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# Landscape and firewood procurement at the prehistoric and protohistoric site of Ses Païsses (island of Mallorca, Western Mediterranean)

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## ABSTRACT

In this article we present the anthracological study of the settlement of Ses Païsses, located in north-eastern Mallorca (Balearic Islands, Western Mediterranean). A total of 25 charcoal samples have been analysed, corresponding to both concentrated (hearth and oven content) and dispersed charcoal fragments. The samples come from four different buildings of the settlement, each one showing different phases of occupation. The site presents a long sequence of occupation (from c.1212–1005 cal BC to the 1st century cal AD), expanding from the last centuries of the Bronze Age (Naviform), through the Early (Talayotic) and Late (Post-Talayotic) Iron Age up to the beginning of Roman occupation of the island. During this time span, different plant formations are identified in the anthracological record, forming the characteristic mosaic-like Mediterranean landscape. The diachronic trends observed in the anthracological record do not indicate any notable changes or substitutions of vegetation types. Most likely, any variations point to the reformulation of landscape practices related to the procurement and consumption of forest resources. In this regard, two main uses of wood have been identified: firewood and construction timber.

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## 1. Introduction

In this article we present the anthracological study of the Late Bronze Age and Iron Age site of Ses Païsses, located in north-eastern Mallorca (Balearic Islands, Western Mediterranean) (Fig. 1). Two characteristics of the site make the anthracological study of Ses Païsses particularly interesting. On the one hand, the long-lasting sequence excavated at the site offers the possibility of tracing human-landscape interactions and vegetation dynamics from 1212 to 1005 cal BC to the 1st century cal AD. This chronological frame covers the period from the end of the Late Bronze Age (LBA) to Romanization, including Early (EIA) and Late Iron Age (LIA) levels.

This research therefore complements recently published anthracological studies focusing on previous Naviform Bronze Age chronologies (Picornell-Gelabert and Servera-Vives, 2016).

On the other hand, Ses Païsses is located in a specific biogeographical area from which no other anthracological data has been recovered until now. Nowadays the Artà peninsula in the northeast of the island presents a very distinct landscape, with different kinds of forests and non-wooded areas, both of which have notable manmade features. The vegetation shown in the anthracological diagram of Ses Païsses is different from the trends seen in other palaeoenvironmental studies, so it complements and creates a more complex picture of the ancient vegetation dynamics and landscape shaping in prehistoric and protohistoric Mallorca.

The Artà peninsula covers a total surface area of 168 km<sup>2</sup>, with a large central plain surrounded by mountains that form the end of the Serra de Llevant mountain range. Ses Païsses occupies a central position on this plain, at the top of a rocky hill at 125 m.a.s.l. The hill

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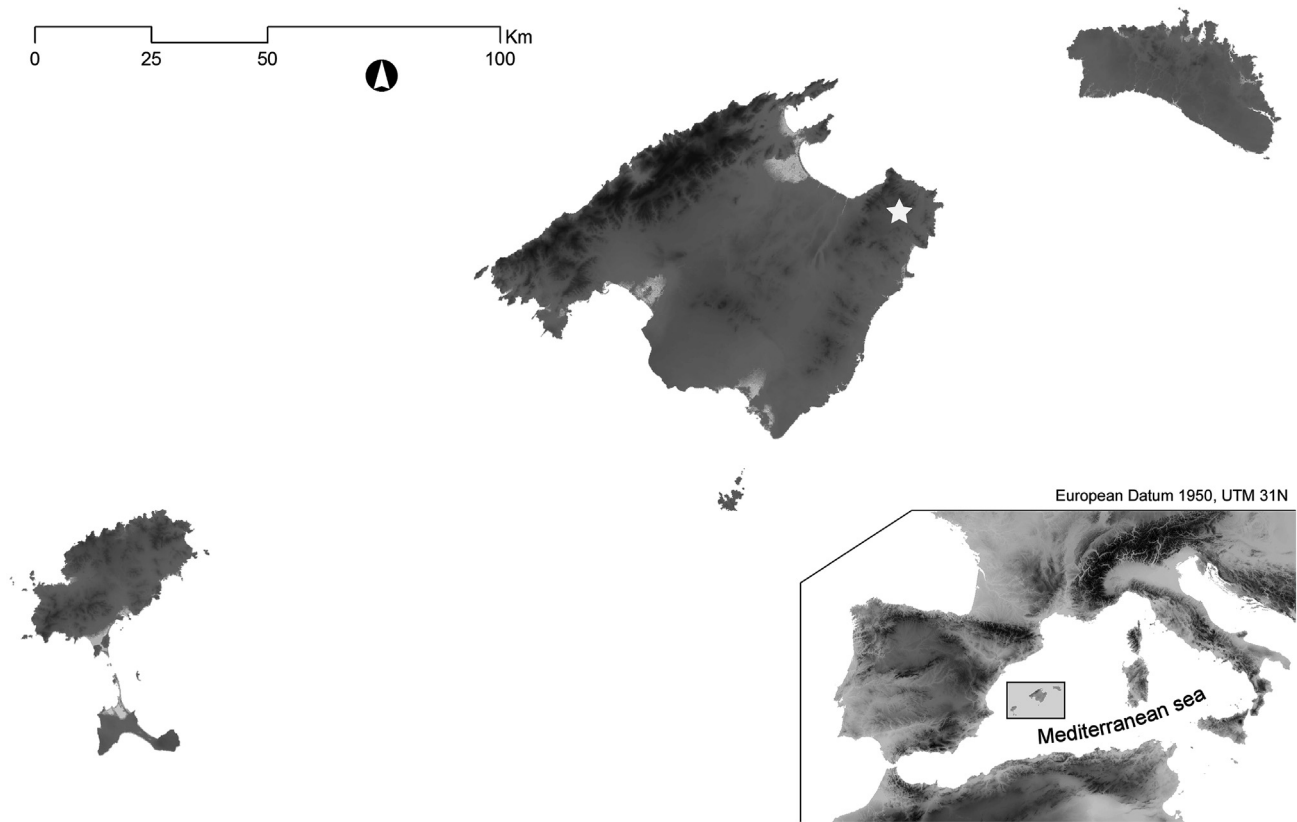


Fig. 1. Location map of the site in the island of Mallorca (Balearic Islands, Western Mediterranean).

and the site are enclosed by various streams to the South. The soil is poor, limy and shallow, although some alluvial soils found in the southern stream. Close to the site (<1 km) to the southeast there is a fresh water spring (*Font de n'Argonyana*). The poorest soil is located in the coastal and mountain areas.

The current vegetation is diverse, but tree cover is not a significant feature. The most common forest formation is the Mediterranean maquis dominated by wild olive trees (*Olea europaea* L.), especially in the southern areas of the Serra de Llevant (Alomar and Conesa, 2004). In the northern areas these formations are more degraded and there is a lower density of trees and shrubs, and *Ampelodesma mauritanica* (Poiret) T. Durand et Schinz grasslands are very common (Llorens et al., 2007). The spread of these grasslands at the expense of forest cover has been partially linked to human activity, mainly related to husbandry (burning for land clearance and pasture renewal). This shrubby or grassland dominated community is also currently colonizing abandoned crop fields, mainly in rocky places and the hills of the Serra de Llevant.

Diverse areas of oak forests (*Quercus ilex* L.) are spread around the peninsula, generally with poor undergrowth (Alomar and Conesa, 2004). One such forest is located at the Ses Païsses site, which presents an undergrowth flora of *Pistacia lentiscus* L., *Cistus monspeliensis* L. and *Olea europaea* L., matching the degraded character of these oak forests patches.

The *Pinus halepensis* Miller canopies cover in variable densities a remarkable part of the peninsula woodlands, sun-shading different communities of maquis and garrigues, including the well-characterized ones by the abundance of *Arbutus unedo* L., inland, or *Juniperus phoenicea* L., in the coastal areas.

In this geographical context, the site of Ses Païsses represents the largest prehistoric settlement in the Artà area, occupying a total of 10,788 m<sup>2</sup>, surrounded by a cyclopean wall (Fig. 2). The most

ancient levels that have been documented correspond to the last centuries of the Late Bronze Age, dating back to c.1212–1005 cal BC (Aramburu, 2010). The settlement of Ses Païsses is organized around a central turiform, a cyclopean non-domestic building that was built before c.1000 BCE (Aramburu, 2010). Around this, a group of different buildings would have developed, creating a complex village. Various buildings have been already excavated and identified (houses, storage buildings, public and communal spaces, etc.). In approximately the 8<sup>th</sup>–6<sup>th</sup> century cal BC a circular cyclopean wall was erected to enclose the settlement (Hernández and Aramburu, 2005).

Ses Païsses has a subsidiary ceremonial centre, *Es Pujols* (Hernández and Aramburu, 2005), consisting of an alignment of monumental buildings in this little range, located 1 km away from Ses Païsses. Moreover, a row of different *talaiots*, tower-like cyclopean public buildings from the Balearic Iron Age, surround the site a short distance away, at 1.75–2 km. This schema of a large village at the centre of rows of combined or isolated cyclopean monumental buildings is found in other parts of the Artà peninsula (*Son Sastres*, *S'Auma Vell*) and seems to characterize the occupation of this land during the Iron Age (Hernández and Aramburu, 2005). These networks of visual interconnectivity between cyclopean monuments constitute a strategy of landscape creation and occupation during the Iron Age (Galmés, 2015). The occupation of Ses Païsses would develop from the LBA period throughout the EIA (or Talayotic culture) and LIA (or Post-Talayotic/Balearic culture) up until the beginning of the Romanization of the island of Mallorca, starting in 123 cal BC after the invasion of Quintus Caecilius Metellus.

In this paper, anthracological materials will be presented for four different buildings excavated between 2004 and 2008: Buildings 13, 14, 25 and 51, covering a total time span of more than a millennium (information about the samples is given in Table 1).

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