TIMETABLE

FRIDAY 20th JUNE

8:30  Registration / tea and coffee
9:20  Welcome

SESSION 1  Perceptions and depictions
Chair: Joe Roe
9:30  Dog and monkey pets in pharaonic Egypt
      Kamila Braulinska
9:50  Trading identities: alternative interpretations of Viking horse
      remains in Scotland
      Siobhan Cooke
10:10 Food for the soul: the socioeconomic context of fishing and fish
      consumption in Anglo-Saxon England, AD 400–1100 – the ups
      and downs of multidisciplinary approaches in zooarchaeology
      Rebecca Reynolds
10:30 Tea and coffee (20 mins)

SESSION 2  Methodological innovations
Chair: Adam Allentuck
10:50 The use of biometric analysis to highlight environmental
      change: insights into past environmental conditions – a case
      study from the Palaeolithic
      Beatrice Bertini Vacca
11:10 Northern European evidence cited for Middle Pleistocene
      spear use
      Annemieke Milks
11:30 Is it possible to differ two domesticated and two wild forms of
      South American Camelids on the basis of osteological material?
      Katarzyna Marciniak
11:50 Investigating ‘wild’ cattle to uncover causes of foot pathologies
      and identify past draught cattle
      Lauren Bellis
12:10 A disease-ridden dog from a 19th century site in Toronto,
      Canada: a case emphasizing the importance of differential
      diagnosis and a clinical approach to palaeopathology
      Eric Tourigny
12:30 Lunch (50 minutes)
13:20 Laboratory tour

SESSION 3  Zooarchaeology in flight  
Chair: Anna Spyrou
13:40 Cultural and scientific perception of human-chicken interactions: chickens in archaeological material culture  
Michael Feider
14:00 Identifying goose and duck remains from archaeological sites using morphometric analysis  
Ged Poland
14:20 The use and consumption of mammals and birds at Thornton Abbey (North Lincolnshire, United Kingdom) in Late Medieval and Post-Medieval times  
Sofia Tecce
14:40 Birds of prey (Accipitriformes) remains from archaeological sites in Poland  
Martyna Wiejacka

15:00 Tea and coffee (20 mins)

SESSION 4  Invisible animals  
Chair: Elizabeth Henton
15:20 Trotting into prehistory: tracing the invisible donkey in the Ancient Near East  
Jill Goulder
15:40 Tracking the elusive fallow deer: exploring stable isotope evidence for imports during the Iron Age and Roman periods in Britain  
David Osborne
16:00 Camels on the north-eastern frontiers of the Roman Empire  
Weronika Tomczyk
16:20 The neglected goat: a new methodological approach to the understanding of the role of this species in the English Medieval husbandry and economy  
Lenny Salvagno

Debate
16:40 Outreach and reaching out: communicating zooarchaeological research to a wider audience  
Chairs: Louise Martin and Elizabeth Farebrother

17:00 Drinks reception
19:00 Dinner (optional)
SATURDAY 21ST JUNE

9:00  Tea and coffee

SESSION 5  Pleistocene environments and adaptations
Chair: Mariana Nabais

9:30  When humans met carnivores, when carnivores met humans: a coevolutionary process during the Pleistocene
Edgard Camarós and Marián Cueto

9:50  The exploitation of animal resources in the Meuse basin (Belgium) during the Middle Palaeolithic
Grégory Abrams

10:10  Taphonomic analysis of Lower Cantabrian Magdalenian deposits from El Mirón cave (Cantabria, Northern Spain)
Jean Marie Geiling, Ana Belen Marín-Arroyo, Manuel Ramón González-Morales and Lawrence Guy Straus

10:30  Man vs wild: ecological pressures and human behaviours in North-West Europe during the Late Pleistocene (MIS 3)
Elodie-Laure Jimenez and Mietje Germonpré

10:50  Tea and coffee (20 mins)

SESSION 6  Prehistoric animal exploitation
Chairs: Mariana Nabais & Elizabeth Farebrother

11:10  Zooarchaeological analysis of red deer (Cervus elaphus), elk (Alces alces) and roe deer (Capreolus capreolus) remains from the Holocene in Polish areas
Jan Wiejacki

11:30  Animal exploitation and the use of space in the Greek sector of the Late Neolithic settlement of Promachon-Topolnica, central Macedonia, Greece
George Kazantzis

11:50  Understanding the first Chalcolithic communities of Estremadura: a zooarchaeological approach at Castro de Chibanes, Portugal
Vera Pereira

12:10  Characterisation of the domestic dog in the late prehistory of the Iberian Peninsula
Arantxa Daza

12:30  Lunch (50 minutes)
SESSION 7  Animals in urban societies  
*Elizabeth Farebrother*

13:20  Small town, large cattle: investigating drivers of cattle pathology and size change in Roman-period Ashton  
*Meghann Mahoney*

13:40  Medieval cattle cranial waste from the Burgstraat in Ghent  
*Emmy Nijssen*

14:00  Feeding a city: zooarchaeological perspective on urban provisioning in post-medieval Chester, England (AD 1500–1950)  
*Rebecca Gordon*

14:20  The preliminary faunal analysis of Drumclay Crannog, County Fermanagh  
*Maureen Vaughan*

14:40  Discussion and closing remarks

15:00  Trip to the Grant Museum (optional)

Posters will be displayed in the break room throughout the conference.
SESSION 1

PERCEPTIONS AND DEPICTIONS

Chair: Joe Roe
Dog and monkey pets in pharaonic Egypt
Kamila Braulinska

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Pets are attested in both zooarchaeological and iconographic sources from ancient Egypt. From the earliest periods of Egyptian history, the dog was the animal depicted as a man’s companion. It is explicitly represented as a pet from the Old Kingdom onwards. In this period, the monkey joins it in the same function. Interestingly, although there were other animals kept as pets, these two seem to be the most popular. Moreover, they are presented together, sometimes interacting in a humorous context. It seems, however, that not only artists had a sense of humour: it was probably tomb robbers who set the mummies of a dog and a monkey together in KV 50, so that they seemed to interact even in the afterlife. Both of the pets may have been leashed, but the animal that was tied up more frequently was the monkey. From the iconography one can assume that the latter might have been more problematic than the dog. Surprisingly, owing to its particular characteristics a primate could even replace the dog in certain duties. Embalmed bodies of pets are one of the four types of Egyptian animal mummies. There are certain indications that permit to recognise pets among millions of mummies, which were mostly prepared as vota. Other types of dog and monkey burials contribute to the body of zooarchaeological evidence as well.
Trading identities: alternative interpretations of Viking horse remains in Scotland
Siobhan Cooke

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There are over 130 known Viking burials in Scotland. Burials containing horse or horse remains comprise approximately 7% of these burials. It is only in recent decades that researchers have begun to question the importance of the animals in Viking graves. This aspect of doctoral research seeks to explore alternative meanings to the traditional interpretations of animals in graves. Conventional interpretations include horses as wealth, status or symbolism of warfare. A key theme of this current research is the use of animals in the creation and affirmation of human identity in response to social factors, and in particular how animals can be used as a means of expressing or affirming cultural affiliation and identity, in a similar way to material culture. This paper will present results from a survey of all known Viking burials in which horses appear as part of the assemblage, discuss findings and present possible alternative explanations from the traditional high status or warrior grave.
Food for the soul: the socioeconomic context of fishing and fish consumption in Anglo-Saxon England, AD 400–1100 – the ups and downs of multidisciplinary approaches in zooarchaeology
Rebecca Reynolds
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The limitations of certain categories of faunal remains such as fish requires us to consider wider sources of information in order to fully appreciate their role in past societies. Such multi-disciplinary approaches can be very rewarding but also come with their problems. This presentation will discuss the multi-disciplinary approaches used to study the changing role and attitude to fish consumption in Anglo-Saxon England. Alongside the analysis of fish bones, isotope data from human remains, fish-related place-names, weirs and material culture associated with fishing such as hooks and sinkers were studied and discussed alongside each other. While this has enabled for a much more colourful view of fishing beyond purely economic factors in this crucial period of change and development and highlighted the importance of also considering sociocultural factors, unsurprisingly many more questions remain to be explored and most of these are born out of the multidisciplinary approach adopted.
SESSION 2

METHODOLOGICAL INNOVATIONS

Chair: Adam Allentuck
The use of biometric analysis to highlight environmental change: insights into past environmental conditions – a case study from the Palaeolithic

Beatrice Bertini Vacca

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Biometry has played an important role in faunal studies: it has been essential to our knowledge of the domestication process and the identification of wild and domestic animals during later prehistory and historic periods. However, biometry may also be an important source of information for the study of wild species during earlier prehistoric times, and provide evidence for non-human factors, such as climate and environment. The aim of this presentation is to further explore the potential of biometry for investigating the relationship between variations in size of animals and environmental conditions, using a number of Palaeolithic faunal assemblages as case studies.

Biometrical data from a number of different sites, mostly Upper Palaeolithic cave sites from different regions of the Italian peninsula (among these Grotta del Romito, Grotta Paglicci, Arene Candide, Riparo Fumane), were compared to each other and also to data from modern animals. Body size fluctuations in the most common species hunted at the investigated sites (ibex, chamois, wild boar and red deer) have been detected, which can be correlated with spatially and temporally differing climatic and environmental conditions. These changes are therefore interpreted as related to non-human environmental factors, as opposed to the effects of human control on animal populations.
Northern European evidence cited for Middle Pleistocene spear use
Annemieke Milks

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Two significant artifacts regarding the possibility of Middle Pleistocene Homo engaging in hunting behaviors using wooden spear technologies come from Britain. The site of Boxgrove, West Sussex, dating to MIS 13, produced a fragment of a horse scapula in the 1990s that bears a semi-circular damaged edge, claimed to possibly be the result of impact from a wooden spear. The scapula came from the butchered remains of a robust species of caballoid horse. The notch in the scapula fragment has been frequently cited as strong evidence of hunting with weapons in the Middle Pleistocene. However, systematic and controlled experimental work using hand-delivered (thrown or thrusted) wooden spears on similar-sized animal targets to produce a reference sample for impact damage does not exist. Reference samples that do exist are based upon lithic tipped spears or arrows, and/or have used small sized or juvenile carcasses, both of which are thought to be problematic due to differences in bone mineral density and morphology. Furthermore, the kinetic energy of hand-delivered spear technologies remains poorly understood, rendering any existing experimental work using hand-delivered spears problematic. The second artifact from Britain used to argue for Middle Pleistocene hunting with spears is a broken tip of a wooden spear dating to MIS 11 from Clacton-on-Sea. The ‘Clacton spear’ underwent analysis in the 1970s to better understand its function, but no further analysis of the spear has been undertaken since that time, in spite of advances in controlled experimental work and archaeological finds of simple wooden spears such as those from Schöningen, Germany dating to MIS 9. This paper presents ongoing controlled experimental research that aims to provide foundational quantitative data on simple wooden spear technologies, including ‘effectiveness’ measures such as depth of penetration for spears such as that from Clacton, and impact damage on faunal remains such as that from Boxgrove. A set of experiments ruling out issues of equifinality, including possible damage on scapulae from hammerstones or handaxes in butchery activities is also proposed as necessary before robust conclusions regarding impact damage from simple hand-delivered spears can be made.
Is it possible to differ two domesticated and two wild forms of South American Camelids on the basis of osteological material?

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The literature does not specify precise information on how archaeozoologists distinguished all four forms of South American Camelids on the basis of osteological material. This fact is a big problem for all archaeologists working with osteological faunal remains from South America. The lack of information about features of species identification of llama, alpaca and their wild forms guanaco and vicunia in zooarchaeological studies is often discussed in the literature, but so far no one has collected existing information about distinctive features that can be observed during osteological studies. Also there are very few specialists improving our knowledge of distinctive features of all four South American Camelids that occur on bones. This results in incomplete archaeozoological studies in which there is no information about species identification. In most cases, the publications are divided into those in which the species is determined without giving any guidance about how it was made and those where there is no distinction between species, and all of four camelids bear the common name "South American Camelids". Of course, determination of South American Camelids taxonomy only to the family level is not a mistake. Such data can bring a lot of relevant and valuable information about the way the camelids were used by humans in the past. However, capturing the differences of the usage of four forms is impossible. Also differences in functions of the llama and alpaca are difficult to identify and are known only through the chronicles.

This paper aims to summarise and critique all known information about the distinctive features visible on the bones of South American Camelids. Its also presents the new distinctive features which came out during archaeozoological analysis of faunal skeletal remains from Maucallacta.
Investigating ‘wild’ cattle to uncover causes of foot pathologies and identify past draught cattle

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Archaeologists have struggled to identify the varying degrees to which cattle were used for physical labour in the past. Examining the cattle skeleton itself is the most direct method of analysis, yet the causes of pathologies, and those which are anthropogenic, are at present poorly understood. Unfortunately whole depositions are rare and most cattle remains in the archaeological record are highly fragmented. Cattle feet are therefore a very promising source of evidence due to their abundance and weight-bearing role. The only studies, however, up to the present day have been those of archaeological remains, cattle reared under modern intensive farming methods and only the third phalanx of water buffalo.

A herd of cattle have roamed wild and unmanaged by humans, since the medieval period, in Chillingham Park in Northumbria. The study of the Chillingham cattle is thus an ideal opportunity to remedy the aforementioned issues and provide a control against which past cattle populations may be compared. By noting the rate of common pathologies such as exostoses, lipping, broadening and eburnation in an entirely unmanaged herd, we can determine the prevalence of said pathologies that we can expect in cattle that are not used for physical labour. This is an important step in investigating how a past community used cattle: were they used for physical labour, dairy, meat or a combination?

This presentation will discuss the results of research into the feet of twelve Chillingham cattle with the author’s analysis and interpretation of the data, providing a comparison with past studies. The analysis constitutes a challenge to the ideas that all pathologies are anthropogenic, and that a particular form of lesion will necessarily have only one cause.
A disease-ridden dog from a 19th century site in Toronto, Canada: a case emphasizing the importance of differential diagnosis and a clinical approach to palaeopathology

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In clinical settings, the ability to sort through a complicated mixture of symptoms and observations in order to arrive at a diagnosis remains a difficult task and the results are often inconclusive, ambiguous and even incorrect. Achieving a correct diagnosis from archaeological remains is further complicated by factors such as missing soft tissue, the absence of patient histories and taphonomic changes to the skeleton, among others. This paper reconstructs the thought processes and lines of reasoning behind the diagnosis of an afflicted dog recovered from a 19th century burial in Toronto, Canada. Multiple pathologies including mild to severe periosteal and endosteal new bone formation of the forelimbs, osteomyelitis of the auditory bulla, advanced periodontal disease and severe osteophytosis of the spine; symptoms that can easily confuse the attribution to one or more root causes. This paper emphasizes the need to approach palaeopathology cases in a manner similar to that seen in a clinical setting with the development of a differential diagnostic procedure. Arriving at the correct diagnosis in palaeopathology cases can elucidate archaeological interpretations on human-animal interactions as well as inform us on the history of specific diseases. This paper also emphasises the need for interdisciplinary collaboration between archaeologists and medical professionals. The hypothesis arrived at in this case study is the result of multiple lines of evidence that will be further investigated using a variety of diagnostic equipment.
SESSION 3

ZOOARCHAEOLOGY IN FLIGHT.

Chair: Anna Spyrou
Cultural and scientific perception of human-chicken interactions: chickens in archaeological material culture

Michael Feider

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The way an animal is represented in a society's material culture can tell a great deal about the interactions that took place between humans and that animal, or even the idea of the animal, in life. Artefacts like cockfighting spurs or horse fittings can tell how the animal was used, while depictions of the animal suggest what attributes the animal assumed in contemporary belief systems. The latter is particularly important, as this information may be impossible to retrieve from analysis of the physical remains alone. As part of the Cultural and Scientific Perception of Human-Chicken Interactions Project, this study aims to investigate the spread of the chicken across Europe and the cultural and environmental changes that accompanied it. By focusing on the interactions between humans and chickens rather than the animals themselves, the project aims to highlight the importance of this relationship in the cultural evolution of both ancient and modern Europe.

A database of chicken-related material culture is being created to explore the place chickens occupied in the cultural landscape of the past. This includes research on objects depicting chickens, artefacts used in the keeping of chickens, and structures/features relating to chickens. This research will focus on the late prehistoric and Roman periods of Britain, France, Italy, and other regions, with the goal of identifying how chickens are represented in material culture during those periods. Once collected, the data will be analysed to provide information not only about how chickens were kept and exploited for food and other commodities, but also how they were perceived by the communities who exploited them and how human attitudes towards chickens varied across time and space.

This study will extend zooarchaeological research beyond the physical remains of animals themselves to further explore the social and cultural effects those animals had on the people who kept them and will demonstrate the importance of cross-disciplinary research in the interpretation of faunal data.
Identifying goose and duck remains from archaeological sites using morphometric analysis

Ged Poland

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Morphometric analysis is routinely applied to mammalian osteological remains and is used for a variety of reasons such as identifying wild and domestic taxa and differentiating between closely related species such as sheep and goats. Morphometric analysis has not been used as extensively for the identification of different bird taxa from archaeological sites and there is currently no robust method for identifying some taxa that are frequently recovered, such as geese and ducks. It has been discussed a number of times that the identification of specific goose and duck species can be very difficult, especially when comparing closely related species, and so the discussion of their use in the past has been limited. This is not only because some taxa are very similar morphologically, but also because there is a large amount of species within each genus that an unknown individual could belong to (especially compared to the amount of species in each mammalian genus). Previously some work has been undertaken to resolve this issue, such as the development biomolecular methods of identification, but these are not routinely applied to archaeological assemblages and only differentiate between a small number of species.

This paper seeks to demonstrate some developments in the use of morphometric analysis in differentiating between different goose and duck taxa from archaeological sites in Britain. Measurements of postcranial bones of 20 species of duck and 7 species of goose were taken from over 750 specimens in modern reference collections in the UK and Europe to create a database of the most common taxa recovered from archaeological sites. Criteria for distinguishing between the different taxa is being developed using multivariate statistics with the aim of producing an readily applicable method of identification for archaeological goose and duck remains.

This is research is being undertaken as a part of an ongoing PhD project at the University of Sheffield (UK) with the aim of applying the method to the analysis of goose and duck remains from Roman sites in Britain.
The aim of this paper is to present the results of the analysis of the animal bones recovered from the 2012 archaeological excavation at Thornton Abbey (North Lincolnshire, United Kingdom). This site presents the advantage of an almost uninterrupted occupational history from late medieval to post-medieval times, first as an Augustinian monastery and later as a high-status estate. The main objective of the zooarchaeological analysis of the mammal and bird bone remains was to study consumption patterns and husbandry practices on a temporal scale, and to compare these results with countrywide trends. The results obtained point out that most meat consumption relied on domestic animals (cattle, sheep and pig) but also that some wild animals such as deer were being exploited, even during monastic times. Bird bone remains, especially domestic fowl, are also present on site and show evidence of exploitation. In sum, the results are consistent with the historical accounts of the high-status of the site, even during its monastic phase as Augustinian monasteries such as this one are known for their high economical standing during medieval times. From this preliminary analysis we are left with a general view of the economy of Thornton in terms of animal exploitation, and with promising prospects for future zooarchaeological studies.
This paper presents the results of the first research in Polish zooarchaeology devoted to the history of relations between humans and birds of prey. Using the available publications, data about birds of the order Accipitriformes were collected. The archaeological context falls into the Mesolithic to Early Medieval period. The majority of identified species belong to current Polish fauna; most of them were Accipitridae. Birds of prey occur in 25% of the prehistoric sites and 50% of the Early Medieval sites. The growth of their occurrence in the younger contexts proves the change in the role they played in culture that took place. In prehistoric times, for which the most numerous were white-tailed eagle remains (Haliaeetus albicilla), they were mostly linked with their symbolic aspect. While during Medieval times hawks (Accipiter gentilis) became more popular because of their use in falconry. Knowledge of falconry, which we are not ruling out during the pre-medieval times, has been proved by the written and iconographical sources so far. If the bird of prey remains reflected the background fauna, buzzard (Buteo buteo) rather than hawk remains would be in majority. But two facts argue for linking hawks with falconry: that their remains are noted on sites settled by populations of higher social status, and the domination of female hawk remains on these sites. Additionally, the fact that hawks are better adapted for hunting in forest zones, which were dominant in the Polish Middle Ages, is worth noticing.
SESSION 4

INVISIBLE ANIMALS

Chair: Elizabeth Henten
Trotting into prehistory: tracing the invisible donkey in the Ancient Near East
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Little attention has been paid to the usage and impact of the working donkey in Ancient Near Eastern prehistory. ANE archaeology has tended until recently to be settlement-based, and faunal remains are therefore mainly related to food. It can be tricky to tell donkeys from onagers, and domesticated from wild equids; and zooarchaeological emphasis to date has tended to be on the donkey’s domestication, or on its hybridisation with wild onagers. Perhaps consequently, there is a lack of emphasis on the donkey in wider ANE archaeological investigation and interpretation. Models for the early use of working animals for ploughing commonly appear based on Western European mediaeval models of semi-industrialised temperate-zone clay agriculture, featuring oxen. Until the last few years there has been very little mention of donkeys in archaeological literature on Mesopotamia and the southern Levant, either for ploughing or as contributory transport factors to the explosion of trade and urbanisation.

In order to bring the donkey more into the limelight, I have been focusing in my PhD thesis on modern ethnographic material relating to the use of donkeys and cattle for work in developing countries, looking at the social and economic impact of their adoption after manual cultivation and porterage. In many regions of Africa, astonishingly working animals were only first used within living memory; and with the late 20th century oil crises, governments and NGOs are now strongly promoting their use rather than mechanised means. There is a huge body of recent published studies on their adoption and social/economic impact; a very different picture – often of donkeys ploughing – emerges from studies of adoption of working animals in regions featuring arid, sandy soils unsuitable for deep ploughing. The ethnographic material also highlights the invaluable role of donkeys in short-distance transport: supporting new intensive agriculture by transporting crops etc, easing the lives of women by their use for carrying firewood and water, and providing income to the poor through transportation services and carrying of goods to market.

We can have some optimism that if there is a new focus by archaeologists on including donkeys in their interpretations, their strong and invaluable presence will emerge in the story of the social and economic development of 4th millennium BC Mesopotamia and the southern Levant.
Tracking the elusive fallow deer: exploring stable isotope evidence for imports during the Iron Age and Roman periods in Britain

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The European Fallow deer (*Dama dama dama*) became extinct in the British Isles and most of continental Europe at the time of the Last Glacial Maximum, with the species becoming restricted to an Anatolian refugium. Human-mediated reintroductions resulted in fallow populations in Rhodes, Sicily, Mallorca, Iberia and other parts of western Europe. Eventually, the species was brought to Britain by the Romans during the 1st century AD, with a breeding population being established at Fishbourne Roman Palace. The human influence on the present-day distribution of the species makes it particularly interesting from a zooarchaeological perspective.

This paper describes my MSc research, as part of the AHRC-funded project *Dama International: Fallow Deer and European Society 6000 BC–AD 1600*, looking at antlers from Iron Age and Roman sites in Britain for evidence of trade in body parts and whether this can be elucidated by a parallel stable isotope study of modern fallow antlers of known provenance.
Camels on the north-eastern frontiers of the Roman Empire
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Ample iconographic, written and osteological proofs of the occurrence of both dromedary (*Camelus dromedarius*) and Bactrian (*Camelus bactrianus*) camels are known from many Roman provinces. However, in contrast to the western provinces, osteological material from the north-eastern frontiers of the Empire has not yet been discussed collectively. In the literature is a lack of information about which breed of camel was widely spread, for what purposes they were used, and whether the camel, as the species introduced by humans artificially was treated in a unique way.

Camel bones have been found at Ajdovščina-Casta (Slovenia), Hrusica-Ad Pirum (Slovenia), Viminacium (Serbia), Vranj (Serbia), Novae (Bulgaria) and Tanais (Russia). The earliest (first century AD) and the largest assemblages of bones were derived from the easternmost sites: Tanais and Novae. Identification of breeds was possible at 4 out of 6 sites. In all the assemblages the majority of the bones belonged to Bactrian camels. It is noteworthy that dromedary occurred only at the west of the discussed area; this indicates a gradual increase of the importance of Bactrian camels in the eastern provinces, which additionally supplemented the work of other researchers. Bones were not isolated or buried intentionally at any site discussed here.

The incomplete data collected from different sites did not allow confirming the main goal of breeding camels. It can be generally assumed that camels were used mainly as draft and pack animals, probably at the army, and they were rarely consumed.
The neglected goat: a new methodological approach to the understanding of the role of this species in the English Medieval husbandry and economy

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Written resources as well as archaeological data confirm that during the medieval period in England a steady decrease in the presence of goat took place, reaching the point in which, by the late medieval period, this animal is almost disappeared. This phenomenon has raised the interest of many zooarchaeologists and historians for several reasons. For example, goat is much more commonly recorded in some historical written resources then we would expect from its occurrence in archaeological records. Another archaeologically intriguing aspect is the body parts representation of this animal. The analysis of English medieval bone assemblages, have revealed a scarcity of goat post cranial bones and teeth which is coupled though, with a much greater abundance of horncores.

This interesting picture can be better brought into focus only if the identification problem is tackled. In fact, distinguishing between sheep and goat bones still is one of the most challenging aspects a zooarchaeologist has to deal with. Important publications based on criteria for sheep/goat postcranial identification have been published more than 40 years ago, while studies on the discrimination of teeth are much more recent. Nevertheless, they are all based on morphological differences whose assessment may be highly subjective. The main goal of this research is to create a new methodology based on biometry which can represent a more objective tool for the proposed identification. Some distinctive morphological traits have been translated into biometrical indices and have been applied on modern reference collections of sheep and goats with very promising results.

The same methodology is going to be applied then on a number of identified sheep/goat medieval assemblages from England with the intent of re-evaluating the mystery of the under-represented goat.
SESSION 5

PLEISTOCENE ENVIRONMENTS AND ADAPTATIONS

Chair: Mariana Nabais
When humans met carnivores, when carnivores met humans: a coevolutionary process during the Pleistocene

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The study of the interaction between humans and animals can be highly significant in archaeozoology. The analysis of fossilized interactions reveals bidirectional relations between humans and other species that shared the same ecosystem and that could have had an important role in human evolution.

This is the case of large carnivores, which had a preeminent role in the formation of modern human behaviour during the Pleistocene. This interaction is common during this period and has different changing shapes. Actually, the relation between both can be described as a coevolutionary process that can be observed and inferred in many Palaeolithic archaeological contexts.

In the present contribution, we analyze this interaction between hominids and carnivores from the Middle to the Upper Palaeolithic by giving to archaeozoology a much more holistic perspective. This means that it is necessary to include in our research elements such as experimentation with large carnivores, spatial distribution analysis, and even ethological observations. In this sense, all this must be combined to infer changes in the relation that hominids (both Neanderthals and H. sapiens) had with carnivores, to understand how this interaction evolved related to hominid behaviour. To reach this purpose, different archaeological contexts and osteological collections from Spain, France and Germany are studied in order to understand human subsistence strategies, recycling activities, tools and ornaments production, inhumation practices, alternate use of cave and domestication. Interpretations are obtained by combining our results with our experimental, actualistic and palaeontological observations. The objective of our research on the interaction between hominids and carnivores during the Pleistocene is to build a new methodology beyond archaeozoology, capable of the recovery of human behavior through this complex and evolving relation.
North-West Europe is a vast territory, which regroups plains bordered by valleys incising limestone substrate. In this particular topography, the Meuse basin acts as a synthesis of this system where coexist the great loess plain in the north, the Ardenne-Eifel massif in the south, allowing karstic networks formation. During the Middle Palaeolithic, this territory has gone through many climate changes where warmer and colder phases alternated. These changes modified the plant covers, fauna, which lived in, and, consequently, relationships between Neanderthals and their environment. The almost continuous occupation of this wide area highlights a great adaptive ability of Neanderthals.

The Meuse basin has been explored since the 19th century and offers numerous Middle Palaeolithic sites; both in open air and cave contexts. Unfortunately, most of the sites were excavated during the 19th century and provided summary stratigraphic context to the discoveries, frequently associating material from different archaeological layers. Nevertheless, a few sites have been recently excavated, like Walou and Trou Al’Wess caves as well as Trou de l’Abîme of Couvin and Remicourt-En Bia Flo I. One site, Scladina Cave, is still under continuous excavation since 1978.

The purpose of our research is to give an overview of the relationships between Neanderthals and fauna, through both collections where the chronostratigraphic context is well known and critical analysis of the collections with a more uncertain context. All the operational sequence of the exploitation of animal carcasses is taken into account, since its acquisition to the use of bones as fuel through the shaping of bone tools, such as retouchers. So far, despite the diversity of occupations, both from an environmental and a chronological point of view, some recurrences are observed. Anthropogenic marks (cut marks and breaking pattern of long bones), visible on bones, emphasize intensive exploitation of animal resources. These marks are mainly observed on middle size (red deer, reindeer) and large size (bear, horse, aurochs/bison) mammals. Nevertheless, some specific behavioural features are highlighted as the favoured exploitation of rupicolous mammals observed logically in rocky environment. Enjoying their knowledge of the territory, Neanderthals took also advantage of the migration routes across the plains of
NW, focusing their attention on gregarious mammals (horses and reindeers/red deers).
Taphonomic analysis of Lower Cantabrian Magdalenian deposits from El Mirón cave (Cantabria, Northern Spain)

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Cantabrian Late Pleistocene strategies of subsistence reveal different phases of cultural change. The first phase occurred during the transition from the Solutrean to the Early Magdalenian (around 20,000 cal BP) while the second one occurred from the Lower to the Middle Magdalenian (around 18,000 cal BP). This study will focus on the second transition. Archaeozoological data from the extraordinarily rich macromammal assemblage of El Mirón Cave, located in the upper Ason valley of the eastern Cantabrian Cordillera, are used to shed new light on this transition. Taphonomic modifications found on the faunal assemblage were classified to identify the accumulating agents and the diagenetic processes at the site. These were divided into anthropogenic and non-anthropogenic processes based on different macroscopic and microscopic modifications. The recorded diagenetic processes were classified by natural alterations encompassing weathering stage, dissolution through water activity, manganese coating, calcite formation, fungi activity and root etching. Macromammal remains showing these taphonomic categories were plotted, according to their spatial distribution within the cave, in order to localize variation in modifications. The plots, generated for the layers analyzed here (Level 15 and 16), were used to track vertical changes across the strata. According to the taphonomical results, the late Lower Magdalenian levels were modified under warmer and more humid climatic conditions. Both layers were accumulated by human activities, with very slight carnivore input. In summary, the results from the El Mirón Lower and Middle Magdalenian macrofaunal assemblages indicate continuity in selected hunted species (red deer and ibex), seasonal site occupation and butchering activities practiced. The decrease in archaeological density, however, indicates a change to shorter or less frequent site occupations. The sudden end of this type of unique Lower Magdalenian deposits possibly occurred due to a change in settlement pattern and economic decisions at the end of the Late Pleistocene in the Cantabrian Region. The presented data suggests that this differences in palaeoeconomic behavior during the Lower to the Middle Magdalenian transition was intrinsically influenced by climate changes.
A sustainable ecosystem is a complex and fragile set of interactions and interdependent relationships between living organisms and their physical environments. To be relevant, both archaeological and palaeontological registers must be seen in the light of the available palaeoecological data, in order to apprehend the part of deliberate choices and natural constraints in the prey selection process. This ongoing PhD research attempts to better understand the settlement systems and subsistence patterns in northwestern Europe providing new data from Belgian sites, taking into account these global palaeoecological parameters.

The Meuse valley is a karstic region situated in southern Belgium, and was highly frequented during all the Palaeolithic. This area presents a contrasting topography in comparison with the neighbouring areas (Northern France, Channel River, Doggerland...) and was probably a “refuge zone” for many species including large Herbivores, Hyaenas and Humans during the cold stages of MIS 3 (about 60000–27000 BP). Sharing the same ecological niches (same habitat, same prey), the two greater predators of this period (humans and hyaenas) were constantly in interspecific competition. Studying their subsistence behaviours in relation to the large-game availability can help us to characterize their respective adaptive responses in face of the changing ecosystems and, thus, to understand choices specifically made by the past human groups.

Two new palaeolithic collections were analysed during this research project: Tiene des Maulins and Trou Magrite. These two sites were differently occupied during MIS 3: the former was occupied by humans probably as a hunting site and by hyaenas as a den, the latter was mainly occupied by humans as a base camp. The results show that for the same period, the diet of these hyaenas seems to focus on very large mammals such as wooly rhinoceros, whereas humans have mostly exploited cervids and equids. This difference in the diet will be discussed: is it due to an ecological constraint or a hunting specialisation by one or the other species? To go further, large-scale comparisons including more archaeological and palaeontological sites in northwestern Europe were undertaken. This data set provides a global vision of the different adaptive responses of the herbivores and their predators: extension or contraction of the geographical range, seasonal migrations, extinctions, etc.
SESSION 6

PREHISTORIC ANIMAL EXPLOITATION

Chair: TBA
Zooarchaeological analysis of red deer (Cervus elaphus), elk (Alces alces) and roe deer (Capreolus capreolus) remains from the Holocene in Polish areas

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This paper addresses the question of Cervidae and its significance to the life of prehistoric and Early Medieval populations in Polish areas. This is the first time that all sources of information about red deer, elk and roe deer remains in Polish archaeological contexts have been used. The faunal remains came from 89 prehistoric sites (settlements and burials) from the Neolithic to Roman period, and 80 Early Medieval sites (gords and settlements). Osteological data were collected from the literature. Geographical and chronological distributions of red deer, elk and roe deer will be displayed. Most numerous are red deer and roe deer remains. Elk’s remains are poorly represented. Uerpmann’s VSI and Meadow’s LSI scaling techniques, which have not been used previously in Polish research, enabled changes in body size to be observed. Godynicki’s coefficients of length were also used, so red deer and roe deer withers heights were possible to calculate. The results of the analysis show that red deer and roe deer, hunted by the prehistoric and medieval populations, were characterized by the bigger body sizes than species living nowadays in Poland. The roe deer VSI and LSI histograms present bimodal distribution, what can be interpreted as biological difference or hunting preferences. Throughout the whole Holocene period Cervidae were hunted mostly for their tasty meat, and materials in the form of bones, antler and leather. It is also possible that deer or stag have spiritual and symbolic significance.
Animal exploitation and the use of space in the Greek sector of the Late Neolithic settlement of Promachon-Topolnica, central Macedonia, Greece

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Excavations on the border between Greece (sector Promachon) and Bulgaria (sector Topolnica) in the basin of Strymonas, central Macedonia, Greece, have revealed ‘flat-extended’ settlement dating to the early phase of the Late Neolithic. In addition to the rich array of material culture evidence, the excavation (1983–2003) yielded a substantial quantity of animal bone remains, thus offering an unparalleled opportunity to study the human-animal relationships. This paper, which is based on the results of an on-going doctoral research at the University of Sheffield, will focus on husbandry strategies at the Greek sector of Promachon, and will examine the role of the domestic livestock and their contribution to the economy of the site. Within Promachon, animal remains indicate an economy particularly tuned to the production of meat; however, a small-scale exploitation of caprines for milk and fleece and of cattle for milk and labour could also be inferred. This information is valuable, considering the scarcity of data from contemporary settlements across central Macedonia in general, and the basin of Strymonas in particular. The substantial better representation of cattle in Promachon than any other settlement in Greek Macedonia, suggests that, to some extent, husbandry practices in Promachon are culturally linked to Balkan, rather than Greek Macedonian settlements. Of additional interest is the presence of a large subterranean structure in Promachon rich in material culture evidence and animal bones, thus creating an interesting contrast to the rest of the deposits, which indicate a more likely household origin.

This case study will present new information on subsistence strategies in an underrepresented area of northern Greece during a time-period (fifth and fourth millennium BC), that is considered one of the most dynamic eras of the prehistory of southeastern Europe. It will also clarify both temporal and regional trends in animal management, placing Promachon in the broader spectrum of contemporary agro-pastoral communities and creating an integrated picture of human-animal relationships that encompasses both the basin of Strymonas and Greek Macedonia.
Understanding the first Chalcolithic communities of Estremadura: a zooarchaeological approach at Castro de Chibanes, Portugal

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This study integrates archaeological, zooarchaeological and taphonomic results from the first chronological scope of the excavations of the site of Castro de Chibanes (Palmela, Portugal), concerning the Chalcolithic period, with preliminary results from a sample – the Horizonte IA – representing the first half of the 3rd millennium BC. The faunal collection presents itself as rather small but well preserved, with a low range of animal species, comprising mainly domestic mammals as a food supply. With low percentages of hunted animals, husbandry emerges as a central activity for these populations. Like other known sites of the Portuguese Estremadura, at a regional scale and by analysing its goods, it is possible to describe it within the cultural domain of the Chalcolithic of Estremadura. On the other hand, would this reflect on the zooarchaeological assemblage? We aim to recognise the common traits between these sites and discrepancies from others documented as culturally from the Chalcolithic of Sudoeste.
Characterisation of the domestic dog in the late prehistory of the Iberian Peninsula

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The information that geometric morphometrics can provide about subtle changes in the shape of bones independently from the size broadens the extent of the ordinary osteometry. It allows to compare bone elements independently from their age or breed and it can also apply to archaeological fractured bones that otherwise would not be included in the usual osteometric indexes.

With these provisos in mind we have started a project on the morphological characterisation of the dog in the Iberian Peninsula during the Chalcolithic and Bronze Age times. To give a picture of the variability of dog morphology, modern specimens of wolves, foxes and dogs of known age, sex and breed have been characterized with geometric morphometrics in order to compare them with the archaeological material. The osteometric indexes, related to shoulder height and weight, provided some information for the archaeological remains but they strongly depend on the preservation of bones so that they could only be applied to fused bones, reducing the sample significantly. With characterisation through geometric morphometrics of archaeological dog specimens not only we have increased the sample but also assigned them to the closest morphological group depicted by modern specimens. Our first results with this technique reveal that archaeological dogs present a variability of morphotypes that was not detected with the standard osteometry indexes.
SESSION 7

ANIMALS IN URBAN SOCIETIES

Chair: Elizabeth Farebrother
Small town, large cattle: investigating drivers of cattle pathology and size change in Roman-period Ashton
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The Romano-British settlement at Ashton, Northamptonshire, which developed along the line of a minor road, has often been defined as a “small town.” The site is notable for producing extensive evidence for iron-working and some other craft activity, but the relative importance of the agricultural economy is not yet fully understood. Very few small towns in the region have been excavated so completely as Ashton, and the category of “small town” remains a contentious one. Examining cattle can provide insight into Ashton’s urban and rural aspects, and help situate it within the wider Nene Valley landscape context.

Cattle were not only contributors to the meat diet of Ashton’s inhabitants, but would have been an important source of secondary products including draught labour. Using Bartosiewicz’s Pathological Index for identifying draught-related foot pathologies, we can gain a better understanding of the extent to which cattle were used to facilitate intensive cereal agriculture, and the relative importance of secondary products. The presence of very large cattle in this part of Britain is an increasingly recognised phenomenon, and the changes in size and morphology can inform on wider changes starting with the conquest and continuing throughout the four centuries of Roman occupation.
Medieval cattle cranial waste from the Burgstraat in Ghent

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An excavation conducted in 2011 in the medieval city of Ghent (Belgium) has brought many structures, artefacts and ecofacts to light. One structure, SP 140, is particularly interesting for zooarchaeologists. This is namely the place where a few hundred cranial fragments of mainly cattle were found. The assemblage was interpreted as part of butchers’ waste that has passed through the cycle of the artisanal economy of the late medieval town. Probably these cattle remains were used to extract marrow and marrow oil after which they were deposited. Due to time pressure, only 60% of the whole sample could be investigated. It however does still cover 2652 bone fragments, of which 2624 came from cattle (Bos taurus). The remaining 27 fragments were from sheep and pig.

Concentrating on the cattle fragments, there are some post-cranial fragments, especially metacarpals, metatarsals and phalanges. However, the majority of the finds are part of the cranium. The present mandibles and the maxilla were abundant (1034 fragments), and they were chopped in a very systematic way. Both maxilla and mandible were divided in three parts, separating the anterior from the medial part, where the premolars and molars are found, at the diastema, and the posterior from the medial part after the last molar. Due to the fact that, mostly, the medial part of the jaw was fairly complete, the opportunity was taken to assay the mandibles for age distribution in this population. 131 left and right mandibles had sufficient teeth present to be used in this research. Parallel to investigating the age distribution, the function of these mainly cranial parts in the medieval economy was looked at. Most likely this deposit was the end of a long economic chain of cattle processing of butchery, tanning, horn processing and lastly marrow and marrow oil extraction from these cranial parts. Comparing this site to similar sites in Belgium and Europe gave an interesting insight in the age distribution of and the particular chopping procedure represented at this 13th century site in Ghent.
Feeding a city: zooarchaeological perspective on urban provisioning in post-medieval Chester, England (AD 1500–1950)

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Despite the growing awareness of the importance of post-medieval archaeology in Britain, detailed analyses of post-medieval animal bones remain rare. However, there are many important benefits from studying the animal bones from this era. The post-medieval period witnessed a myriad of social and economic changes (e.g. population boom, mass immigration and industrialisation) which prompted the industrialisation of food production, innovations in agriculture and the globalisation and trade in animals and their products. Such changes ultimately altered the provisioning of animals and their products in towns and cities. For this reason, zooarchaeology is well placed to explore the transformations in the production and consumption of animals and their products. This paper will present the preliminary results of zooarchaeological investigations undertaken on faunal remains from Chester to explore diet, consumption behaviours and animal husbandry within the city and its environs. The paper will also draw on the strengths and weaknesses of conducting post-medieval zooarchaeological analyses and highlight avenues of zooarchaeological enquiry that need further exploration.
The preliminary faunal analysis of Drumclay Crannog, County Fermanagh

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Drumclay is an early medieval crannog site recently excavated and currently being analysed by the NIEA. There are substantial faunal remains at Drumclay, and this is a report of progress so far in the research. Drumclay is significant because it is the first major faunal assemblage of this date from southern Ulster, an area which has previously been bereft of such material. Early results show that certain aspects of the livestock economy radically differs from that noted in other places during this period.
POSTERS
Archaeomalacological analysis of Zone B from the Mesolithic cave site of El Toral III (Llanes, Asturias)
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Current evidence indicates that the exploitation of coastal resources during the Mesolithic in eastern Asturias was carried out with intensity. Nevertheless, up to now just a few archaeological assemblages of this period have been analyzed in detail due to the peculiar characteristics of these deposits, which in numerous occasions turn out to be cemented. A rescue excavation at El Toral III (Llanes, Asturias) allowed the identification of uncemented shell midden stratigraphic units that are providing new information on the exploitation of the coast during the Mesolithic. The site has been dated to the Asturian Mesolithic, but inside of the deposit two different areas were identified, the zone A and the zone B. This Masters dissertation comprises the study of molluscs, crustaceans and echinoderms found in the stratigraphic units located in the Zone B which has been dated to the late Mesolithic (c. 6800 BP–c. 7600 cal BP). The methodology of analysis is divided in different phases: anatomical classification and taxonomy of the remains, quantification, and taphonomical and biometrical analysis. This study is intended to not only implement the methodology of analysis, it also aims to approach the lifestyles of Mesolithic human groups who inhabited the Cantabrian region through the knowledge of its collection practices in the coastal environment and the role these resources played in their subsistence strategies.
Smashing animal illusions: zooarchaeological approaches towards ceramic representations of fauna in Halaf Northern Mesopotamia
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Collaborative studies and the integration of wider archaeological evidence with faunal remains have proven intrinsic to the development of our zooarchaeological knowledge of human–animal relationships. Information collected on Neolithic animal domestication episodes, animal management and material culture representation of animals in prehistoric Southwest Asia has significantly enlightened our archaeological understanding of the prehistoric Near East. That is perhaps, with the exception of much of the Eastern Fertile Crescent, due to its inaccessibility over previous decades. To redress this issue, this paper explores previous investigations of Halaf-period (c. 6500–5500 BC) ceramic representation of animals alongside the faunal evidence to deliberate how this can be explored in ongoing projects in Iraqi Kurdistan. This presentation also demonstrates the influence of perspectives from other specialisms on the interpretation of material.
Butchery practices at Edlingham Castle, Northumberland: using GIS technology to display and identify butchery patterns.

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Butchery evidence is rarely recorded in great detail in zooarchaeological reports. This study aims to show a fast and effective way of recording and displaying butchery evidence that could be easily adopted to visually represent butchery patterns of a species using GIS technology. Edlingham Castle, Northumberland was a medieval hall-house that underwent varying degrees of social change during its occupation. These changes are reflected historically and archaeologically from the changes in social statuses of the families who occupied the castle and the changes in architecture. Zooarchaeological analysis was conducted, with a particular concentration on butchery analysis to understand how animals were being exploited and understand social change in the high status diet. Orton (2010) used ArcGIS models to disseminate anatomical data yet these templates have been adapted to display the data trends to visually present patterns of butchery to see which region of the bone the marks were predominantly occurring.

From the butchery evidence we can conclude that head and feet were been removed, carcasses were most likely not been split in halves through a longitudinal division down the vertebrae, and there was also evidence of skinning and filleting of meat from the meaty joints. The evidence does not allow for determining specific cuts of meat, or identify a definitive change in butchery practices over time, though with a larger sample this may very well have been possible. This method of recording butchery is succinct and a straightforward way of representing large amounts of data. This method will be implemented in my future research to compare larger data sets from medieval castle assemblages to identify favoured cuts of meat and display trends over time and geographically.
Shells and humans: molluscs and other coastal resources from the earliest human occupations at the Mesolithic shell midden of El Mazo (Asturias, northern Spain)

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The Mesolithic of Atlantic Europe is characterised by the formation of large shell middens at coastal locations as a result of an intensive exploitation of littoral areas by the last hunter-fisher-gatherers. Archaeomalacological research was limited until the start of the 21st century, however in recent years these studies have been common in different sites along the Atlantic Europe, including the Cantabrian region, located in northern Spain. In this paper we present the results obtained from the study of molluscs and other coastal resources from the Mesolithic shell midden site of El Mazo cave (Asturias, northern Spain). We examined the molluscs from stratigraphic units 114 and 115, dated to the Mesolithic (9000–8700 cal BP). From a methodological point of view, the influence of using different mesh screen sizes was tested. Result showed that the use of 1 mm mesh screen is crucial to establish an accurate minimum number of individuals for sea urchins. The results on species representation showed that environmental conditions during the Mesolithic period were similar to current conditions in northern Spain since the species recovered at El Mazo are the same that currently inhabit the Cantabrian coast. Biometric data indicated that human populations exploited coastal resources with intensity, while collection areas showed resources procurement in lower and exposed areas than in previous periods, such as the Late Magdalenian and Azilian.
From Pests to Pets: social and cultural perceptions of animals in England’s urban environments
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In the past, animals and their products were prominent features of urban life. How people utilised these animals as well as their relationships has continually changed. For example, cats, dogs, pigs and other animals lived in close proximity to people in post-medieval urban centres and were viewed in terms of their functional affordances. Cats were kept to deter rodents and exploited for their fur, dogs were protectors of the home and pigs were not only food, but helped to reduce the amount of rubbish where they were kept. However, perceptions and treatment of urban animals were far from static. The emergent animal welfare movement and legislation heralded a change in the species and numbers of animals present in the urban environment and altered human-animal relationships. Now people are detached from 'livestock' (e.g. pigs), but have developed closer bonds with companion animals (e.g. cats, dogs, etc.) This poster will draw upon zooarchaeological and historical evidence in an attempt to show the timing of this transition and highlight some key factors in the accompanying shift in human-animal relationships.
Birds, beasts and burials: an examination of the human-animal relationship

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Levi-Strauss once said animals are not only “good to eat” but are “good to think”. Furthermore, Gilhus said animals are “good to feel” with. In essence, both scholars highlight the importance that animals may have had within the communities around them. This study explores non-consumption based theories of animal inclusion in burials from a variety of disciplines outside the field of archaeology and as such is able to bypass the inherent boundary found within the specialisations of zooarchaeology and human osteology. This approach attempts to find a balance between the fields allowing for a deeper holistic questioning of the relationship between humans and animals to occur. Focus will be placed on changes seen during the Roman occupation of Britain (43–410 AD); namely sites in and around St. Albans. A discussion of the problems with recognising surviving material culture as potential evidence of funerary rites are had by questioning the significance of animals found within inhumed and cremated contexts. Further questions of suitability of ‘ritual’ of the animal counterpart are explored through the cross examination of the age and biological sex of the particular species buried alongside humans at various points in their lifecycles. Other factors that may prompt or prevent the inclusion of animals in the burial practice are also considered. This includes the gifting of food for the gods and/or the deceased, ensuring of fertility, points of socio-economic gain, solidification for the group and/or extension of the self.
Figueira Brava Cave (Setúbal, Portugal), preliminary results: macro-mammals and tortoises
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Figueira Brava Cave is a Middle Palaeolithic site located at about 50 km south of Lisbon, Portugal. Recent archaeological works conducted between 2010 and 2013 revealed a more defined stratigraphy and detailed chronology than previous excavations (1988–1989). A total of nine spits were identified on the inside area of the cave’s Entrance 3 dated from MIS-5b to MIS-5d, confirming a Neanderthal occupation.

A total of 5061 fragments of macro-mammals and tortoises were recovered and studied. Most remains are from the top spits (A1-A6), becoming scarcer towards the bottom and nearly absent closer to spit A9, the sediment covering the bedrock. About 46% of the assemblage is indeterminate, but the remaining 54% could be assigned to a size category ranging from large to very small macrofauna. Cervids and caprines are among the best represented animals, but lagomorphs and tortoises clearly dominate the assemblage. Considering that several other very small size prey (such as birds, molluscs, crabs and fish) were also recovered from the same archaeological spits, it is hypothesised that a wide spectrum diet was adopted by the Neanderthal groups profiting from an ecotonal environment surrounding the cave.
Archaeozoological study of Chalcolithic levels from La Castañera shelter (Cantabria, Spain)
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Research about the Chalcolithic of the Cantabrian region is less developed than in other European regions. Although this situation has been changing in recent decades, specific studies about faunal remains and subsistence are still scarce. In this work, the preliminary results of the archaeozoological study from the 2011–2013 excavations at La Castañera shelter (Cantabria, Spain) are presented. The main objective is to investigate the subsistence strategies of those who lived at this site, identify its use functionally and evaluate changes within the deposits throughout time. This is one of the first taphonomic analyses of animal bones undertaken in a Late Prehistoric site in Cantabria. In the La Castañera assemblage cattle and pig are the predominant species, which is unusual compared to the rest of the Iberian Peninsula, where ovicaprids are more commonly exploited. Taphonomically, bone modification provides information about the animal processing and type of exploitation. In addition, the richness of burned bones shows how human groups carried out periodical cleaning processes by burning episodes in the living floors and livestock corrals within the site. This kind of events are usual in caves or shelters that served as stables and where burning dung is a common practice, repeatedly done, to avoid parasites.
Yummy llamas: archaeozoological analysis of skeletal remains from Edificio E and the ceremonial landfill Basural 1 from Maucallacta, Peru
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This poster presents the results of the archaeozoological analysis of the faunal remains discovered in 2006–2007 and 2009 at the site of Maucallacta in southern Peru. The material comes from two locations: the entrance of the structure “Edificio E” and from the ceremonial landfill “Basural 1”. Material was analyzed by Weronika Tomczyk (Edificio E) and Katarzyna Marciniak (Basural 1). Maucallacta was the pre-Inca and then Inca ceremonial and administrative centre of the Condesuyo province. Its location in the vicinity of the Coropuna volcano – an Inca oracle – made Maucallacta a very important station on the map of imperial sanctuaries. Maucallacta was permanently inhabited by a small group of people who were responsible for managing the ceremonial centre. It was revived only during the Inca festivals, when throngs of pilgrims arrived in order to celebrate religious rituals.

Material from Edificio E included less than two hundred pieces of bone, poorly preserved and strongly fragmented. Osteological analysis was possible for 70% of the assemblage and showed that the species represented in the sample are domesticated mammals typical of Pre-Columbian times: llama (Lama glama) and alpaca (Lama pacos); and one bone belonging to cattle (Bos taurus). It could be assumed that this set is the remains of a ceremonial feast, organised when the building was ‘ceremonially closed’ or rebuilt. Material from Basural 1 included more than four thousand pieces of bone, also strongly fragmented and belonging mostly to domesticated camelids. Several bones were identified as belonging to local deers and birds from Accipitridae family. These faunal remains are doubtless evidence of sacrifices and feasts, which took place on the ceremonial square and were shot down from the platform in the act of the cleaning its surface.

Comprehensive studies of these two assemblages, supported by the early colonial chronicles studies and comparisons with other sites, depict the character of the feasts and sacrifices at Maucallacta and show the similarities between ceremonies organised in two different architectural structures.