Ostracods as indicator of the Badenian marine flooding (Central Paratethys, Bosnia & Herzegovina and Serbia)

Ljupko Rundić

Ostracods as indicator of the Badenian marine flooding (Central Paratethys, Bosnia & Herzegovina and Serbia) | Ljupko Rundić | Journal of Faculty of Mining, Geology and Civil Enegeneering - Special Issue | 2022 | |

10.51558/2303-5161.2022.1.1.49

http://dr.rgf.bg.ac.rs/s/repo/item/0006891

DOI 10.51558/2303-5161..2022.1.1.49

OSTRACODS AS INDICATOR OF THE BADENIAN MARINE FLOODING (CENTRAL PARATHETYS, BOSNIA & HERZEGOVINA AND SERBIA)

Ljupko Rundić[1]

The Badenian marine transgression has a great importance for paleogeographic, paleoclimate and paleobiogeographic reconstructions of the marginal parts of the Central Paratethys (e.g. Bosnia and Serbia) during the early Middle Miocene. Different marine fauna entered the area via corridors (herein, primarily connected to the Mediterranean), indicating a strong marine influence on which the existing continental environment was exposed. Therefore, in most cases, there is a transgressive and unconformable relationship between older rocks and overlying Badenian sediments (Ugljevik, Jadar basin, Kolubara basin, Belgrade area, central Serbia, etc.). The main indicators of such an event are mainly foraminifers, molluscs, algae, bryozoans, and calcareous nanoplankton. Based on them the dynamics of seawater incursion was determined (Ćorić et al., 2007; Pezelj et al., 2013; Sant et al., 2018; Mandic et al., 2019, 2019a; Rundić & Renovica, 2019; Jovanović et al., 2019). Ostracods as an accompanying fauna are always more or less present in samples. However, there are only few publications have pointed it as a topic. The authors who have researched the area sporadically mentioned Badenian ostracods (Rundić, 1992; Mitrović and Rundić, 1993; Rundić et al., 2000; Mandic et al., 2019). Ostracods assemblages contain various taxa associated with typical Mediterranean seawaters during the Langhian (Badenian) time.

In general, the following species dominate: *Acanthocythereis hystrix* (Reuss), *Costa edwardsii* (Roemer), *Aurila haueri* (Reuss), *Pokornyiella deformis* (Reuss), *Flexus triebeli* (Ruggieri), *Cnestocythere truncata* (Reuss), *Cletocythereis haidingeri* (Reuss), *Pterygocythereis calcarata* (Bosquet), *Loxoconcha hastata* (Reuss), *Callistocythere canaliculata* (Reuss), *Heliocythere vejhonensis* (Procházka), *Henryhowella asperrima* (Reuss), *Paracypris polita* Sars, Krithe sp., *Parakrithe* sp., etc. Taxons such Krithe and Parakrithe live in an infraneritic (circalittoral) to bathyal zone (Ayress et al., 1999). These genera and other deeper water ostracods (e.g. Paracypris) support an open sea influence. Callistocythere, Henryhowella, Xestoleberis, Costa, Acantocythereis and Pterygocythereis inhabit infraneritic zone. Some genera are truly cosmopolitan (e.g. Aurila, Costa, Loxoconcha, Cnestocythere) and occupy other provinces of the time (Mediterranean, Indo-Pacific). The size of the shell, its ornamentation and pronounced ultrastructure (e.g. Pokornyiella, Cletocythereis, Semicytherura, Tenedocythere, etc.) indicates life in a warm, shallow sub-tropical sea (Zorn, 2004).

[1] University of Belgrade, Faculty of Mining and Geology, Department of Regional Geology, Kamenička 6, Belgrade, Serbia. Corresponding author: ljupko.rundic@rgf.bg.ac.rs

REFERENCES

Ayress, M., Barrows, T., Passlow, V. & Whatley, R., 1999, Neogene to Recent Species of Krithe (Crustacea: Ostracoda) from the Tasman Sea and off Southern Australia with Description of Five New Species: Records of the Australian Museum, v. 51, p. 1–22.

Ćorić, S., Vrabac, S., Ferhatbegović, Z. & Đulović, I. 2007. Biostratigraphy of Middle Miocene Sediments from the Tuzla Basin (North-eastern Bosnia) based on Foraminifera and Calcareous Nannoplankton. II Works. On Neogene of Central and South-Eastern Europe. Joannea Geol. und Pal., 9: 21–23.

Jovanović, G., Ćorić, S. & Vrabac, S., 2019. The First evidence of marine Badenian transgression near Koceljeva (Central Paratethys, western Serbia). Ann. Geol. Pennins. Balk., 80/1, 1-15.

Mandic, O., Rundić, Lj., Ćorić, S., Pezelj, D., Theobalt, D., Sant, K. & Krijgsman, W. 2019. Age and mode of the Middle Miocene marine flooding of the Pannonian Basin - constraints from Central Serbia. Palaios, 34/2, 71-95.

Mandic O., Sant K., Kallanxhi M-E., Ćorić S., Theobalt D., Grunert P., de Leeuw A. & Krijgsman W. 2019a: Integrated bio-magnetostratigraphy of the Badenian reference section Ugljevik in southern Pannonian Basin — implications for the Paratethys history (middle Miocene, Central Europe). Glob. Planet. Change 172, 374–395.

Mitrović, S. & Rundić, Lj., 1993. Biostratigraphy of the Neogene in the central Kolubara Basin. Ann. Geol. Pennins. Balk., 57/1, 181-192.

Pezelj, Đ., Mandic, O. & Ćorić, S., 2013. Paleoenvironmental dynamics in the southern Pannonian basin during initial middle Miocene marine flooding. Geologica Carpathica, 64, 81–100.

Rundić, Lj., 1992. Badenian ostracodes from Gornja Trnova area, NE Bosnia. Ann. Geol. Pennins. Balk., 56/1, 251-262.

Rundić, Lj. & Renovica, S., 2019. On a lacustrine-coal series and the middle Miocene marine transgression in the area of Janjari-Atmačići (Ugljevik-east). II Congress of geologists of BiH, Laktaši, 01-03.10.2019. Proceed. & Abstracts book, 91-94.

Rundić, Lj., Trofimovich, N. & Savić, Lj., 2000. Badenian microfauna of Bogutovo Selo, Ugljevik. In: Karamata S. & Janković S. (eds.). Geology and Metallogeny of Dinarides and the Vardar zone, 225-233, Zvornik-Banja Luka.

Rundić, Lj., Knežević, S. & Rakijaš, M., 2013. Badenian marine transgression: new evidence from the Vrdnik coal basin (northern Serbia). Ann. Geol. Pennins. Balk., 74, 9–23.

Sant, K., Mandic, O., Rundić, Lj., Kuiper, K., Krijgsman, W., 2018. Age and evolution of the Serbian Lake System: integrated results from Middle Miocene Lake Popovac. Newsletter on Stratigraphy, 51/1, 117-143.

Zorn, I., 2004, Ostracoda from the lower Badenian (middle Miocene) Grund Formation (Molasse Basin, Lower Austria). Geologica Carpathica, v. 55, p. 179–189.

Acknowledgment: This study was supported by the Ministry of Education, Science and Technological Development of the Republic of Serbia (Contract on realization and financing of Scientific Research Work NIO in 2022 No.451-03-68/2022-14/200126)