



**CRYPTIC 2021: THE IMPRINT OF CLIMATE AND THE HUMAN ACTIVITY IN  
THE DIATOM COMMUNITIES OF LOWLAND AND MOUNTAIN LAKES  
IN THE CARPATHIANS**

Cryptic 2021: A klíma és az emberi tevékenység lenyomata tavaink kovaalga-  
közösségeiben a Kárpátokban

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The main aim of the Cryptic project "CRYPtogams' Traits In the Carpathians" is to carry out a trait-based study of cryptogams in parallel with accurate species-level identification. The work focuses primarily on diatoms in the mountain lakes of the Carpathians, but lowland lakes are also included in the studies, combining the neo- and palaeolimnological approach. We collected sediment surface samples from the deepest points of altogether 53 lakes of the Carpathians, where cores were obtained for paleoecological reconstruction. During the processing of 40 samples, 410 entities were distinguished, some of them could be new taxa. A database has been built in order for quantitative pH and total phosphorus reconstruction.

In the talk we present the long-term stories of 3 lakes (100, 500 and 1,500 yrs) as demonstrated by diatom assemblages. (1) Lake Balea, which has undergone drastic changes over the last three decades, where these changes could be linked to land use and atmospheric deposition, while global warming was found also significant. The multi-proxy analysis of sediment cores from Lake Ighiel (2) also evidenced changing landscape use (deforestation, grazing, construction), but demonstrates the role of atmospheric cycles (NAO) in lake processes, too. During the analysis of the sedimentary record the most dramatic change in the composition of the diatom community took place from the 1980s. At this time, the community was completely transformed in two steps, where nitrogen from the atmosphere may have played a decisive role in the process. The thousand-year diatom-based history of Lake Latorica (3) was found clearly climate-driven, where our data can contribute significantly to better understanding the Little Ice Age. The research was supported by the NKFIH (119208).