles, *Anglo-Saxon Studies in Archaeology and History*, **7**, 79-84.

Klingender, F, 1971. *Animals in art and thought to the end of the Middle Ages*. London: Routledge & Keegan Paul.

Krapp, G and Dobbie, E van K. 1936. *The Exeter Book*. The Anglo-Saxon Poetic Records **3**. New York: Columbia University Press.

Lang, J, 1999. The Imagery of the Franks Casket: Another Approach, in J Hawkes and S Mills (eds), *Northumbria's Golden Age*. Stroud: Sutton Publishing.

Lapidge, M, 2000. The Archetype of Beowulf, *Anglo-Saxon England*, **29**, 5-41.

Lapidge, M, Blair, J, Keynes, S and Scragg, D, 1999, 2001. *The Blackwell Encyclopaedia of Anglo-Saxon England*. Oxford: Blackwell Publishing Ltd.

Lawson, G, 1982. Note on the Musical Instruments, in J G Coad and A D F Streeten, Excavations at Castle Acre Castle, Norfolk, 1972-1977, *Archaeological Journal*, **139**, 254.

Lawson, G, 1984. Flutes, in A Rogerson and C Dallas, 1984. Excavations in Thetford 1948-59 and 1973-80. *East Anglian Archaeology* **22**, The Norfolk Archaeological Unit, Norfolk Museums Service.

Lawson, G, 1986. Conservation versus restoration: towards a handling and performance policy for excavated musical instruments, with special reference to microwear studies and finds from the English warship Mary Rose (1545), in: C S Lund (ed.), *2nd Conference of the ICTM Study Group on Music Archaeology, 19-23 November 1984, Vol. I.: General Studies*. Stockholm: Royal Swedish Academy of Music.

Lawson, G, 1993. Note on bone flutes, in C Dallas, Excavations in Thetford by B. K. Davison between 1964 and 1970, *East Anglian Archaeology Report*, **62**, 159-160, Norfolk Museums Service, Field Archaeology Division.

Lawson, G, 1995a. Surfaces of musical instruments of bone, metal and wood' *Ancient Surfaces. Abstracts of papers presented to the 1995 Spring Meeting of the United Kingdom Finds Research Group AD 700-1700*. Cambridge: Cambridge Music-archaeological Survey.

Lawson, G, 1995b. Flute, in P Andrews, *Excavations at Redcastle Furze, Thetford, 1988-9. East Anglian Archaeology Report, No.72*, 116. Norfolk Museums Service, Field Archaeology Division.

Lawson, G, 1999. Getting to Grips with music's prehistory: experimental approaches to function, design and operational wear in excavated musical instruments, in A Harding (ed), *Experiment and Design: Archaeological Studies in Honour of John Coles*, 133-8. Oxford: Oxbow Books.

Lawson, G, 1999, 2001. *Musical Instruments*, in M Lapidge et al, *The Blackwell Encyclopaedia of Anglo-Saxon England*, 328-9. Oxford: Blackwell Publishing Ltd.

Lawson, G, forthcoming a. Bone ?reed-pipe, in E Shepherd Popescu, *Norwich Castle: Excavations and Historical Survey, 1987-98. Part I: Anglo-Saxon to c.1345*.

Lawson, G, forthcoming b. Musical instruments, in A Chapman, *Raunds, West Cotton: a study of Medieval settlement dynamics. Excavation 1985-9*. English Heritage Monograph.

Lawson, G, forthcoming c. Tuning and tradition: the earliest Northumbrian bagpipes and their relationship to finds from archaeological excavation, *Archaeologia Aeliana*, 5<sup>th</sup> Series, 34 (2005).

Lawson, G, and d'Errico, F, in press. Microscopic, experimental and theoretical re-assessment of Upper Palaeolithic bird-bone pipes from Isturitz, France: Ergonomics of design, systems of notation and the origins of musical traditions (first results). Paper presented at the 2nd International Music Congress: The Archaeology of Early Sound, Blankenburg: Harz.

Lawson, G, and Margeson, S, 1993. Musical Instruments, in S Margeson, *Norwich households. Medieval and Post-Medieval Finds from Norwich Survey Excavations 1971-78*, 211-3. East Anglian Archaeology Report No. 58.

Lawson, T, and Killingray, D, 2004. *An Historical Atlas of Kent*. Chichester: Phillimore & Co. Ltd.

Leaf, H, forthcoming. Note on bone flute, in Wharram Monograph XI volume.

Leaf, H, forthcoming. Note on bone flute, in Northampton Kingswell Street volume.

Leahy, K, 2003. *Anglo-Saxon Crafts*. Stroud: Tempus.

Lindsay Price, A, 1994. *Swans of the World. In Nature, History, Myth and Art*. Tulsa, Oklahoma: Council Oak Publishing Company, Inc.

Lowe, B J, et al, 1987. Keynsham Abbey: Excavations 1961-1985, *Somerset Archaeology and Natural History*, **130**, 81 -103.

Lowe, B J, 1995. The demise of Keynsham's Great House, *North Wansdyke Past and Present, Journal of Keynsham and Saltford Local History Society*, **7**, 3-11.

Lund, C S, 1985. Bone Flutes in Vaestergoetland. *Acta Musicologica*, **57**, 9-25.

Lund, C S, 1998. What is wrong with music archaeology? A critical essay from a Scandinavian perspective including a report about a new find of a bullroarer, in A Buckley, *Hearing the Past: Essays in Historical Ethnomusicology and the Archaeology of Sound*, 17-28. Liège: Etudes et Recherches Archéologiques de l'Université de Liège.

Lund, C S, 1991. *Musica Sveciae Fornnordiska klanger (The sounds of Prehistoric Scandinavia)* (CD notes).

MacDonald, R H, MacDonald, K C, and Ryan, K, 1993. Domestic Geese from Medieval Dublin, *Archaeofauna*, **2**, 205-218.

MacGregor, A, 1985. *Bone Antler Ivory & Horn. The technology of Skeletal Materials Since the Roman Period*. London and Sydney: Croom Helm.

MacGregor, A, 1989. Bone, Antler and Horn Industries in the Urban Context, in D Serjeantson and T Waldron (eds), *Diet and Craft in Towns. The evidence of animal remains from the Roman to the Post-Medieval Periods*, 107-128. Oxford: B.A.R British Series, Vol. 199.

MacGregor, A, 1991. Antler, Bone, and Horn, in J Blair and N Ramsey, *English Medieval Industries*, 355-378. London: The Hambledon Press.

MacGregor, A, 2000. Bone and Antler Objects, in P A Stamper and R A Croft, *The South Manor Area. Wharham. A Study of Settlement on the Yorkshire Wolds, VIII*, 148-54. York: York Archaeological Publications 10.

MacGregor, A, 2001. Objects of Bone, Antler and Ivory, in P Saunders (ed), *Salisbury Museum Medieval Catalogue Part 3*, 18-21. Salisbury: Salisbury and South Wiltshire Museum.

MacGregor, A, Mainman A J and Rogers, N S H, 1999. *Bone, Antler Ivory and Horn from Anglo-Scandinavian and Medieval York. The Archaeology of York. The Small Finds 17/12*, 2006. York: Council for British Archaeology.

MacPherson-Grant, N, 1983. A note on a fragmentary bone end-blown pipe from a medieval house site at Stonar, near Sandwich, *Archaeologia Cantiana*, **99**, 266-268.

Mann, J, 1982. *Early Medieval Finds from Flaxengate. 1: Objects of Antler, bone, Stone, Horn, Ivory, Amber and Jet. The Archaeology of Lincoln 14/1*, 1-68. London: The Council for British Archaeology.

Margeson, S, 1993. *Norwich households. Medieval and Post-Medieval Finds from Norwich*. Norwich: The Norwich Survey/Norfolk Museums Service, Centre for East Anglian Studies, University of East Anglia, in conjunction with The Scole Archaeological Committee.

McGee, T, 1985. *Medieval and Renaissance Music. A Performer's Guide*. Toronto, Buffalo and London: University of Toronto Press.

Meaney, A L, 2002. Birds on the Stream of Consciousness: Riddles 7 to 10 of the Exeter Book, *Archaeological Review from Cambridge*, **18**, 120-152.

Megaw, J V S, 1960. Penny Whistles and Prehistory, *Antiquity*, **34**, 6-13.

Megaw, J V S, 1961a. An End blown Flute or Flageolet from White Castle, *Medieval Archaeology*, **5**, 176-180, PL XXIX.



Megaw, J V S, 1961b. Penny Whistles and Prehistory: Further Notes, *Antiquity*, **35**, 55-57.

Megaw, J V S, 1963. A Medieval Bone Pipe from White Castle, Monmouthshire, *Galpin Society Journal*, **16**, 85-93.

Megaw, J V S, 1968a. An End Blown Flute from Medieval Canterbury, *Medieval Archaeology*, **12**, 149-150.

Megaw, J V S, 1968b. Problems and non-problems in palaeo-organology: a musical miscellany, in J M Coles and D D A Simpson, *Studies in Ancient Europe. Essays presented to Stuart Piggott*. Leicester: Leicester University Press, 333-358, PL XIV-XVI.

Megaw, J V S, 1968c. The Earliest Musical Instruments in Europe, *Archaeology*, **21**, 124-132.

Megaw, J V S, 1975. The Bone Pipe, in C Platt and R Coleman-Smith, *Excavations in Medieval Southampton Volume 2*, 252-253. Leicester: Leicester University Press.

Megaw, J V S, 1983. The Pipe, in N MacPherson-Grant, A note on a fragmentary bone end-blown pipe from a medieval house site at Stonar, near Sandwich, *Archaeologia Cantiana*, **99**, 266-268.

Megaw, J V S, 1984. Bone Musical Instruments from Medieval Exeter, in J P Allan, *Medieval and Post-Medieval Finds from Exeter, 1971-1980*. Exeter Archaeological Reports: Volume 3, 349-351. Exeter: Exeter City Council and the University of Exeter.

Megaw, J V S, 1990. Bone Whistles and Related Objects, in M Biddle (ed.) *Object and Economy in Medieval Winchester ii, Winchester Studies 7ii*, 718-23. Oxford: Clarendon Press.

Milne, G, 1989. *Discovering London's Ancient Harbours. Archaeological Excavations on the Thames Exchange Site 1988-89: A preliminary summary*. London: Museum of London Archaeological Archive (unpublished report)

Montagu, J, 1976. *The World of Medieval and Renaissance Musical Instruments*. Newton Abbot, London and Vancouver: David & Charles.

Moreno-García, M and Pimenta, C, 2004. Arqueozoologia cultural: o aerofone de Conímbriga *Revista Portuguesa de Arqueologia*, **7(2)**, 407-425.

*NFW74 Archive Report*, Museum of London Archaeological Archive.

Norfolk online database: <http://noah.norfolk.gov.uk>.

Northcote, E M, 1980. Some Cambridgeshire Neolithic to Bronze Age birds and their presence or absence in England in the Late-glacial and early Flandrian. *Journal of Archaeological Science*, **7**, 379-383.

O'Connor, T P, 1987. On the structure, chemistry and decay of bone, antler and ivory, in K Starling and D Watkinson, *Archaeological Bone, Antler and Ivory*. The United Kingdom Institute for Conservation.

O'Dwyer, S, 2004. *Prehistoric Music of Ireland*. Stroud: Tempus.

Ohlgren, T H, 1986. *Insular and Anglo-Saxon Illuminated Manuscripts. An Iconographic Catalogue c. A.D. 625 to 1100*. Garland Publishing Inc, New York and London.

Ohlgren, T H, 1992. *Anglo-Saxon Textural Illustration*. Kalamazoo, Michigan.

Ottaway, P, 1992. *Anglo-Scandinavian Ironwork from Coppergate*. The Archaeology of York. The Small Finds **17/6**. London: The Council for British Archaeology.

Ottaway, P, and Rogers, N, 2002. *Craft, industry and everyday life: finds from medieval York*. *Archaeology of York v. 17, Small finds*; 15. York: Council for British Archaeology.

Padelford, F M, 1899. *Old English Musical Terms*. Bonn: P.Hanstein's Verlag.

Page, C, 1980. Fourteenth-century Instruments and Tunings: a Treatise by Jean Vaillant? (Berkeley, MS 744), *The Galpin Society Journal*, **33**.

Page, C, 1981. *Anglo-Saxon Hearpan: their terminology, technique, tuning and repertory of verse 850-1066*. York: University of York Centre for Medieval Studies PhD thesis.

Parfitt, K, 2000. Townwall Street Dover, *Current Archaeology* **168**, **XIV/12**, 474-6.

Parfitt, K, Corke, B, and Cotter, J, forthcoming. *Excavations off Townwall Street, Dover, 1996*.

Perrins, C M and Middleton, A L A 1985. *The Encyclopaedia of Birds*. London, Sydney: George Allen & Unwin.

Pitt-Rivers, A H L F, 1883. Excavations at Caesar's Camp near Folkestone, *Archaeologia*, **47**, 439, 456, 464, Pl. XX, 35.

Platt, C, 1973. *Medieval Southampton. The port and trading community, A.D. 1000-1600*. London and Boston: Routledge and Keegan Paul.

Platt, C, and Coleman-Smith, R, 1975a. *Excavations in Medieval Southampton 1953-1969 Volume 1. The excavation reports*. Leicester: Leicester University Press.

Platt, C, and Coleman-Smith, R, 1975b. *Excavations in Medieval Southampton 1953-1969 Volume 2. The finds*. Leicester: Leicester University Press.

Price A L, 1994. *Swans of the World in Nature, History, Myth and Art*. Tulsa, Oklahoma: Council Oak Publishing Company, Inc.

Price, E, 2000. *Frocester. A Romano-British Settlement its Antecedents and Successors*. Stonehouse: Gloucester and District Archaeological Research Group.

Pritchard, F, 1991. Small Finds, in A.G. Vince (ed), *Aspects of Saxon-Norman London 2: Finds and Environmental Evidence. Middlesex Archaeological Society Special Paper No. 12*, 207. London: Middlesex Archaeological Society.

Proctor, N S, and Lynch, P J, 1993. *Manual of Ornithology. Avian Structure and Function*. New Haven and London: Yale University Press.

- Rackham, O, 1980. *Ancient woodland. Its history, vegetation and uses in England*. London: Edward Arnold.
- Rahtz, P A, and Watts, L, 2004. *Wharham: a study of settlement on the Yorkshire Wolds; v. 9. The North manor area and North-West enclosure, 252-3*. York: York Archaeological Publications.
- Raistrick, A, 1952. The Malham Iron-Age Pipe. *Galpin Society Journal*, **5**, 28-38.
- Rault, L, 2000. *Musical Instruments. A Worldwide Survey of Traditional Music-Making*. London: Thames and Hudson.
- Reimers, C, and Vogel, V, 1989. Knochenpfeifen und Knochenflöten aus Schleswig in Ausgrabungen, *Schleswig Berichte und Studien 7 Das archäologische Fundmaterial I*.
- Renfrew, C, and Bahn, P, 2005. *Archaeology. The Key Concepts*. London and New York: Routledge.
- Reynolds, A, 1994. The Compton Bassett Area Research Project – first interim report, *Institute of Archaeology Bulletin*, **31**, 169-198.
- Reynolds, A, 1999. *Later Anglo-Saxon England. Life and Landscape*. Stroud: Tempus.
- Riddler, I, 1995. in R Ivens, P Busby and N Shepherd, *Tattenhoe and Westbury. Two Deserted Medieval Settlements in Milton Keynes*, 392. Aylesbury: Buckinghamshire Archaeological Society, Monograph Series No.8.
- Riddler, I, 2003. A Lesser Material: the Working of Roe Deer Antler in Anglo-Saxon England. in I Riddler, *Materials of Manufacture. The choice of materials in the working of bone and antler in northern and central Europe during the first millennium AD*, 41-48. Oxford: Archaeopress. BAR International Series 1193.
- Rimmer, J, 1981. An archaeo-organological survey of the Netherlands, *World Archaeology*, **12/3**, 233-245.

- Roberts, J, 2001. *Post-excavation assessment of archaeological work at Black Horse Lane, Swavesey, 1999*. Cambridgeshire County Council Archaeological Field Unit Report PXA 31.
- Rodwell, K, and Bell, R, 2004. *Acton Court: the evolution of an early Tudor courtier's house*. London: English Heritage.
- Roes, A, 1963. *Bone and Antler Objects from the Frisian Terp-Mounds*. Haarlem: H. D. Tjeenk Willink & Zoon N. V.
- Rogerson, A, and Dallas, C, 1984. *Excavations in Thetford 1948-59 and 1973-80. East Anglian Archaeology 22*. The Norfolk Archaeological Unit, Norfolk Museums Service.
- Rooney, A, 1993. *Hunting in Middle English Literature*. Cambridge: The Boydell Press.
- Rosborough, C, 1990. *Archaeological excavations at Pinners' Hall, 105-108 Old Broad Street and 8 Austin Friars Square*. Interim Report.
- Rose, M, and Hedgecoe, J, 1997. *Stories in Stone. The Medieval Roof Carvings of Norwich Cathedral*. London: Herbert Press.
- Rowland Jones, A, 2005. Iconography in the history of the recorder up to c.1430 – Part 1, *Early Music*, **33/4**, 557-574.
- Rowland Jones, A, 2006. Iconography in the history of the recorder up to 1430 – Part 2, *Early Music*, **34/1**, 3-27.
- Rylatt, M, and Mason, P, 2003. *The Archaeology of the Medieval Cathedral and Priory of St Mary, Coventry*. Coventry: Coventry City Council.
- Sabloff, J, 2005. Processual Archaeology, in C Renfrew and P Bahn, *Archaeology. The Key Concepts*, 212-19. London and New York: Routledge.
- Saunders, P (ed), 2001. *Salisbury Museum Medieval Catalogue Part 3*. Salisbury: Salisbury and South Wiltshire Museum.

- Sawyer, P H, 1968. *Anglo Saxon Charters: an annotated list and bibliography*. London: Royal Historical Society.
- Scarre, C, and Lawson, G (eds), 2006. *Archaeoacoustics*. Cambridge: McDonald Institute for Archaeological Research.
- Schiffer, M B, 1987. *Formation Processes of the Archaeological Record*. Albuquerque, N.M.: University of New Mexico Press.
- Schmid, E, 1972. *Atlas of Animal Bones. Knochenatlas*. Amsterdam, London and New York: Elsevier Publishing Company.
- Schofield, J, and Maloney, C (eds), 1988. *Archaeology in the City of London 1907-1991. A Guide to Records of Excavations by the Museum of London and Its Predecessors, 177-179*. London: Museum of London.
- Sequentia, 2004. *The Rheingold Curse, A Germanic Saga of Greed and Revenge from the Medieval Icelandic Edda*. Audio CD: MA 20016.
- Serjeantson, D, 2002. Goose husbandry in Medieval England, and the problem of ageing goose bones, in *Proceedings of the 4<sup>th</sup> Meeting of the ICAZ Bird Working Group, Kraków, Poland, 11-15 September, 2001. Acta zoologica cracoviensia*, **45** (special issue), 39-54.
- Serjeantson, D, 2006. Birds: Food and a Mark of Status, in C M Woolgar, D Serjeantson and T Waldron, *Food in medieval England: Diet and Nutrition*, 131-147. Oxford: Oxford University Press.
- Sermon, R, 1997. Two Medieval Whistles from Gloucester, *Glevensis*, **30**, 51-52.
- Shepherd Popescu, E, forthcoming. *Norwich Castle: Excavations and Historical Survey, 1987-98. Part I: Anglo-Saxon to c.1345*.
- Soden, I, 2002. *Life and death on a Norwich Backstreet AD900-1066, Excavations in St.Faith's Lane, Norwich 1998*, 54, 55, 61. Northampton: Northamptonshire Archaeology.

Spencer, B, 1990. *Salisbury and South Wilshire Museum Medieval Catalogue Part 2. Pilgrim Souvenirs and Secular Badges*. Salisbury: The Salisbury and South Wiltshire Museum.

Spencer 1998, *Pilgrim Souvenirs and Secular Badges. Medieval Finds from Excavations in London: 7*. London: the Stationery Office.

Stamper, P A, and Croft, R A, 2000. *The South Manor Area. Wharham. A Study of Settlement on the Yorkshire Wolds, VIII*. York: York Archaeological Publications 10.

Stone, D J, 2006. The Consumption and Supply of Birds in Late Medieval England, in C M Woolgar, D Serjeantson, and T Waldron, *Food in Medieval England, Diet and Nutrition*, 148-161. Oxford: Oxford University Press.

Sykes, N, 2004. The Dynamics of Status Symbols: Wildfowl Exploitation in England AD 410-1550. *Archaeological Journal* **161**, 82-105.

Sykes, N, 2005. Hunting for the Anglo-Normans: zooarchaeological evidence for medieval identity, in A Pluskowski, *Just skin and bones? New perspectives on human-animal relations in the historic past*, 73-80. Oxford: Archaeopress (BAR, British Series).

Sykes, N, 2006a. The impact of the Normans on Hunting Practices in England, in C M Woolgar, D Serjeantson, and T Waldron, *Food in medieval England: Diet and Nutrition*, 162-175. Oxford: Oxford University Press.

Sykes, N, 2006b. Natural History of Fallow Deer. *Sussex Past and Present*, **110**, 4-5.

Sykes, N, White, J, Hayes, T E, and Palmer, M R, 2006. Tracking animals using strontium isotopes in teeth: the role of fallow deer (*Dama dama*) in Roman Britain. *Antiquity*, **80/310**, 948-959.

Tamboer, A, 1999. *Opgedolven Klanken. Archeologische muziekinstrumenten van alle tijden*. Assen: Drents Museum.

- Tamboer, A, 2004. Plover Calls of the Netherlands. Archaeological Finds and Living Tradition, in E Hickmann and R Eichmann (eds), *Music-Archaeological Sources: Finds, Oral Transmission, Written Evidence. Papers from the 3rd Symposium of the International Study Group on Music Archeology at Monastery Michaelstein, 9-16 June, 2002*. Studien zur Musikarchäologie IV, Orient-Archäologie **14**. Rahden/Westf, 181-192.
- Taylor, A J, 1961. White Castle in the Thirteenth Century: A Reconsideration, *Medieval Archaeology*, **5**, 169-175.
- TEX88 Archive Report*. 1988. Museum of London Archaeological Archive.
- Thomas, C, and Dunwoodie, L, 1997. *250 Bishopsgate, London E1. A Post-Excavation Assessment*. London: MoLAS.
- Thomas, C, 2000. *280 Bishopsgate and the Spitalfields Ramp. Spitalfields E1. An Archaeological Fieldwork Report*. London: MoLAS.
- Thomas, C, Aitken, R, Bowsher, D, Daykin, A, Harward, C, Holder, N, McKenzie, M, Pitt, K, and Thrale, P, 2003. *280 Bishopsgate and the Spitalfields Ramp. Spitalfields E1. A post-excavation assessment report*. London: MoLAS.
- Thomas, R (forthcoming), Chasing the ideal? Ritualism, pragmatism and the later medieval hunt.
- Ticehurst, N F, 1957. *The Mute Swan in England: Its History, and the Ancient Custom of Swan Keeping*. London: Cleaver-Hume Press.
- Trow-Smith, R, 1976. Introduction, in *British sheep breeds. Their wool and its uses*. Brentford: The British Wool Marketing Board.
- Turk, I (ed), 1997. *Mousterian "Bone Flute"? and Other Finds from Divje Babe I Cave Site in Slovenia*. Ljubljana, Slovenia: Institut za Arheologijo.
- Ulbricht, I, 1984. Die Verarbeitung von Knochen, Geweih und Horn im mittelalterlichen Schleswig. *Ausgrabungen in Schleswig, Berichte und Studien* **3**, Neumunster.



Vialou, D, 1998. *Our Prehistoric Past. Art and Civilization*. London: Thames and Hudson.

Viking Tones, 1998. *I Dreamt me a Dream*. Skald CD 2. Højbjerg: Skalk.

Vince A G (ed), 1991. *Aspects of Saxon-Norman London 2: Finds and Environmental Evidence. Middlesex Archaeological Society Special Paper No. 12*, 207. London: Middlesex Archaeological Society.

Wacher, J, 1966. Excavations at Riplingham East Yorkshire 1956-7, *The Yorkshire Archaeological Journal*, **41**, 608-665.

Wade, K, 1980. A settlement site at Bonhunt Farm, Wicken Bonhunt, Essex, in D G Buckley, *Archaeology in Essex to AD 1500*, 96-102. London: Council for British Archaeology.

Wade-Martins, P, 1973. A 10<sup>th</sup> – century bone flute from North Elmham, Norfolk, *Galpin Society Journal*, **26**, 142-3.

Wade-Martins, P (ed.), 1980. *Excavations in North Elmham Park, 1967-1972. Vols. 1 & 2 East Anglian archaeology Report no.9, Norfolk*. Gressenhall: Norfolk Archaeological Unit for the Scolle Committee for Archaeology in East Anglia.

Waterman, D M, 1959. Late Saxon, Viking and Early Medieval Finds from York, *Archaeologia*, **97**, 59-105.

*WAT78 Archive Report*. 1978. Museum of London Archaeological Archive.

Webster, L, 1999. The Iconographic Programme of the Franks Casket, in J Hawkes and S Mills (eds), *Northumbria's Golden Age*. Stroud: Sutton Publishing.

Wilkins, N, 1979. *Music in the Age of Chaucer*. Cambridge: D.S. Brewer.

Williamson, C (ed), 1977. *The Old English Riddles of the Exeter Book*. Chapel Hill NC: The University of North Carolina Press.

Windell, D, Chapman, A, and Woodiwiss, J, 1990. *From barrows to bypass. Excavations at West Cotton Raunds Northamptonshire 1985 - 1989*. Northampton: Northamptonshire Archaeology Unit, English Heritage.

Woolgar, C M, Serjeantson, D, and Waldron, T, 2006. *Food in Medieval England, Diet and Nutrition*. Oxford: Oxford University Press.

Yalden, D, 1999. *The History of British Mammals*. London: T and A D Poyser Ltd.

Yalden, D W, 2002. Place-name and archaeological evidence on the recent history of birds in Britain, in *Proceedings of the 4<sup>th</sup> Meeting of the ICAZ Bird Working Group, Kraków, Poland, 11-15 September, 2001*. *Acta zoologica cracoviensia*, **45** (special issue), 415-429.

Yapp, B, 1981. *Birds in Medieval Manuscripts*. London: The British Library.

Zeepvat, R J, and Cooper-Reade, H, 1996. Excavations within the Outer Bailey of Hertford Castle. *Hertfordshire Archaeology*, **12**, 15-40.

1908. *Catalogue of the Collection of London Antiquities in the Guildhall Museum (second edition)*, 42. London: Library Committee of the Corporation of the City of London.