

THE QUATERNARY MAMMALS FROM THE CAVES OF CASAIS ROBUSTOS AND CABEÇO DE MORTO, ALCANENA (PORTUGAL): THE CASE OF *Lynx pardinus* Temminck, 1827

Darío Estraviz^{1,2} and Octávio Mateus^{1,2}

¹ Departamento de Ciências da Terra, Faculdade de Ciências e Tecnologia, FCT, Universidade Nova de Lisboa, 2829-526 Caparica, Portugal: d.lopez@campus.fct.unl.pt / omateus@fct.unl.pt

² Museu da Lourinhã, Rúa João Luis de Moura 95, 2530-158 Lourinhã, Portugal.

Keywords: *Cervus elaphus*, *Capra pyrenaica*, *Canis lupus*, Serra de Aire, Quaternary

INTRODUCTION

On the present work, bone material of Pleistocene or Holocene mammals from two karstic cavities in the Natural Park of Serras de Aire e Candeeiros (Municipality of Alcanena, District of Santarém, Portugal) is reviewed. Three wooden boxes with unprepared material referred to “Casais Robustos” were recovered from the storage of the Department of Earth Sciences in the FCT, Universidade Nova de Lisboa. The only associated information was the locality and a letter that detailed how the material was given to the department. When and who retrieved the fossil material remain unclear

The two localities studied in this work, Casais Robustos (30° 30' 0" N, 8° 40' 0" W, 254 m. a. s. l.) and Cabeço de Morto (30° 30' 24" N, 8° 40' 30" W, 280 m a. s. l.), are separated by just one kilometer. The first site is situated inside a small village and the second one is located in a quarry that nowadays remains closed. According to Cardoso (1993), the identified fossil material from both sites combined consists of 41 remains corresponding to the following species: *Cervus elaphus* Linnaeus, 1758; *Capra pyrenaica* Schinz, 1838; *Equus ferus* Linnaeus, 1758 and *Canis lupus* Linnaeus, 1758. All this material was recovered on surface, being it later deposited in the former Center of Stratigraphy and Paleobiology, now the Department of Earth Sciences of Universidade Nova de Lisboa, at Caparica, Portugal.

MATERIAL AND METHODS

The calcareous crust that covered the fossil remains was successfully removed mechanically using a micro-jackhammer in most of the

specimens, however in other cases the specimens were submerged in formic acid at 5% of concentration in water during twelve hours (after protecting the exposed parts of the bone with Paraloid® B72 diluted at 5% in acetone) in order to weaken the thickest crusts before mechanical preparation and to eliminate the thinner ones in the more complicated parts of the bone, like the epiphysis. Then, the bone fragments that fit were glued with the same product, this time diluted at 50% in acetone. Other remains were left untouched because of the possibility that acidic preparation would distort eventual molecular studies. Finally the fossil remains were compared with the osteological collection of the LARC (Laboratório de Arqueociências) of the DGPC (Direção Geral de Patrimônio Cultural) in order to identify them accurately.

During this research a total of 58 bone fragments were identified, including 31 cranial remains mostly belonging to *Cervus elaphus*, 10 teeth of *Equus ferus* and four pieces of axial skeleton, including a *Cervus elaphus* pelvis with the right acetabulum complete. Also 23 appendicular skeleton remains were recognized including one humerus, one metacarpal, one femur, one tibia and one metatarsal of *Cervus elaphus* mostly complete; one metatarsal attributable to *Capra pyrenaica* and the distal portion of a right humerus of *Lynx* (Linnaeus, 1758) with a distal mediolateral diameter of 32.5 mm (Fig. 1).

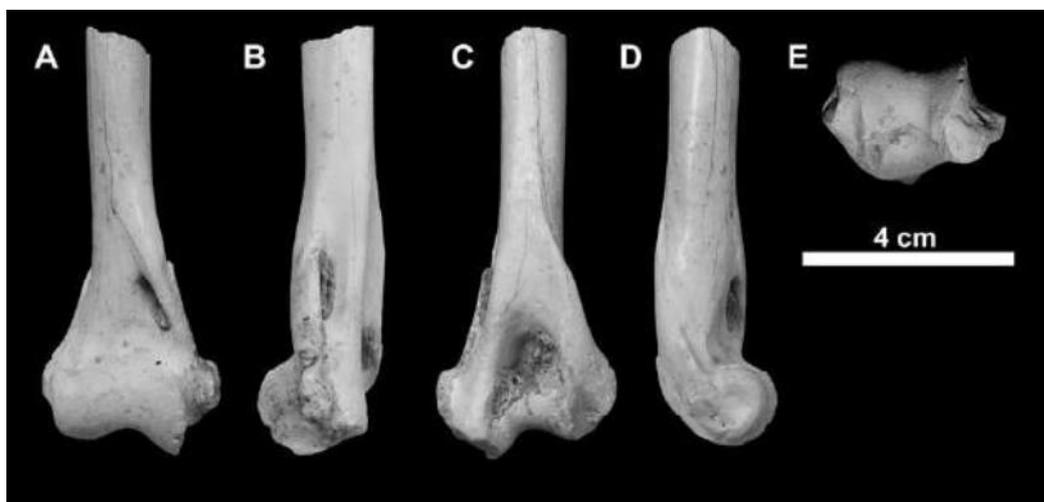


Fig. 1. Distal fragment of right humerus of *Lynx pardinus* (FCTUNL-VP-713) in (A), anterior; (B), medial; (C), posterior; (D) lateral, and (E), distal view.

Comparing this inventory with Cardoso (1993), we discovered the absence of some exemplars: Among them is the only upper second molar

of *Canis lupus* in the sample, one radius, two ulnae, two metacarpals, one femur and one tibia of *Capra pyrenaica* and *Cervus elaphus*. Additionally new remains not mentioned in the previous work have been found, including ten teeth, five pieces of mandibles, one cranial fragment, four horn fragments, one vertebra, two fragmentary scapulas, one pelvis, four humeri (including the *Lynx* one) and one phalanx.

DISCUSSION AND CONCLUSIONS

The incongruence between the number and nature of the remains cited in the literature and those studied in this work could be caused by mislabeling and misplacement of the fossils. The preparation of the samples has also allowed us to obtain new information of previously unidentifiable remains.

The fragment of the *Lynx* right humerus is the first occurrence of this genus in the locality of Casais Robustos. Compared with the humerus of *Lynx pardinus* from the collection of LARC it possesses the vascular foramen in the same spot of the olecranon fossa, the medial epicondyle is well marked and protrudes laterally in the same angle (almost 90°), the capitulum is approximately 2/3 the height of the trochlea in both bones and the orientation of the supracondyloid foramen (almost invisible from dorsal view) is equal in both specimens. The LARC specimen belonged to a young female and its distal mediolateral diameter is 25 mm, meanwhile the diameter of the FCT specimen is 32.5 mm; what matches perfectly with the sexual dimorphism observed in *Lynx pardinus*, the males of this species are about 25% bigger than females (Beltrán and Delibes, 1993). Also the FCT specimen has a more marked supracondyloid ridge useful for attaching bigger muscles, like the ones of a big male lynx. However, given the size variability of this species during the Pleistocene (Kurtén and Granqvist, 1987) we hesitate to assign this bone to a male of *Lynx pardinus*.

The distal diameter of this specimen falls in the range of the actual *Lynx pardinus* and the remains of this genus in the Portuguese sites of Casa da Moura, Fontainhas, Caldeirão, Escoural and Algar de Cascais. Nevertheless it is also smaller than the ones from Gruta das Salemas, Lapa da Rainha and mostly Furninha. It is also smaller than the values of the actual *Lynx lynx* (Linnaeus, 1758), as we can see in Tab. 1. Its excellent preservation could make it useful for future molecular studies, but only new analyses can prove this point.

Locality or species	Number of specimens	Minimum-Maximum (mm)	Mean (mm)
Casa da Moura	2	30,9 - 35,2	33
Fontainhas	2	32,2 - 33,1	32,6
Caldeirão	4	28,2 - 32,2	30,4
Escoural	3	32,1 - 35,0	33,3
Algar de Cascais	3	31 - 33,3	31
<i>Lynx pardinus</i>	2	25 - 30,6	27,8
Gruta das Salemas	2	36,1 - 36,1	36,1
Lapa da Rainha	1	35,6	35,6
Furninha	5	33 - 39,2	35,8
<i>Lynx lynx</i>	2	36,5 - 37,2	36,8
Casais Robustos	1	32,5	32,5

Tab. 1. List of *Lynx* humerus with the measurements of the distal mediolateral diameter; from diverse localities in Portugal plus specimens of the two European lynxes (*L. lynx* and *L. pardinus*). All data except the specimen of Casais Robustos and one of the *Lynx pardinus* come from Cardoso (1993).

REFERENCES

- Beltrán, J. F., and Delibes, M. 1993. Physical characteristics of Iberian lynxes (*Lynx pardinus*) from Doñana, southwestern Spain. *Journal of Mammalogy*, 74(4), 852-862.
- Cardoso, J. L. 1993. *Contribuição para o conhecimento dos grandes mamíferos do plistocénico superior de Portugal*. Centro de Estudos Arqueológicos do Concelho de Oeiras (Câmara municipal de Oeiras), Oeiras, 567 pp
- Kurtén, B., and Granqvist, E. 1987. Fossil pardel lynx (*Lynx pardina spelaea* Boule) from cave in southern France. *Annales Zoologici Fennici* 24(1): 39-43.

LIFE FINDS A WAY



XVI. PALEONTOLOGO IKERTZAILE GAZTEEN
TOPAKETAKO LABURPEN-LIBURUA

LIBRO DE RESUMENES DEL XVI ENCUENTRO
DE JÓVENES INVESTIGADORES EN
PALEONTOLOGÍA

ABSTRACT BOOK OF THE XVI MEETING OF
YOUNG RESEARCHERS IN PALEONTOLOGY



aranzadi
zientzia elkartea

SOCIEDAD DE CIENCIAS
SOCIETY OF SCIENCES
SOCIÉTÉ DE SCIENCES



Universidad
del País Vasco

Euskal Herriko
Unibertsitatea

ZIENTZIA
ETA TEKNOLOGIA
FAKULTATEA
FACULTAD
DE CIENCIA
Y TECNOLOGÍA

© De los textos y las figuras, los autores

© Del diseño de la portada y el logo del XVI EJIP, Oier Suarez Hernando y Humberto Serrano

© De la fotografía de la portada, Naroa Martinez Braceras

Maquetación: Jon Errandonea Martin y Roi Silva Casal

Depósito Legal: xxxxxxxxxxxx

Cómo citar el libro: Amayuelas, E., Bilbao-Lasa, P., Bonilla, O., del Val, M., Errandonea-Martin, J., Garate-Olave, I., García-Sagastibelza, A., Intxauspe-Zubiaurre, B., Martinez-Braceras, N., Perales-Gogenola, L., Ponsoda-Carreres, M., Portillo, H., Serrano, H., Silva-Casal, R., Suárez-Bilbao, A., Suarez-Hernando, O., 2018. *Life finds a way*, Gasteiz, 328 pp.

Cómo citar un abstract: Intxauspe-Zubiaurre B., Flores, J-A., Payros A., Dinarès-Turell, J., Martínez-Braceras, N., 2018. Variability in the calcareous nannofossil assemblages in the Barinatxe section (Bay of Biscay, western Pyrenees) during an early Eocene climatic perturbation (~54.2 ma), p. 21–24. In: Amayuelas, E., Bilbao-Lasa, P., Bonilla, O., del Val, M., Errandonea-Martin, J., Garate-Olave, I., García-Sagastibelza, A., Intxauspe-Zubiaurre, B., Martinez-Braceras, N., Perales-Gogenola, L., Ponsoda-Carreres, M., Portillo, H., Serrano, H., Silva-Casal, R., Suárez-Bilbao, A., Suarez-Hernando, O. (Eds.), *Life finds a way*, Gasteiz.

