

## **New data on *Elephas chaniensis* (Vamos cave, Chania, Crete)**

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**SUMMARY:** The description of the new species *Elephas chaniensis* Symeonides, Theodorou and Giannopoulos 2000 was published on 9 December 2000 (Symeonides *et al.*, 2000) for the celebration of the 50th anniversary of the Hellenic Speleological Society. The fossil material was collected in the submerged cave of Vamos near Chania, Crete on the southeast of Drepanon Cape at the east side of the Souda Gulf. In this paper we discuss the material collected since the first publication. All available data from the first and recent collections point to the existence of a large but not continental-sized endemic elephant. The material allows us to understand the size variation of the new species. The finds were collected by divers. The submerged cave was open to the air during the last climatic minimum. Today only the upper part of the main chamber is above sea level. All data point to a Late Pleistocene age. Absolute dates are expected to be available in time for the Congress.

### 1. INTRODUCTION

The cave was found by E. Eythimaki, during underwater fishing. It was filmed by G. Tzanaki and I. Spanos and was first studied by the geologist V. Giannopoulos from the Ministry of Culture, who also discovered the fossil bones. The collected material was transported to the Geological Department of Athens University and was studied by N. Symeonides, G. Theodorou and V. Giannopoulos. Material is still collected during periods of field work. The bones are found at a depth of 1.5 to 4.5 meters, partly in sandstone and partly covered by calcitic material. The first publication included data on elephant bones, and as well as fossil bones of cervids belonging to *Candiacervus* sp, or to the smaller group of De Vos (1979), or close to the lower limit of his 'size II'. The elephant material is attributed to the new endemic species *Elephas chaniensis*.

### 2. THE MATERIAL

The first collection includes more than 40 elephant bones. The first impression was that we were dealing with a large elephant, larger than any known specimen from the Rethymno area. It was crucial to know the size variation of the Vamos population or at least to have a good indication. If some bones could be attributed to a large but not continental-sized elephant then we had an endemic population. If all bones were close to the lower – though unknown – limit of continental Late Pleistocene elephants, then we could not exclude the possibility that the newly discovered material could represent the long undocumented occurrence of *E. antiquus* on Crete. Some pieces of unciform, representing three ontogenetic stages from large to small adult animals, gave the first very good indication of the size variation of the population. The material belonged to a large but clearly not continental-sized elephant.

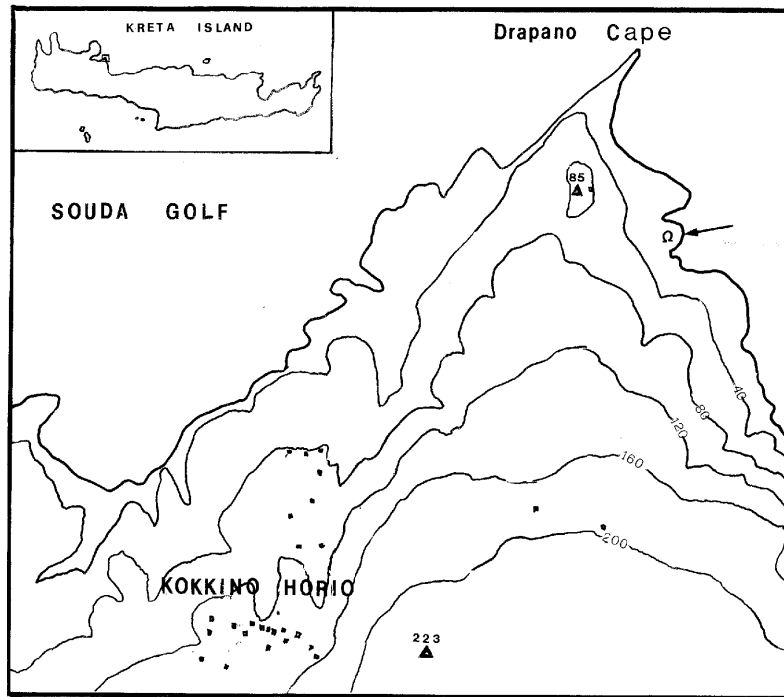


Fig.1 - Map of Crete. The arrow points to the fossiliferous cave.



Fig.2 - The main room of Vamos cave.

After the first publication, the diver and geologist V. Giannopoulos continued from time to time to collect and observe the elephants of Vamos cave. New fossils bones came to light and a new period for bone collecting is planned

for the summer of 2001. Biometrical investigation of the new material clearly shows that we are dealing with the new endemic form previously described.



Fig.3 - Long bones of elephants still in the sea bed in Vamos cave.

### 3. DISCUSSION AND CONCLUSIONS

It was obvious from the beginning that these elephants had roamed the Chania area during the last climatic minimum, 18,000 y. BP. Possibly they had migrated there earlier during the episode of lower sea level. It was also clear that the elephants or their bones could only have entered the cave at periods when the sea level was at least 10-20 meters lower than today. This could alternatively have occurred shortly before the last marine transgression, a hypothesis making it possible that their extinction occurred at the beginning of Holocene. Questions similar to those concerning the history and the extinction of the Tilos elephants are apparent:

- When did these elephants arrived on Crete?
- What is their relation with the other Cretan species?
- What was the influence of Man and Nature on their extinction? We must not forget that the Tilos elephants, the last European elephants, became extinct just less than 4000 y. BP (Theodorou 1986, and references within).

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