

Early Pleistocene hominins in Europe: the sites of Barranco León and Fuente Nueva-3 (Orce, Spain)

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The Early Pleistocene (Late Villafranchian) sites of Orce, placed in the northeastern sector of the Guadix-Baza Basin (Granada, southeastern Spain), are key to the study of the first human settlements in the European subcontinent.

Evidence of human presence and anthropic activity has been found at two sites, Barranco León and Fuente Nueva-3.

In this sedimentary basin, the hominins inhabited a mild environment rich in vegetation, which provided all resources necessary for their living, including the presence of a lake with a permanent water sheet fed by thermal springs and abundant ungulate carcasses. However, these animal resources were also focus of attention for scavenging carnivores.

In Barranco León, with a chronology of 1.4 Ma, and slightly older than Fuente Nueva-3, 1.3 Ma, a deciduous tooth of *Homo* sp. has been unearthed in 2002 [1] and a huge assemblage of Oldowan (i. e. Mode 1) tools, made in flint and limestones, have been recovered in both localities. In addition, evidences of human modification are frequent on the bone surfaces, as cut-marks, resulting from disarticulation, defleshing and evisceration activities, and percussion marks that evidence bone fracturing for accessing marrow contents.

Cut marks are mostly present on large ungulates limb bones, although a number of axial elements, as rib and vertebrae fragments, show cut marked surfaces. Percussion evidences are located almost exclusively in appendicular elements.

Carnivores activities are present too, and are focused, as cut marks, on limb bones. These modifications were mostly originated by the giant, short-faced hyena of African origin *Pachycrocuta brevirostris*, although the study of the fossil bones from the last four dig seasons evidence the presence of tooth marks from other carnivores of smaller body size.

In any case, anthropic activity predominates in both, Barranco León and Fuente Nueva-3, which suggest a secondary access of carnivores to these areas.

However, the upper archaeological level of Fuente Nueva-3, which has provided 150 coprolites and several tooth remains of *P. brevirostris*, is an exception to the pattern of competitive exclusion depicted above for hominins and scavenging carnivores. Taphonomic analysis of ungulate postcranial remains preserved in this level has shown increased carnivoran activity, thus evidencing a possible competition for ungulate carcasses between *Homo* and *Pachycrocuta*

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References:[1] Toro-Moyano, I, Martínez-Navarro, B., Agustí, J., Souday, C., Bermúdez De Castro, J.M., Martín-Torres, M., Fajardo, B., Duval, M., Falguères, C., Oms, O., Parés, J.M., Anadón, P., Julià, R., García-Aguilar, J.M., Moigne, A.-M., Espigares, M.P., Ros-Montoya, S., Palmqvist, P., 2013. The oldest human fossil in Europe, from Orce (Spain). *Journal of Human Evolution*, 65, 1-9.[2] Espigares, M.P., Martínez-Navarro, B., Palmqvist, P., Ros-Montoya, S., Toro, I., Agustí, J., Sala, R., 2013. *Homo* vs. *Pachycrocuta*: Earliest evidence of competition for an elephant carcass between scavengers at Fuente Nueva-3 (Orce, Spain). *Quaternary International*. 295, 113 -125.

EARLY PLEISTOCENE HOMININS IN EUROPE: THE SITES OF BARRANCO LEÓN AND FUENTE NUEVA-3 (ORCE, SPAIN)

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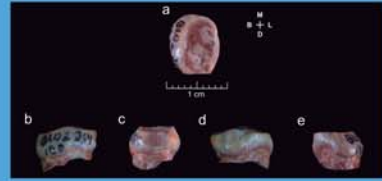
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In Barranco León, (~1.4 Ma.), slightly older than Fuente Nueva-3, (~1.3 Ma.), a deciduous tooth of *Homo* sp. has been unearthed in 2002. (Toro-Moyano et al., 2013) and a huge assemblage of Oldowan (i. e. Mode 1) tools, made in flint and limestones, have been recovered in both localities.



Barranco León

Fuente Nueva-3

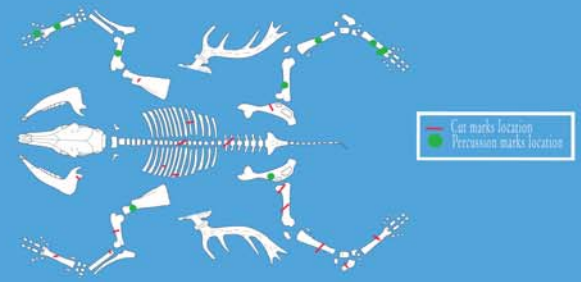


Deciduous tooth of *Homo* sp. from Barranco León



Lithics artifacts

Evidences of human modification are frequent on the bone surfaces, as cut-marks, resulting from skinning, disarticulation, defleshing and evisceration activities, and percussion marks that evidence bone fracturing for accessing marrow contents.



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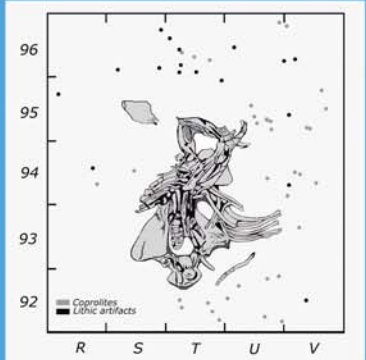


Carnivores modifications were mostly originated by the giant, short-faced hyena of African origin *Pachycrocuta brevirostris*. In any case, anthropic activity predominates in both, Barranco León and Fuente Nueva-3, which suggest a secondary access of carnivores to these areas.



In the Guadix-Baza basin, the hominins inhabited a mild environment rich in vegetation, which provided all resources necessary for their living
Landscape reconstruction for Orce Sites (M. Antón)

However, taphonomic analysis of ungulate postcranial remains preserved in upper level of Fuente Nueva-3 has shown increased carnivoran activity, thus evidencing a possible competition for ungulate carcasses between *Homo* and *Pachycrocuta* (Espigares et al., 2013).



REFERENCES
 -Espigares, M.P., Martínez-Navarro, B., Palmqvist, P., Ros-Montoya, S., Toro, I., Agustí, J., Sala, R., 2013. Homo vs. Pachycrocuta: Earliest evidence of competition for an elephant carcass between scavengers at Fuente Nueva-3 (Orce, Spain). *Quaternary International* 295: 113-125.
 -Helmer, M., 1987. Fiches d'ostéologie animale pour l'archéologie, SérieB: mammifères, n° 1, CNRS/APDCA, Fig. 3
 -Toro-Moyano, I., Martínez-Navarro, B., Agustí, J., Souday, C., Bermúdez de Castro, J.M., Martínón-Torres, M., Fajardo, B., Duval, M., Falgueres, C., Oms, O., Parés, J.M., Anadón, P., Juliá, R., García-Aguilar, J.M., Moigne, A.M., Espigares, M.P., Ros-Montoya, S., Palmqvist, P., 2013. The oldest human remain in Europe: from Orce (Spain). *Journal of Human Evolution*, 65: 1-9.