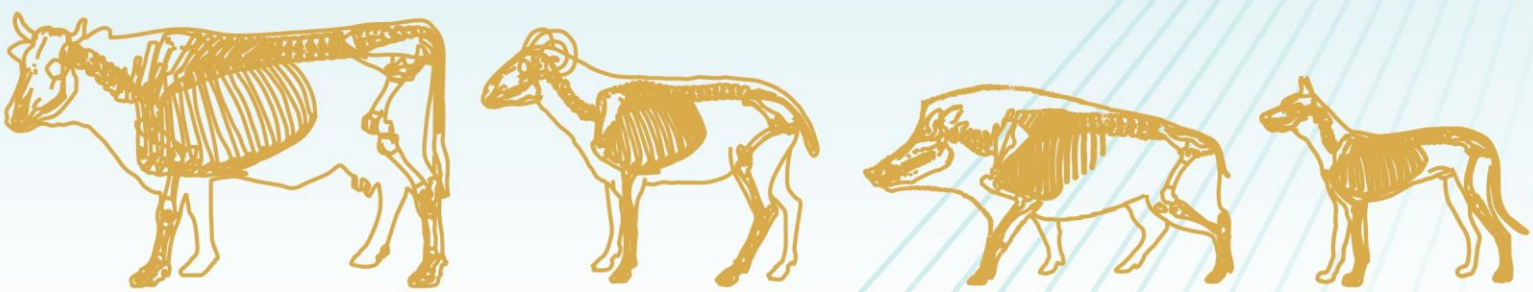
ZoP 2012

First Zooarchaeology Conference in Portugal

8-9 March 2012

Amphitheatre 3
Faculty of Letters
University of Lisbon

Book of Abstracts



Organization:

Support:

Cleia Detry & Rita Dias (eds.)

Organization:
UNIARQ (Centro de Arqueologia da Universidade de Lisboa)
CBA (Centro de Biologia Ambiental da Faculdade de Ciências UL)

Book Cover Design:
Célia Gonçalves

ABSTRACTS - ORAL PRESENTATIONS

A brief history of Zooarchaeology in Portugal

Cleia Detry[1] & João L. Cardoso[1,2]
cdetry@gmail.com
[1]*Uniarq - Centro de Arqueologia da Universidade de Lisboa, Portugal*
[2]*Universidade Aberta, Lisboa, Portugal*
Keywords: Zooarchaeology; Portugal; History
Portuguese zooarchaeology began with the establishment of the first Geological Commission by Carlos Ribeiro and Nery Delgado. These two important 19th century geologists understood the importance of animal bones for an understanding of our past. Following their death, Zooarchaeology in Portugal was undertaken mainly by foreigners until the second half of the 20th century. In the 1980s and 90s Zooarchaeology benefited mainly from individual studies and later from a new institutional input - the creation of an Archaeoscience laboratory (CIPA) within the former Instituto Portugûes de Arqueologia (now part of IGESPAR). Members of this laboratory published several reports dealing with animal remains from Portuguese archaeological sites ranging in date from the Mousterian to the 18th century AD.
Prior to the invention of radiocarbon dating, zooarchaeological remains were used mainly to date archaeological sites. The understanding of man-animal relations and the impact of man upon the environment were side issues. The recent increase in the number of researchers dedicated to this scientific area has produced a wider spectrum of approaches such as taphonomy, osteometry, ancient-DNA, etc. as well as new areas of investigation including studies of fish and mollusk remains.

Ichthyoarchaeological research in Portugal: perspectives and development

Sónia Gabriel[1]
sgabriel@igespar.pt
[1]*Laboratório de Arqueociências. IGESPAR, IP, Lisboa, Portugal*
Keywords: Ichthyoarchaeology; Portugal; research overview
Ichthyoarchaeology is a discipline currently in expansion. Despite its development, little attention has been paid to fish remains in the Portuguese archaeological record. This gap is due to the lack, until recently, of suitable reference collections, and to the need of specialists dedicated to the study of fish remains recovered from archaeological sites. The reduced number of studies produced since the 1970's reflects this fact.
This work presents a characterization of Ichthyoarchaeological research in Portugal, with particular reference to work carried out at the IGESPAR's Zooarchaeology Laboratory. The results achieved integrate aspects of research that include studies in osteometry, palaeoecology, taphonomy, and animal exploitation.

The engagement of youth in archaeofaunal studies in Portugal: present scenario and considerations

Nelson Almeida[1,2,3] & Cláudia Costa[4,5]
nelsonjalmeida@gmail.com & ccordeirocosta@gmail.com
[1] *GQP-CG, Quaternary and Prehistory Group, Geosciences Centre, Coimbra, Portugal*
[2] *ITM, Instituto Terra e Memória, Mação, Portugal*
[3] *Museu de Arte Pré-Histórica e do Sagrado no Vale do Tejo, Mação, Portugal*
[4]*Uniarq - Centro de Arqueologia da Universidade de Lisboa, Portugal*
[5]*Universidade do Algarve — FCHS, Faro, Portugal*
Keywords: Archaeozoology; Zooarchaeology; young researchers
Archaeozoology and Zooarchaeology have definitively established themselves in Portugal as auxiliary disciplines of Archaeology. This occurrence is connected with the increase of archaeological activity (mainly due to Commercial Archaeology), and the creation of the necessary tools for the formation of specialists, it being human or physical resources.
Recently we prepared some works related to the relation between archaeofaunal studies and Commercial Archaeology in Portugal. We tried to understand how the growth in entrepreneurial activity was related to the

study of archaeofaunal remains in the form of scientific production. A by-product of this work concerns the paper of youth researchers in the production of this specialized knowledge.
The discussion about the value of archaeofaunal studies is no longer made, nevertheless, despite the "evolution" of the research paradigms and the growing necessity of multidisciplinary studies, it seems to us that the possible contributions of the younger specialists still has a long way to go. We present a brief panorama of the development of the discipline in Portugal, relate it to the present situation, specifically with the young researchers and present some considerations about this thematic.

Exploitation of bone in the Upper Paleolithic of Portugal

Marina Évora[1,2,3]
marevora@gmail.com
[1]*Uniarq – Centro de Arqueologia da Universidade de Lisboa, Portugal*
[2]*Universidade do Algarve — FCHS, Faro, Portugal*
[3]*NAP – Núcleo de Arqueologia e Paleoecologia da Universidade do Algarve, Faro, Portugal*
Keywords: Upper Paleolithic; osseous industry; processing; modification
In the Upper Paleolithic contexts where organic remains were preserved, we see that the artisans of this period used all the hard animal materials that were available (bone, antler, tooth, ivory, tortoise-shell, shell, egg shell, horn, etc.) for the manufacture of utilitarian or / and symbolic objects.
The choice and the differentiated use for each of these materials appears to have been directly related with the cognitive capacity of these populations and their subsequent recognition of the different mechanical and aesthetic properties of each raw material.
The analysis of faunal collections, in addition to providing information about the means of subsistence of these communities, also enables us to infer about the procedures of exploitation of osseous materials and its use in the manufacture of tools. The production of the osseous artifacts may have had different procedures that, as will be seen, can be inferred by the characteristic marks left on the bone surface.
In this communication we present the techniques of transformation and modification of the red deer antler and of mammal bones, since these were the raw materials used in the Upper Paleolithic in Portugal for the manufacture of tools like wedges, awls, beveled tools, fish hooks or spear points.

Some 'flashes' on Portuguese Archaeozoology

Jean-Philip Brugal[1]
brugal@mmsh.univ-aix.fr
[1]*CNRS - UMR 7269 'Laboratoire Méditerranéen de Préhistoire Europe-Afrique, Aix-en-Provence, France*
Keywords: Portugal, Archaeozoology, Pleistocene, Palaeolithic
The last 20 years have seen an intensification of research in prehistoric archaeology in Portugal. This has resulted in the development of specific studies - especially geological and biological sciences. In conjunction with stone tools, animal remains are a very useful register of archaeological deposits. They are often found in abundance and allow a variety of complementary studies including palaeontology, palaeoecology, taphonomy, zooarchaeology, palaeogenetics ... These take a special dimension due to certain biogeographic factors that characterise Portugal, a country located at the southern periphery of Western Europe and at the end of the Iberian Peninsula. This has allowed us to determine the nature of the original human settlements and animals that existing here during the Quaternary, especially the survival of certain species, including Neanderthals, designating an emblematic case in these regions.
The Human-Animal relationship was essentially one of food dependence for much of prehistoric time. For the Palaeolithic, we are concerned with the identification of strategies for acquisition and consumption of prey species (herbivores) in a context of predation, which implies also the question of interspecific competition for resources such as meat. We can observe 'man through his prey', and this in turn helps to clarify the duration of human occupation, the function of a site and ultimately to understand the socio-economic organization of human groups.
These studies are based primarily upon our understanding of both small and large mammalian communities and their succession during the Pleistocene in relation to climatic variations and/or industrial facies. A first overview of the dynamics of Quaternary faunas will be presented, before discussing, in chronological order from oldest to most recent, several examples of sites rich in vertebrate faunal remains. These sites include the Acheulian/Middle Pleistocene of Galerias Pesadas, Brecha das Lascas (Aroeira); continue with examples of

Mousterian sites (Oliveira, Foz de Enxarrique, etc..) and sites in Upper Palaeolithic caves such as Buraca Escura. The diversity of predators in the Portuguese literature will also be discussed, with emphasis on the Pleistocene deposits of Furninha (Peniche). These 'flashes' on faunal remains highlight the importance and richness of the Portuguese archaeological heritage and its heuristic value in research on past human societies.

Breaking the bones: taphonomic indicators in experimental dynamic fracturation of bovids long bones

Nelson Almeida[1,2,3], Sara Cura[1,2,3], Pedro Cura[1,2,3] & Palmira Saladié[1,4,5]
nelsonjalmeida@gmail.com
[1] *GQP-CG, Quaternary and Prehistory Group, Geosciences Centre, Coimbra, Portugal*
[2] *ITM, Instituto Terra e Memória, Mação, Portugal*
[3] *Museu de Arte Pré-Histórica e do Sagrado no Vale do Tejo, Mação, Portugal*
[4] *IPHES, Institut Català de Paleoecologia Humana i Evolució Social, Tarragona, Catalunha, Espanha*
[5] *URV, Universitat Rovira i Virgili, Àrea de Prehistòria, Tarragona, Catalunha, Espanha*
Keywords: Dynamic fracturation; *Bos taurus*; long bones; fracture plane; percussion marks
A wide variety of international research projects dealing with actualistic studies of bone biomechanics have been produced and disseminated in the last decades. The majority of these papers deal with the problems of differentiation between carnivore and anthropic fracturation, i.e., static and dynamic loading in long bones.
Some taphonomic indicators have been showed to allow separation between different accumulation agents in experimental and archaeological assemblages, helping in discussions related to different access to archaeofaunistical remains. The majority of these actualistic works were achieved with unmodified pebbles and *Bos taurus* fresh bones.
In this communication we present the results of a series of dynamic loading fracturation of *Bos taurus* long bones. Modified quartzite implements and bones in different conditions or "freshness" indexes were fractured and the resulting fragments analyzed. Although preliminary, the analysis of the fracture planes, longitude and circumference of the diaphysis, as well as other indicators (e.g. fragment measurements, percussion pits plus notches%, impact flakes%), allows the elaboration of some considerations.

The aurochs in Portugal: an important contribution to a wider picture of European aurochs morphological variation

Lizzie Wright[1]
e.wright@sheffield.ac.uk
[1] *Department of Archaeology, University of Sheffield, UK*
Keywords: aurochs; biometry; morphology; Mesolithic
Throughout European prehistory, the aurochs (*Bos primigenius*) was an extremely important animal to humans. Not only was it frequently hunted, but it is also generally agreed to be the wild ancestor of one of the most important domesticated animals – domesticated cattle (*Bos taurus*). On the Iberian Peninsula the aurochs is commonly encountered on sites from both the Pleistocene and the Holocene, and it features prominently in cave art across the region.
Despite the importance of the aurochs, our knowledge of its morphological variation is relatively limited. Zooarchaeologists across Europe, regardless of the geographic focus of their research, often refer to measurements from Danish material (DegerbØl & Fredskild, 1970) in order to distinguish wild from domestic specimens. Considering the differences in climate and environment between different areas of Europe, it is likely that the Danish dataset is not relevant to material from more distant geographical areas. The limited scope of this biometric data poses problems for studies considering the origins of domestication, and has the potential to confuse the interpretation of genetic data.
This paper will provide some preliminary results from my PhD project, which aims to increase our knowledge of aurochs morphological variation across a much wider area and longer timescale. The contribution of the Portuguese sample will be focused on, and in particular the Mesolithic material from the Muge middens, which has proven to be an invaluable Iberian dataset for my work.
DEGERBØL, M. & FREDSKILD, B. 1970. *The Urus (Bos primigenius bojanus) and Neolithic Domesticated Cattle (Bos taurus domesticus linne) in Denmark*, Copenhagen, The Royal Danish Academy of Science and Letters.

So many rabbits! Small animals' dietary role in the Mesolithic shellmidden of Cabeço da Amoreira (Muge, Central Portugal)

Rita Dias[1,2,3]
rddias@ualg.pt
[1]*Uniarq – Centro de Arqueologia da Universidade de Lisboa, Portugal*
[2]*Universidade do Algarve — FCHS, Faro, Portugal*
[3]*NAP – Núcleo de Arqueologia e Paleoecologia da Universidade do Algarve, Faro, Portugal*
Keywords: Small Game; Subsistence; Cabeço da Amoreira
Studies about Paleolithic normally refer to large game hunting as primary subsistence for hunter-gatherer populations. During Mesolithic, the general idea points to an intensification of aquatic resources consumption. Nevertheless, recent investigations suggest that not only there is a considerable regional variability in hunter-gatherer subsistence but aquatic resources have been consistently consumed from well before. Also, there has been a devaluation of small animals' exploitation, not only in the Paleolithic but also in the Mesolithic. Recent theories, such as Nutritional Ecology, have valued the role of small animals in human diet. This paper aims to discuss the role of rabbits in the diet of complex Hunter-Gatherers communities during the Mesolithic, based on new data from the Cabeço da Amoreira Mesolithic shellmidden.

How can marine invertebrates help to better understand the Neolithisation along the European Atlantic facade?

Catherine Dupont[1]
catherine.dupont@univ-rennes1.fr
[1]*Université de Rennes, France*
Keywords: Neolithisation; Shell-midens; Methodology; Marine invertebrates
In Portugal there is a long tradition of interactions between human populations and the Atlantic Ocean, which is reflected in the way of living. The Prehistory does not break the rule and there are numerous Prehistoric archaeological sites that confirm the existence of coastal settlements. The presence of marine invertebrates among archaeozoological remains collected from these sites has been described early. In 1884, Ribeiro referred to species of seashells and crabs and provided an explanation of why some seafood was part of the humans' diet. In Portugal there are a large number of well-preserved shell-middens when compared to other European countries along the Atlantic facade. However, archaeological data from marine invertebrates (seashells, urchins, goose barnacle, seashells, crabs) have been neglected for a long time compared to the huge accumulations of seashells that are real shell-middens. In this communication we will highlight the enormous archaeological interest in studying such archaeozoological remains. We first present the importance of the sieving and the exhaustive sorting of these materials despite of the long time required to carry out such work. The techniques involved in the study of the different invertebrate remains will be also discussed, namely those employed for: Species determination, quantification, evaluation of the 'Minimum Number of Individuals', reconstruction of the original size and identification of the season of gathering.
Due to these recent methodological developments, we start to understand the past distribution of some of these marine species also in relation to climatic variations. Some species have particular biotopes which can be related with palaeoenvironmental variations. On a larger context, it will also be interesting to compare the components of the Mesolithic and Neolithic shell-middens (species diversity and types of fauna) with isotopic data from human skeletons in order to compare movement patterns along the European Atlantic facade.

Mesolithic and Neolithic shell middens in Western Algarve: issues in ecology, taphonomy and economy

Maria João Valente[1]
mvalente@ualg.pt
[1]*Universidade do Algarve — FCHS, Faro, Portugal*
Keywords: Shell-midden; Mesolithic; Neolithic; Taphonomy; Palaeoecology
In Western Algarve there are several archaeological sites with abundant shell deposits (namely, Castelejo, Barranco das Quebradas, Rocha das Gaivotas, Vale Santo I, Alcalar 7 and Ribeira de Alcantarilha). Most of these

sites date back to the Mesolithic and/or Early Neolithic — from the Preboreal to the Atlantic periods — and are considered very similar to each other regarding their function and deposited materials.
Nonetheless, these same sites and their deposits also show noticeable differences in their relative abundance of mollusk species, evidences of their processing as food, and their post-depositional activity. It is our intent to critically organize all the available data and discuss issues such as:
– Are relative abundances of species mirroring local ecological availability or are they the product of human selective choices? Or are both factors to be considered?
– What kind of food processing techniques were used? Are these techniques (and their traces) observable through time or in between sites from same age?
– What are the obvious post-depositional processes? How do they affect our perception of the archaeological context?
From this framework we will propose interpretative hypotheses regarding the economy and diet of the last hunter-gatherer (Mesolithic) and first productive communities (Early Neolithic) of Western Algarve.

A Chalcolithic burial of an equid: the case of Etar de V.N. de Mil Fontes

António Carlos Valera[1,2], Jorge Parreira[2] & Cláudia Costa[3,4]
antoniovalera@era-arqueologia.pt & ccordeirocosta@gmail.com
[1]Núcleo de Investigação Arqueológica (ERA Arqueologia)
[2]ERA Arqueologia S.A., Lisboa, Portugal
[3]Uniarq – Centro de Arqueologia da Universidade de Lisboa, Portugal
[4]Universidade do Algarve — FCHS, Faro, Portugal
Keywords: Chalcolithic; equid skeleton; animal burial; osteometric characterization
The archaeological site of Etar de Vila Nova de Mil Fontes (southern littoral Portugal) was identified and briefly survived in the 1980's (Silva & Soares, 1997). It was then characterized as an extensive open site, with shell middens of low development, dated from Chalcolithic.
Recently, during an emergency intervention performed by ERA Arqueologia S.A., the site was again excavated in a larger area. This work allowed the characterization of several new contexts such as fireplace, a huge circular structure of a hut and a shell midden. The artefactual characterization points to a chronology of the occupation in the 3rd millennium B C, with some possible elements already of the Bronze Age.
Special relevance, though, has a particular context with the inhumation of an almost complete equid skeleton (just the skull was missing), with a particular structure of stones revealing a meaningful intentionally of the deposition. Although no absolute dating is yet available, this archaeological context seems to be contemporary with the Chalcolithic.
This paper aims to characterize this contextual deposition, the positional and post depositional aspects and discuss the aspects concerning animal depositions practices during the period.
In this case, the osteometric characterization of the bones is extremely relevant in order to try the taxonomic identification. Moreover, this skeleton may highlight the controversial point of the equids significance to the Chalcolithic communities, where research tends to deal only with objects manufactured from the bones of these animals, mainly phalanges transformed in the so called idols ("idolos falange"), and the other parts of these animals are more or less rare, comparing with other animals remains.
SILVA, C.T. & SOARES, J. (1997), "Economias costeiras na Pré-História Recente do Sudoeste Português. O concheiro de Montes de Baixo", Setúbal Arqueológica, Vol.11-12, p.69-108.

The inclusion of faunal remains in Bronze Age funerary practices in Southern Portugal, Montinhos 6 - a case study

Cláudia Costa[1,2] & Lídia Baptista[3,4]
ccordeirocosta@gmail.com & lidiabap@gmail.com
[1]Uniarq – Centro de Arqueologia da Universidade de Lisboa, Portugal
[2]Universidade do Algarve — FCHS, Faro, Portugal
[3]Centro de Estudos Africanos da Universidade do Porto-CAM, Portugal
[4] Faculdade de Letras da Universidade do Porto, Portugal
Keywords: Bronze Age; funerary practices; faunal remains
Montinhos 6 is located at Serpa (Beja, South of Portugal) excavated by one of the authors (L.B.) during an emergency intervention within the "Alqueva Project". The site presents two hundred forty six negative

structures with different morphology, chronology and different fills. In this paper we will focus on a group of twenty one structures related to burial Bronze Age practices; this group is constituted by seven pits and fourteen hypogea. Concerning the funerary contexts, the hypogea presented ante-chamber leading to one or two circular chambers, where the human bodies were deposited. Some presented individual burial and others collective inhumations (maximum of five individuals). In the group of corpses collected, one can find male and female, adults and sub-adults. The votive assemblage connected with the inhumations is mainly composed by pottery and metal artefacts. Only six hipogea revealed faunal association to the funerary ritual, mainly forelimb bones of Bos and Ovis/Capra and a partial skeleton of *Oryctolagus cuniculus*. Most of the remains were deposited in anatomical connection, but isolated radiuses were also present. By looking at the way faunal elements were used in these practices, it may highlight some aspects of such practices. In this contribution, the authors will focus on the taphonomic signatures of the faunal remains in order to discuss its participation in the burial practices.

Montinhos 6 is not an isolated case. Since the 1970's, that Bronze Age necropolis are known in South-West of the Iberian Peninsula. In recent years, mainly due to emergency archaeological interventions, we started to know a little more of the so-called "Bronze do Sudoeste" (South-West Bronze Age); mainly how diverse this archaeological unity can be. With the discussion we are proposing, we aim to contribute to the understanding of the complexity of the South-West Bronze Age burial practices.

Animal bones from the Roman site of Tróia (Grândola, Portugal): mammal and bird remains from the fish-salting workshop 2, sector 2

Mariana Nabais

(mariananabais@gmail.com)

Keywords: Portugal; Tróia; Roman; salt-fishing tanks; Zooarchaeology

The Roman site of Tróia is located at about 50 km south of Lisbon, Portugal. It is positioned on the NE side of Tróia Peninsula facing the river Sado estuary. Tróia is known since the 16th century and several archaeological interventions have been conducted until now. The great importance of this site is intimately related to the production of large amounts of salted fish and fish sauces that were sold throughout the West Roman Empire, from the 1st to the 5th century AD. From the excavation campaigns of 2007 and 2008 in workshop 2, sector 2, a total of 663 mammal and bird bones were recovered and studied. They demonstrate that some of the Tróia's population diet was mainly based on domesticated caprines, pigs and chicken that might have been kept within small family groups. No large mammals were kept maybe due to their high needs of maintenance which contrast to the easy care of medium size animals. Hunting activities seemed to have taken place, being rabbits and hares an important element in the diet. Finally, the patterns of animal consumption in Tróia appear to be very similar to other Portuguese Roman sites, although more excavation and research is needed in order to create a more accurate picture of Tróia's diet.

Mammal remains from the Governor's House (Belém Tower, Lisbon) and the archaeological site in the Rua dos Correeiros (Baixa, Lisbon) in the context of fish processing factories in Lusitania

Silvia Valenzuela-Lamas[1,2]

s.valenzuela@sheffield.ac.uk

[1]Uniarq – Centro de Arqueologia da Universidade de Lisboa, Portugal

[2] IEF Marie Curie Fellow, University of Sheffield, UK

Keywords: mammals; Roman; Portugal

This communication presents the results of the taphonomical, taxonomical and biometrical analysis of the mammal remains recovered in the fish salting factories Casa do Governador da Torre de Belém (Lisboa) and Núcleo Arqueológico da rua dos Correeiros (NARC-BCP, Lisboa). The species are mainly domestic taxa and the bones have numerous anthropic marks on them. The results are contextualized with the information available for this kind of fish processing factories in Lusitania.

The animal species, domestic and wild, that inhabited Tavira in the past and today

Jaquelina Covaneiro[1]
jaquelinacovaneiro@hotmail.com
[1]*Câmara Municipal de Tavira, Portugal*

Keywords: Tavira; Archaeozoology

In recent years several archaeological excavations were carried out in the historical center of Tavira, which have enabled expanding knowledge about the human communities that lived there for centuries.
In general, all archaeological sites have allowed the exhumation of faunal remains.
Up to now we studied remains from Convento das Bernardas, Irene Rolo, Bela Fria, Convento da Graça and Parque de Festas.
The study undertaken until now has made it possible to know which animal species were present in the archaeological record over time, from the Iron Age to Modern Times.
The faunistic analysis allowed us to understand more about the domestic and wild species, pattern of slaughter, cutmarks, taphonomic phenomena, among other things.

What did they eat in Roman and Moslem Conímbriga? The animal bones from the 1990s excavations

Cleia Detry[1], **João L. Cardoso**[1,2] **& Virgílio H. Correia**[3]
[1]*Uniarq - Centro de Arqueologia da Universidade de Lisboa, Portugal*
[2]*Universidade Aberta, Lisboa, Portugal*
[3]*Museu Monográfico de Conímbriga, Condeixa-a-Velha, Portugal*

Keywords: Zooarchaeology; Molems; Roman; Faunal remains; Conimbriga

In 1992 and 1993 a small excavation of the archaeological site of Conímbriga in central Portugal was undertaken. The area excavated was over the roman amphitheatre adjacent to the late roman wall and the material derived from late Roman (3rd - 4th C. AD), late antiquity (6th-7th C. AD) and Islamic (7th-11th C. AD) times, and included a total of 3370 animal bones. The study of these is the subject of this presentation.
This assemblage is important as it allows us to compare Roman and Moslem dietary preferences and their relations with animals (animal use and improvement). The collection is also important because Moslem period bone assemblages are rare in central Portugal.
Most bones belonged to mammals, with cattle being most common, followed by pig and sheep. The presence of some rabbit and red deer also shows evidence for hunting. The presence of pig indicates that the rules of *haraam* were not strictly applied in this part of Portugal.

Zooarchaeological perspective of the islamic sites in Algarve - Current State of Knowledge

Vera Pereira[1]
vera_lcpereira@yahoo.co.uk
[1]*CEAUCP,Universidade de Coimbra, Portugal*

Keywords: Zooarchaeology; Islamic; Algarve

Zooarchaeology in Portugal presents itself still as a shy producer of data and useful knowledge. Although, the study of faunal assemblages recovered from archaeological contexts increased in the last decade, when compared with other approaches of archaeological sites and its goods, as pottery or lithics, faunal studies still have a long way to go, as a useful aid on reconstructing the past and ancient populations.
As many archaeological sites from different regions of Portugal, with distinct chronologies are being studied, we center this presentation on the Algarve region, specifically on faunal analysis from the Islamic period. We aim the summary of work done and its methodology, considering taxonomic, taphonomic and osteological approaches to the animal remains.

Some thoughts on the beginnings of animal domestication in Portugal

Simon JM Davis[1]
simonjmdavis@gmail.com, sdavis@igespar.pt
[1]*Laboratório de Arqueociências, IGESPAR, Lisboa, Portugal*

Keywords: Animal domestication; Mesolithic crisis; Portugal; Near East

The origin of domesticated animals is an exciting topic in zooarchaeology. *Which* animals were domesticated, *where*, *when* and *why*, are key questions. I shall apply some criteria used in the Near East, with is rich zooarchaeological record, to attempt to provide answers to some of these questions with respect to certain important animals like dog, cattle, sheep, goat and pig here in southern Portugal. We now have some evidence indicating a gradual increase of demographic pressure especially in the Mesolithic when the wild boar and small animals, with their high reproductive potential, were more commonly hunted, and red deer, aurochsen and wild boar became smaller, subsequently recovering their former size by the Chalcolithic. This apparent period of crisis in the Mesolithic may explain why man was later 'forced' to change from hunting to husbanding. Certain stock criteria like burial (dog), a sudden change in faunal frequencies (deer, ibex and horse to sheep, goat, pig and cattle) and size reduction (aurochs – cattle, wild boar – pig, wolf – dog) help date the beginning of animal domestication. It is useful to contrast what was happening in the Near East and other parts of the Mediterranean basin with events here in Portugal.

At table with the nuns of 17th century Santa-Clara-a-Velha Monastery (Coimbra, Portugal)

Cleia Detry[1]**, Lígia Gambini**[2]**& Artur Corte-Real**[2]
(cdetry@gmail.com)
[1]*Uniarq - Centro de Arqueologia da Universidade de Lisboa, Portugal*
[2]*Mosteiro de Santa-Clara-a-Velha, Coimbra, Portugal*

Keywords: Santa Clara-a-Velha Monastery; Modern Period; Mammal; Zooarchaeology

The Santa Clara-a-Velha monastery is located on the left bank of the river Mondego near the city of Coimbra. It was founded in 1286 by D. Mor Dias and occupied until 1677.

1995 saw the beginning of a major project of excavation of the church interior and cloisters and restoration of the monastery.

We shall present the results of the study of faunal remains recovered in three trenches (areas 41 and 46, and Room B) with special focus on the mammal remains. These contexts are dumps dated to the first half of the 17th century, the last period of the nuns' occupation of the monastery.

Mammals, mostly sheep, pork, cow and rabbit, dominate the assemblage. Their patterns of age-at-death indicate the slaughter of young animals and even piglets. And the parts of the skeleton represented indicate that only the more meaty joints were brought into the monastery. These findings are interpreted in terms of an occupation by people of high-status.

Lynx and Man: importance of historical research for the future of a threatened species

M. Fernandes[1] **; M. Casas**[2]**; A. Frazão-Moreira**[3]**.; JA Godoy**[2]
fernandesm@icnb.pt
[1]*Instituto da Conservação da Natureza e Biodiversidade, Lisboa, Portugal*
[2]*Estacion Biológica de Donana, Spain*
[3]*Centro em Rede de Investigação em Antropologia, Lisboa, Portugal*

Keywords: molecular genetics; lynx; osteological material; anthropological relationship

Historical references from lynx in Portugal are mainly from stuffed animals and pelts ranging from the end of the XIX century until 1990. They come from different areas indicating a wide range of the species: Serra da Estrela, Monfurado, Évora, Barrancos, Malcata and Mira, but already confirming a southeastern distribution. Museum specimens and private collections have proved very useful to the study of the past differentiation and diversity of the lynx across Portugal and Spain. Osteological material from those samples was used for DNA analysis which indicated a low genetic diversity already by the early XX century. These results imply that fragmentation processes throughout the Iberian Peninsula began earlier than was previously thought. It is now thought that the Iberian Lynx, as a specialist, may never have been a common species. In order to learn more

about the demography of the lynx we would need to include samples from and prior to the XV century when the decline probably started. The oldest samples from Portugal date back to the Middle Palaeolithic. Elements of this species are relatively abundant in Upper Palaeolithic levels at Gruta do Caldeirão and continue through late Mesolithic (Muge shell-middens). These vestiges are also interesting evidence of a relationship between Man and Lynx. In fact some of these show cut marks and were found among other material associated with human food. Although lynx has some symbolic mythology, such as the constellation named by the Greeks and portrayals of Gods with lynx skins, it was also consumed by humans. In fact, registers of cooking and sharing lynx meat among family and friends on special occasions persisted until the 1960s-70s in one of the historical Portuguese areas of occurrence. Traditional relationships and historical research provide important knowledge for the future of the lynx, presently a threatened species which depends on considerable efforts for its conservation and attitudes towards reintroduction.

On the origin of the Iberian Chameleons

Octávio S. Paulo[1,2]

[1]*Centro de Biologia Ambiental (Computational Biology and Population Genomics Group)*

[2]*Faculdade de Ciências da Universidade de Lisboa*

Keywords: Strait of Gibraltar; Holocene vestiges; recent introduction; Southern Portugal

Based on a sentence from Themido (1945) the Chameleon species is assumed to be introduced in Portugal in the beginning of the XX century. Themido mention that this species only exist in Southern Spain and Portugal and not in any other place of the European mainland, and that exist a colony in the 500 h of the Mata Nacional de Vila Real de Santo António:

" Esta colónia de camaleões descende, segundo informações dignas do melhor crédito, de exemplares trazidos do Sul da Espanha e de Marrocos, há cerca de 25 anos, por operários algarvios que periodicamente iam trabalhar nas fábricas instaladas naquelas regiões."

This sentence, and only this sentence, was the base for the popular conviction that Chameleons are a recent introduction in Portugal, however the species was already classified as least concern in last red book revision 2005, what implies the recognition of a certain status for the species.

The discovery by Talavera and Sanchíz (1983) of Holocene vestiges of Chameleons from the Málaga region in Spain, where there is a considerable current population, reinforced the idea that at least some Iberian populations could be of natural and ancestral origin.

The first molecular studies were carried out in the late nineties (Paulo et al. 2001) and in spite they were not conclusive they shed some light on the origin of the Iberian chameleons. A double origin of the Iberian chameleons was revealed and further studies are planned to address this problem with more detail.

PAULO, O.S., PINTO I., BRUFORD, M.W., JORDAN, W.C., NICHOLS, R.A. (2002). The double origin of Iberian peninsular chameleons. *Biological Journal of the Linnean Society* 75: 1-7.

TALAVERA, R. & SANCHÍZ, F. (1983). Restos holocénicos de Camaleón común, *Chamaeleo chamaeleon* (L.) de Málaga. *Boletin de la Real Sociedad Española de Historia Natural (Geologia)* 81: 81-84.

THEMIDO, A.A. (1945). Sobre a existência em Portugal de Camaleão vulgar, *Chamaeleo chamaeleon chamaeleon* (L.). *Memória e Estudos do Museu Zoológico da Universidade de Coimbra* 166: 1-4.

A diachronic phylogenetic study of Iberian cattle: some preliminary results

Catarina Ginja[1,2], Simon Davis[3], Ana Elisabete Pires[1,2], José Matos[2], Catherine Hänni[4], Emma Svensson[5] & Anders Götherström[5]

catarinaginja@gmail.com

[1]*Centro de Biologia Ambiental, Faculdade de Ciências, Universidade de Lisboa, Portugal*

[2]*Grupo de Biologia Molecular, Instituto Nacional Recursos Biológicos – INIA, Lisboa, Portugal*

[3]*Laboratório de Arqueociências, IGESPAR, Lisboa, Portugal*

[4]*Paleogenomics and Molecular Evolution group, Institut de Génomique Fonctionnelle de Lyon/École Normale Supérieure, France*

[5]*Evolutionary Biology Centre, Uppsala University, Sweden*

Keywords: Iberian cattle; ancient DNA; osteometry; phylochronology

The Middle East is seen as the major domestication centre for taurine cattle (~10-12,000 YBP). However, recent research has shown that the picture might be more complex with events of domestication having occurred in other regions as well. In Iberia aurochsen were present until the Chalcolithic and coexisted for several millennia with domestic cattle of Near Eastern ancestry (introduced in this territory ~6,500 YBP). This raises the interesting

question of whether local domestication and/or admixture events have contributed to the genetic makeup of Iberian varieties of cattle. Modern genetic data indicate that native Iberian cattle exhibit unusually high levels of diversity and strong breed structure. Moreover, these data clearly show that there are typical African variants in Iberian cattle.

It is now generally agreed that diachronic genetic studies are required to infer the origins and evolutionary trajectories of domestic animals. Analysis of ancient DNA (aDNA) opens a direct window into the past allowing reconstruction of the genetic history of animal populations. We aim to investigate the occurrence of local domestication and/or recruitment of Iberian aurochsen into domestic stock by combining zooarchaeological and aDNA information. We are also interested in understanding the times and direction of interactions between Iberian and North African cattle.

We have collected cattle remains from several archaeological sites in Iberia and North Africa spanning the last 28,000 years (from Palaeolithic to modern times). Zooarchaeological and archaeological context data were recorded. Genetic analyses were performed in ancient DNA-dedicated facilities (Palgene-Lyon, France and Uppsala University, Sweden) following strict laboratory procedures. We sequenced mitochondrial *D-loop* fragments (< 200 bp) with the 454 GS Junior Technology. DNA was successfully recovered from aurochs samples as old as 28,000 years. We discuss preliminary results of this diachronic phylogenetic study, specifically the continuities and/or discontinuities that are related with cattle origins and dispersion throughout Iberia and North Africa over time.

A phylochronology of the domestic dog in Iberia

Ana Elisabete Pires[1,2], C. Detry[3], C. Ginja[1,2], F. Simões [1] & C. Hänni[4]

ana.elisabete.pires@gmail.com

[1]Centro de Biologia Ambiental, Faculdade de Ciências, Universidade de Lisboa, Portugal

[2] Grupo de Biologia Molecular, Instituto Nacional Recursos Biológicos-INIA, Lisboa, Portugal

[3]Uniarq – Centro de Arqueologia da Universidade de Lisboa, Portugal

[4]Paleogenomics and Molecular Evolution group, Institut de Génomique Fonctionnelle de Lyon, CNRS/Université Claude Bernard LyonI/ENS, Lyon, France

Keywords: Domestic dog; Evolution; Palaeogenetics; Iberia; phylochronology

Previous molecular analyses of modern Portuguese autochthonous domestic dog breeds clearly indicates high levels of genetic diversity, the presence of specific genetic variants and a moderate genetic structure among breeds. We are now interested in understanding the genetic makeup of ancient skeletal remains of dogs and how the genetic variability has evolved over time in Iberia. A recent study showed that domestic dogs existed in Iberia for at least 8,000 YBP.

We combined zooarchaeological and archaeological data with ancient DNA information. The latter was generated in an ancient DNA facility in Lyon/France following strict protocols and by making use of the 454 GS Junior technology. We have sequenced a *D-loop* fragment of ~180 base pairs long. We compared the genetic composition among several dog remains over time and space from Mesolithic, Neolithic and Chalcolithic archaeological sites in Portugal.

DNA was successfully retrieved from dog remains from Iberia as old as 8,000 years. The palaeogenetic analysis of heterochronous samples allowed us to disclose the genetic variation of these ancient dogs and contrast it with the modern data.

Osteometrics showed that a lineage of dogs smaller than wolves spread all over Europe after 15,000 YBP probably with origin in the Middle East. Additionally, the burial of dogs has been documented for 12,000 YBP in the Middle East and 8,000 YBP in Iberia. Dogs were occasionally buried with humans and this practice demonstrates a special care towards this domestic species. The archaeogenetics of these dog remains will help us to understand the origin of the dogs found in Iberia as well as their evolutionary trajectories associated with humans.

Short genetic distances between modern Iberian wild boars and South Iberian domestic pigs

Barbara van Asch[1]
basch@ipatimup.pt
[1]*IPATIMUP – Institute of Molecular Pathology and Immunology of the University of Porto, Portugal*
Keywords: Genetic distance; Iberia; pig; mitochondrial; wild boar
The phylogeography of wild boars and domestic pigs has contributed important insights into where and when domestication occurred although the multiplicity and complexity of regional processes is still largely unknown. Iberia is an excellent model to investigate the relationships between wild and domestic pigs because these populations have always coexisted in the same territory, indigenous-type breeds still survive and human-mediated wild boar translocations from other regions were not extensive. The relationships between modern wild boars and domestic pigs in Iberia were investigated by the analysis of a fragment of the mitochondrial DNA control region in a large sample (n = 409) of individuals from Portugal by comparison with published sequenced from other European regions. The Iberian sample revealed a high frequency of a sub-cluster (E1c) of the European haplogroup E1 (77% of total Iberian samples, 96% of wild boar, 90% of Alentejano breed and 87% of Iberian breed). Low genetic distance (F_{ST} = 0.105) was observed between Alentejano (Portugal) and Iberian breed pigs (Spain). Alentejano and Iberian breed pigs had low genetic distances to both Iberian and Central European wild boar (average F_{ST} = 0.345 and 0.215, respectively). This genetic pattern suggests that pig husbandry in Iberia did not solely rely on imported Central European stock, but also included the recruitment of local wild boars. We will attempt to discuss these results in the context of recent zooarchaeological findings regarding *Sus scrofa* in Iberia.

Horse Domestication in Iberia - Past, Present and Future

Cristina Luís[1], **Joana Morais**[2], **Maria do Mar Oom**[2]
cmluis@fc.ul.pt
[1] *Universidade de Lisboa, Museus da Universidade de Lisboa*
[2] *Universidade de Lisboa, Centro de Biologia Ambiental, Faculdade de Ciências*
Keywords: Horse; Domestication; Ancient DNA; Genetics; Iberian Peninsula; North Africa
Horse domestication has long been a subject of intensive research. In the last decade, with the emergence of ancient DNA analysis and its comparison with modern DNA, there has been an even more lively discussion on this subject. One of the major issues has been the possibility of an independent horse domestication event in the Iberian Peninsula. However, and despite all studies made so far, several questions still remain open or need clarification.
1. Were there independent domestication events in the Iberian Peninsula and in North Africa?
2. Is there any evidence for the migration of horses between North Africa and Iberia before the Moorish invasion in 711 AD? If so, what was the direction of that migration?
3. Are there clear genetic evidences that the pool of horses that remained in the south of the Iberian Peninsula during the last glaciation subsequently influenced other European horses?
In this presentation a summary of the results obtained so far on this subject will be presented, with an overview on the studies that are currently being conducted and what is expected to be obtained in future studies.

ABSTRACTS – POSTER PRESENTATIONS

Large carnivores' diversity during the Palaeolithic Iberian Penisula

Francisco Correia[1] **& Rui Ramos**[1]
franciscomrcorreia@gmail.com & constantino.rui.90@gmail.com
[1]*Universidade do Algarve – FCHS, Faro, Portugal*
Keywords: Palaeolithic; Large Carnivores; Iberian Peninsula
The purpose of our poster is to correlate the information between various papers, about the large carnivores of the Palaeolithic Iberian Peninsula in human context.
The existence of large carnivores in sites with human occupation has a high importance in the issue of hominid diet and site occupation behavior.
The competition between hominids and large carnivores would restrict each other access to carcasses and even

shelters. The finding of carnivores in sites with human occupation can help to find out if the human occupation was made interchangeably with the large carnivores. Also, there is the hypothesis of access to a large carnivore as a carcass by a hominid, following the consumption of that meat.
Along the Palaeolithic, carnivores may have faced extinction phases. One of our goals is to try to locate them through bibliographic data on the subject. Nevertheless, no bibliographies were studied in the context of non-human carnivores. Something which is necessary for better understanding.
Close to the end of the Paleolithic, more precisely, Upper Palaeolithic, the relationship between human and carnivores began to change, mainly because of the reduction of this type of animal, caused by competition, or due to environmental changes.

Study of the mammals recovered in Cabeço da Amoreia (Muge – Portugal): State of the art

Alexandra Pereira[1]
alexandrairpereira@hotmail.com
[1]*NAP – Núcleo de Arqueologia e Paleoecologia da Universidade do Algarve, Faro, Portugal*
Palavras-chave: Mesolithic; Cabeço da Amoreira; Mammals
The beginning of the Mesolithic, about 10.000 years BP, was marked by profound environmental changes, altering the ecology and economy of hunters-gatherers communities. With the end of the last glacial period and the beginning of the Holocene, around 12.000 to 10.000 BP, climate conditions improved, characterized by an increase in temperature and humidity, sea levels raised, dense forests appeared and an evolution of species of fauna was verifiable.
These changes transformed the flora and fauna of the sites, which resulted in the emergency of high bio diversified environment and forced hunter-gathers of the Muge shell-middens to adapt the news conditions, change their subsistence and settlement patterns, hunting strategies and use of the different animal species.
The site of Cabeço da Amoreira was located in back the of the Tagus estuary, integrated in the Mesolithic complex of Muge and has its own cultural identity. The fauna set is diverse and numerous, being an important source for the knowledge of subsistence and settlement practices of these hunter-gatherer groups.
The present work proposes to approach the state of the art as regards to study of the mammals recovered in Cabeço da Amoreira, exposing the studies that have been made to date, resultant from 150 years of archaeological interventions. It's known that mammals hunted by such communities are typical of a temperate climate, dense forest with open spaces, integrated in an ecosystem of high biodiversity.

The last studies that have been made, allowed the understanding of hunting and exploration strategies of various animal species, based in Taxonomy, Osteometry, Taphonomy, Paleoecology and Paleoeconomy.

The faunal assemblage recovered from the Chalcolithic settlement of Escoural (Montemor-o-Novo, Portugal)

Mohamed Azaza
Keywords: Chalcolithic; Escoural; Zooarchaeology
The present work examines the faunal assemblage recovered from the Chalcolithic settlement of Escoural (Santiago d'Escoural, city, country?). The main purpose of this study is the identification of all faunal remains and the determination of the dominant species on the site. Butchery marks and skeletal representation for the different species suggest that the major part of these remains stem from the diet. The contribution of wild species as the Aurochs, the horse or the red deer suggests their synergetic contribution and their economic importance. The weak presence of sheep/goat suggests their secondary role in the subsistence structure of the settlement. The dominance of *Sus* proves the preference the human communities installed on the site had for this animal and probably shows their gradual sedentarisation. The comparison of Escoural data with others from local sites (Mercador settlement, Mourão) and regional ones (Leceia settlement, Portuguese Estremadura) helps to reconstruct the local and regional landscape characterized probably at Escoural by a plain with a middle altitude which had forest covert.
During the Chalcolithic, on the settlement of Escoural,

- The hunting of the **wild horses** was been practiced, proved likely by the presence of the butchery marks on the identified elements of the skeleton.

- For the **wild cattle (*e.g.* aurochs)**, we can say that it had a synergic importance mainly if the strategy of the subsistence of the settlement was based on the hunting.
- The main presence of the **domestic cattle** suggests its importance for the settlement (meat, milk, farmers work).
- The preference of the pig (wild/domestic), traduces likely it synergic contribution which suggests probably the gradual transformation to the Agricultural lifestyle.

The Pigs were not really domesticated but the group was outside of the village, eating mainly fruits.

- The observation of few **sheep/goat** remains suggests that hunting was relevant for this population's economy.

In death as in life. Ties between Man and animals in Southwest Iberian Peninsula Bronze Age: two case studies from Alto de Brinches 3 e Torre Velha 3 (Serpa, Alentejo, Portugal)

Eduardo Porfírio[1] & Miguel Serra[1]
eporfirio@gmail.com & miguelserra@palimpsesto.pt
[1]Palimpsesto

Keywords: Bronze Age from SouthWest Iberia; depositions of animals; pits; Ritual

The archaeological excavations carried out by Palimpsesto Lda. at Alto de Brinches 3 and Torre Velha 3 (Serpa, Alentejo, Portugal) were conducted under a specific program designed to assess the archaeological impacts caused by the construction of Alqueva dam (EDIA SA) irrigation systems.

The fieldwork was developed in both sites revealing a large number of archaeological contexts which are dated to different historic and prehistoric periods. In each site, pits were found containing articulated animal bones together with Bronze Age ceramics.

At Alto de Brinches 3 the pit [664] revealed at least two different episodes of animal deposition. Firstly, a canid was deposited and subsequently a wider range of animal articulated bones, e.g. a pig and another canid. At Torre Velha 3, the analysis filling sequence of the pit [2411] revealed a human burial in flexed position together with a human ossuary and, in a superior level, a canid burial.

The aim of this paper is to present these two cases, currently under investigation, where the faunal remains analysis play a central role, both in understanding the deposition conditions and the symbolic component involved with these practices. Lastly, a brief framework of similar occurrences identified in regional and peninsular Bronze Age sites is presented.

Case studies like this from Alto de Brinches 3 and Torre Velha 3 contributes to better characterize the relationships between this human communities and their animals. Ties like the ones reported here show a great complexity. More traditional economist's point of view, sees animals linked exclusively to draught, transport and as a source of food and raw materials. The study of ritual manifestations of this kind combined with the analysis of associated artefactual assemblages plays an important role to characterize the symbolic practices and the daily life of these Bronze age communities.

Humans and carnivores: the Late Bronze Age archaeofauna of Cadaval (Alto Ribatejo, Central Portugal)

Nelson Almeida[1,2,3], Palmira Saladié[1,4,5] , Ana Rosa Cruz[1,6] & Luiz Oosterbeek[1,2,7]
nelsonjalmeida@gmail.com
[1] GQP-CG, Quaternary and Prehistory Group, Geosciences Centre, Coimbra, Portugal
[2] ITM, Instituto Terra e Memória, Mação, Portugal
[3] Museu de Arte Pré-Histórica e do Sagrado no Vale do Tejo, Mação, Portugal
[4]IPHES, Institut Català de Paleoecologia Humana i Evolució Social, Tarragona, Catalunha, Espanha
[5]URV, Universitat Rovira i Virgili, Àrea de Prehistòria, Tarragona, Catalunha, Espanha
[6]CPH, Prehistory Centre – Polytechnic Institute of Tomar, Portugal
[7]IPT, Polytechnic Institute of Tomar, Portugal

Keywords: Alto Ribatejo; Late Bronze Age; Gruta do Cadaval; Palaeoeconomy; Accumulation

Gruta do Cadaval (Alto Ribatejo, Central Portugal) is a karstic cave with a long stratigraphic sequence spawning from Middle Palaeolithic to Medieval times. A Late Bronze age occupation was identified associated to an individual burial and a hearth indicating a mixed use as habitat and burial ground.

The archaeofaunistical assemblage (NSP 773) is very fractured with a clear predominance of green fractures

indicated by the planes analysis. There is a dominance of ovicaprids (*Ovis aries*, *Capra hircus*), followed by other taxa: *Bos taurus*, *Sus scrofa* ssp., *Cervus elaphus* and *Capreolus capreolus*. Carnivores, leporids, insectivores, quelonids and avifauna were also identified.
The work presented is focused on the taphonomic aspects related to the accumulation of the identified taxa and the sedimentary context. The cavity occupation is also discussed. For the domestic species the analysis of age at death suggests a mixed economy with the acquisition of primary and byproducts.
We are in the presence of a pastoralist economy; in which hunting practices were at the most complementary.

Shell remains from Casa do Governador da Torre de Belém
Project "*A indústria de recursos haliêuticos no período romano: a fábrica da Casa do Governador da Torre de Belém, o estuário do Tejo e fachada atlântica*" (PTDC/HAH/74057/2006)

Manuela Dias Coelho[1]
manueladiascoelho@gmail.com
[1] *Uniarq – Centro de Arqueologia da Universidade de Lisboa, Portugal*
Keywords: shell remains, gathering, consumption, Roman period

The analysis of the malacological collection from Casa do Governador da Torre de Belém has shown a great diversity of marine species, with predominance of *Mytilus edulis* and *Patella* genus but also the species *Ostrea edulis*, *Anomia ephippium* and *Nassarius reticulatus*.
According to the context of origin, can be seen a greater diversity of species in three structures (of 34 identified), as well as higher MNI values in contexts where work has been done with sieve during the archaeological intervention.
In paleoecological domain, there was a predominance of species of rocky substrates, as well as sheltered areas, both exposed and beaten by the waves. In the analysis of tidal levels, there was a predominance of species of the upper and middle intertidal zone, allowing a direct gathering, with a daily rhythm, whose strategy would be to collect adult specimens, confirmed by biometric analysis.
About gathering techniques characterization, we can considerer a mollusks acquisition of the genus *Patella* with the aid of sharp instrument, as well as the possible use of tools like rake, dredge or peak in obtaining the species *Ostrea edulis*.
In the inventory of *post-mortem* evidences it was found sporadically the purchase of shells of *Pecten maximus*, while traces of use were reported for the remains of *Ostrea edulis* as the result of a probable use as scrapers. In turn, with marks of transformation can be identified the presence of perforated shells in the genus *Patella* and species *Ostrea edulis* and *Cymbium olla* without identification of traces of use in these productions.
The study of taphonomic changes demonstrated the high level of fragmentation on the species *Mytilus edulis*, as a result of handling and deposition forms, with the question of whether its use in diet with particular methods could result in the major fragmentation debris.

The faunal assemblage from a roman pit in the villa of São Miguel de Odrinhas (Sintra, Portugal)

Alexandre Gonçalves[1]
alexandre.masmo@gmail.com
[1]*Museu Arqueológico de São Miguel de Odrinhas, Sintra, Portugal*
Keywords: Animal bones; Roman pit; villa

We intend, with this poster, to present a set of faunal remains recovered during the excavation of a roman pit associated with the villa of São Miguel de Odrinnhas (Sintra, Portugal).
It will be exposed the contexts were this assemblage came from and disclosed a first classification of the osteological evidences.
The assemblage is mainly composed of complete skeletons that were both deposited intentionally or have intrusive origin has should be the case of the high number of elements belonging to rodents, small insectivores, reptiles, amphibians and small birds. The skeletons that were probably intentionally deposited by humans in the pit for reasons of disposal or even ritual belong mainly to sheep and dogs; there were also some cases of isolated craniums of cattle and one skeleton of a cat. It was concluded that most of the remains do not represented disposal of food left-over's.

An isotopic study on atlantic cod: insights regarding trade and fishing strategies from the Pictish period to the Norse Age in North Atlantic Scotland

Nayeli Jiménez-Cano[1]

[1]*Dept. of Biology, Archaeozoology Laboratory, Universidad Autónoma de Madrid, Spain*

Keywords: fish remains; cod trade; stables isotopes

The relationship between Man and Sea during Pictish (800-900 AD) and Norse (900-1000 century AD) periods in the North Atlantic Sea has a well recorded and still floutrishing history. However, the nature and importance of marine resource exploitation, especially Atlantic cod (*Gadus morhua*) and its trade during both periods of the Western Isles of Scotland remains largely unknown. This work assesses the trade and fishing strategies of Atlantic cod during the Pictish-Norse transition from two sites: Bostadh and Galson, by using isotopic ratios (?13C and ?15N) from cod bone collagen.

The results demonstrated that the Viking colonization in the case of Bostadh did not necessarily imply a violent change but a continuity of previous cod exploitation patterns. While at Galson during the Norse period the codfish consumed could have had a Norwegian origin, which could suggest that this settlement was taking part in the increasing Norwegian cod trade of the first millennium AD. These suggestions complement the recent hypothesis about cod transportation from the Arctic Norway to the Baltic and North Sea.

The evidence shown here reassesses the models of cultural contact in Atlantic Scotland by enhancing previous evaluations with isotopic values that supplement the archaeological data regarding fishing practices during the Viking transition in the Outer Hebrides.

Early European records of Neotropical mammals: a review of iconographic and literary sources

Marco Masseti[1] **& Cecilia Veracini**[2]

cveracini2011@gmail.com

[1]*Laboratory di Antropologia, Università di Firenze, Italy*

[2] *ISCSP – CAPP, Universidade Técnica de Lisboa, Portugal*

Keywords: Ethnozoology, artistic representation, chronicles, 16th century

This work aims to give a review of the early description and iconographic records of Neotropical mammals found or known in Europe after the re-discovery of America. In the last years many new works demonstrate that such animals were brought back in Europe in a quantity greater than previously supposed and that the knowledge about them was well developed already in the 16th century. The earlier chronicles of European travelers in the Americas during the 15th and 16th already contain many references to mainland American mammals, such as those from the Paria Peninsula, Venezuela, written by Christopher Colombus on his third transatlantic voyage in 1498, and by Vicente Yańez Pinzón, who followed in the footsteps of Colombus. Also the Peter Martyr d'Anghiera's first Decade contains the accounts of European encounters with many animals, including the common opossum, *Didelphis marsupialis* L., 1758, deer of the genus *Odocoileus* and *Mazama*, the kinkajou, *Potos flavus* (Schreber, 1774), the jaguar, vampire bats, and monkeys, among them *Alouatta seniculus* (L., 1766). Moreover just in the first years after the America re-discovery many of the indigenous mammals were sent to Europe, where they were often kept in the menageries of the nobles and the aristocracy. Nevertheless, it is traditionally held that, apart from a very few cases, the earliest representations of living American animals date to the second half of the 16th century (eg. Historiae animalium by Conrad Gesner [1557], or Tavole di animali by the Italian Ulisse Aldrovandi [1522 – 1605]), but very recent evidences document the representation of living animals already in the first decades of that century.