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# **LAKE - BASIN - EVOLUTION**

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## **Lake – Basin – Evolution**

Stratigraphy, Geodynamics, Climate and Diversity of Past and Recent

Lacustrine Systems

### **Program & Abstracts**

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Krstić, N. 1985. Ostracoden im Pannonien der Umgebung von Belgrad. In: Papp, A. (Ed.), *Chronostratigraphie und Neostatotypen, Miozän der Zentralen Paratethys VII. M6, Pannonien*. Akadémiai Kiadó, Budapest, 103–143.

***Latonia gigantea* (Anura, Alytidae) from the Middle Miocene of Lake Vračević (Serbia)<sup>P</sup>**

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The Middle Miocene sediments of Vračević yielded rich fossil vertebrates association. The herpetological remains at this site were partially described in an earlier paper (Jovanović & Đurić, 2005). Presence of frog *Latonia* at Vračević was the first record in Serbia. This genus of large frogs belongs to a family Alytidae (Discoglossinae). Until recently *Latonia* was considered to be an extinct genus present from late Oligocene to Pleistocene. (Biton et al. 2013) believe that the rediscovered hula painted frog (Israel, Hula Valley) is actually a living fossil named *Latonia nigriventis*.

The fossil remains include disarticulated and highly fragmented jaw bones and axial skeleton. The poor state of preservation made identification very difficult. The maxilla fragments lack secondary ornamentation which as *L. ragei*. However ornamentation may be absent in younger individuals of *L. gigantea* (Roček, 1994). Due to the fact that remains have the features of a smaller individual, they were identified as *Latonia cf. gigantea*.

*Latonia* is a representative of periaquatic Amphibians (Venczel & Stiucă, 2008). It is found in humid habitats near water bodies, as is the case with the species *L. nigriventis*. Presence of this species in sediments of Vračević leads to conclusion that during the Middle Miocene

(Sarmatian) this locality was characterized by lacustrine-swampy paleohabitat.

Biton, R., Geffen, E., Vences, M., Cohen, O., Bailon, S., Rabinovich, R., Malka, Y., Oron, T., Boistel, R., Brumfeld, V., Gafny, S. 2013. The rediscovered Hula painted frog is a living fossil. *Nature Communications* 4: 1959.

Jovanović, M., Đurić, D. 2005. Fosilna herpetofauna sela Vračević kod manastira Bogovađa (Centralna Srbija). *Zbornika radova za 14 Kongres geologa SCG (CD izdanje)*.

Roček, Z. 1994. Taxonomy and distribution of Tertiary Discoglossids (Anura) of the Genus *Latonia* v. MEYER, 1843. *Geobios* 27 (6): 717–751.

Venczel, M. & Stiucă, E. 2008. Late middle Miocene amphibians and squamate reptiles from Taut, Romania. *Geodiversitas* 30 (4): 731–763.

**A minute ostracod (Crustacea) from the Miocene Solimões Formation (western Amazonia, Brazil) – Evidence for marine incursions?**

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A huge wetland (the ‘Pebas system’; Hoorn et al., 2010) covered western Amazonia during the Miocene, hosting a highly diverse and endemic aquatic fauna (e.g., molluscs, ostracods). One of the most contentious issues concerns the existence, potential pathways and effects of marine incursions on this ecosystem. Palaeontological evidences (body fossils) are still rare. The finding of a presumably marine ostracod species (*Pellucistoma curupira* Gross, Ramos & Piller, 2015) in the upper middle Miocene Solimões Formation initiated a taxonomic, ecological and biogeographic review of the genus *Pellucisto-*

ma. We demonstrated that this basically marine (sublittoral, euhaline), subtropical-tropical taxon is biogeographically confined to the Americas. The biogeographic distribution of *Pellucistoma* largely depends on geographic, thermal and osmotic barriers (e.g., land bridges, deep and/or cold waters, sea currents, salinity). We assume an Oligocene/early Miocene, Caribbean origin for *Pellucistoma* and outline the dispersal of hitherto known species up to the Holocene. *P. curupira* is dwarfed in comparison to all other species of this genus and extremely thin-shelled. This is probably related to poorly oxygenated waters and, in particular, to strongly reduced salinity. The associated ostracod fauna (dominated by the euryptent *Cyprideis* and a few, also stunted ostracods of possibly marine ancestry) supports this claim. Geochemical analyses ( $\delta^{18}\text{O}$ ,  $\delta^{13}\text{C}$ ) on ostracod valves furnished constantly very light values, indicative for a freshwater setting. These observations point to a successful adaptation of *P. curupira* to freshwater conditions and therefore do not signify the presence of marine waters. *P. curupira* shows closest affinities to Caribbean species. We hypothesise that *Pellucistoma* reached northern South America (Llanos Basin) during marine incursions in the early Miocene. While larger animals of marine origin (e.g., fishes, dolphins, manatees) migrated actively into the Pebas wetland via fluvial connections, small biota (e.g., *P. curupira*) were phoretically freighted and developed freshwater tolerance over long time scales.

Gross, M., Ramos, M.I.F. & Piller, W.E. 2015. A minute ostracod (Crustacea: Cytheromatidae) from the Miocene Solimões Formation (western Amazonia, Brazil) – Evidence for marine incursions? *Journal of Systematic Palaeontology*, DOI: 10.1080/14772019.2015.1078850.

Hoorn, C., Wesselingh, F.P., Steege, H. ter, Bermudez, M.A., Mora, A., Sevink, J., Sanmartín, I., Sanchez-Meseguer, A., Anderson, C.L., Figueiredo, J.P., Jaramillo, C., Riff, D., Negri, F.R., Hooghiemstra, H., Lundberg, J., Stadler, T., Särkinen, T. & Antonelli, A.

2010. *Amazonia Through Time: Andean Uplift, Climate Change, Landscape Evolution, and Biodiversity. Science*, 330, 927–931.

### Lacustrine Karpatian to lowermost Badenian ostracods and palynomorphs from Sjeniĉak section (Croatia)<sup>P</sup>

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In Croatia the pre-Badenian lacustrine, alluvial, fluvial and deltaic deposits occur in the Sava and Drava depressions, in their sub-depressions, as well as on the inselbergs between them. The Sjeniĉak section is located in the Karlovac sub-depression which, according to Mandic et al. (2012) could represent a zone independent from the Sava depression. It is related to the intra-mountainous basin of the Dinaride Lake System.

The present work is a continuation of an earlier study of the Sjeniĉak section (Mandic et al., 2012). According to Mandic et al. (2012) lacustrine deposits from the Karlovac sub-depression are characterized by abundant dreissenid bivalve accumulations of the Illyrian Bioprovince type. Weighted mean Ar/Ar age for the Sjeniĉak ash is  $16.00 \pm 0.09$  Ma (De Leeuw et al., 2012; Mandic et al., 2012). This age indicate that the Southern Pannonian Basin continental phase lasted at least 2 Ma (Mandic et al., 2012) and that it coincides with the deposition of lacustrine sediments with similar fauna in the more interior parts of the Dinarides.

For the present study two samples were analyzed from the Sjeniĉak section; a clayey