EVIDENCE OF INTERACTION *HOMO-CUON* IN THREE UPPER PLEISTOCENE SITES OF THE IBERIAN MEDITERRANEAN CENTRAL REGION

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During the Pleistocene three species of the genus *Cuon* spread widely in Europe (*C. stehlini, C. priscus* and *C. alpinus*). The oldest identified remains of *Cuon alpinus* in the Iberian Peninsula were recovered in Trinchera-Galeria middle Pleistocene site (Atapuerca, Burgos). During the upper Pleistocene this species has been identified in different sites all over the Peninsula. This work focuses on the interactions *Homo-Cuon* in three different sites (Cova Negra, Coves de Santa Maira and Cova del Parpalló) of the Iberian Mediterranean region.

Models of accumulation of *Cuon* remains in archaeological contexts

1. Anthropic accumulations: usually isolated elements or either fragments of them. This should be the case of some remains recovered in the Iberian Peninsula, such as the mandible from Cova Negra and the neurocranium from Coves de Santa Maira.

2. Natural or non-cultural accumulations: similar to those remains recovered in paleontological contexts. Partial or whole skeletons with low rates of fragmentation. These accumulations are due to predation or natural deaths. This is the case of the individual from Cova del Parpalló.

Archaeological sites

1. Cova Negra
2. Coves de Santa Maira
3. Cova del Parpalló

***Cuon alpinus* Pallas 1811**

Middle-sized Canidae (height: 40-55 cm; weight: 12-25 kg), smaller but sturdier than the wolf (*Canis lupus*).

Inhabit different biotopes (Mediterranean regions during the Pleistocene; mountains and tropical forests).

Current distribution: India, China, and SE Asia.

Predatory and feeding behaviors: Gregarious hunters (mainly) and scavengers. Selective killing and consumption of middle-sized ungulates, although depending on prey availability dholes can also hunt smaller preys.

Ethological studies have observed mainly a quickly consumption of preys in the killing sites with non-significant transportation of remains.

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ANTHROPIC ACCUMULATIONS

The mandible of *Cuon* from Cova Negra and the neurocranium from Coves de Santa Maira are the only remains in the Iberian Peninsula with anthropic marks related to the butchering process.

The mandible: Is a well-preserved fragment of a left hemimandible with complete premolar and molar series (P1-M2). In its lateral part we observe a number of short and oblique lithic scrapes.

The neurocranium: Is a complete specimen fragmented on the zygomatic process of the frontal bones. Over the left parietal there is a long thin and oblique lithic incision.

Considering their position, both marks can be related to the removal of the skin.

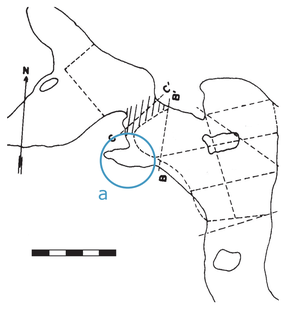
Cova Negra (Xàtiva, València).
Middle Paleolithic MIS 5d-b
Hemimandible of *Cuon* cf. *alpinus*

Coves de Santa Maira (Castell de Castells, Alacant).
Upper Paleolithic MIS 2
Neurocranium of *Cuon alpinus*

NATURAL ACCUMULATIONS

The collection was recovered from the basal levels of a small gallery within the cave during the excavation carried out by Ll. Pericot in 1930; levels which must be prior to Gravettian levels. The dhole assemblage consists of an almost complete cranium, two hemimandibles, several fragments of the right scapula, the left radius, the right femur, and an ilium fragment. Leaving aside recent fractures, the bones are almost all complete and belong to **the same adult individual**, who probably died of natural causes; they don't show anthropogenic or carnivore marks.

Associated to this set of bones, have been recovered some remains of ungulates, mainly ibex (*Capra pyrenaica*). Taphonomic marks (mostly scrapes, pits and punctures) indicate carnivore involvement in its deposition. The identification of these remains together with the dhole ones suggests the possibility that these remains were accumulated by this canidae.

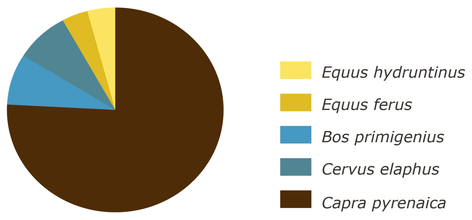


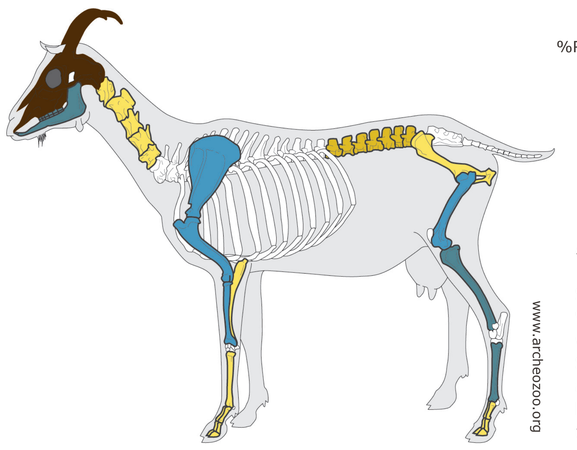
Pericot 1942.

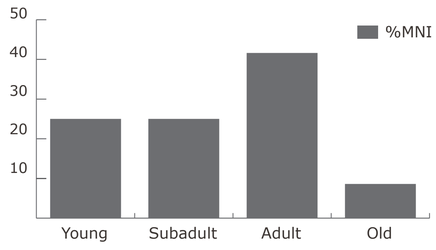
Plan of Cova del Parpalló
a) Small gallery where the dhole bones were recovered

Cova del Parpalló (Gandia, València).
Prior to Gravettian levels (natural accumulation).
Several bones of the same individual of *Cuon alpinus.*

UNGULATE REMAINS STUDIED (associated to the dhole bones)







Taxonomical representation (MNI and MNE)

The MNE total recovered is 123. *Capra pyrenaica* is the most abundant taxon (MNE=97, MNI=19). *Bos primigenius* and *Cervus elaphus* MNE=13 and 10 respectively (both MNI=2). The less represented species are *Equus ferus* and *Equus hydruntinus* (MNE =1 and 2 respectively, MNI=1). Consequently, the study of sex and mortality profiles and the anatomical representation have been carried out using the data of ibex.

Anatomical representation

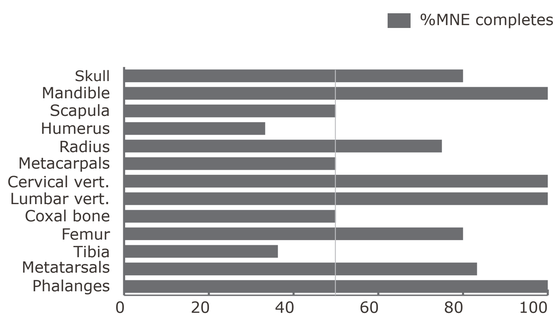
Skull and horn core are the most abundant remains (84,2 %). Maxilla and upper molars, mandible and lower molars as well as tibia and metatarsal represent between 20 and 30%. Scapula, humerus, radius and femur, between 10 and 20%, and ulna, metacarpal, vertebrae, coxal bone and phalanges below 10%. Other elements like the ribs and the carpal and tarsal bones are not represented.

Sex and mortality profiles

There are represented 10 males, 6 females and 3 undetermined. 12 individuals have provided age information. The structure is dominated by the adults (5 individuals of more than 3 years old and 1 senile individual) that represent 50% of the collection. Juvenile and subadult individuals represent a 25% respectively.

Set of ungulate bones, associated to the dhole individual and located in the basal levels of a small gallery (Cova del Parpalló).

Humerus of *Capra pyrenaica* with fresh spiral fractures on the middle diaphysis due to carnivore bites.



Fragmentation

Most of the bones are well-preserved, complete or with low rates of fragmentation (between 75-100% of complete bones): cranium, mandibles, axial skeleton, radius, femur, metatarsals and phalanges. Humerus and tibia are the most fragmented bones, with only 33,3 and 36,3% of complete bones respectively.

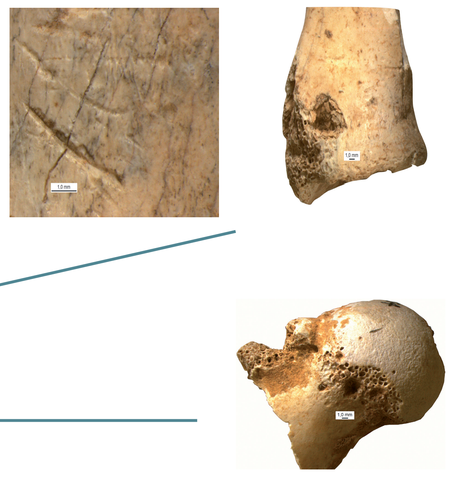
Fragments of humerus are dominated by distal remains (50% of fragments), while tibia shaft fragments (42,8%) are more abundant than proximal (28,5%) or distal (28,5%). The longitudinal fragmentation of tibiae is probably due to diagenetic agents, as well as the transversal breakage of radius and femur. Fresh breakage due to consumption processes have been only well identified in humerus (NISP=3), skull (NISP=1) and scapula (NISP=1). Fragments with recent fragmentations have not been included on this analysis.

Two fragments of diaphysis present particular breakage patterns that could be caused by human percussions as well as by carnivore bites pressure, since both processes can result in the same breakage morphology.

ALTERATIONS

Seventeen remains of ibex present clear marks related to carnivore action (17,5%). Most important features are absence of broken diaphysis, punctures and pits mainly in articular ends, and some scrapes. The different marks, bones where they appear and % are showed in the table (in blue, the most abundant marks).

	%NISP with marks	Tooth marks
Mandible	9	scrapes
Cranium	6,3	fracture with notches
*Scapula	57,1	**punctures**, **pits**, scrapes
Humerus	50	**scrapes**, pits, notches
Ulna	100	pits, notch
Coxal bone	50	pits, notch
*Femur	42,9	**scrapes**, pits, notches
Tibia	30	**scrapes**, pits



CONCLUSIONS

The dhole remains recovered from three Upper Pleistocene sites from Valencia show **two different interaction processes between humans and dholes**: on the one hand, dholes could be preys for humans (Cova Negra and Coves de Santa Maira); on the other, dholes could compete with human groups for caves and resources (Cova del Parpalló).

The ungulate bones collection recovered from the gallery of Cova del Parpalló is very interesting. Spanish ibex is the most abundant taxon on these collection, although other taxa (auroch, red deer and two species of equids) are present as well. Associated with these collection there are some remains of an adult specimen of dhole (*Cuon alpinus*) death by natural causes. That fact suggests that **this animal could be a new bone accumulation and alteration agent**. Neither coprolithes nor decidual teeth were recovered form this gallery, that could be more used as an sporadic shelter than as a den.

Taphonomic alterations on ibex bones are due mainly by carnivores and affect almost the 20% of the whole sample. Most of the bones are complete, and the articular ends are abundant. Adult specimen dominates the age profiles and both sex are present. The characteristics of the bones suggest a **sporadic or occasional occupation of the basal levels of the gallery by carnivores** where these animals transport their preys, or parts of them. The low alteration rates on artiodactyla bones could be produced during the first stages of consumption (consumption of meat and soft tissues) and their features are different from those marks (more intense and abundant) usually produced by carnivores like wolves or hyenas. The particular characteristics of the dhole dentition, with a greater development of the trigonid (cutting blades of the molars) and a smaller talonid, could be related to the special features of the collection.

As we have pointed out in a previous paper (Pérez Ripoll *et al.*, 2010), the presence of the dhole during upper Pleistocene seems to be important, according to the new data from different sites. **Dholes had probably been important rivals for humans and other carnivores** for refuges and resources, as well as sporadic preys of humans groups.

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