Small foraminifers from the Paleogene basins in the Republic of Macedonia

Малки фораминифери от палеогенските басейни в Република Македония

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Introduction

Paleogene sediments are broadly spread on the territory of Republic of Macedonia, especially in the central and the eastern part, named Vardar zone and the Serbo-Macedonian massif. According to its distribution, the Paleogene in Republic of Macedonia can be divided into 4 major (larger) basins and few isolated masses, mostly located along the shells and covers with an orientation NW–SE. They are: Tikveš, Ovče Pole, Skopje-Kumanovo and Delčevo basins, as main ones, and Deve Bair, Valandovo-Gevgelija and Ilovica-Shtuka within the Strumica valley, as isolated blocks (Fig.1).

As a result of the lithostratigraphic studies of the Paleogene sediments taken from the above mentioned basins, 5 superpositionally distributed lithostatigraphic units (lithozones) have been divided: basal, lower flysch, lithozone of yellow sandstones, upper flysch lithozone and carbonate – sandy lithozone.

The geological age of the sediments in all basins has been determined as Upper Eocene to Lower

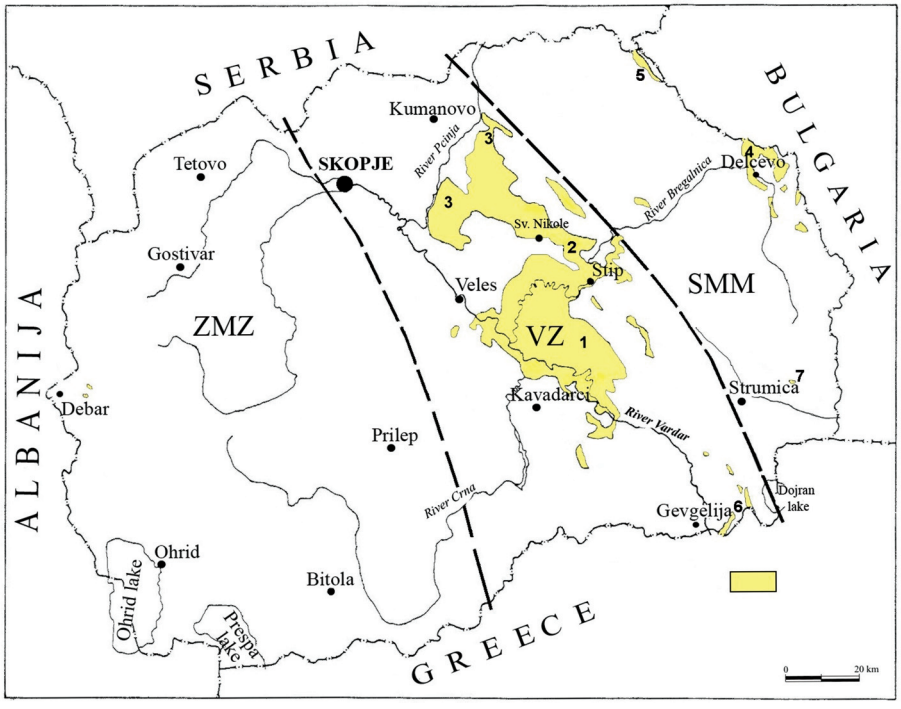

Fig. 1. Distribution of Paleogene sediments in Republic of Macedonia: *ZMZ,* Western Macedonian zone; *VZ,* Vardar zone; *SMM,* Serbian–Macedonian massif
Basins: *1,* Tikveš; *2,* Ovče Pole; *3,* Skopje-Kumanovo; *4,* Delčevo; *5,* Deve Bair; *6,* Valandovo-Gevgelia; *7,* Strumica

Oligocene on the base of many fossil remainings coming from macrofossil groups. The total thickness of the Paleogene sediments (Upper Eocene–Oligocene) is estimated as 3000–3500 m (seemingly, according to some other data the thickness reaches up to 4000 m).

Materials and methods

Sampling of foraminiferal fauna was carried out on open Paleogene cross sections in basins of Macedonia. Technical work was done with classical methods of micropaleonthological analysis (break up, washing, drying, selecting and determination). Taxonomic determinations were carried out with a microscope binocular Zeiss, 50 to 80 magnifications. Microphotographs were taken with an electronic microscope JMS–5510–JEOL on selected foraminiferal tests.

Results

As a result of the micropaleontologcal research of the Paleogene sediments from Macedonian basins, rich and diverse association of benthic and planktonic foraminiferal fauna has been found. Research collection consists of 68 samples from borehole sections located in Ovče Pole and Tikveš basins and 180 samples of the open Paleogene cross sections in Tikveš, Ovče Pole, Skopje-Kumanovo, Delčevo, Valandovo-Gevgelija and Strumica basins. 76 species belonging to 41 genera and 25 families were established: Spiroplectamminidae Cushman, 1927 – 2 species, Eggerellidae Cushman, 1937 – 1 species, Textulariidae Ehrenberg, 1838 – 2 species, Spiroloculinidae Wiesner, 1920 – 1 species, Hauerinidae Schwager, 1896 – 4 species, Nodosariidae Ehrenberg, 1838 – 5 species, Lagenidae Reuss, 1862 – 4 species, Polymorphinidae d'Orbigny, 1839 – 2 species, Glandulinidae Reuss, 1860 – 2 species, Globigerinidae Carp., Park. and Jones – 12 species, Catapsydracidae Loeblich and Tappan, 1957 – 1 species, Bolivinidae Glaessner, 1937 – 7 species, Buliminidae Jones, 1875 – 3 species, Fursenkoinidae Loeblich and Tappan, 1961 – 1 species, Caucasinidae Bykova, 1959 – 2 species, Stilostomellidae Finlay, 1947 – 2 species, Baggenidae – 2 species, Eponididae – 2 species, Parrelloididae – 1 species, Cibicididae – 5 species, Nonionidae Schultze, 1854 – 4 species, Chilostomellidae Brandy, 1881 – 1 species, Heterolepidae Gonzáles-Donoso, 1969 – 4 species, Gavelinellidae Hofker, 1956 – 3 species, Rotaliidae Ehrenberg, 1839 – 2 species.

Benthic foraminifers are more taxonomically diverse and represented with a huge number of specimens and sorts that are vastly spread in the basins. Planktonic foraminifers are less in amount, and they show limited spread in Ovče Pole, Tikveš and Skopje-Kumanovo basins.

Benthic and planktonic associations found in Ovče Pole and Tikveš basins, has enabled the process of identifying one biostratigraphic zone Catapsydrax dissimilis – Globigerinatheka tropicalis (Toumarkine, Luterbacher, 1985) and one biostratigraphic subzone Bolivina antegressa from the zone Planulina costata (Burgova, 1988), which are significant to the geological age of those basins.

Systematic classification of the foraminiferal fauna was done after Loeblich and Tappan (1988).

Conclusion

Micropaleontological analysis of the Paleogene basins in R. of Macedonia, revealed a wide spectrum of foraminiferal species spread into whole Eocene section. The vast number of the determined foraminiferal taxa is mutual forms for all basins. The mutual foraminiferal fauna in the Paleogene basins in Macedonia refers to similar bionomic conditions and the existence of relation between those reservoirs during the sediment's depositing.

The presence and stratigraphic distribution of many benthic and plankton foraminiferal species from the open Paleogene cross sections in Tikveš, Ovče Pole, Skopje-Kumanovo, Delčevo, Valandovo-Gevgelija and Strumica basins enable us to complete stratigraphy of these basins with new data.

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