A new elephant site in the Haliákmon River valley (W. Macedonia, Greece)

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Introduction

The Proboscidean record in Greece includes more than seventy-five sites that chronologically span from the Middle Miocene to the Holocene (Dermitzakis & Theodorou 1980, Doukas & Athanassiou 2003). Fossil elephant remains are common in the Upper Pleistocene deposits of Greece, particularly in the fluvial and lacustrine sediments of the northern part of the country. However, it is usually about isolated finds (tusks, molars etc.) and not parts of a diverse fossil assemblage. Likewise, the discovery of more or less complete skeletons is rare. Most of these remains belong to the European forest elephant *Elephas antiquus* Falconer & Cautley, 1845, a typical element of the Late Pleistocene faunas of Greece. Reports of the Proboscidean geographical distribution in the Greek peninsula can be found in Dermitzakis & Theodorou (1980), Dermitzakis *et al.* (1982) and Doukas & Athanassiou (2003).

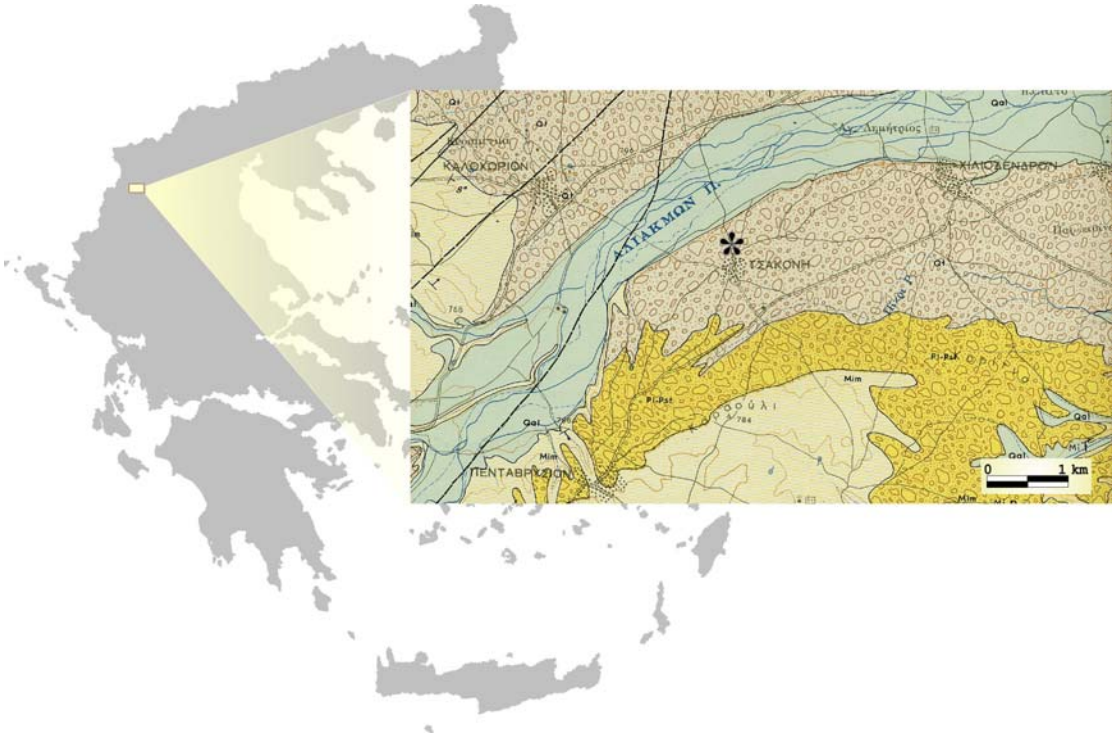

Figure 1. Map of the Tsákoni area, based on Savoyat & Monopolis (1971). The location of the fossil elephant site is marked with an asterisk.

The valley of Haliákmon, as well as the wider area of the Grevená–Kastoriá basin, have already yielded several fossil proboscidean remains, which are reported or studied by Brunn (1956), Psarianos (1958), Melentis (1966), Paraskevaidis (1977), Steensma (1988), Tsoukala & Lister (1998) and Tsoukala (2000). This study describes a new locality with an elephant fossil. It is located on the right bank of the river Haliákmon, north of the village Tsákoni (Prefecture of Kastoriá, Municipality of Hag. Triáda — Fig. 1) and it was spotted by a villager in a country road section. Geologically, the area is an old terrace of the river, which consists of a fairly hard fluvial conglomerate. The site was excavated in August 2003, by the Ephorate of Palaeoanthropology–Speleology with the technical help of the Municipality of Hag. Triáda.

Figure 2. Lateral view of the tusk specimen (scale: 10 cm).

Taxonomy

Order: Proboscidea Illiger, 1811

Class: Elephantoidea Osborn, 1921

Family: Elephantidae Gray, 1821

Genus: *Elephas* Linnaeus, 1758

cf. *Elephas antiquus* Falconer & Cautley, 1845

The locality of Tsákoni yielded a single specimen, namely an elephant tusk part (Fig. 2). It is a 102 cm long distal part, with a maximum diameter of 16 cm. The tusk tip was broken before the deposition. The find was directed almost perpendicularly to the road section (Fig. 3), so that it can be assumed that the rest of the tusk has been destroyed during the road construction. The same is possible for any existing parts of the cranial and postcranial skeleton. The specimen is very brittle and badly preserved, as the dentine cones that built the tusk are fragmentised into small pieces. Nonetheless, the general morphological characters of the tusk can be well observed: it is moderately bent and it does not show any considerable torsion.

Figure 3. Location of the find (arrow) in the road section.

It was attempted to find additional morphological data, which could help in the determination of the specimen. In order to do this, thin and polished cross sections, cut perpendicular to the tusk long axis, were prepared from tusk fragments (Fig. 4), so that observations and measurements of the Schreger pattern can be carried out. The morphology of the Schreger pattern has been recently successfully used for proboscidean taxonomic reasons (Espinoza & Mann 1993, Palombo & Villa 2001, Trapani & Fisher 2003). However, it was not possible to observe and reliably measure the metrical characters of the Schreger pattern in any section.

The find is currently stored in the collections of the Ephorate of Palaeoanthropology–Speleology in Athens.

Discussion

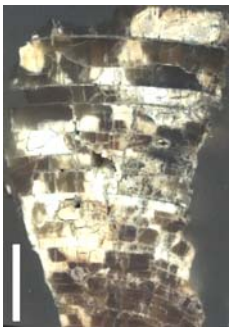

Figure 4. Cross section of the tusk (scale: 10 mm).

Two elephantid genera are known in the Pleistocene of Europe: *Mammuthus* Brookes, 1828 and *Elephas* Linnaeus, 1758. The former is represented by three species that form a continuous evolutionary lineage from the Late Pliocene to the Late Pleistocene: *M. meridionalis*, *M. trogontherii* and *M. primigenius* (Maglio 1973, Lister 1996). All three are characterised by tusks that show considerable bend and torsion, which become more expressed towards stratigraphically younger specimens. The latter is represented in the continental faunas by one species, *E. antiquus*, which is stratigraphically confined to the Middle and Upper Pleistocene. *E. antiquus* had more or less straight tusks that exhibit weak torsion (Kurtén 1968). It is clear that the morphology of the studied specimen corresponds to that of the genus *Elephas* and its sole European continental species *E. antiquus*. However, it is preferably referred to as cf. *E. antiquus*, as the bad preservation and its small dimensions allow for a degree of uncertainty in morphological observations.

Conclusions

The distal tusk part, found in the locality Tsákoni in the Haliákmon River valley, plausibly belongs to the elephant species *Elephas antiquus*, which lived in Europe during the Middle and Late Pleistocene (Maglio 1973). As it is considered to be a forest dweller adapted to temperate climate (Kurtén 1968), it can be assumed that forests and woodlands were widespread in the area of the Haliákmon valley during the Pleistocene.

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