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Lacustrine Upper Miocene of Central Balkans

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The lacustrine Upper Miocene was described from Macedonia (Dumurdzanov 1997), but it also includes parts of central Serbia and Bulgaria. At the present level of study it is still debatable whether all these layers belonged to the same basin called Central Macedonian Lake (ibid) or they comprise the several smaller satellite lakes as well.

It is known that the Central Macedonian Lake stretches from the city of Skopje in the middle of Balkan Land on the west to behind the Pirin Mt in the east, but it probably penetrates further into Bulgaria. It might extend northwards to Sofia, spreading further through Srednegorie to Burgas. At the south, it almost reaches Thessalonica, where it merges with the caspi-brackish Pontian. Its southern coal-bearing arm of Pelagonia extended nearly to the Pontian outcrops of Katerina on Aegean Sea.

The sediments of the lower part of the Central Macedonian Lake are often badly sorted due to a high erosion rate. Usually they are without autochthonous fauna but at this level, the remnants of vertebrate bones were widely spread and sometimes are abundant.

The lacustrine upper part of the column contains benthic fossils around Skopje and Bureli. The mollusc fauna is represented mainly by Unionidae, both in Skopje and Bureli, together with *Melanopsis affinis*. At Veternik, to the north from Skopje, one lens included a few well-preserved mollusc shells: *Theodoxus doricus, T. neumayri and Aphanothilus*, decorated with ribs and tubercles, as well as several ornamented species of *Prososthenia*.

The ostracodes have peculiar features and could only be compared with some Chi-

nese taxa and even associations from the Eocene and Oligocene. At the slope below the Skopje fortress, ostracodes are very abundant and diverse. They include the genus *Macedocandona* with reverse valves (right valve larger and overlaps the left one), with species flock containing four taxa. The genus shows similarity to the Chinese *Potamocyprella*. Moreover, there are also other Oriental taxa. The Chinese forms had to travel a long way from one refugium to another, carried by birds, in order to appear in south-eastern Europe in the Upper Miocene. Aberrant ostracodes lived next to the less numerous halotolerant *Fabaeformiscandona, Cypria, Cypridopsis* and *Plesiocypridopsis.* One marine *Callistocythere* representative was, most probably, brought from the Mediterranean area.

Outcrops along the border and whole basin fill of the Pelagonia-Florina-Ptolemais-Servia basin are made of the Komnina Fm, belonging to the Late Miocene. According to orbital signatures, it mostly matches the Pontian age. In Lava section this is from 6.9 to 6.2 MAa. The 6 m of Ptolemaida section above coal consists of diatomite containing mostly fragmented Unionidae in its lower part and above them alternating larger or smaller amounts of snails of different sizes (*Theodoxus macedonicus, Valvata piscinalis, Lymnaea stagnalis,*). Two *Neclecandona sp. juv.* valves come out from a shell of *T. macedonicus* together with finest ochre-red sand fill. All this indicate the redeposition in the water of low energy, diminishing upwards.

The Late Miocene stage is presented by a diatom assemblage consisting of coarsely ornamented forms of genus *Aulacoseira,* in Vranje and Prespa basins. Their age was determined after the identical microflora was recorded in the Pontian sediments of coal mine Kolubara. Similar rough species *Aulacoseira* are dominant in SW Bulgaria in diatomaceous sediments of Gotse Delchev and farther in Elhovo Basins.

New data on mammals of Tavnik (Kraljevo, central Serbia) such as the new dormouse species *Miodyromys wesselsi* n. sp., with a more complex molar morphology than in the species *Miodyromys aegercii* from the sediments of middle Miocene of Serbia, indicates the higher level of evolution development. As the genus *Megacricetodon*, also from Tavnik, does not appear in the MN10 zone, it means that Tavnik, in biostratigraphic sense, belongs to MN9 zone of Upper Miocene. It is possible that some other localities of Cacansko-Kraljevacki Basin (for example Gornja Trepča, according to ostracodes) is of Upper Miocene age, also.

Main reference

Dumurdzanov N., 1997. Lacustrine Neogene and Pleistocene in Macedonia. Proc. Field Meetings IGCP 329, Spec publ. Geoinstitute 21: 31-36, Belgrad