

# Environment and plant economy during the Mesolithic in the Haut-Quercy (Lot, France): anthracological and carpological data\*

Auréade Henry<sup>1</sup>, Laurent Bouby<sup>2</sup> and Nicolas Valdeyron<sup>3</sup>

1 CNRS-CEPAM UMR 6130, Univ. Nice Sophia-Antipolis, Campus St-Jean d'Angély SJA3, 24 Av. Des Diables Bleus, 06357 Nice cedex 4; aureade.henry@cepam.cnrs.fr

2 CBAE, UMR 5059, Institut de Botanique, 163, rue Auguste Broussonet, F-34090 Montpellier; laurent.bouby@univ-mntp2.fr

3 Univ. Toulouse le Mirail- TRACES UMR, 2 rue Antonio Machado F-Toulouse; valdeyr@univ-tlse2.fr

**Summary:** This paper presents and discusses the results of the analyses of the charred wood and seed remains from three Mesolithic sites: les Fieux, les Escabasses and le Cuzoul de Gramat (Lot, France). Charcoal analysis shows quite original results, i.e. the early disappearance of softwoods in favour of pre-forest vegetation dominated by *Prunus* type *mahaleb/spinosa* in which deciduous *Quercus* forest develops progressively. Such environments produce a variety of edible fruits, which do not seem to have been exploited significantly for alimentary purposes.

These results raise several questions linked to the palaeoecological representativeness of our charcoal assemblages and the palaeoeconomic significance of the carpological remains, both of which could have been biased by cultural factors (selection, site function, activities...) and/or taphonomic conditions.

**Key words:** firewood, palaeoethnobotany, Mesolithic, south-western France.

## INTRODUCTION

The Causses of the Haut-Quercy, located between the Pyrenean and the Massif Central mountain ranges, offer contrasted landscapes that must have been attractive to prehistoric hunter-gatherers, according to the great number of sites dotting the Causse de Gramat, center of our study area. However, only few palaeobotanic studies have been carried out in this region unfavourable to the conservation of sporopollinic and other non-charred plant material. In order to obtain a picture of the local environment and its exploitation during the Mesolithic period, this paper presents and discusses the results of the charred wood and seed remains from the sites of les Fieux, les Escabasses and le Cuzoul de Gramat.

## THE SITES

These are all located on the limestone plateau Causse de Gramat, at an altitude of 250 to 300 m asl. The present-day vegetation is located in the supra-Mediterranean level and consists of more or less degraded *Quercus pubescens* woodlands.

The stratigraphic sequences dating from the Mesolithic comprise layers dated between ca. 9500 and 5500 BP: Fieux cave has yielded early Mesolithic layers (Champagne *et al.*, 1990), whereas Escabasses cave and Cuzoul de Gramat rockshelter were reoccupied throughout the middle and late/final Mesolithic (Valdeyron, 2000; Valdeyron *et al.*, 2011).

## MATERIAL AND METHODS

Sampling, sorting and identification were performed in concordance with the classic methodology of each discipline (Chabal, 1991; Marinval, 1999). In order to

represent and to discuss the evolution of the ligneous vegetation on the plateau, data from 5 sites were integrated in a factorial analysis.

## RESULTS

The layers dating from the end of the early Mesolithic (Les Fieux cave) showed very homogeneous anthracological results, which indicate the presence of well-established forest vegetation dominated by deciduous *Quercus*.

As for the middle Mesolithic, the charcoal analysis of les Escabasses showed a strong dominance of *Prunus* type *mahaleb/spinosa* (around 8000 BP) whereas the study of Cuzoul led to results that were closer to the charcoal assemblages from Les Fieux (however, no radiocarbon dates are available yet).

Finally, the anthracological spectra resulting from the analysis of the layers of the late Mesolithic of those two sites converge: supramediterranean woodland dominated by *Quercus* and its associated species, as well as the appearance of slightly more hygrophilous taxa, reflect probably an increase in humidity related to the climatic evolution of the Atlantic period.

The dominance of *Prunus* type *spinosa* in one site led to question the palaeoecological representativeness of our spectrum: are we dealing with pre-forest type vegetation or have other factors led to the distortion of our results?

As in most temperate dry Mesolithic sites, carpological data are extremely scarce and plant material consists mainly of hazel pericarps, although sometimes fragments of acorns or Fabaceae were recovered. Nevertheless, first results obtained for the site of Cuzoul seem promising; the excavation is only

beginning, and 3 taxa (*Corylus*, *Quercus* and *Cornus*) have already been identified in a single hearth.

But to what extent do these results reflect the reality of plant exploitation by Mesolithic groups? Our palaeoeconomic interpretation cannot be made regardless of taphonomic or societal issues such as site function or season of occupation.

## DISCUSSION

Our anthracological results, as well as their comparison with data from other sites, allow us to discuss the palaeoecological evolution of the plateau, but also to consider the possibility of a taphonomic impact on the material of Escabasses cave.

A comparative study of different sizes of charcoal shows that *Quercus* is underrepresented among the charcoals superior to 4 mm in the layers where *Prunus* is dominant, and overrepresented in the late Mesolithic layers where *Quercus* becomes the main taxon. Therefore, differential fragmentation can hardly be considered as a distortion factor. These results are in concordance with previous work by Chabal (1982, 1991) and Badal-García (1990).

In addition, the taxa list and proportions obtained for the middle Mesolithic layers of Escabasses cave are very similar to present-day fruticeae *Prunetalia spinosae* Tüxen, the only difference being the persistence of this formation throughout the centuries, whereas nowadays this kind of vegetation is more quickly invested by forest taxa when the land is unexploited.

This recurrent pattern through several layers of the Escabasses, as well as similar situations encountered in other sites from the middle Mesolithic, make the hypothesis of a human preference for Rosaceae prunoideae difficult to support.

As regards the carpological results, it is well known that hazel represents an important food resource throughout the Mesolithic, but even this is difficult to conclude for our sites, since estimations show that the recovered fragments correspond to a very reduced number of entire nuts.

It is interesting to notice that this amount remains low regardless of the season of occupation i.e. regardless of the fact that nuts (but also other edible fruits) were available around the sites. Hazel, which has a high nutritional value and is often seen as an emblem of the Mesolithic period, seems to be particularly suitable for transportation; therefore, different scenarios of acquisition and consumption can be proposed.

## CONCLUSION

The review of some potential causes of distortion of our anthracological data leads us to speak in favour of their palaeoecological representativeness. The specificity of the studied region seems to reside in the early disappearance of softwoods in favour of a pre-forest vegetation dominated by *Prunus* type *mahaleb/spinosa* in which deciduous *Quercus* forest develops progressively, though in a locally and temporally contrasted way.

## REFERENCES

- BADAL-GARCIA, E., 1990. Méthode de prélèvement et paléoécologie du Néolithique d'après les charbons de bois de "La Cova de les Cendres" (Alicante, Espagne)." *Pact, Journal of the European study Group on physical, chemical, mathematical and biological techniques applied to archaeology* 22, 231-243.
- CHABAL, L., 1982. *Méthodes de prélèvement des bois carbonisés protohistoriques pour l'étude des relations homme-végétation*. D.E.A. USTL, Montpellier.
- CHABAL, L., 1991. *L'Homme et l'évolution de la végétation méditerranéenne des âges des métaux à la période romaine; recherches anthracologiques théoriques, appliquées principalement à des sites du Bas-Languedoc*. Ph.D. Thesis, Université de Montpellier 2.
- CHAMPAGNE, F., CHAMPAGNE, C., NOVEL, P., JAUZON, P., 1990. Le site préhistorique des Fieux à Miers (Lot). Etat actuel des recherches. *Gallia Préhistoire* 32, 1-28.
- MARINVAL, P., 1999. Les graines et les fruits: la carpologie. In Ferdière, A. (Ed.), *La botanique*. Errance, collection "Archéologiques".
- VALDEYRON, N., 2000. Géographie culturelle du mésolithique récent/final dans le sud de la France. In *Actes des rencontres méridionales de préhistoire récente Troisième session, Toulouse, 1998*. Archives d'écologie préhistorique, Toulouse, 23-34.
- VALDEYRON, N., BOSC, B., BRIAND, T., HENRY, A., MARQUEBIELLE, B., MICHEL, S., 2011. Le gisement du Cuzoul de Gramat (Lot, France): présentation des nouveaux travaux et résultats préliminaires. In Sénépart, I. Perrin, T., Thiraut E., Bonnardin, S. (Dir.) *Marges, frontières et transgressions. Actualité de la Recherche. Actes des 8e Rencontres Méridionales de Préhistoire Récente*. Archives d'écologie préhistorique, Toulouse.

\* We would like to inform the reader that this work is still in progress: therefore, the results are likely to evolve towards slightly different conclusions. Please cite the final publication, when available. March 2011.