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**2014**

**SHORT COMMUNICATIONS**  
**НАУЧНИ СЪОБЩЕНИЯ**

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# **ГЕОНАУКИ**

# **GEOSCIENCES**

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SHORT COMMUNICATIONS

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## Biostratigraphic correlation of the Paleogene sections in the Ovče Pole Basin, Republic of Macedonia

### Биостратиграфска корелация на Палеогенски разреди в Овчеполския басейн, Република Македонија

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*Виолета Стоянова, Гоше Петров*

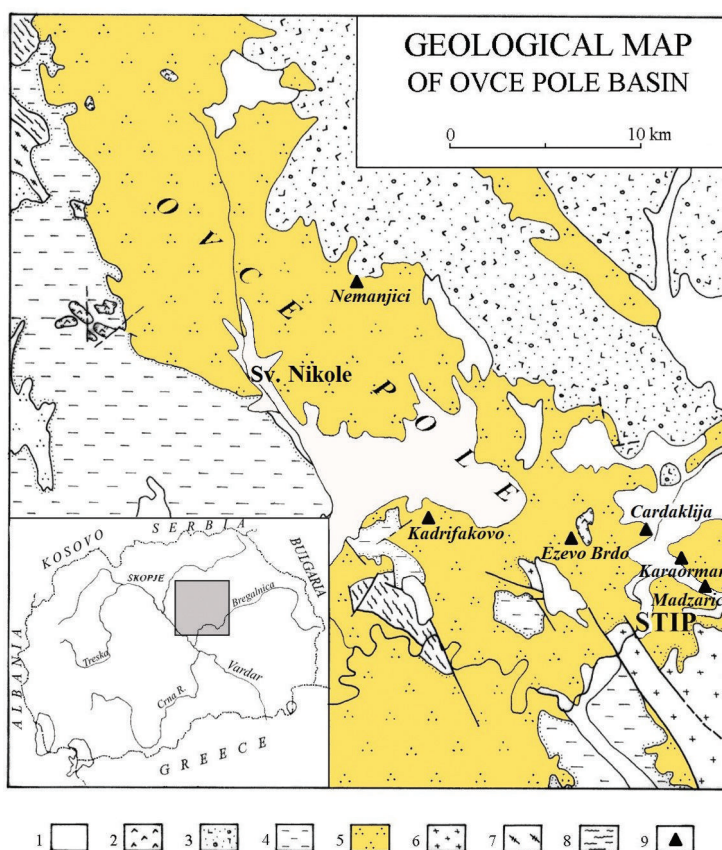
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**Kew words:** planktonic and benthic foraminifers, correlation, Paleogene sections, Ovče Pole Basin.

### Introduction

The Ovče Pole Basin is a large Paleogene sedimentary mass with NW–SE trend that is superimposed on varied rocks from the eastern part of the Vardar Zone in the territory of the Republic of Macedonia (Fig. 1). It is composed of 3.5 km thick succession, which is sub-

divided into four units: basal unit, lower flysch unit, unit of yellow sandstones and upper flysch unit. The Paleogene sediments of the Ovče Pole Basin usually contain abundant foraminiferal associations, which are represented by a large number of specimens, referred to diverse planktonic and benthic species. The latter enabled a Late Eocene–Early Oligocene ages to



**Fig. 1.** Geological map of the Ovče Pole Basin: 1, Quaternary; 2, Neogene effusive rocks; 3, Tertiary volcano-sedimentary rocks; 4, Neogene sediments; 5, Upper Eocene sediments; 6, Jurassic granites; 7, Jurassic gabbro-diabases; 8, Paleozoic schists; 9, studied sections

be determined (Maksimović et al., 1954; Stojanova et al., 2012, 2013).

## Results and discussion

The biostratigraphic significance of the foraminifer fauna in the Paleogene sediments of the Ovče Pole Basin is manifested by the stratigraphic distribution of 62 species, which are coming from six sections (Cardaklija, Ezevo Brdo, Karaorman, Kadrifakovo, Madzarica and Nemanjici) (Fig. 1). Previously obtained data have displayed that 57 species belong to benthic foraminifers (Džuranov et al., 1999; Stojanova et al., 2013; Valchev et al., 2013), whereas 5 species refer to planktonic foraminifera (Juranov, in: Stojanova et al., 2013).

The benthic foraminiferal association is represented by agglutinated, porcelaneous and hyaline species, having a prominent high taxonomic diversity that was recorded in every studied section. According to the stratigraphic position of some diagnostic taxa, a Late Eocene age was confirmed in all sections. For instance, the presence of hyaline taxa *Lagena humifera* Bandy and *Pararotalia audouini* d'Orbigny enabled this age assessment to be defined in sections Cardaklija and Madzarica, and sections Ezevo Brdo, Karaorman and Kadrifakovo respectively. The occurrence of *Bolivina cf. antegressa* Subbotina in benthic foraminiferal association in Nemanjici section allowed identifying the *Bolivina antegressa* Subzone of the *Planulina costata* Zone (Stojanova et al., 2012).

The plankton foraminiferal association is represented by five species: *Globigerina officinalis* Subbotina, *Globoturborotalia ouachitaensis* (Howe and Wallace), *Globoturborotalia angulioffinalis* (Blow), *Globoturborotalia gnaucki* (Blow and Banner) and *G. angulisuturalis* (Bolli). They were all found in the Nemanjici section. The Kadrifakovo section yielded only one species – *Globigerina officinalis* Subbotina. It was documented that the planktonic foraminifers *G. officinalis* Subb., *G. ouachitaensis* (Howe and Wallace), *G. angulioffinalis* (Blow) and *G. gnaucki* (Blow and Banner) co-occur within the interval from the Upper Eocene (Zone P 16) to the end of the Oligocene (Zone P 22), and the first listed species

comes from lower levels of the Eocene. It was also found that *Globoturborotalia angulisuturalis* (Bolli) first appears in the Oligocene and continues ranging upwards. This species and the rest of the plankton taxa were determined in the lowermost sample of Nemanjici section. That defines the Oligocene age for this part of the section, which associates with the upper flysh unit. It is possible the lower levels of this unit to attain the Upper Eocene, but there are not exposures and foraminiferal record.

## Conclusion

The stratigraphic distribution of foraminifer fauna have led to the biostratigraphic correlation of 6 outcrop sections from the Ovče Pole Paleogene Basin. Five sections (Cardaklija, Ezevo Brdo, Karaorman, Kadrifakovo and Madzarica) yielded benthic foraminifers with wide stratigraphic distribution, but the Eocene/Oligocene boundary is difficult to be drawn, because of the absence of benchmark Oligocene elements (planktonic foraminifera). Only the Nemanjici section contributed with Lower Oligocene planktonic foraminifers from the upper level of the upper flysh unit.

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