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Lake – Basin – Evolution

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al., 2003). Although difficult to prove extinction it appears that many of the c. 160 endemic species in the Caspian Sea have been wiped out, apparently as a result of a few immigrant species only. Pontocaspian coastal habitats in the BSB suffer degradation (Popa et al., 2009) yet we present a case from the Lake Razim complex in Romania where habitats expanded due to human interference.

In this review we will show an interactive effort to study and understand anthropogenic turnover and to make a distinction from natural background processes. We document the case of Lake Razim and also will elaborate on the search of possible refuges in the Caspian Sea.

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Diversity of Lake Pannon molluscs in the Transylvanian Basin (Romania)^P

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During the Late Miocene, Lake Pannon covered most of the Pannonian Basin System, including the Transylvanian Basin. The estimated age of the Pannonian sediments in this basin is between 11.6 and 9.5 Ma. The younger deposits were eroded due to the tectonic inversion and intense erosion, therefore the thickness of the Pannonian sequence is only 300 metres. Today, these sediments occur in an isolated but more or less contiguous area in the central and southern part of the basin. The position of the original palaeogeographic connection between the Pannonian and Transylvanian Basins is still a matter of debate; it was probably through the Sălaj area (north) and/or the Mureş Valley (south).

No detailed and comprehensive treatise has ever been published on the Pannonian molluscs of this basin, therefore our first and most important objective is the taxonomic revision of the fauna. We collected molluscs from 12 localities (Agârbiciu, Bodogaia, Chibed, Cristuru Secuiesc, Gârbova de Jos, Gârbovița, Gușterița, Lopadea Veche, Mihălț, Oarba de Mureș, Tău and Vingard), and compare them with the published data. We investigate the collections of the Hungarian Natural History Museum, Budapest (5 localities: Apoldu de Sus, Crișeni, Lopadea Veche, Săcădate and Sâncrai-Dealul) and that of the Geological and Geophysical Institute of Hungary (19 localities: Bucerdea Grânoasă, Cetea, Cunța, Deda, Galda de Jos, Gârbova de Sus, Gârbovița, Geoagiu de Sus, Jidvei, Miercurea Sibiului, Nocrich, Ruși, Sângeorgiu de Mureș, Șilea Nirajului, Șoimușu Mic, Șona, Țapu,

Tătărlău and Vurpăr). Altogether the fauna of 34 localities was determined so far.

Although the literature and the museum labels display a large number of species names, the real number of forms in the Pannonian of the Transylvanian Basin is rather limited. So far we have identified 27 species in the newly collected and revised materials. The most species-rich fauna, that of Gușterița, included only 14 species. The reason of this low diversity is two-fold. First, the littoral deposits of Lake Pannon, together with their probably highly diverse fossil fauna, have mostly been eroded since the Late Miocene as a consequence of basin inversion. Only 4 of our 34 localities (Geoagiu de Sus, Nocrich, Sâncraia-Dealul and Vingard) contain unanimously autochthonous littoral mollusc fauna (with dreissenids, such as *Congeria partschi* and *C. ramphophora*, unioniids, such as *Unio mihanovici*, and grazing snails, such as *Melanopsis bouei*, *M. fossilis*, *M. magna*, *M. pygmaea* and *M. vindobonensis*). The second reason is that mollusc diversity sharply declined with depth in Lake Pannon, and the sublittoral and profundal sediments preserved low-diversity mollusc assemblages. The characteristic forms of these faunas include thin-shelled cardiids (*Paradacna lenzi*, *P. syrmienne*, “*Lymnocardium*” *praeponticum* and “*L.*” *undatum*), dreissenids (*Congeria banatica*), pulmonate snails, such as planorbids (*Gyraulus praeponticus*, *G. tenuistriatus*, *G. vrapceanus*, *Orygoceras brusinae* and *O. levis*) and lymnaeids (*Undulotheca pancici*, *U. rotundata*, *Velutinopsis nobilis* and *V. velutina*).

With further collection and investigation of the fossil material, sedimentological field studies, and revision of other fossil collections, our objective is to get better acquainted with the low-diversity mollusc fauna of the Early Pannonian, to explore the palaeogeographical relations, and to develop the biostratigraphic resolution of the Early Pannonian sediments.

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Quaternary Pontocaspian lake phases in the Marmara Sea Basin

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The Marmara Sea Basin is the doorstep between the Black Sea and Aegean-Mediterranean basins. In the Quaternary conditions in the Marmara Sea Basin switched repeatedly from marine to isolated lacustrine to Pontocaspian lacustrine settings. The Quaternary record in the Marmara Sea is very fragmented, yet improved age estimates of fossiliferous deposits improve very much our understanding of the lake phases in the region and their potential for understanding biotic evolution in Pontocaspian basins. Here I present Middle and Late Pleistocene intervals and faunas, present an improved stratigraphic framework and show their significance for the regional evolution of lake basins and faunas. The intervals contain diverse Middle Pleistocene (Chaudian: Gelibolu in the west and Early Khazarian: Iznik Lake Basin in the East) and Late Pleistocene (Surozhian–Neoeuxinian) localities (Iznik Lake Basin, Izmit Bay area and core samples from the southern Marmara Basin/ Gemlik Bay area). Pontocaspian overflow and marine highstands are matched to the stratigraphic scheme developed by Bardetscher et al. (2011).

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