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First preliminary evidence for basketry and nut consumption in the Capsian culture (ca. 10,000–7500 BP): Archaeobotanical data from new excavations at El Mekta, Tunisia

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ABSTRACT

This paper aims to explore the presence of macro-botanical remains and to assess the role of food plants in sites from the Capsian culture (ca. 10,000–7500 BP). Previous research on the Capsian diet has emphasized the role of land snails and animal resources, but little attention has been paid to the consumption of plants. Here we present the results from the first systematic analysis of charred macro-botanical remains (other than wood charcoal) from a Capsian site. As a case study we have used the data from El Mekta in Tunisia occupied during both the Typical and Upper Capsian periods. Macro-botanical remains were scarce and the evidence of plant use is limited. We identified three taxa including *Pinus halepensis*, *Quercus* sp., and *Stipa tenacissima*. Archaeobotanical and ethnographic evidence suggests that *P. halepensis* and *Quercus* sp. could have been used for human consumption while *S. tenacissima* may have been utilized as a source of fiber for basketry. Decreasing frequencies of *Quercus* sp. from the Typical to the Upper Capsian levels match well with paleoclimatic proxies pointing to a slow process of desiccation in the region. Capsian populations could have adapted to this environmental change by focusing on the gathering of *P. halepensis*. We propose that both acorns and pine nuts could have played an important role in the Capsian diet, providing a highly nutritious food source which could also be stored. Archaeobotanical data is limited and definitive conclusions are still at an early stage but we encourage the application of systematic and complete sampling at other Capsian sites in order to test this hypothesis.

1. Introduction

Archaeological studies on Palaeolithic human diet have largely focused on hunting and protein based foods while the gathering of plants has been usually neglected (Colonese et al., 2011; Hardy, 2010; Mannino et al., 2012; Richards and Trinkaus, 2009).

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Since taphonomic processes generally favor the preservation of hard remains such as bone and shell, not enough attention has been paid to the recovery of more fragile macro-botanical evidence as it is assumed that the taphonomy of pre-farming sites does not allow preservation of these items (Hather and Mason, 2002; Kornfeld, 1996).

This is also the case for the Epipalaeolithic or Late Stone Age of north-west Africa, and particularly for the Capsian culture from modern Tunisia, northern Algeria and possibly Morocco (Lubell, 2001). The Capsian has a special significance in North Africa for it shows early expressions of social complexity. The density of sites is high, some with stratigraphies of several meters depth (Lubell et al., 1976), along with structural remains including stone pavements, post holes and pits pointing to a semi-sedentary way of life (Mulazzani et al., 2013). The Capsian covers a time span from 10,000 to 7500 BP which has been traditionally split into two periods, the Typical Capsian (ca. 10,000–8000 BP) and the Upper Capsian (ca. 8000–7500 BP) (Jackes and Lubell, 2008; Rahmani, 2004). Lithic production followed a different *chaîne opératoire* in both the Typical and the Upper Capsian. Assemblages from the Typical Capsian are based on flake and blade production, mainly by hard and soft hammer percussion and the burin-blow technique. Upper Capsian industries are characterized by the use of the pressure detachment technique to obtain regular and standardized bladelets (Belhouchet et al., 2013, 2014; Rahmani, 2004). Material culture includes a wide variety of bone tools, engraved stones, shell beads and decorated bones and shells, including ostrich shell containers. Open-air sites are common but caves and rock shelters were also in use, the latter characterized by the presence of dark gray sediments including ash, charcoal, decomposed organic residues, fire-cracked rocks and significant quantities of land snail shells (Lubell, 2001), or marine shells in coastal sites (Mannino and Mazzanti, 2013). The abundance of ashes, charcoal and food residues indicate that food processing and cooking were important activities around the site (Amara, 2011). Gray sediments have a considerable extension and depth, which make them easily recognizable. In fact, Capsian sites are locally known as *rammadiyat* (ashy ground in Arabic) or *escargotières* (shell-middens in French), and their inhabitants characterized as snail eaters (Lubell, 2004; Lubell et al., 1976). However, the consumption of terrestrial and marine mollusks does not appear to have been the main protein source (Jackes and Lubell, 2008; Lubell et al., 1975, 1976, 1982–1983; Mannino and Mazzanti, 2013). Evidence for hunting is also abundant, along with that of fishing (Vorenger, 2013).

No macro-botanical evidence has been reported from Capsian sites so far, with the exception of some cones of *Pinus halepensis* (Santa, 1958–1959), one charred bulb of *Allium* sp. (Lubell et al., 1976) and one seed of a wild pulse (Fabaceae) (identified by M. Tengberg-MNHN of Paris, unpublished report). Further botanical evidence comes from the analysis of phytoliths carried out at Aïn Misteheyia, which points to the exploitation of sedges and small-seeded grasses (Shipp et al., 2013). Although wood charcoal samples have been analyzed by Couvert (1969a, 1969b, 1971, 1976, 1977), results have focused on reconstructing environmental conditions. As far as seeds and fruits are concerned, systematic sampling and processing of sediments is rare in these sites, so data on plant foods is still very scarce. Attempts were made to recover macro-botanical remains by flotation and dry sieving at both Aïn Misteheyia and Kez Zoura D, but no plant remains were recorded after flotation of sediments (David Lubell, personal comment). However, recent systematic research carried out at several Late Pleistocene and Early Holocene sites from Morocco (Humphrey et al., 2014; Morales et al., 2013; Zapata et al., 2013) and Libya (Barker et al., 2010) has provided abundant macro-botanical and archaeological data, which suggests that plants were more important in the diet of North African hunter-gatherers than previously thought.

This new evidence raises the possibility that food plants were also important for the Capsian culture. The vast majority of Capsian sites are located inland from the Mediterranean coast, a region of high botanical diversity with many useful plants (Blondel et al., 2010; Haws, 2004; Le Floc'h et al., 2010; Rivera et al., 2006). Our objectives are to assess the presence of macro-botanical remains (other than wood charcoals) at Capsian sites and to discuss their role in the diet of their inhabitants. In order to achieve these aims we used systematically collected macro-botanical data from recent excavations carried out at the site of El Mekta in Tunisia. This is one of the most important sites as it covers both the Typical and Upper Capsian periods and has provided a rich assemblage of material culture. In spite of being more fragile than other plant remains such as phytoliths or pollen, macro-botanical remains can provide more detailed information as identification to species can be achieved in most cases, offering evidence for the plants processed at sites as well as a means for directly dating these activities using radiocarbon methods.

1.1. The site

El Mekta is an open-air Capsian site located on the eponymous hill at coordinates (34°31′43.70″N, 8°43′51.70″E), 10 km north of Gafsa in south-west Tunisia (Fig. 1). The hill itself consists of a monoclite fold, while the site is located on a platform at the top, overlooking the steep (ca. 45°) south-east facing slope which extends to around 30 m by 50 m. The platform is delimited to the north-west by a rock face of one and a half to four meters in height (Fig. 2). The site was located by Boudy in 1906 (Morgan et al., 1910) and excavated by Vaufrey (1933) and Gobert (1951–1952). In 2012 a new series of one by one and two by one meter trenches were opened in order to define sedimentary processes at the site and to obtain a reliable chrono-stratigraphic sequence for the Typical and Upper Capsian. The material production and economic and palaeo-environmental data have been correlated with the stratigraphic sequences obtained from the 2012 trenches (Fig. 3). Five trenches were opened on the platform, two in the higher area (1 and 4) and two in the lower (5 and 6). Trench 3 was dug in front of the rock face by removing only the natural overlying sediments, which probably originated in the upper part of the hill, but no further levels were excavated after recording the first Capsian layer since the goal was to test for the presence of an anthropogenic layer at this location. An additional trench (2) was opened along the slope of the hill. Initial analysis of the lithic industry allowed the spatial location of the Typical and Upper Capsian to be defined according to the technological and typological difference usually recognized in both facies (*Inter alia* Rahmani, 2004). They do not appear to overlie one another, with the Typical Capsian on the lower part of the platform in Trenches 5 and 6, while the Upper Capsian was concentrated on the higher area in Trenches 1 and 4 and along the rock face in Trench 3. A new series of ^{14}C AMS dates obtained on both stages confirm these first observations (Table 2).

The sections (Fig. 4) showed a succession of stratigraphic units defined on the basis of their morphological features (color, texture, structure, ecofacts and artifacts). Trenches 5 and 6 contained several layers sloping from east to west and reaching a depth between 50 and 110 cm. Overlying the calcareous rocks were a series of anthropogenic layers composed of an ash rich silty-sandy matrix, dark gray to black in color (7.5 YR 2.5/1 h) and sealed by a series of strongly disturbed natural and anthropogenic layers. Trenches 1 (90 cm deep) and 4 (80 cm deep) contained a sequence of anthropogenic layers overlying calcareous bedrock and sealed beneath natural topsoil. The layers consisted of an ashy, silty-clay and sandy matrix of brown to dark gray color (2.5 Y 4/2 s).

The impact of natural depositional and post-depositional factors cannot be assessed and may have altered the original features