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Early-Middle Bronze Age communities and wood resources management in northeast Portugal: The Sabor valley

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ABSTRACT

This paper focuses on the relationship between human communities and wood resources in the Sabor valley (Trás-os-Montes region, northeast Portugal) during the Early and Middle Bronze Age. Charcoal from three archaeological sites—Terraço das Laranjeiras, Foz do Medal and Quinta de Crestelos—was analysed. As in other Early-Middle Bronze Age sites in Western Iberia, the majority of the samples were recovered from pits, which complicates charcoal debris interpretation. The charcoal analysis suggests that the formation processes of the archaeobotanical record involved both natural and anthropic factors. The charcoal assemblages studied showed that taxonomic variability was strongly conditioned by the number of fragments produced per feature. Hearths, pits and post-holes provided information about the consumption of wood resources, highlighting the importance of taxa such as *Fraxinus* sp. and *Quercus* spp. combined with shrubby species including small trees (*Juniperus* sp., *Arbutus unedo*, Fabaceae, *Cistus* sp. and *Erica* spp.) and attesting the presence of *Olea europaea* within Middle Bronze Age contexts.

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1. Introduction

Human communities and landscapes have co-evolved, interacting and developing interdependences between people and plant resources (van der Veen, 2014). Wood procurement was one of the most important day-to-day activities of Bronze Age communities and it was closely related to the seasonal rhythm of plants. This activity established a complex interaction between humans and plants that also affected wood resource availability, although environmental setting, climate and soil are the most relevant drivers of plant distribution (Costa et al., 1998).

Three Early-Middle Bronze Age (EBA-MBA) archaeological sites in the Sabor valley (northwest Portugal) were studied: Terraço das Laranjeiras (TL), Foz do Medal (FM) and Quinta de Crestelos (QC)

(Fig. 1). The main goal of this study was to define the relationship established between human communities and wood resources during the Early and Middle Bronze Age by analysing charcoal remains. Charcoal analyses of Bronze Age sites in northeast Portugal, in particular in the region of Trás-os-Montes, have generally not been undertaken. However, some analyses have been carried out on Late Prehistoric sites in the Trás-os-Montes and Alto Douro regions, including the EBA occupations of Cemitério dos Mouros 2 and Barrocal Alto (Figueiral and Sanches, 1998–9, 2003), as well as on EBA contexts in the Cõa valley south of the River Douro (Figueiral, 1999; Queiroz and Van Leeuwen, 2003; Figueiral and Jorge, 2008). This study aims to address this research gap presenting the data from three open-air sites located in the fluvial valley of the Sabor river.

Charcoal debris from archaeological sites can provide some insight into the close relationship between humans and plants, established through wood procurement and consumption. The presence of charred wood implies the contact between wood and fire, usually during the combustion of firewood or during another type of fire event. In order to reconstruct past behavioural patterns

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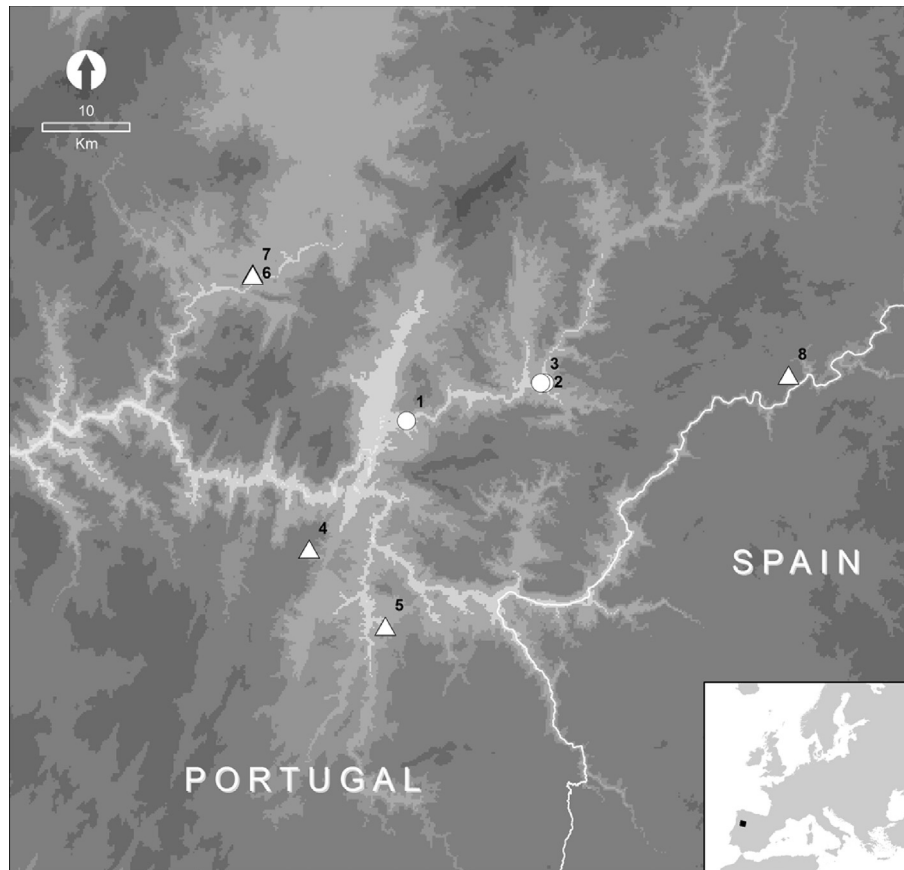


Fig. 1. Map of the Early and Middle Bronze Age sites of the Sabor Valley with anthracological data: 1) Terraço das Laranjeiras, 2) Foz do Medal and 3) Quinta de Crestelos. Other sites of the Late Prehistory with anthracological data in Northeast Portugal: 4) Castelo Velho (Figueiral, 1999; Figueiral and Jorge, 2008), 5) Fumo (Queiroz and Van Leeuwen, 2003), 6) Dólmen de Arcã, 7) Cemitério dos Mouros 2 and 8) Barrocal Alto (Figueiral and Sanches, 1998–9, 2003). Map elaborated by Emilio Abad.

related to wood resource management it is crucial to establish the relation between context and charcoal assemblages. The collection of firewood, its burning, and the subsequent deposition of waste from fire events could represent some of the main activities that conditioned the creation and composition of charred wood remains (Théry-Parisot et al., 2010; Fuller et al., 2014). Such formation processes of archaeobotanical assemblages, focusing on charred wood remains, are discussed in the current paper. This taphonomic approach highlights the complexity of formation processes that affect the archaeobotanical record and stresses the difficulties associated with the interpretation of charcoal debris recovered from Bronze Age sites that are comprised primarily of negative features, such as pits and post-holes. This approach is based on contextual geoarchaeology (Butzer, 1982), assemblage formation theory (Schiffner, 1987), and reflections on charcoal remains' formation processes as proposed by Rodríguez-Ariza (1993) and Piqué (1999). This research also integrates the enlarged concept of taphonomy proposed by Théry-Parisot et al. (2010).

A decrease in forest cover during the Bronze Age has been identified in the Iberian Peninsula (Carrión et al., 2010), but paleoecological data for the 2nd and 1st millennia cal. BC in northeast Portugal are still scarce. This is particularly evident when comparing this area with other northwestern Iberian regions, such as northwest Spain, where palynological, anthracological and carpological data are abundant (Figueiral, 1990; Ramil-Rego et al., 1998; Fábregas-Valcarce et al., 2003; Muñoz-Sobrino et al., 2004, 2007; Mighall et al., 2006; Martínez-Cortizas et al., 2009; Carrión-Marco et al., 2010a; López-Merino et al., 2010, 2012; Kaal et al.,

2011; Tereso, 2012; Martín-Seijo, 2013; Martín-Seijo et al., 2015).

The general scenario for the more Atlantic areas of northwest Iberia points to a significant decrease in forest cover throughout the Middle Bronze Age. Its cause is usually assumed to be anthropogenic, although climate deterioration could have enhanced deforestation and erosion episodes (Fábregas-Valcarce et al., 2003; Muñoz Sobrino et al., 2005; Martínez-Cortizas et al., 2009; López-Merino et al., 2010; Kaal et al., 2011). Nevertheless, significant regional differences have been detected (Ramil-Rego, 1993; Muñoz-Sobrino et al., 2004, 2007; Kaal et al., 2011; López-Merino et al., 2012), suggesting that deforestation occurred earlier and was more intense in coastal and sub-coastal zones as well as in mainland low to mid altitude areas. The decrease in forest cover occurred later in mainland high altitude areas, probably due to these areas being less suitable for farming.

The geographically closest palynological sequences to the study area (northeast Portugal) are those from Sanabria Lake (Zamora, Spain) (Muñoz-Sobrino et al., 2004), which is located c.90 km to the north. Slightly further away, in the western part of the Iberian Central system, there are sequences from Sierras de Gata, Francia and Béjar in Spain (Blanco-González and López-Sáez, 2013; López-Sáez et al., 2014) and Serra da Estrela, in Portugal (Van der Knaap and van Leeuwen, 1995, 1997). Some researchers have also pointed out the potential comparability between the vegetation histories of the northern valleys of the Portuguese mainland Douro basin and that of the mountains of Sanabria (Muñoz-Sobrino et al., 2004; Iriarte-Chiapusso et al., 2016).

The Sanabrian sequences show a decrease in Arboreal Pollen –

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