



ABSTRACTS

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ORAL CONTRIBUTIONS

ORAL

1. PINIONS TO EAT?. AGAIN?

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There are known accurately the faunal resources consumed during the European Upper Paleolithic, but the plants resources are virtually unknown. This may be due to its nature, conservation features and archaeological methods employed in their recovery. Even today archaeological excavations are made where systematic sampling is not done looking for plant resources. Precisely because of the fragility of the plants and the lack of archaeobotanical results efforts should be made at all sampling sites.

Southern Iberia has provided some of the earliest references to the use of plants during the Middle and Upper Paleolithic European (cf. Gorham's and Nerja caves). Recent data indicate that plant resources had a significant place in the human diet long before the "broad spectrum revolution" proposed by Flannery. Ohalo II is perhaps the best example for the Eastern Mediterranean (Weiss et al., 2004). Our communication tries to demonstrate that a systematical and sustainable management of the vegetable resources during the Upper Paleolithic has taken place in the Western Mediterranean too, from the archaeobotanical results of a Solutrean level Cueva de Nerja (Málaga, Spain).

In the "Sala del Vestíbulo" at Nerja's Cave, a domestic fire was brought to light in A7 square, belonging to the level NV 8s. In this paper we present the botanical identification of over 5000 plant remains from the fireplace and the level that encompasses. The methods of analysis are purely mechanical. We used a Nikon Optiphot-100 dark/bright field incident light microscope for taxonomic identification of wood charcoal and Hitachi 4100 Scanning Electronic Microscope. Later, the material was selected for radiometric datation.

Two kinds of remains are presented: processed vegetables for human consumption and the charcoal used as

firewood. From the total of charred remains, 96% are from *Pinus pinea* cones and only 4% are wood charcoals. This ratio indicates the hearth's specificity in the pine-cones processing with the aim to obtain the pine nuts.

1 - Results of this fireplace show the importance of plant resources in the communities of the Upper Paleolithic in southern Europe. Moreover, these resources were also consumed in other regional sites even in earlier periods (Badal 1998, Mestcalfe 1950).

2 During the LGM umbrella pine (*Pinus pinea*) remained in the south of the Iberian Peninsula and was managed sustainably by hunter-gatherers owing to its firewood scarcity. Their presence in this context indicates warm climatic conditions in southern Iberia.

3. The wood used for fuel comes from other taxa that have not nutritional value as *Pinus nigra* / *P. sylvestris*, *Fabaceae*, *Cistus*, etc.

POSTER

2. UPPER PLEISTOCENE - HOLOCENE VEGETATION CHANGES IN NAVALMAILLO ROCKSHELTER (PINILLA DEL VALLE, MADRID, SPAIN)

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Navalmaillo Rockshelter pollen data are presented, in order to know the vegetation and climate changes during Upper Pleistocene (levels: NVP-fluvial, NVP-H, NVP-F and levels β , α), dated in 71.685 ± 5.082 - 77.230 ± 6.016 , and Holocene (NVH), formed previously 3690 ± 60 BP (4.170 - 3.860 cal BP) (Fig.1). The site is located at 1.114 mns, in the center of the high Lozoya valley; was formed by fluvial action (Lontaneres and Navalmaillo, tributaries of Lozoya river) that eroded Late Cretaceous dolomite outcrops. Vegetation point of view (Peinado Lorca y Rivas Martínez, 1987), the area is located in Guadarramense section, Supramediterranean bioclimatic level, in *Luzulo forsteri-Querceto pyrenaicae* range (Fernández, 1988) with deciduous forest (*Quercus pyrenaica*) development under supramediterranean climate, subhumid continental. The pollen extraction followed the standard established protocols (acids and alkalis). The residuals were pollen-enriched through flotation in the Thoulet's dense liquor being later preserved in glycerin in eppendorf tubes. The

number of pollen grains in the samples oscillates between 300 pollen grain number; when the number was low (10-20) that they are figured in the pollen diagram as "presences". The statistics was made using TILIA® and TILIA-GRAPH®. In the samples with statistically significant number of pollen grains the AP/NAP logs were built as well as the rarefaction analysis, to determine the vegetation diversity. In order to make easier the data reading a synthetic pollinic diagram has been built including the most significant taxa (Fig.2).

Pollen data show a vegetation, from Pleistocene formed under climate conditions dry Mediterranean (NVP-river), which pass through a phase with a more moderate climate, with variations in the rate of moisture (NVP-H); progressively are installed more dry conditions (NVP-F) ending in other more severe and with lower temperatures (β levels and α). During the Holocene, the trend observed, within a Mediterranean climate, is toward the installation of conditions with increasing water scarcity, which define the progressive increase of excellence in the study area. The development of nitrophilous taxa and of the NPM coproflora affinity, show the existence of fauna in the territory, which alter the conditions food webs of the east. The relationship between AP and the NPM type 207 (cf. *Glomus fasciculatum*) curves, show the processes of deforestation of the territory, which favoring the reactivation of the erosive processes (*Concentricistes* or *Pseudoeschizaea circula*), especially on the basis of the 860 BP (910-690 cal BP).

Six-phase have been detected as a response to climate change, which, in general, express the transit towards the installation of cooler conditions during the upper Pleistocene. During the Holocene, the vegetation is defining the Mediterranean increased in the study area (Fig.2)

ORAL

3. THE LAST GLACIAL MAXIMUM CHARACTERIZED BY THE SMALL-MAMMAL ASSEMBLAGES IN SOUTHWESTERN EUROPE

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We presents here a palaeoenvironmental and palaeoclimatic approach to the end of the Last Glacial Maximum (LGM) in the Iberian Peninsula on the basis of the small-mammal assemblages (insectivores, bats and rodents). The LGM is an important period in our climate history defined by the maximum extension of ice sheets between ca. 22 and 19 ka BP. In the Mediterranean region the LGM is characterized by humid conditions, which allow for the development of arboreal vegetation.

The small-mammal remains described in this study were recovered from five different archaeological sites within the Iberian Peninsula: El Mirón cave (Ramales de la Victoria, Cantabria), Valdavara-1 (Becerreá, Lugo), El Portalón (Sierra de Atapuerca, Burgos), l'Arbreda cave (Serinyà, Girona) and Sala de las Chimeneas (Maltravieso, Cáceres).

These studied sites shows a non-analogue association represented by species associated with mid-European climatic conditions, such as the voles *Chionomys nivalis*, *Microtus arvalis*, *Microtus agrestis* and *Microtus oeconomus*, together with species associated with Mediterranean requirements, such as *Iberomys cabreræ* and *Microtus (Terricola) duodecimcostatus*. These assemblages reveal that our ancestors lived in those moment under harsher climatic conditions than today in the vicinity of the studied sites, though not as rigorous as elsewhere in Europe, with mean annual temperatures lower than present and an environment dominated by wet open meadows.

Our results have been compared with other environmental and climatic proxies, such as, global isotope curves and palynological, anthracological and palaeoherpetological studies, showing that our data coincide with these previously published results, providing a scenario for the palaeoclimatic and palaeoenvironmental conditions that occurred during the LGM in the Iberian Peninsula.

ORAL

4. HUMAN SOCIO-NATURAL RELATIONS IN CENTRAL PORTUGAL AT THE LAST GLACIAL MAXIMUM

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During the Last Glacial Maximum, abrupt climate changes created highly variable paleoenvironments inhabited by human populations across the Iberian Peninsula. Pollen and sedimentary analyses from deep-sea cores off Portugal provide records of regional-scale paleoenvironmental