



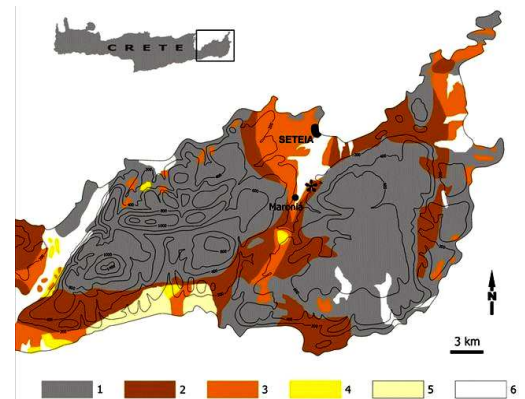
**Informationen zur Umwelt und für Naturreisende auf Kreta:**  
Information about the Environment and for travellers in Crete:



**"Terrible beast" (*Deinotherium*) discovered on Crete**  
**Verification of a Proto-elephant from East-Crete (Miocene)**

Near the village of Maroniá, (South of Sitia, Prefecture of Lassithi, Crete), a jaw fragment of a Deinotherium was found in 1997 by IOANNIS DERMITZAKIS from Sitia and described by ATHANASSIOS ATHANASSIOU in 2004. The fossil find comes from the age of the Neogene (late Miocene; 23 million years before today) and is part of a Proto-elephant from the branch of the fossil trunked animals (Proboscidea). The location, a gravel bed interpolated in marine sediments with white marl and oyster beds (*Ostrea*), and its biostratigraphy data stay for a Miocene age of the formation Faneroméni. The exhibit consists of a right jaw fragment with the first molar (m 1) and has been assigned in the system *Deinotherium giganteum* KAUP 1829: therefore see also the literature <sup>1)</sup>.

Geologically the East of Crete consists of a sequence of mostly Mesozoic, Alpine and Neogene's deposits which form hilly lowlands. The area around Maroniá is a ditch of neo-tectonic origin, filled by Neogene, marine sediments of shallow water, which overlie a Pre-Neogene sequence. The Neogene deposits consist mainly of clay, marly limestone, marls and sandstone. They are rich in invertebrate fossils (foraminifera, Bivalvia, gastropods, echinoderms, etc.), and point to a "beach shallow water environment with low energy".



**Legend:** 1 = Pre-Neogene array, 2 = fluvio-lacustrine shallow water sediment, 3 = marine shallow water sediment Miocene/Pliocene, 4 = continental, marines Pliocene, 5 = continental Pleistocene, 6 = Alluvium. The \* Symbol marks the find spot.



*Deinotherium* ("terrible beast"), from which came the fossil find, was a prehistoric proto elephant, who lived to the age of the Pleistocene Epoch. Also the today living elephants belong to this branch of the fossil trunked animals. In addition to elephant characteristics, the skull has also common characteristics with the manatees. The Deinotherium types developed from a very early split in the elephant tree. These animals had the tusks in the lower jaw and were bent down. They probably served as digging tools in swampy forests. Deinotherium were up to 3.6 m tall and the tusks could be up to 1.5 m long. The Deinotherier died out during the last ice age; only elephants survived until today (but not in Crete).

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The discovery of *Deinotherium*, considered together with the known Miocene mammalian fauna of Crete, suggests that the island must have been connected to the Mainland (by a former land bridge at this time). The morphology of the molars of *Deinotherium* shows that the animals ate soft, abrasion-proof vegetation, which indicate an open woodland habitat.



**Legend:** for the alongside picture: right mandibular fragment with molar (m 1); top: accusale, centre: labiale und bottom: linguale view.

As in the case of all *Deinotherium* first molar (m 1), also this tooth is trilo-phodont; it consists of three cross lophids, and is elongated. The tooth shows only a slight attrition. The enamel is strong and extends from 1 mm on the sides of the crown up to 4 mm on the occlusal surface.

Within the Proboscidea, the family of the Elephantidae show a strong tendency towards extremely hypsodont molars. The numbers of cross lophids are strongly increased and the spaces are filled with cement. Especially the molars are significantly extended in this way. The space problem is solved by a horizontal phyodont. In the jaws of modern elephants are only a maximum of two teeth at the same time in function. They are posterior pushed forward in the jaw and are gradually chew. The remains of the consumed tooth fall out anterior, while from the back the next, larger tooth move up.

5 cm

#### <sup>1)</sup> Literatur:

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