

Charcoal analysis at the San Chuis hill fort (Allande, Asturias, Spain)

Ernestina Badal¹, Yolanda Carrión Marco² and Jesús F. Jordá³

1 Dpto. de Prehistòria i Arqueologia, Universitat de València, Avda. Blasco Ibáñez, 28 46010 Valencia, Spain; Ernestina.badal@uv.es

2 Centro de Investigaciones sobre Desertificación (CIDE), CSIC-UV-GV, Carretera Moncada-Náquera Km 4,5 46113 Moncada (Valencia), Spain; Yolanda.carrion@uv.es

3 Dpto. de Prehistoria y Arqueología, UNED, 28040 Madrid, Spain; jjorda@geo.uned.es

Summary: The archaeological site of the San Chuis hill fort (Allande, Asturias, Spain) is located in the central part of the western Cantabrian Range. The site was occupied between 920 - 480 cal BC (2870 - 2430 cal BP) and 100 cal BC - 540 cal. AD (2050 - 1410 cal BP). Repeated and long-lasting occupation resulted in the overlapping of architectural structures from the first and second Iron Ages and the Roman Period. The study of the wood charcoal remains recovered from these structures has allowed us to distinguish two groups of timber: one used in the construction of the buildings and another used as firewood.

Key words: hill fort, Iron Age, Roman period, firewood, timber, woodland exploitation.

INTRODUCTION AND ARCHAEOLOGICAL BACKGROUND

The San Chuis hill fort (Allande, Asturias, Spain) is located in the western part of the Cantabrian Mountain Range, at 780-800 m asl and at a distance of 35 km from the coast. The site is situated between the Eucolino and Submontano bioclimatic levels and the vegetation series of *Quercus robur* and *Quercus pyrenaica*.

The hill fort was discovered in 1952 and was excavated by Professor Francisco Jordá Cerdá during the 1960's and 1980's, while over the last ten years excavations were continued by one of the authors (Jordá Pardo, 2009). The sequence covers a long period of time from 920 to 480 cal BC (2870 - 2430 cal. BP) and from 100 cal BC to 540 cal AD (2050 - 1410 cal BP); the minimum span of this occupation is 1160 years. The chronology of the settlement is finely defined by nine radiocarbon dates (Jordá Pardo *et al.*, 2002; Marín *et al.*, 2008). On the basis of the radiocarbon dates, the stratigraphy, the overlapping structures and the recovered materials, we have distinguished three clear phases of occupation, the two earliest related to indigenous populations and the latest to the roman reoccupation.

The oldest occupation is a settlement located at the high quarter of the hill fort. There, we have uncovered the remains of a timber structure that was built over the rocky substrate which contained burnt seeds and pottery of the first Iron Age with an age between 890 and 530 cal. BC. The following occupation dated between 710 and 130 cal BC, is characterized by the construction of circular stone structures at both the high and low quarters of the hill fort. Associated to these are pottery from the Second Iron Age and remains of metallurgic activities. The third occupation dates to the Roman period, between 110 cal BC and 530 cal AD; it is characterized by the development of rectangular stone structures, densely built at the high quarter, either over

the previous circular ones or as new foundations. From this settlement, pre-roman pottery, *Terra Sigillata Hispanica*, *tegulae*, roman common pottery and iron slags have been recovered.

The recovery and analysis of wood charcoal samples from San Chuis, is significant for the archaeological research at the Asturian hill forts. There are not many palaeoenvironmental results from the area - among others La Campa Torres (Buxó and Echave, 2001), Camoca, Moriyón and Olivar (Camino Mayor, 1999) - and the new data from San Chuis will enrich our knowledge of the past vegetation and the use of timber.

DATA AND RESULTS

We have analyzed eleven (11) wood charcoal samples recovered from excavated levels of the indigenous settlement, of the roman reoccupation and of the tumble of roman structures destroyed after a fire (roofing material and wall structure) (Table I).

The following taxa have been identified: *Pinus nigra-P. sylvestris* (black-Scotts pine), *Corylus avellana* (hazel tree), *Erica* sp. (heather), *Ficus carica* (fig tree), *Fraxinus* cf. *excelsior* (ash), Leguminosae (legume undershrubs), *Quercus* sp. deciduous type (oak), Rosaceae (the rose family) and *Salix* sp. (willow).

Wood charcoal samples from the indigenous settlement include mainly fuel remains scattered on the floors of the circular structures. These reflect the natural vegetation that would have been exploited for firewood; in the surroundings of the hill fort *Quercus* sp. deciduous type woodland would have grown in which mountain pines, heather and legume undershrubs would have been present as well as some riverine plants (ash, willow).

During the Roman occupation some of the indigenous structures were reused (with the addition of rectangular walls) and new ones were built. From the

habitation floors of these there are only two wood charcoal fragments documenting the presence of *Erica* sp. and *Quercus* sp. deciduous type.

Level	SC 1, N VI (indigenous)		SC 3, N IV-III (Roman)	
	Occupation	Landfill	Occupation	Construction
<i>Corylus avellana</i>		*		*
<i>Erica</i> sp.			*	*
cf. <i>Erica</i> sp.				*
<i>Ficus carica</i>				*
<i>Fraxinus</i> sp.	*			
Leguminosae	*			*
<i>Pinus nigra-sylvestris</i>	*			
<i>Quercus</i> sp. deciduous	*	*	*	*
Rosaceae	*			
<i>Salix</i> sp.	*			
Non-identifiable	*			
Total number	43	3	2	252

TABLE 1. Plant taxa identified in San Chuis scattered wood-charcoal samples.

Nevertheless, the wood charcoal sample from the tumble level of the Roman tower provides significant evidence for the plant species used for the construction of the walls and roof (dated to 2050±50 BP -UBAR-216). For the roof, twigs of 10-15 mm diameter of *Erica* sp, Leguminosae and *Quercus* sp. deciduous type would have been used. Within the rest of the tumble material *Corylus avellana*, *Erica* sp., *Ficus carica* and *Quercus* sp. deciduous type were identified (Fig. 1).

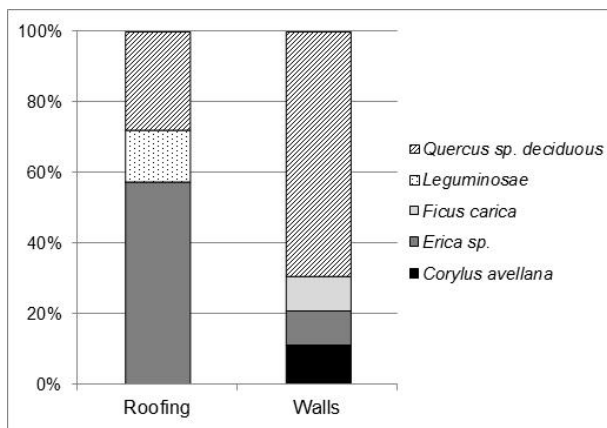


FIGURE 1. Plant taxa identified in the construction layers of San Chuis.

DISCUSSION AND CONCLUSIONS

On the basis of the analysis of wood charcoal from San Chuis we have reached the following conclusions:

- The analysis of wood charcoal material recovered from the indigenous settlement indicates that a variety of species were used for firewood in domestic hearths except for *Erica*. Deciduous oak woodland around the cave would have included mountain pines, heather,

legume undershrub and some riverine taxa (ash and willow).

- For the construction of the Roman tower, heather was mainly used as roofing material and deciduous oak timber for the vertical structure; *Corylus avellana*, Leguminosae and *Ficus carica* are also included in the tumble of the structures.

-The construction timber shows morphological characteristics of two clearly defined types: gross oak beams and twigs or small diameter branches of various taxa, oak included.

- Bark preservation in some twigs shows that the timber used for the construction was mainly cut in the early autumn that is the most favorable season for obtaining the best mechanical qualities. However, a small percentage of wood collected during the non favorable season, may indicate that either construction activities were quite long-lasting or that the collected wood was stored for some time; alternatively these characteristics may reflect periodic restoration of roofs and walls.

ACKNOWLEDGEMENTS

This work was carried out with the financial support of the Principality of Asturias.

REFERENCES

- BUXÓ I CAPDEVILLA, R., ECHAVE JIMÉNEZ, C., 2001. Estudio de los restos paleoarqueológicos del yacimiento de La Campa Torres (Gijón, Asturias). In: Maya, J.L., Cuesta, F. (Eds.), *El Castro de La Campa Torres. Período Prerromano*. Serie Patrimonio 6. VTP Ed. y Ayto. de Gijón, 307-310.
- CAMINO MAYOR, J., 1999. Excavaciones arqueológicas en castros de la ría de Villaviciosa. Precisiones cronológicas. *Excavaciones Arqueológicas en Asturias 1995-98* 4, 151-161.
- JORDÁ PARDO, J.F., 2009. Descubriendo el castro de San Chuis (Allande, Asturias). Nuevas aportaciones al conocimiento de la cronología radiocarbónica de los castros asturianos. *Entemu* XVI, 47-63.
- JORDÁ PARDO, J.F., MESTRES TORRES, J.S., GARCÍA MARTÍNEZ, M., 2002. Arqueología castreña y método científico: nuevas dataciones radiocarbónicas del Castro de San Chuis (Allande, Asturias). *Croa* 12, 17-36.
- MARÍN SUÁREZ, C., JORDÁ PARDO, J., GARCÍA-GUINEA, J., 2008. Arqueometría en el castro de San Chuis (Allande, Asturias, España). *Férvedes* 5, 52-62.