New data about the fossil macroflora from Blagoevgrad Graben (SW Bulgaria)

Нови данни относно фосилната макрофлора от Благоевградския грабен (ЮЗ България)

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Introduction

During field investigations undertaken in 2016, a new fossil site that is situated inside the Blagoevgrad Graben near the town of Boboshevo and containing presumably Late Pontian–Early Dacian macroflora was found by M. Ivanov and determined by V. Bozukov. The fossils are found in situ 10 m below the surface inside the sediment outcrop considered as a part of the Pokrovnik Formation (Bakalov, 1978; Zagorchev, 1992; Ivanov, Bozukov, 2017). The site contains mainly arctotertiary species found in various habitats. Until now trees, bushes, lianas and semi-parasitic bushes that belongs to 12 taxa were registered (Ivanov, Bozukov, 2017).

Stratigraphy of Blagoevgrad Graben

According the Geological Map of Bulgaria (Mari­ nova, Zagorchev, 1991) the Neogene sediments in Blagoevgrad Graben are separated in two main stratigraphic formations – Dzerman (Meotian) and Barakovo (Pontian–Pliocene).

Zagorchev (1992) proposed a new stratigraphic scheme of the Neogene sediments inside the Blagoevgrad Basin that consists of four stratigraphic units: Pokrovnik, Dzerman, Barakovo and Badino Formations. Pokrovnik Formation is the oldest with probable Meotian–Pontian age and it is built mainly of proluvial yellowish polymictic conglomerates and interbeds of sands and sandy clays (Zagorchev, 1992).

Dzerman Formation interfingers with the Pokrovnik Formation and it consists of predominantly alluvial deposits: greenish, whitish or yellowish sands and clays interbedded with whitish or yellowish pebble gravel. The age of Dzerman Formation is Meotian probably continuing into Pontian (Zagorchev, 1992).


Ivanov (2016, 2018) and Ivanov and Bozukov (2017) confirmed the presents of the four main lithostratigraphic units determined by Zagorchev (1992), but based on the newly discovered fossil site near the town of Boboshevo the authors corrected the stratigraphic positions of Pokrovnik and Dzerman Formations. According Ivanov and Bozukov (2017) Pokrovnik Formation (Upper Pontian–Lower Dacian) is younger than Dzerman Formation (Meotian) and has complex lateral relationships with the last.

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As a result of the ongoing in 2018 studies of the sediments from Pokrovnik Formation were established: one species of gymnosperms – Tsuga europaea Menz. and 15 angiosperm taxa. Of the last mentioned Potamogeton praenatans Knoll, Cyperus sp. and Typha latissima A. Braun possess cosmopolitan nearest living relatives (Fig. 1). In this case, the cosmopolitan distribution of these three taxa is presumed by its water-related lifestyle. Six angiosperm taxa are representatives of the arctotertiary type of vegetation: Alnus ducalis (Gaud.) Knobl., A. incana (L.) Moench, Carpinus betulus L. foss., Sorbus aff. aria (L.) Crantz, Ulmus pyramidalis Goepp. and Viburnum aff. nudum L. The species Tsuga europaea belongs to the arctotertiary type too (Fig. 1). Five angiosperm taxa are representatives of the paleotropical type of vegetation: Caesalpinites inaequalis Palam. et Petkova, Laurus
nobilis L. foss., Myrica lignitum (Ung.) Sap., Persea pliocenica (Laur.) Kolak. and Pterocarya para-
disiaca (Ung.) Iljinsk (Fig. 1). The fossil species Quercus cardanii A. Massal (Fig. 1), which is related to the endemic species for the Black Sea region Q. hartwissiana Stév., has also been established. The new paleo-
floristic data are in line with what has been established so far. They reaffirm the relative young age of the fl-
orbearing sediments. Of the newly find out taxa, only Caesalpinites inaequalis has Middle Miocene as a stratigraphic distribution (Palamarev, Petkova, 1987).

Taking into account all 28 species that have been es-

tablished so far, the following result will be reached: 11 taxa are registered in Bulgarian fossil sites aged as Late Pontian–Early Dacian, 13 taxa are found in fossil sites aged in an interval of Middle Miocene to Late Pontian–Early Dacian, and 2 taxa (Caesalpinites inaequalis and Sapindus falcifolius) are registered in Middle Miocene deposits as upper limit of their stratigraphic distribution. The taxon Alnus aff. viridis (Chaix.) D.C. is registered for the first time in Bulgarian paleoflora.

Conclusions

The studied paleoflora from Pokrovnik Formation is closest to those from Garman (18 common species) and the Sofia Basin (16 common species). In turn, the paleofloras from Garman (Kitanov, 1984) and Sofia Basin (Stojanoff, Stefanoff, 1929; Stefanoff, Jordanoff, 1935) have established a Late Pontian–Early Dacian age. On this basis, it could be assumed a similar age of Pokrovnik Formation.

References


