

# Charcoal analysis in Preventive Archaeology: combining culture heritage management with scientific research in the A75 motorway (Clermont l'Hérault - Béziers, Southern France)

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**Summary:** *The drawbacks and advantages of preventive archaeology and the implications for archaeobotanical studies are assessed based on the example of work carried out prior to the construction of the A 75 motorway in southern France. The main results obtained in sites destined to be rapidly destroyed are presented. They provide a large scale insight on human settlement and land exploitation from the Middle Neolithic to the height of the Roman Empire.*

**Key words:** *preventive archaeology, southern France, charcoal analysis, human settlement, vegetation*

## INTRODUCTION

According to the Collins Dictionary of Archaeology (Bahn, 1992) Rescue Archaeology or Public Archaeology is a British generic expression applied to the work carried out on sites prior to their destruction by modern developments. This term is synonymous with the North American Salvage Archaeology or Cultural Resource Management and with the French "Fouilles de sauvetage", which was replaced in 2001 by 'Fouilles préventives' (preventive archaeology), in an attempt to reverse the drawbacks of traditional rescue archaeology. In Rescue archaeology 'archaeologists run behind the bulldozers' trying to make the best of the unpleasant job of rapidly destroying our history; in Preventive archaeology 'archaeologists precede the bulldozers' (Demoule and Landes, 2009) safeguarding our history via the excavation, study and publication of uncovered remains.

This is the aim of INRAP (Institut National de Recherches Archéologiques Préventives), which possesses both the infrastructures required for large scale survey/excavation and the will to promote high quality research.

During field work an effort is made to recover as much information as possible. However, our ability to study the archaeobotanical remains recovered from the sediment samples is limited by time and financial resources. Clear research priorities must therefore be established in order to obtain reliable datasets. This negative aspect is compensated by the opportunities opened by the work in linear projects such as motorways, railway lines, gas works, which allow us to visualise patterns of human settlement and subsistence adaptation through time and on a regional scale, crossing a large range of ecological habitats. The work carried out prior to the construction of the A 75 motorway between Clermont-l'Hérault and Béziers (Hérault, Southern France) is a good example of this (Fig. 1).



FIGURE 1: The site of Montferrier (Antiquity) prior to the construction of the A 75 motorway (photo M. Compan).

## RESULTS AND DISCUSSION

Based on the assessed importance of remains uncovered during the survey phase ('diagnostique' in French), more than 30 locations were selected for subsequent major excavation and study, covering the period Neolithic - Middle Ages.

Concerning charcoal analysis, particular attention was paid to sites with particularly interesting structures:

- Middle/Late Neolithic settlements (Pirou, Roquessols, Barreau de la Devèze) characterized by the large number of pits uncovered (more than 300 just in the first site). The abundance of heliophilous plants, colonisers of empty spaces suggest a long last occupation / exploitation of the area. Significant frequencies of *Pistacia lentiscus*, which usually grows on the dry and stony areas of the Mediterranean 'garrigue', raise questions concerning its significance this early in time.

- Delimited fields covered with plantation pits (vine plantation and orchards) during the gallo-roman period (Champ Redon, Aire de Repos de Valros) allowed us to test the type and the paleoenvironmental reliability of the information obtained from this type of structure. The taxonomic diversity recorded by the identification of the charcoal fragments recovered suggests that the remains of domestic wood fuel were recycled (at least partly) and used as a fertiliser in agriculture. This impression has been confirmed by the study of terrestrial molluscs (S. Martin in Figueiral *et al.*, 2010a).

- Roman burial ensembles (Renaussas, Vigne de Bioaux, Cresses Basses, Peyre Plantade, Soumaltre) provided information on the wood-fuel used to cremate the bodies and showed that, in general, no particular selection was carried out. The diversity of woody plants exploited testifies to the absence of any restrictive rules. However, certain activities linked with the burial ritual (ex: fireplace associated with tombs) may have favoured the sporadic choice species, such as *Cupressus*. The use of branches of small calibre may be explained by the technical requirements of the cremation process.

Lined wells were excavated obeying strict safety procedures and rewarded us with a remarkable wealth of material and information concerning the Roman period (Montferrier, Rec de Ligno, Mazeran), especially concerning the levels preserved under anoxic conditions. The quantity and diversity of plant material vary from one well to the other. Although some of the debris might have fallen naturally or been lost accidentally, it is clear that most of them result from the use of wells as a rubbish dump. The most relevant charcoal analysis data were obtained in the first well and provide a clear image of the major biotopes exploited by the local population - the mixed oak woodland, the alluvial forest and the cultivated fields. The identification of present-day exogenous species (*Fagus*, *Abies*, *Larix/Picea*) may result either from trade or from their sporadic survival in favourable lowland locations as shown by previous studies (Chabal 1997; Durand 1998; Puertas 1998, among others). The abundance of monocotyledonous stems (*Arundo*) is more difficult to explain in terms of local ecology alone and may result from specific activities carried out in the vicinity (Figueiral *et al.*, 2010a and b).

## CONCLUSIONS

A complex picture of human occupation and activities is drawn. This is an area where the different ecological and cultural influences from the Hérault and the Orb valleys converge. Preventive archaeology

allowed us to show the importance of recognizing chrono-cultural disparities in order to understand their influence in the establishment and evolution of vegetal landscapes. Concerning Pre-History, the question of the early anthropogenic impact may be linked with the presence and confrontation of “Ferrières” or “Vérazien” populations in this buffer zone. The ecological influence of the Hérault valley and the coastal plain is also detected. This ecological pattern is also identified later on, during Antiquity, with influences from both the “Clermontois” an area of passage and exchanges, and urban centres, such as Béziers. The problem of the small and medium sized gallo-roman agrarian establishments has also been considered, in association with the diversity of their economy and grape vine exploitation. The “A 75 experience” has also highlighted the importance of a scientific coordination for the paleoenvironmental studies, to provide rapid guidance, to deal with strategic choices in terms of sampling, to assess the potential of remains in terms of research projects, and to ensure that specialists are kept informed of developments during field work.

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