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Introduction

Discovered in 1893 by Moser and Perko (Perko, 1904), Pocala Cave (Duino-Aurisina, TS) (Fig. 1), is well known for the great amount of cave bear (particularly *Ursus spelaeus*) and cave lion (*Panthera leo spelea*) fossils discovered. Most of those remains are preserved today at the Natural History Museum of Trieste. Marchesetti, in his excavation campaign, discovered a *Ursus spelaeus* cranium with an external-internal passing parietal lesion (Fig 4 a-c) which, according to the excavation document, was “inflicted on the right parietal bone with a rough Mousterian flint” (Marchesetti, 1908). Due to all these types of evidences, many scientists have studied this site searching for proof of interaction between *Homo* sp. and cave bears.

Taphonomic and taxonomic analysis

The analysed sample is focused on 3% (NISP 447) of the total remains in the Museum storage (NR 17,195 and NISP 15,430). These remains were studied taphonomically with two stereomicroscopes, Leica MZ6 at the Natural History Museum of Trieste and Leica S9i at the Bones Lab, Cultural Heritage Department of University of Bologna. The most common and relevant taphonomic processes found are: flutiation (9 %), carnivore traces (4 %), manganese (3%), trampling (2%) and cut-marks (less than 1%). We studied all the remains in the museum storage (NR 17,195) taxonomically (Fig. 2) using the comparative collection from both Museum of Trieste and Bones Lab of Bologna. The majority of remains were from Carnivora, in particular cave bears (Fig. 2-b, Fig. 2-c).

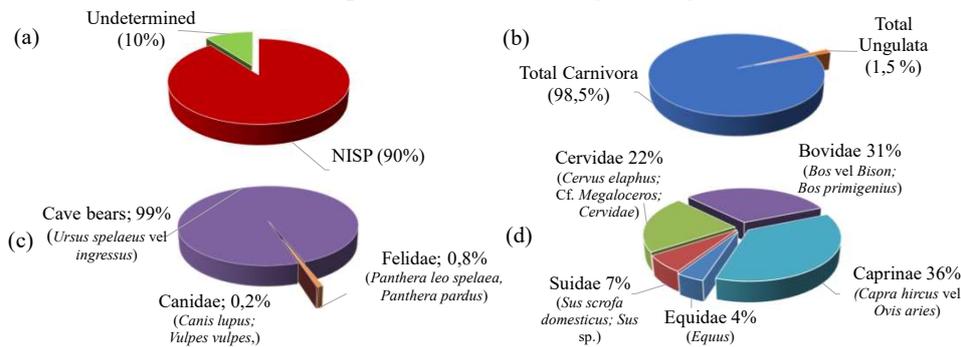


Fig. 2: percentage ratio between undetermined (NR 1,765) and NISP (15,430) remains (a); percentage ratio between Carnivora and Ungulata in the Museum Storage (NISP 15,430) (b); different percentage ratio between families within Carnivora (c); different percentage ratio between families within Ungulata (d);



Fig. 1: Pocala location

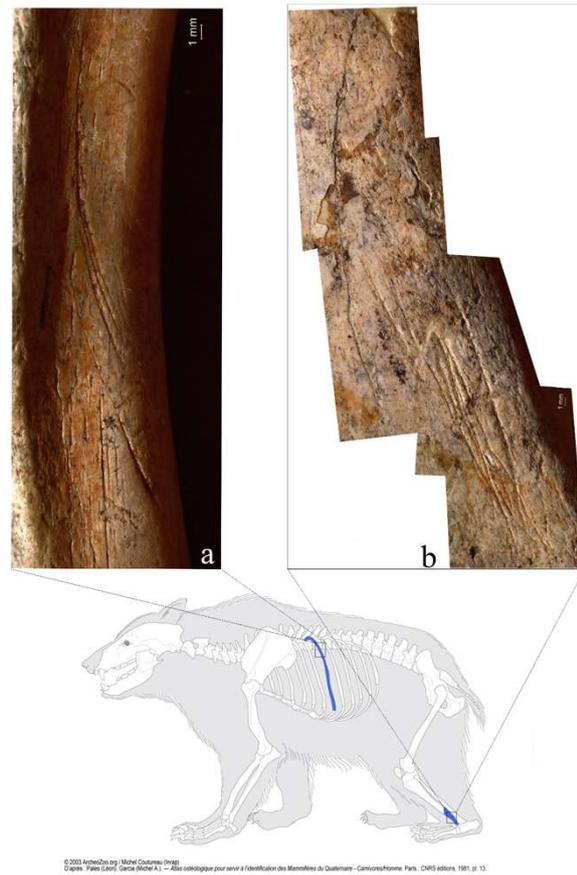


Fig 3: instances of cut-marks. Vpa 1974-5 (a) rib with cut-marks associated with the removal of fur and/or recovery of meat; Vpa 1829-1 (b) fragment of left tibia with cut-marks attributable to the detachment of flesh masses.

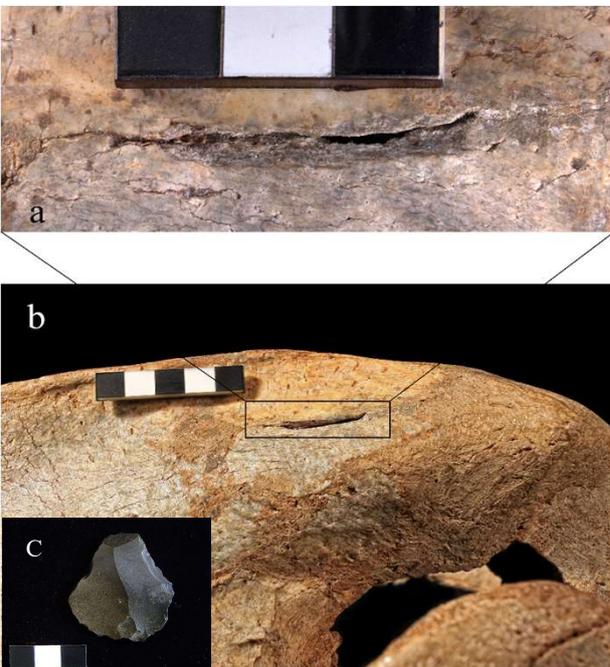


Fig. 4: right frontal of *Ursus spelaeus* (b); detail of the lesion (a); Levallois flint (c)

Discussion

Partial taphonomic study of the analysed remains cannot give an exhaustive and complete interpretation of the cave exploitation by *Homo*. Nevertheless, Pocala Cave can be defined as a “bear site” considering:

- 1) the majority of cave bear bones (NISP 15.042) compared to other animal remains (NISP 388) (Fig. 2)
- 2) the presence of taphonomic process like «charriage a sèc»
- 3) the presence of phosphates (Battaglia, 1930).

The cranium of *Ursus spelaeus* (Fig 4) found by Marchesetti shows an external-internal passing parietal lesion, but the correct interpretation of this find is unfortunately very difficult due to recent signs of manipulation (Fig 4-a) and will require further research. The presence of numerous traces of gnawing on bones by carnivores can be attributed to the bears themselves, or hyenas and lion. For the first time in the Pocala Cave, these remains show clear cut-marks from butchering (Fig 3) on a rib (Fig 3-a) and on a distal tibia (Fig 3-b). Through comparison with other sites (Krapina, Fumane, Rio Secco (Miracle, 2007; Romandini et al., 2018) this study provides more evidence of the interactions between humans and bears during the Middle Paleolithic in this region.

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