

First biostratigraphic evidence for the presence of Triassic at Melia (Western Thrace, Greece)

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Л. Димадис, П. Пападопулос, А. Горанов, М. Енчева — Первые биостратиграфические данные о присутствии триаса в Мелия (Западная Фракия, Греция). Исследованию подвергался небольшой разрез свиты Дримос-Мелия у северозападного края деревни Мелия округа Александруполос. Все предшествующие исследователи определяли возраст свиты как меловой или меловой-палеоценовой (?). Во время настоящих исследований, в слое темно-серого алевроитового аргиллита этой-же свиты были найдены отпечатки двух экземпляров двухстворчатых моллюсков, определенных как *Halobia superba* Mojs. Это известный триасовый вид распространенный в верхнем ладине — нижнем карне. На основании данной находки сделан вывод, что впервые в этом районе установлено присутствие нормальных неметаморфизованных триасовых пород позднеладинского — нижнекарнийского возраста. Очевидно хотя бы часть свиты Дримос-Мелия, относимой до сих пор целиком к мелу, имеет триасовый возраст.

Abstract. All previous studies on the Drimos — Melia Formation ("series") suggest a Cretaceous or Cretaceous — Palaeocene? age. Along a short section close to the north-western entrance of the village of Melia (Alexandropoulos District), we found in a bed of dark-gray silty shales of this formation prints of two thin-shell bivalve specimens identified as *Halobia superba* Mojs. This is a typical Triassic species known from the Upper Ladinian and Lower Carnian. Thus, several important conclusions are drawn, and namely, that for the first time the presence of non-metamorphic Triassic (Upper Ladinian — Lower Carnian) terrigenous rocks is proven in the area, and that such is the age of at least a part of the Drimos — Melia Formation.

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Introduction

The project "Sedimentological studies of phosphorites in Western Greece. General problems of sedimentology" has been carried out in 1984 and 1985 within the frame of a bilateral agreement between the Institute for Geology and Mineral Exploration of Greece (IGME) and the Geological Institute of the Bulgarian Academy of Sciences (Sofia). Working on problems from the second part of the project, L. Dimadis and

A. Goranov studied in 1984 near the village of Melia (Alexandropoulos District) the boundary between the Drimos — Melia Formation and its cover built up of Palaeogene molasse sediments. Prints from thin-shelled bivalves have been found in dark-grey to blackish silty shales of the formation. They have been determined by M. Encheva. Due to different reasons, this important evidence is published with a considerable delay only now.

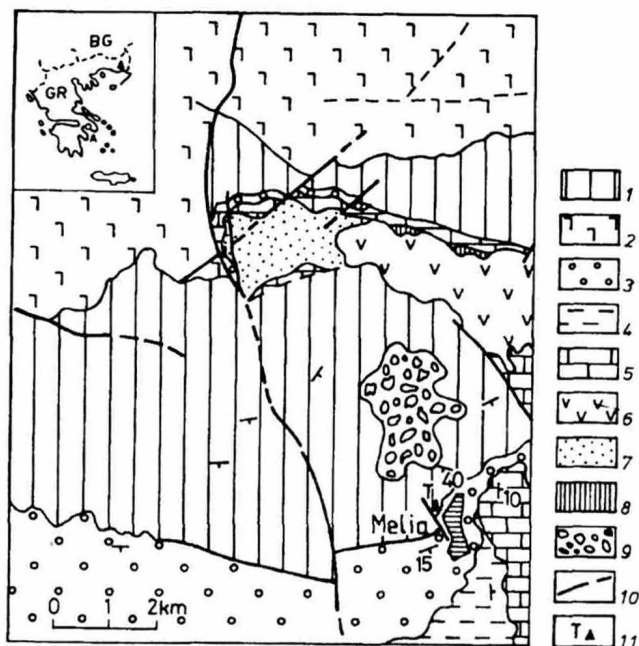


Fig. 1. Geological map for the area of the village of Melia (after Papadopoulos, 1980). 1 - Drimos - Melia Formation (Mesozoic): dark-grey to black silty shales, quartzitic sandstones, quartzites, grauwackes and fine-pebble conglomerates; 2 - Cretaceous diabases: green to dark-coloured aphanites and dolerites (partially spilites), pillow-lavas and pyroclastics; 3-4 - Lower Lutetian: 3 - unsorted non-layered breccia and conglomerate, 4 - grey-brown thinly-bedded marls alternating with fine-grained sandstones and conglomerates; 5 - Upper Lutetian: greyish-white biostromic to biohermal limestones, locally biomicritic and oolitic; 6-8: Priabonian: 6 - light brown dacites: bodies, dykes, flows, pillow-lavas, 7 - marls in alternation with sandy marls or sandstones, 8 - finely-sandy marls in rhythmic alternation with coarse-grained sandstones and conglomerates; 9 - Pleistocene: red clays to sandy clays with calcareous intercalations and concretions, in alternation with non-sorted conglomerates, breccias and sandstones; 10 - fault; 11 - locality with Triassic bivalves

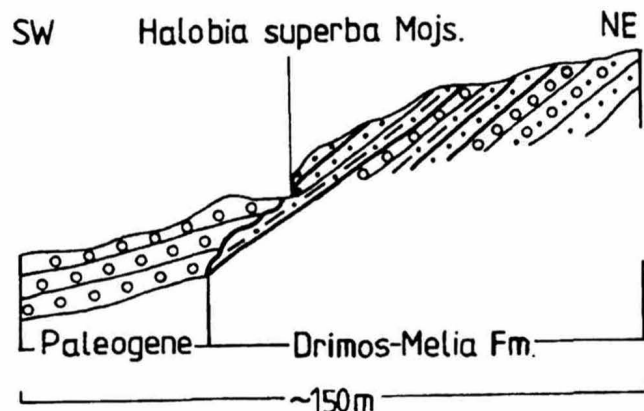


Fig. 2. Geological section at the north-western end of the village of Melia (Alexandroupolis District) with the position of the Triassic bivalves found

Geological setting and section studied

The geological structure of the region studied is due mostly to Kopp (1965) and to Papadopoulos (1980) who mapped the area and published the sheet Ferai - Peplos - Ainos of the Geological Map of Greece (1:50000). The authors cited introduced the "series" Drimos - Melia that has all necessary characteristics of a formal lithostratigraphic unit (Drimos - Melia Formation). A Jurassic - Cretaceous (Kopp, 1965, based on ammonite find by Trikalinos, 1955) or Cretaceous age has been suggested, and the age of the transgressive unconformable sedimentary cover of red polymictic breccia and breccia-conglomerate (Fig. 1) has been determined as Lower Lutetian. A Cretaceous - Palaeocene? age has been recently accepted for the Drimos - Melia Formation by Biggazi et al. (1989) in a publication on the age and geodynamic significance of the Petrota intrusive complex.

The section of the Drimos - Melia Formation studied (Figs. 1 and 2) is situated closely to the north-western end of the village of Melia. The formation (Papadopoulos, 1980) consists of a non-rhythmic sequence of dark-grey to blackish silty shales, quartzitic sandstones, grauwackes and conglomerates. Some beds are rich in coalified plant debris. The bedding is almost horizontal, medium- to thick-bedded. The rocks show an intense diagenesis. The cementing matrix of the coarse terrigenous sediments is of silicate composition (clayey and quartzose). The beds dip south-west at an angle of about 45°. The Drimos - Melia Formation is intersected by a complexly-built diabase complex of supposed Cretaceous age. It is covered with a unconformable transgressive contact by red coarse-pebble to boulder badly-sorted breccia and breccia-conglomerate dated as Lower Lutetian (Papadopoulos, 1980). Their beds dip south at an angle of 15 - 20°.

During the studies on the section, we found in one of the layers of silty shales prints of two specimens (each of them represented by both valves) of thin-shelled bivalves. These specimens are determined as *Halobia superba* Mojsi- sovich (Plate I) known from the Late Ladinian and the Early Carnian.

Conclusions

The finds of *Halobia superba* Mojs. in the non-metamorphic shales of the Drimos - Melia

Formation have important consequences for the geology of Western Thrace (Northern Greece) and the Balkan Peninsula. Several conclusions may be drawn:

(i) The presence of the Triassic System (Upper Ladinian — Lower Carnian) is proven for the first time in the area studied, at the south-eastern periphery of the Rhodope Massif. It is represented by non-metamorphic terrigenous sedimentary rocks.

(ii) The Triassic age is proven for a part of the Drimos — Melia Formation, previously referred to the Cretaceous or Cretaceous — Palaeocene?.

(iii) The finds show the necessity of further detailed studies to establish the exact position of the Triassic and of its volume. Other parts of the Mesozoic Eratem can be possibly determi-

ned within the section of the Drimos — Melia Formation.

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Explanation to PLATE I

1, 2. *Halobia superba* Mojsisovicz. Upper Ladinian — Lower Carnian. Drimos — Melia Formation; north-western end of the village of Melia (Alexandroupolis District). (× 1.3)

PLATE I

