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Domestic and ritual use of plants and fuels in the neolithic cave of Alepotrypa, southern Peloponnese, Greece: The wood charcoal and phytolith evidence

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ABSTRACT

The study presents the combined results of wood charcoal and phytolith analysis at Alepotrypa Cave, southern Peloponnese, Greece. The cave preserves rich cultural remains (hearth and floor constructions, pits and platforms, human bone scatters, massive quantities of fine pottery, lithic artefacts and ornaments) spanning the late Early to the Final Neolithic. The studied macro and micro-remains come from two distinct areas of the cave, the anterior chamber (close to the entrance of the cave) and the interior chambers (including a small fresh water lake), which, as has been suggested by several lines of evidence (analyses of cultural remains, human bones and micromorphology), were used for domestic and ritualistic purposes respectively. The aim of this study is two-fold: a) to investigate the local vegetation, and woodland management, b) to understand the use of plants and use of space along the habitation history of the cave exploring the possibility of a domestic setting for the anterior chamber and a ritualistic one for the interior. Wood charcoal and phytolith analyses support the two modes of usage; different fuel types in the hearths of the interior and anterior chambers of the cave along with different activities are documented. The anterior preserves well prepared clay floors and platforms with some cereal remains indicating light processing or consumption. The hearths in this area were fed with leafy branches from the open vegetation of the surrounding rocky slopes that included various scrub plants and scattered drought-resistant trees. Through time and probably as a response to increased demand due to more frequent and longer-lasting use of the cave, neolithic people expanded their fuel-procurement activities to nearby evergreen woodland and deciduous oak thickets. By contrast the interior preserves evidence of ritualistic activities supported by the use of selected types of fuel, i.e. composted sheep dung along with firewood from scrub vegetation and small diameter wood of Fabaceae, *Cistus* sp. and *Phillyrea/Rhamnus alaternus*. The excellent burning qualities of composted dung and the ease of transportation of such material as well as of the small size firewood would explain their preferential use in the interior chambers where access was exceptionally difficult. Nevertheless, the slow-burning glow and smell of dung under the light of *Pinus nigra* resinous wood torches may have enhanced the powerfully evocative atmosphere of the interior chambers serving ritual purposes.

1. Introduction

Anthracological studies have been conducted in cave sediments worldwide in order to understand human activities and climatic variations in the past (e.g. Aura et al., 2005; Euba et al., 2016; Ntinou and Kyparissi-Apostolika, 2016; Starkovich and Ntinou, in press; Vidal-Matutano, in press; Whitau et al., 2016). Phytolith analysis has also been proved a valuable tool in cave sites aiming at unraveling human practices and climatic changes in the long past (e.g. Albert et al., 2012; Cabanes and Albert, 2011; Karkanas et al., 2002; Madella et al., 2002; Rodríguez-Cintas and Cabanes, in press; Tsartsidou et al., 2015) as well as use of plants for everyday activities and ritual purposes (Power et al., 2014). Rarer is the combination of the two proxies that provide evidence on the use of caves in antiquity (Fletcher and Madella, 2006). Especially for

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Greece such combined studies are absent; thus the present study which combines the results of wood charcoal and phytolith analysis at Alepotrypa Cave, in the Diros Bay, on the western coast of the Mani peninsula, Peloponnese, Greece, constitutes an important archaeobotanical contribution in prehistoric cave studies. The cave was excavated from 1970 to 2006 (Papathanasopoulos, 2011). A new project in course since 2011 aims at refining the dating of the stratigraphic sequence of the cave. The current analysis of archaeobotanical macro (wood charcoal) and micro (phytoliths) remains collected from two distinct areas of the cave, the anterior and the interior, has the overall objective of investigating the possible two different modes of space usage, domestic and ritualistic respectively. Our analyses, focusing on the remains of domestic fuels used for heating, lighting and cooking aim to unfold the Neolithic local vegetation setting and to understand the use and management of plants at different phases along the habitation history of the cave. An approximation to the early/middle Holocene vegetation of the area is a significant contribution to the palaeoenvironmental history of this specific area of the Peloponnese where the conditions for the preservation of other plant remains (i.e. pollen) are lacking. Moreover, assuming that the procurement and use of fuels is an economic activity closely linked to the social organization of a community (Asouti and Austin, 2005; Gur-Arieh et al., 2014; and ref. therein), by analysing the consumption of fuels at Alepotrypa cave we assess aspects related to the function(s) of the site, the subsistence activities and perception of the environment.

2. The natural and archaeological setting

Alepotrypa Cave is located in the southernmost part of the Peloponnese, in the Diros Bay, on the western coast of the Mani peninsula, Greece, facing the Aegean Sea (36°38'19.04″N, 22°22'57.49″E, 20 masl) (Fig. 1). The climatic conditions in the area are typically Mediterranean with hot, dry summers and mild, wet winters. The mean annual winter rainfall is between 500 and 750 mm while average temperatures are 10–15 °C in January and over 25 °C in July (Polunin, 1980, pp. 12–20).

The vegetation of the area presents great variability in density and composition depending on the topography, the anthropogenic activities, soil types and exposition (Fig. 1). Evergreen woods and thermophilous mixed deciduous woodland, maquis and phrygana vegetation occur in the lowlands and hills (Polunin, 1980). The area where Alepotrypa Cave is located forms part of the thermo-mediterrannean belt that extends over the coastal hill country and is characterized by the Oleo-Ceratonion vegetation with secondary mass occurrence of *Pistacia lentiscus* and *Quercus coccifera*. Following the coastal areas, in moister and higher localities meso-mediterranenan evergreen woodland with *Quercus coccifera, Arbutus, Cercis siliquastrum, Pistacia terebinthus, Erica* and *Phillyrea latifolia* expands. *Quercus ithaburensis* subs. *macrolepis* is locally important and *Fraxinus ornus* can be found in montane localities. On the northern part of the Mani Peninsula the southernmost supra-mediterranean conifer forests grow on the Taygetos Mountain with *Pinus nigra* expanding between 1100 and 1650 m and *Abies cephalonica* forming forests on metamorphic limestone at altitudes between 900 and 1800 m (Bohn et al., 2000/2003).

The cave, about 300 m long, is a massive karstic formation of several chambers ending at a deep freshwater pond. The topography of the cave distinguishes two areas: the anterior chamber (areas A and B) close to the entrance and the interior chambers including the spacious chamber of the freshwater pond (Fig. 2).

The cave was discovered in 1958 by the Greek Speleological

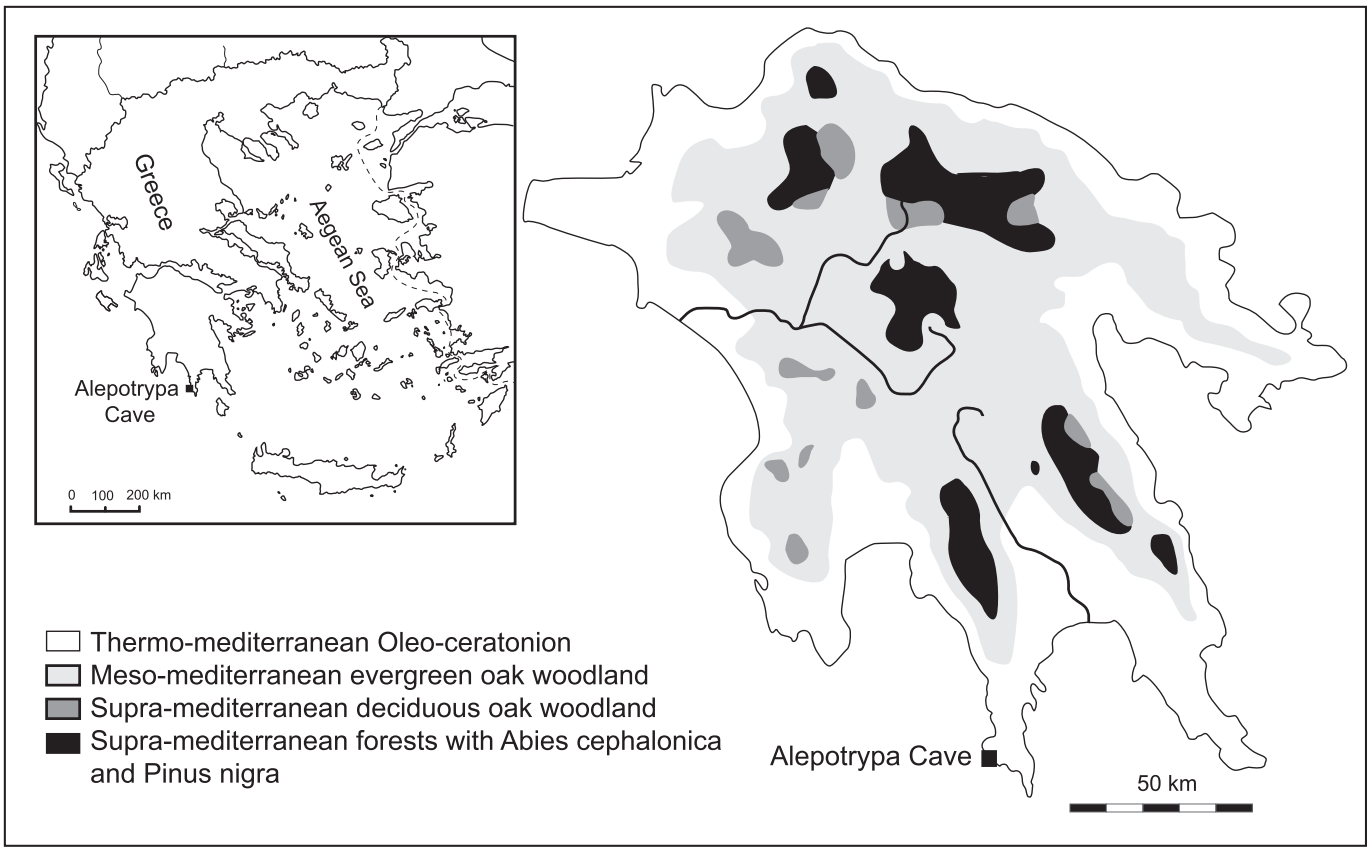

Fig. 1. Location of Alepotrypa Cave in the Mani Peninsula, Peloponnese, Greece and the vegetation of the broader area (redrawn and modified after Bohn et al. 2000/2003).

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