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Benthic fauna of a Pleistocene shallow water hydrothermal vent, Kos Island, Aegean Sea

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In the Mediterranean Sea, hydrothermal activity in marine environments is mainly shallow and of the gaseohydrothermal type (Dando et al., 1999).

Environmental conditions resulting from the processes of hydrothermal venting create a unique ecosystem for benthic organisms. However, while the benthic communities around deep-sea hydrothermal vents are relatively well understood, only sparse information exists on the effects of shallow-water hydrothermal vents on ambient ecosystems. Few shallow vent sites have been studied in detail to catalogue biological diversity. The data to date suggest that, in contrast to deep sea vents, shallow vents, in general, have few endemic species of metazoan, which are represented of the most tolerant species in the ambient fauna. Consequently, many of these sites may be regarded as “hotspots” of species biodiversity.

The active volcanic arc of the Aegean Sea can be considered an ideal setting to assess the effect of hydrothermal vents on fossil and recent benthic ecosystems.

Kos island is one of the most active areas of the south Aegean volcanic arc. The calcalkaline type volcanic activity occurring in the area of Aegean took place during Tertiary and Quaternary. The most recent volcanic activity, witch affected the island, manifested about 145.000 years before.

In order to provide a thorough investigation on fossil benthic faunal assemblages encountered in fossil shallow hydrothermal vents, a Pleistocene section, cropping out in the northern Kos island has been selected for study. The lithology (marl) of the section

allowed a proper extraction of its faunal contents and identification at species level. This study provides a detailed taxonomic and paleoecological analysis for benthic fauna associated with ancient hydrothermal vents.

Populations of the small bivalve *Myrtea spinifera* and scattered tube worms (possibly vestimentiferan) incrusted on pieces of calcareous crusts, were recovered from the lower part of the section. These chemosynthesis based populations derived energy from oxidation of the methane and/or reduced sulfur compounds, by bacterial endosymbionts in their gills (Fiala-Médioni & Felbeck, 1990; Fiala-Médioni et al., 1993; Fisher, 1995) or trophosomes (Nelson & Fisher, 1995). The co-existence with the benthic foraminifera *Ammonia beccarii inflata, Valvulineria bradyana, Nonion depressulum* supports the influence of a shallow hydrothermal vent in the investigated area.

This is reinforced by the presence of hot grounds and submarine fumarole activity in the studied area, as the formation of various hydrothermal minerals (e.g. kaolinization, volcanic glass) and the alteration of various mineral assemblages, point out.

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