

Information about the Environment and for travellers in Crete:

Fossil site Potamida / Kastelli Kissamos (Upper Miocene)
A standard section of the Kissamos formation / Northwest Crete



Characteristic fossils (and places of discovery) of the shallow water and slope position in the Upper Miocene basin (between 7.5 and 6.5 million years ago) of Kastelli Kissamos, province Chania/NW Crete are described in detail in the magazine FOSSILIEN, numbers 2/1998, 1/2000 and 1/2002; in addition see also our leaflet No. 092-05/E of the CRETE environment forum and the included hints, cross references and literature.

In addition to it in the following some short information's to the discovery site Potamida: The abandoned marl pit is located about 3 miles southeast of Kastelli Kissamos and exploits about 63 m monotonous, grey marl clay. The pit, in which in former times material was diminished for ceramics production, offers an impressive sight with its "marl cone" (**fig 1 – 3**)



Pictures are showing the abandoned marl pit with its "marl cone", for size comparison with a person (centre pic.)

The outcrop is considered as standard profile to the local stratigraphy. The borders between the stages Tortonian and Messinian are in the upper third of the outcrop. The discovery site offers above all plenty planktonic micro- and Nano-fossilis.

The former fauna shows up in a soft soil socialization, consisting of thin-shelled oysters and tender-shelled shells (pilgrim mussel). The extrication of their thin shells succeeds usually only in "pieces of broken parts" and fragments (**fig. 4 - 7**).



Likewise to the fauna belong the thin-shelled irregular sea-hedgehogs (*Schizaster*), which usually are found scooped and fragmented. The bony fish fauna is almost exclusively occupied by Otolith (ear stone) and represents a Mediterranean mixed fauna from offshore shallow water forms. Proven so far were conger (*Congridae*), cods (*Gadidae*), grenadiers (*Macrouridae*), slimeheads (*Trachichthyidae*), bigscales (*Melamphaidae*) and lightfishes (*Myctophidae*).

In the transitory facies between the monotonous marl in the lying and the hanging (fossil debris limes) dominate typical elements of the basin slope, whose fossil contents e.g. *Terebratulina* and isolated Octo corals speak for a habitat with water depths between 100 and 200 m.

The small-scale basin of Kastelli-Kissamos (where based on KEUPP & BELLAS (2002) syngenite disturbances cared for a fast lateral facies change, together with its limiting swells, which are marked by a continuing swallow water progress during the Upper Miocene) offers possibilities of finding fossils of different habitats and preservation slots. The species-rich spectrum corresponds in its composition to a typically Mediterranean socialization.

GEO-Information III: Clefts fillings

Clefts fillings in rocks and sediments are usually found in former tertiary land surfaces; they occur in particular also in the Mediterranean area and occasionally (usually with larger soil/foundation engineering works) are cut. Significantly at the clefts fillings are not only those often found fossils, but equally also the rapid backfilling as well as the time of the emergence. The slurry and sealing with clefts loam effects usually in a very short time and possibly in it contained fossils therefore document also only a temporally closely limited fauna of a catchment area



The picture is showing a small, about 2.3 m deep and 1.6 m wide clefts filling, here at a high embankment in Kato Goves (at a secondary route, parallel to the “Old Road” Iraklion – Agios Nikolaos) in North Crete. The clefts filling is visible in the cross section by the cut and is also clearly emphasized by the different tertiary sediments. Not yet more examined no statement about the emergence or possible fossil contents can be made at present.

In Germany the Korbacher clefts filling (see fig. right), forms one of the world-wide rare fossil stores for vertebrate animals (predominant reptiles) from the age Permian. In its scientific meaning the “Korbacher clefts” is put on a level to the “pit Messel”.



Pictures: (3) U. Kluge / (6) H. Eikamp (5/2005)