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Research paper

Plant exploitation and diet in altitude during Mesolithic and Neolithic: Archaeobotanical analysis from a hunting camp in the Chartreuse massif (l'Aulp-du-Seuil, Isère, France)

Lucie Martin [a,b,*], Claire Delhon [c], Stéphanie Thiébault [d], David Pelletier [e]

[a] Laboratoire d'Archéologie Préhistorique et Anthropologie, Institut F. A. Forel, Sciences de la Terre et de l'Environnement, University of Geneva, 18 route des Acacias, 1211 Geneva 4, Switzerland
[b] UMR 5204, EDYTEM, CNRS, University of Savoie, Pôle Montagne, 73376 Le Bourget du Lac, France
[c] UMR 6130, CEPAM-CNRS, University of Nice Sophia Antipolis, Campus Saint-Jean-d'Angély, SJA3-24 Avenue des Diables Bleus, 06357 Nice Cedex 4, France
[d] UMR 7209, Archéozoologie, archéobotanique: sociétés, pratiques et environnements, CNRS-Muséum National d'Histoire Naturelle, Bât. Anatomie comparée CP56, 55 rue Buffon, 75005 Paris, France
[e] INRAP, Direction Interrégionale Rhône-Alpes/Auvergne, 13b rue Pierre Boulanger, 63100 Clermont-Ferrand, France

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ABSTRACT

This paper presents the state of knowledge on plant economy in the Northern French Alps from Middle Mesolithic to Middle Neolithic (about 10,500 to 6200 cal. BP). The recent analysis of charcoal and seeds/fruits of a hunting camp of the Chartreuse massif provides new information on the way people managed their environment in a subalpine context. We focus here on a block shelter (l'Aulp du Seuil), located in an isolated valley, at 1720 m a.s.l. Excavations carried out between 1993 and 2005 permitted the discovery of an archaeological sequence stretching from Middle Mesolithic to Historic times. Charcoal and seeds/fruits analyses were performed on layers dated from Mesolithic to Middle Neolithic. Botanical assemblages mainly recorded the local vegetation, dominated by *Pinus* (charcoal and needles). The charcoal and macroremain assemblages reflect the exploitation of a large territory, especially during the Middle Neolithic: inhabitants of the shelter gathered plants in a large zone, from the collinean level to the immediate surroundings of the site, the subalpine level. Finally, the results inform us about fuel management and diet. The high amount of pine used for fuel has most probably two causes: its abundance in the vegetation but also its easiness of use in a temporary occupation (important amounts of dead wood). Seasonal inhabitants of the shelter brought hazelnuts and cereals. The presence of these last clearly shows, during Neolithic, a connection between the shelter and a permanent village located at lower altitude. L'Aulp du Seuil could be used as a seasonal residential station during that period. This study shows the importance to integrate the analyses of ecofacts in such archaeological programs in order to better understand the socio-economic systems of prehistoric alpine communities.

1. Introduction

In the last decades, several research programs in the Chartreuse and the Vercors massifs were led by the team *Paléomilieux et peuplements alpins* (*alpine palaeoenvironment and human population*, UMR 6636-LAMPEA, CNRS-University of Provence). The aim of these programs — which included excavations and systematic surveys, artefacts and ecofacts analyses — was to understand Lateglacial and Holocene environmental and chronocultural frame in the Northern French Alps. Another purpose was to catch the interactions between people and their environment in this mountainous context, and to contribute to the understanding of social and economic organisation (Bintz et al., 1995, 2008; Marguet et al., 2008).

Archaeobotanical studies are very rare in the Alps above 1500 m. This paper presents an overview on plant economy in the Mesolithic and Neolithic in a subalpine context. It focuses on a recently analysed site (charcoal, seeds and fruits): shelter no 1 (Alp1) of l'Aulp du Seuil in the Chartreuse massif (05°53′E–45°21′N, 1720 m a.s.l., Fig. 1). The analyses aimed at a first insight on vegetation history between Middle Mesolithic and Middle Neolithic, from about 10,500 to 6200 cal. BP. In the Alps, altitude and topography accentuate the climatic effects on ecosystems, while they limit the development of new human practices linked to the Neolithisation process around 7500 cal. BP (agriculture, pastoralism) (Nicod and Picavet, 2003). Our analyses were also carried out in order to describe how mountain

* Corresponding author at: Laboratoire d'Archéologie Préhistorique et Anthropologie, Institut F. A. Forel, Sciences de la Terre et de l'Environnement, University of Geneva, 18 route des Acacias, 1211 Geneva 4, Switzerland.
E-mail addresses: lucie.martin@unige.ch (L. Martin), claire.delhon@cepam.cnrs.fr (C. Delhon), stephanie.thiebault@mnhn.fr (S. Thiébault), david.pelletier@inrap.fr (D. Pelletier).

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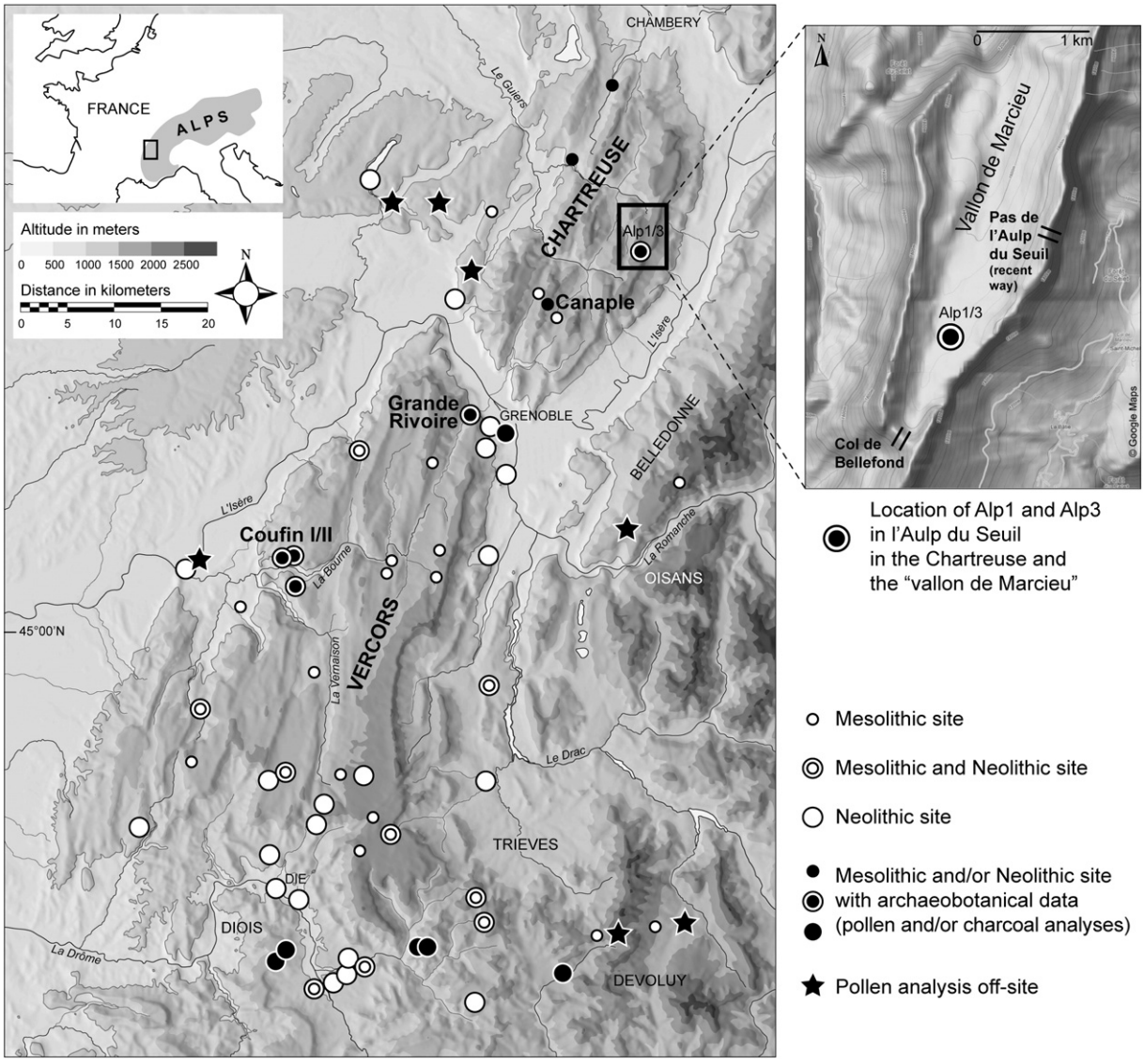

Fig. 1. Location of Mesolithic and Neolithic sites in the Chartreuse and Vercors massifs, and of the shelters Alp1/Alp3 of l'Aulp du Seuil in the "vallon de Marcieu" (CAD C. Bernard and L. Martin).

people managed their environment during this period; to evaluate the human impact on vegetation in altitude on a seasonal settlement; to identify which plants were collected in surrounding areas and/or brought to the site, with the aim to better understand the socio-economic system of alpine Neolithic.

1.1. Archaeobotanical analyses in Chartreuse and Vercors massifs: state of knowledge

Human populations appear in the Western Alps soon after the retreat of wurmian glaciers (Nicod and Picavet, 2003). In the subalpine calcareous massif of Vercors and Chartreuse (culminating at 2500 m a.s.l.), numerous archaeological sites are known for the Mesolithic and the Neolithic periods, between 10,000 and 6000 cal. BP (Fig. 1). People visited altitude areas for hunting and gathering raw material (flint, rock crystal, tenacious rocks, etc.), and later, since the Neolithic, shepherds used them for pasture. Most of the settlements discovered so far are hunting camps or devoted to pastoral activities (Marguet et al., 2008), and only few of them included archaeobotanical analyses, quasi-exclusively charcoal studies (black dots in Fig. 1). Palynology did also concern several sites, but, in this kind of context, results are not very conclusive. Samples from open-air deposits all proved to be sterile, and pollen is most of the time badly preserved in block/rock-shelters (Argant, 1999). Only three archaeological sites located in the Vercors massif provided punctual data: the caves of "Coufin I" and "Coufin II" and the rock-shelter of "la Grande Rivoire" (Fig. 1). The palynological sequence of "Coufin I/II" (550 m a.s.l.) covers Lateglacial and Holocene periods, showing that the local vegetation, first dominated by *Pinus* and *Betula* (Allerød), evolves after the younger Dryas towards mixed oak forest (Atlantic) and beech-fir forest (Subboreal) (Bui-Thi-Maï et al., 1987; Girard and Bui-Thi-Maï, 1999). In "la Grande Rivoire", which is a pastoral neolithic site, pollen analysis was performed on caprine dung levels, and thus reflects well the species gathered by sheperds for litter and fodder while the surrounding vegetation is badly recorded (Delhon et al., 2008). Palynological analyses from natural sequences are inexistent in the Chartreuse and Vercors massif. Data is available, from North to South, on their western piedmont (Chirens, Saint-Sixte, Saint-Julien de Ratz and Saint Hilaire du Rosier), in the south of Belledone Massif (col de Luitel) and in the Devoluy massif (Lake Lauzon and peat bog of Forest) (Wegmüller, 1977; Clerc, 1988; Argant et al., 2006) (black stars in Fig. 1). Previous charcoal analyses led since the end of the eighties by S. Thiébault have permitted to define a regional anthracological zonation (Thiébault, 1988, 1999a,b). Charcoal data,