How to identify standards of Neanderthal short-term occupations in cave environments? Zooarchaeological and taphonomic preliminary results of Teixoneres Cave unit III

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INTRODUCION

Archaeological sites are often the result of a palimpsest. A palimpsest is an overlapping of different activities and/or several occupations and many natural processes, whose material traces are partially destroyed or reworked. This is a critical aspect to deal with when trying to recognize the duration of Neanderthal occupations. In this line, zooarchaeological and taphonomic studies can help to understand how the anthropogenic presence is embedded in the natural context and what processes (biostratinomic and fossil-diagenetic) have affected the archaeological record.

TEIXONERES CAVE

Moià, Barcelona, Spain (Fig.a)

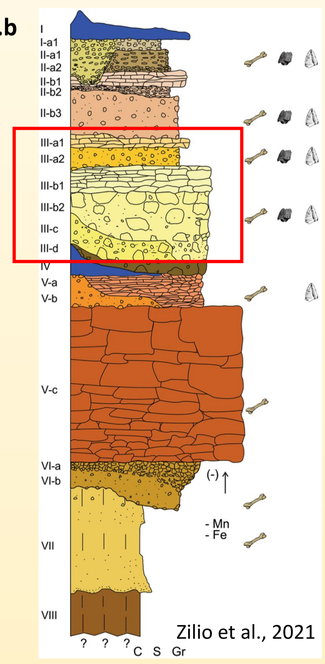
3 main chambers (X, Y, and Z) (Fig.c)

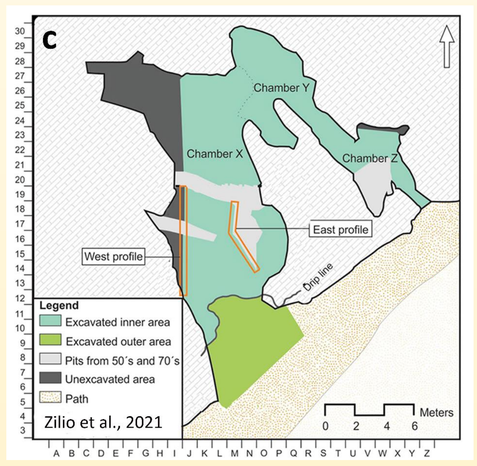
Chamber X: the main entrance; eight stratigraphic units (from > 200 ka to 14–16 ka) (Fig.b)

Unit III >51 ka BP to 43.4 ka cal BP

Human (cave entrance) and carnivore occupations (inner area) alternated[1,2]

Fig.b





METHODS

Calculation of NR (Number of remains), NISP (Minimal Number of Identified Specimens), MNE (Minimal Number of Elements), MNI (Minimal Number of Individuals), and %RA (Relative Abundance Index)[3]
Analysis of bone surface modifications: cut marks, bone breakage, burning damage, tooth marks, and digestive damage[4]

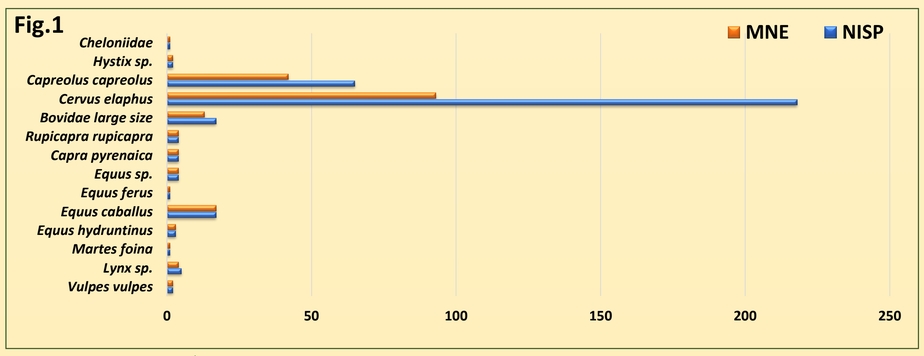
RESULTS

NISP 5063

High taxonomic diversity (Fig.1)

Cervus elaphus and *Capreolus capreolus* are the most representative taxa

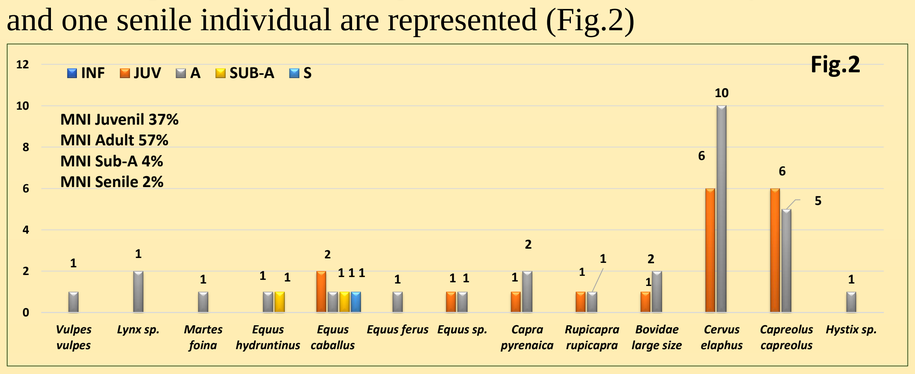
Fig.1



MNI 50

Adults are predominant among all the taxa. However, 18 juveniles and one senile individual are represented (Fig.2)

Fig.2



Anthropogenic damage on bones is recurrent
On the tot NR: 15% of bones are burned and 4.8% show cut marks
There is an overlap of human and carnivore modifications on some bones
C. elaphus and *C. capreolus* are the most exploited taxa

TAXA/Size body class	Ctm	PN	PP	IF	R	Cs	Pe	CF	Bur
Bovidae large size	4	3						1	1
Cervus elaphus	33	23		3	2	5	1		12
Capreolus capreolus	6	3							8
Large size	24	6	1	35	3			1	41
Medium size	95	10	3	98		3	6		201
Small size	81	19		69		1	9	1	485
Very small size	1								12

Tab.1 HUMAN MODIFICATIONS. Ctm: cut mark; PN: percussion notch; PP: percussion pit; R: retoucher; Cs: cortical scare; Pe: peeling: CF: cortical scare; Bur: burning

Appendicular and cranial elements are the most abundant, especially in the case of *C. capreolus* and *C. elaphus* (Fig.4)

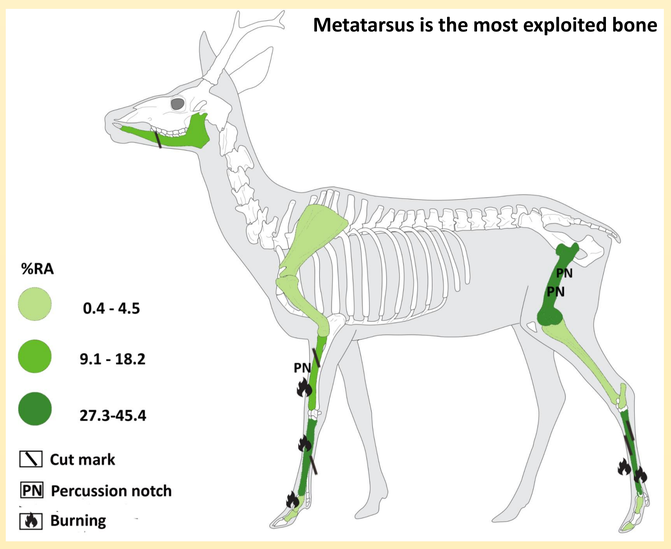
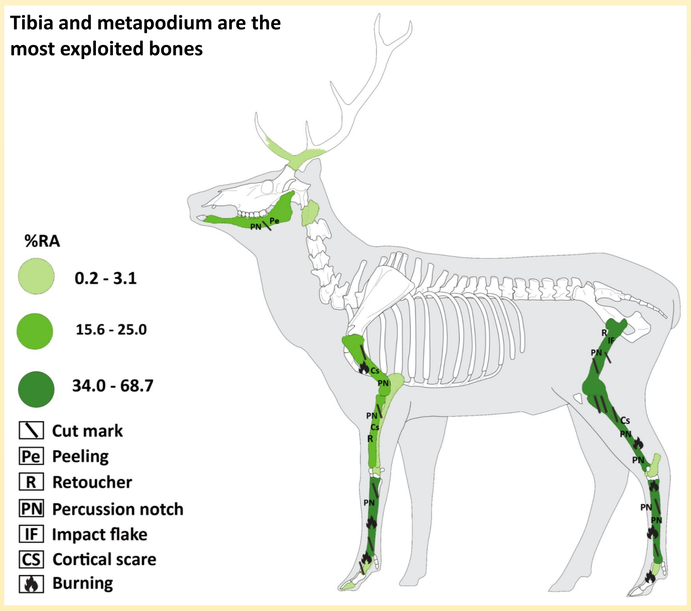


Fig.4



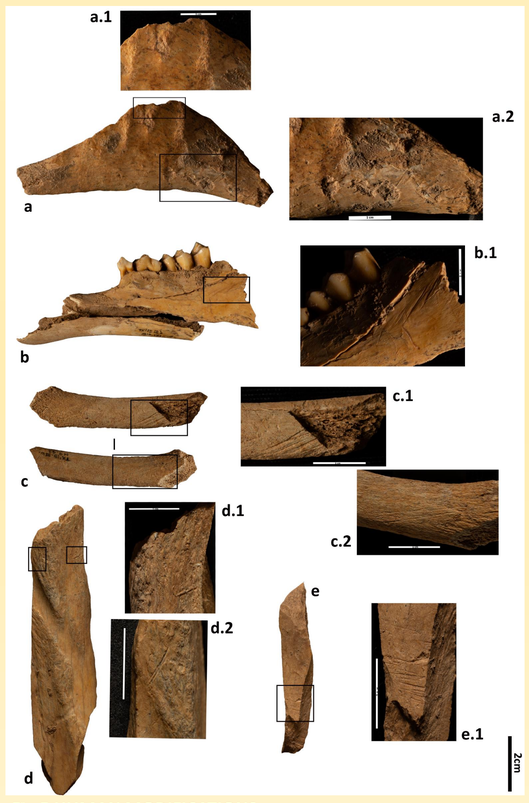


Fig.5 HUMAN MODIFICATIONS
a small size pelvis: a.1 crenulated edge, a.2 pits, and cut marks overlapped; **b** roe deer mandible: b.1 cut marks; **c** small size rib: c1, c2 cut marks; **d** red deer tibia: d.1 score, d.2 cutmark; **e** long bone of medium-sized animal: e1 cut marks

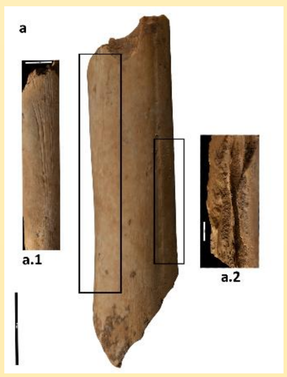


Fig. 7 HUMAN MODIFICATIONS
a red deer metacarpus: a.1 cut marks, a.2 percussion notch

Fig.6 HUMAN MODIFICATIONS
Impact flake

11.5% of NR (n=587) show carnivore modifications (pits, punctures, scores, crenulated edges and/or digestive damage)

Digestive damage (3.7%) and scores (3.6%) being the most significant (Fig.8)

Fig. 8 CARNIVORE MODIFICATIONS
a digested long bone of a small-sized animal; **b** scores on a red deer femur; **d** puncture on a roe deer calcaneus; **e** and **f** pits and scores on a long, and a flat bone

DISCUSSION

At Teixoneres Cave the high proportion of limb elements and the presence of cut marks on shafts, suggest human primary access to the prey. Anthropogenic damage shows that butchery and consumption were carried out in the cave, mostly at the entrance. Despite that, carnivore-damaged bones (from mostly the inner area) prove that other predators inhabited the cave at non-human occupation moments. The zooarchaeological and taphonomic data complement other studies made at the site suggesting short-term human occupations. Previous analyses highlighted a clear dichotomy between exogenous (final products) and local raw materials (knapped in the site)[5]. Moreover, the study of microwear[6] is compatible with the hypothesis of high mobility and short-term human occupations. In addition, the surface used by humans is limited[2], reinforcing the hypothesis of small groups occupying the site and the short duration of occupations. The diversity of taxa is frequently related to long-term human occupations, which may contradict the interpretation at Teixoneres unit III. However, some authors suggested that opportunistic hunting strategies and/or the palimpsest nature of archaeological sites, which might show on the same surface animals hunted at different moments, can also promote a wide diversity of species represented[7]. Therefore, it is necessary to explore these differences in depth and understand which elements could be useful to identify short-term occupations.

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