



## CRYPTIC 2023: CRYPTOGRAMS' TRAITS IN THE CARPATHIANS

Cryptic 2023: A kriptogámok tulajdonságai a Kárpátokban

**Krisztina Buczkó<sup>1\*</sup>, Csilla Stenger-Kovács<sup>2</sup>, Mária Höhn<sup>3</sup>, László Lőkös<sup>1</sup>  
Erzsébet Szurdoki<sup>4</sup>, Katalin Báldi & János Korponai<sup>5</sup>**

<sup>1</sup>Department of Botany, Hungarian Natural History Museum, Baross str. 13. H-1088 Budapest; <sup>2</sup>University of Pannonia, Center for Natural Science, Research Group of Limnology, Egyetem str. 10. H-8200 Veszprém; <sup>3</sup>Department of Botany, Hungarian University of Agriculture and Life Sciences Ménési str. 44. H-1118 Budapest; <sup>4</sup>ELTE Faculty of Primary and Pre-School Education, Budapest, H-1126 Kiss János altábornagy str. 40; <sup>5</sup>University of Public Service, Faculty of Water Sciences, Department of Water Supply and Sewerage, H-6500 Baja, Bajcsy-Zsilinszky str. 12-14., Hungary; \*E-mail: [buczko.krisztina@nhmus.hu](mailto:buczko.krisztina@nhmus.hu)

The Cryptic project "CRYPTograms' Traits In the Carpathians" launched in 2016 and reached the first milestone in 2023 when the final report of OTKA 119208 was completed. The project has focused on diatoms in the mountain lakes of the Carpathians, but lowland lakes are also included in the studies, combining the neo- and palaeolimnological approach; for understanding the lake development in the Anthropocene. In the talk we present the long-term stories of Lake Ighiel Romania (924 m a.s.l.), as demonstrated by diatom assemblages. The possible associated stressors for climate variables (temperature, precipitation, NAO, AMO) were also analyzed. Lake Ighiel, a dominant natural hydroclimatic control on the lacustrine system was found between 1920–1960, followed by significant subsurface erosion across the catchment driven by intensified forestry. The multi-proxy analysis of sediment cores from Lake Ighiel evidenced changing landscape use (deforestation, grazing, construction), but demonstrates the role of atmospheric cycles (NAO) in lake processes, too. The community was completely transformed in two steps, where nitrogen from the atmosphere may have played a decisive role in the process. Zone boundaries and the duration of the zones defined on the base of taxonomical, biovolume, trait-based life-forms of diatoms showed different pattern, demonstrated that the taxonomical and trait-based approaches differ significantly and their responses for drivers are different.

Beyond trait-based analysis we also worked on alfa-taxonomy, the high-resolution taxonomical discovery. We have progress in the taxonomy of the genus *Gomphonema* in the Carpathians. *Gomphonema lacunicola* was reported from the subalpine lake of the Pâreng Mountains from Lake Câlcescu as the first Romanian data on the species. We reported and documented the first Romanian occurrence of the diatom *Gomphonema angustivalva* E. Reichardt 1997 from a lake sediment core of Lake Balea, a proglacial lake of the Carpathian Mountains. The research was supported by the NKFIH (119208).