

Geopark of Aghios Nikolaos – Neapolis, Lakonia, Peloponnese

E. Moraiti¹ and A. Alexopoulos¹

(1) Hellenic Survey of Geology & Mineral Exploration, Spirou Loui 1, 13677 Acharnae, Greece; moraiti@igme.gr
 (2) University of Athens, aalexopoulos@geol.uoa.gr

Along the coast near Neapolis (Peloponnese, Greece) a vast amount of cylindrical and cone-shaped tube like structures can be found within the quarternary und neogene coastal arenitic limestones (Fig. 1).



Figure 1. The Petrified forest of Agios Nikolaos.

The microscopic anatomical study and the large number of samples studied resulted in finding components fossilized palm trees, coniferous and broadleaf trees. At the same time highlighting the uniqueness of the Geopark which epkalyptetai of fossiliferous marine sediments, such as Bryozoans, red algae, molluscs, echinoderms and other categories of animal fossils, giving particular attention to the emergence of the Geopark.

All these tubes have to be interpreted as dissolution pipes. The former explanation as “petrified forest” can no longer be maintained. Dissolution pipes are syngenetic karst formations, which can be verified in many young coastal sediments in the Mediterranean as well as worldwide. It can be shown, that the genesis of dissolution pipes is closely related to an intense root growth. Fossilized root structures (rhizoliths, rhizocretions, etc.) are mainly concentrated in places of dense tube distributions as well as along young tectonic fissures. At different places along the coast near Aghios Nikolaos many fracture structures accompanied by rhizoliths can be demonstrated running parallel to the coast for distances of several hundred meters. At the Peninsula of Palaekastro south of Neapolis dissolution Pipe fields can be clearly identified even in satellite images. Within many different rhizoliths unambiguous cell structures can be detected.



Figure 2. Stereopair of a cluster of pipes at Ag. Nikolaos “Petrified Forest” (left); Stereopair of a cluster of pipes at “The Petrified Forest”, Cape Bridgewater, western Victoria – note the cemented rims (right).

The interpretation of the tube forms near Aghia Marina as “petrified forest” is no longer tenable but this does not affect the high geological value of the Geopark of Aghios Nikolaos-Korakas. Due to the very good outcrop conditions in the area of Neapolis, the development of a young tectonically controlled coast with its arenitic sediments und with its different karst phenomena can be a tangible experience.

The focused solution process seems a better hypothesis for general interpretation of both isolated pipes, and the dense fields of pipes which are a distinctive feature of dune limestones throughout the world. Note that the four alternative modes of focusing water flow discussed above are not presented as mutually exclusive hypotheses—all could act, either together or separately, according to the local situation in any area.

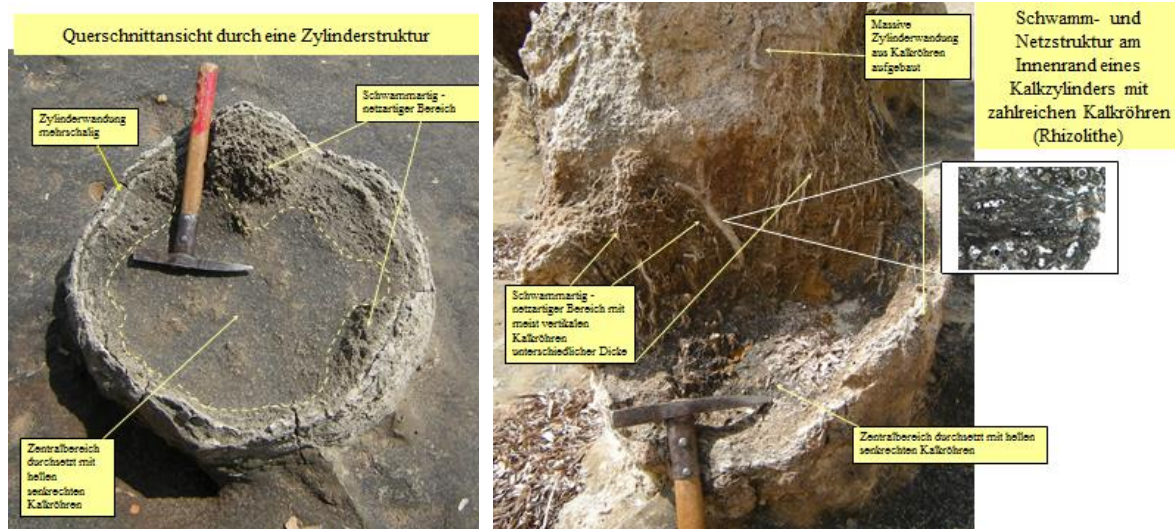


Figure 3: Cross-sectional view through cylinder structure of pipes at “The Petrified Forest”.

Rhizomorphs are common in dune sands and form around small roots growing through the sand. Such roots would preferentially follow the organic-rich soils that fill the solution pipes and branch out from them. Thus, rhizomorphs could be called petrified roots, but the pipes are not petrified trunks.

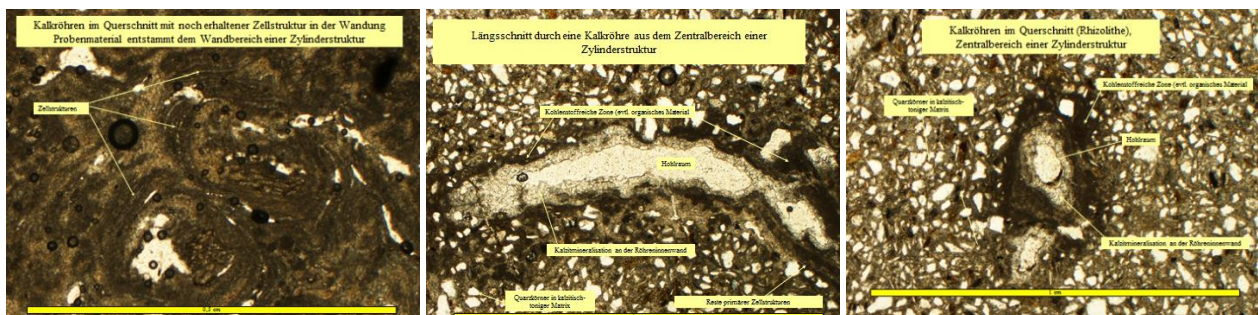


Figure 4. Thin sections of cylinder structure of pipes at “Petrified Forest”.

The Geopark of Aghios Nikolaos represents with its dissolution pipes pseudo forest and with the high concentration of various fossil root structures a nationwide unique selling proposition. Its value and its significance as a national Geotope is on the same level as the other world famous petrified forests.

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