TRACE: Tracing the Holocene distribution of beech and oak forests in the Carpathian Basin using standscale paleoecology 2018-2022 (NKFIH 129167)

This project focuses on the study of vegetation borderlines in two contrasting environments. In the humid NE Hungarian and West Hungarian hill regions project participants investigate the past distribution limits of beech forests, while in the warm and dry Kiskunság region reconstruct the former cover of oak forests. Paleoecological research methods are completed by community DNA metabarcoding and forestry document analyses. Via the pollen, plant macrofossil and macrocharcoal analyses of small forest hollow deposits the project aim is to gather information on stand scale forest compositional changes in the North Hungarian Mid Mountains and in the Őrség-Vendvidék region of Transdanubia during the last couple of thousand years. Besides introducing stand scale palynology in Hungary, the project also involves the application of novel DNA metabarcoding techniques on forest soils to support our pollen and plant macrofossil based inferences for the former presence of beech in places currently dominated by other trees. In the Kiskunság sand region quantitative forest cover reconstructions are plenned throughout the Holocene using pollen data and the REVEAL model of pollen dispersal and deposition. This research contributes new and important data to better understand the history of the Pannonian oak forest steppes.

Research questions: When did forest cover reach its maximum during the Holocene in the Kiskunság and when did forest cover start to decrease? What were the primary drivers of forest cover decrease?

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