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Palaxius velienensis n. sp., a new crustacean microcoprolite from the Upper Triassic of Greece

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With 2 figures and 1 plate

Kurzfassung

Aus obertriassischen Karbonaten der „Tyros beds" im südöstlichen Peloponnes (Griechenland) wird ein neuer Mikrokoprolith, *Palaxius velienensis* n. sp., beschrieben. Die Karbonatlage mit *Palaxius velienensis* hat wahrscheinlich norisch-rhätisches Alter.

Abstract

A new microcoprolite, *Palaxius velienensis* n. sp., is described from the Upper Triassic carbonates of the „Tyros beds" in Southeastern Peloponesse (Greece). The carbonate bed with *Palaxius velienensis* is most probably Norian/Rhaetian in age.

Introduction

The microcoprolite described here has been found in carbonate rocks from the area of St. Demetrios-Velies, Southeastern Peloponesse (text-fig. 1). These rocks were first studied by Lekkas & Papanikolaou (1978) and considered representing the normal transition of the "Tyros beds" (Ktenas, 1924) to the lower member of the carbonate series of the Tripolis Zone. Nevertheless, Brower (1983) regarded these rocks as bedded carbonates of the "Tyros beds" of Upper Triassic age (Carnian-Norian). Also Gerolymatos et al. (in press) referred to these rocks as "Tyros beds", but of Rhaetian age.

According to Thiebault (1982), Lallement (1984), Dornsiepen et al. (1986) and Doert et al. (1987) the Upper Triassic carbonate rocks with a thickness of 100–200 m, overlie and probably have the lateral transition to the volcanic tuffs, lavas and tuffites. These rocks are also folded and highly fractured. In terms of stratigraphy only a column is given by Brauer (1983). In the lower parts of the carbonate sequence thin-bedded carbonates are alternating with variously colored calcareous beds, whereas in the upper part of the sequence the dolomitic beds increase and calcareous shales decrease.

According to our investigations these rocks show a cyclic sedimentation of thin-bedded (<40 cm) dark to light grey dolomites and calcareous shales of a few centimeters in thickness.

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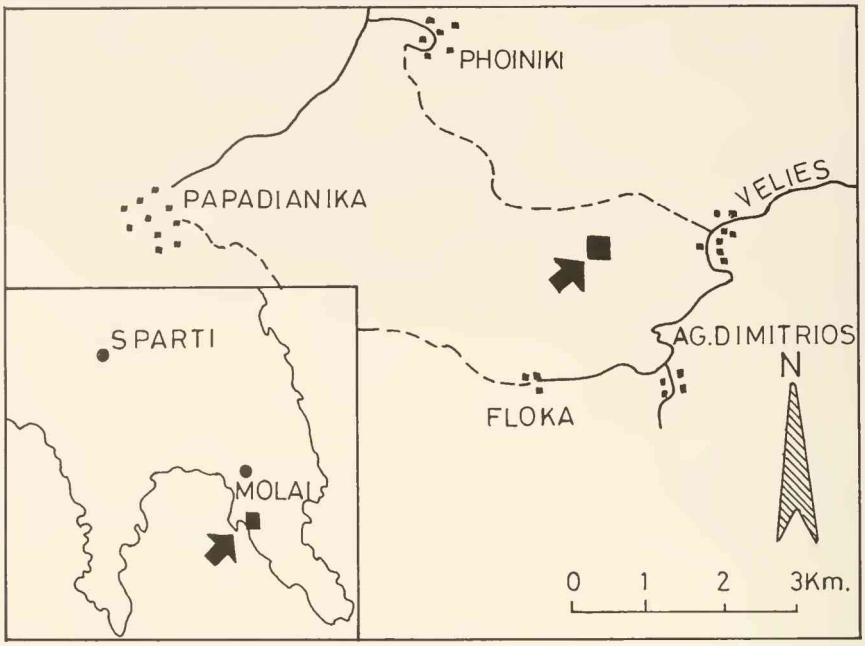


Fig. 1: General and detailed map showing the locality of the microcoprolite described in this paper.

The thickness of the beds is not constant and it is increasing towards the upper members of the sequence.

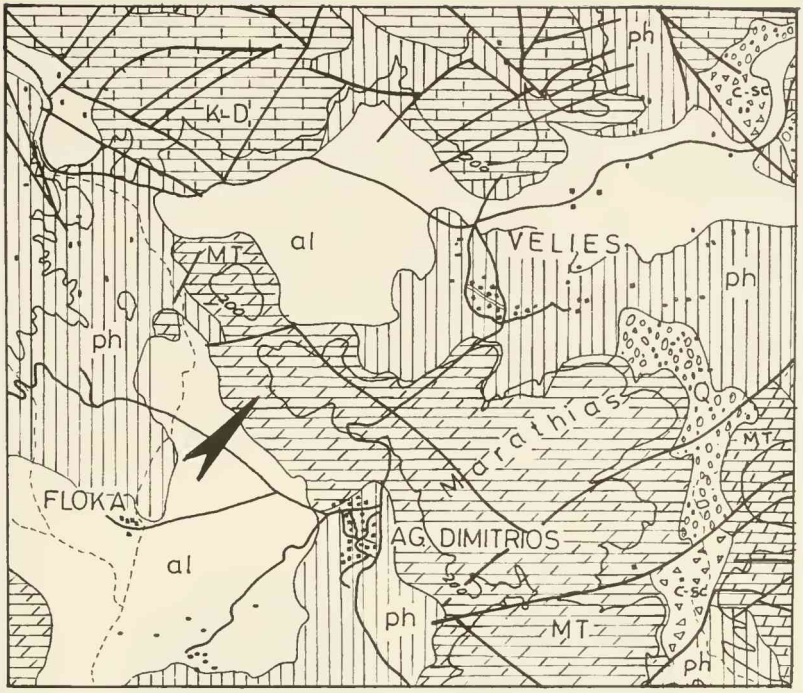
Although the primary sedimentary features are not well preserved due to metamorphism and dolomitization, the remaining features indicate a depositional environment characterized by a restricted shallow carbonate platform (tidal flat or restricted circulated shelf) with intertidal and subtidal areas.

The main lithofacies are (see text-fig. 2):

- Cryptalgal laminated dolomudstone
- Stromatolitic dolomite with fenestral fabric
- Dolomudstone with casts of evaporites
- Dolograinstone with grapestone grains
- Pellet-laminated dolostone
- Dolopackstone with coated grains.

The sample with the new microcoprolite has been found in a dark grey, thinly laminated dolostone.

The particles contained mainly include oomolds, other coated grains, lithoclast (slightly reworked), pellets, few tangential ooids, skeletal fragments (pelecypods) and few gastropods. The particles are cemented by dusty dolomitic crystals. The large skeletal fragments and vugs are cemented by zoned dolomitic crystals and finally by quartz crystals with numerous inclusions (carbonates and other minerals).



Photogeological map of the studied area, I.G.M.E 1977

Fig. 2: Geological map of the area with locality (arrow) of the microcoprolite described in this paper.

Paleontological Description

Phylum Arthropoda Siebold & Stannius, 1845
Class Malacostrata Latreille, 1806
Order Decapoda Latreille, 1803
Family Glypheidae Winkler, 1883

Remarks

The microcoprolite genera *Favreina* Brönnimann, *Parafavreina* Brönnimann, *Palaxius* Brönnimann & Norton and *Helicerina* Brönnimann & Masse were first placed into the group of the thalassinid Decapoda. According to Förster (1980, in Förster & Hillebrandt 1984) thalassinid decapods appear first in Upper Liassic (Toarcian) representing the successor forms of Triassic Glypheidea. Förster pointed out that the *Favreina* Brönnimann, *Parafavreina* Brönnimann and *Palaxius* Brönnimann & Norton should be placed to the group of Glypheidea (see Senowbari-Daryan 1988). This classification is followed in this paper.

Genus *Palaxius* Brönniman & Norton, 1960

Type species: *Palaxius habanensis* Brönnimann & Norton, 1960

Palaxius velienensis n. sp.
(pl. 1, fig. 1–8, text-fig. 3)

Derivatio nominis: According to the village Velies, east of the locality.

Holotype: The transverse section of a rod-shaped coprolite from thin section 49613, illustrated in pl. 1, fig. 1.

Paratypes: All specimens illustrated in pl. 1, fig. 2–7.

Locus typicus: (see text-fig. 1).

Stratum typicum: Upper Triassic (most probably Norian/Rhaetian).

Repository: Bayer. Staatssammlung für Paläontologie und histor. Geologie, München (Inventar-Nr.: 1988 I 33–35).

Material: 10 specimens in thin sections 49613, 23976, 24939.

Diagnosis: A species of the genus *Palaxius* Brönnimann & Norton with 12 longitudinal canals. The cross section of the longitudinal canals are crescent-like. The canals are arranged in two symmetric groups of 3 each to the plane of symmetry. The medial canals are directed with their concave side away from the plane of bilateral symmetry. One of the periferal canals is directed with its concave side to the plane of symmetry and the two others are directed with their concave side opposite to one another but parallel to the plane of bilateral symmetry.

Differentialdiagnosis

Palaxius velienensis n. sp. differs from all other species of *Palaxius* (listed by Senowbari-Daryan 1979, Molinari Paganelli et al. 1979) by the number of longitudinal canals. Except *Palaxius sirticus* Brönnimann & Norton (1960) with 16 and *Palaxius shastaensis* Kristan-Tollmann (1983, in Kristan-Tollmann & Tollmann) with 12 longitudinal canals all other species of *Palaxius* possess 10 or less canals. *Palaxius shastaensis* Kristan-Tollmann, described from Upper Triassic (Norian-Rhaetian) of Northern California, has the same number of canals (12) as *P. velienensis* but these two species can be differenciated by the pattern of arrangement of the

canals: The canals of *P. shastaensis* KRISTAN-TOLLMANN are arranged in two symmetric groups of 3 each to the plane of symmetry like *P. velienensis* but on the first species the concave sides of all canals are directed to the outside of the coprolite (see text-fig. 3).

Description

The outline of transverse section of the rod-shaped coprolite is circular to subcircular and has a diameter of 0,5–0,6 mm. The number of the longitudinal canals, crescent-like in cross section, amounts to 12. The canals are arranged in two symmetric groups of 3 each to the plane of bilateral symmetry. The medial canals are directed with their concave side away from the plane of symmetry. One of the periferal canals is directed with its concave sides to the plane of symmetry and to one of the medial canals (see text-fig. 3/B) The two other periferal canals are situated with their concave sides opposite to one an other. The connection-line between the concave sides of both canals is directed parallel to the plane of bilateral symmetry (see text-fig. 3/B). The medial and peripheral canals have always the same size and are about 0,05–0,08 mm in diameter. The crescent-like outline of the canals (in cross sections) can not always be recognized (pl. 1, fig. 7). In longitudinal sections the canals are represented by two sparitic parallel lines (pl. 1, fig. 4, 6).

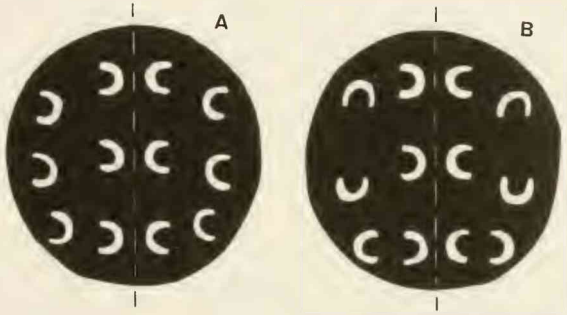


Fig. 3: Position and arrangement of 12 canals in the plane of symmetry in A) *Palaxius shastaenisis* KRISTAN TOLLMANN and B) *Palaxius velienensis* n. sp. (not to scale).

Remarks

The sample with *Palaxius velienensis* represents a finegrained laminated dolostone, partly with graded bedding. In addition to *P. velienensis* a few radiolarians and shells ("filaments") occur. The stratigraphic age of the sample and therefore of the microcoprolite can not be given exactly. Because all other known species of *Palaxius* of Norian/Rhaetian age have 12 canals, a Norian/Rhaetian age for *Palaxius vellienensis* is very probable.

Acknowledgement

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Plate 1

Fig. 1–8: *Palaxius velienensis* n. sp., a microcoprolite from the Upper Triassic of Greece.

Fig. 1: Holotype. Transverse section showing the crescent-like canals arranged in two groups in the plane of bilateral symmetry. Arrows show the plane of symmetry. Thin section 49613, 80×.

Fig. 2: Two specimens (transversal section). Thin section 23976, 80×.

Fig. 3: Transverse section showing the canals. Thin section 49613, 80×.

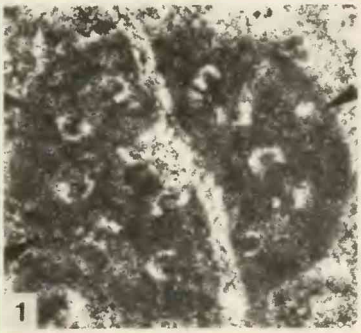
Fig. 4: Longitudinal section. The canals are represented as two parallel lines. Thin section 23976, 80×.

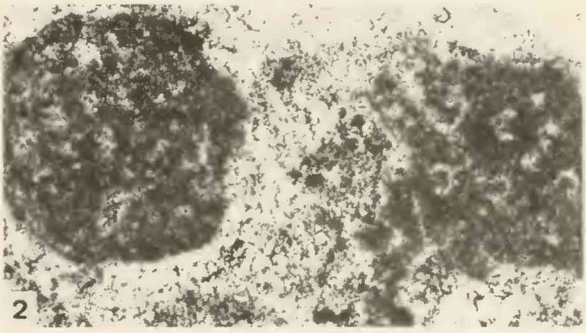
Fig. 5: Transverse section. Thin section 23976, 80×.

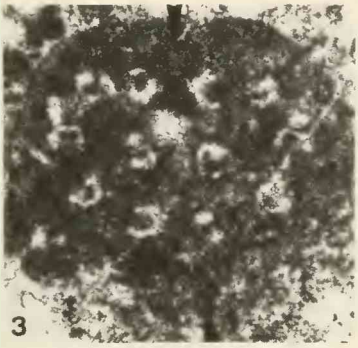
Fig. 6: Longitudinal section like fig. 4. Thin section 23976, 80×.

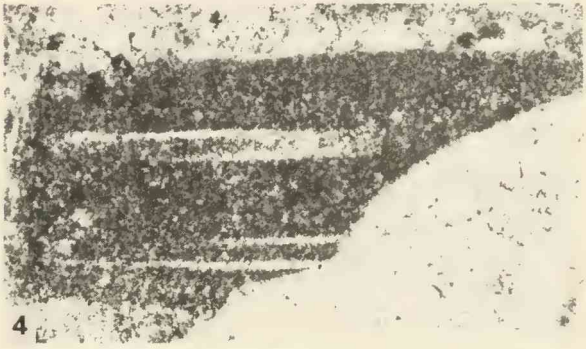
Fig. 7: Transverse section. Because of diagenesis the crescent-like canals look circular. Thin section 24939, 80×.

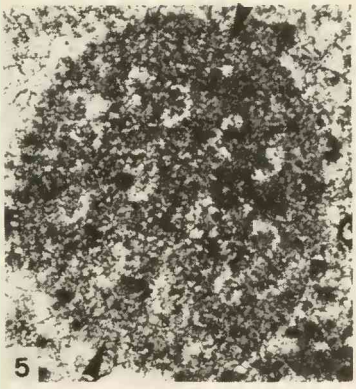
Fig. 8: A destroyed specimen showing several canals. Thin section 23976, 80×.

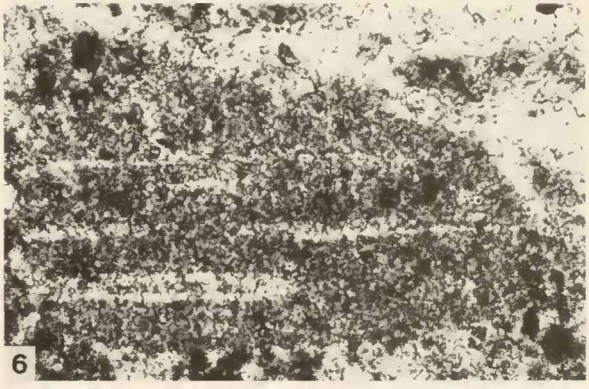


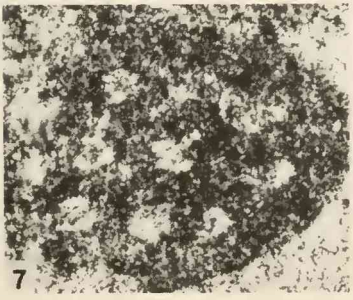












SENOWBARI-DARYAN, B. & VARTIS-MATARANGAS, M.: *Palaxius* Plate 1