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# Population and forest dynamics in Central Europe: large-scale quantitative approach combining archaeology, palaeoecology and climate

Jan Kolář<sup>\*1,2</sup>, Petr Kuneš<sup>1,3</sup>, Mária Hajnalová<sup>4</sup>, Péter Szabó<sup>1</sup>, Peter Tkáč<sup>1</sup>, Martin Macek<sup>3,5</sup>, and Helena Svitavská Svobodová<sup>1</sup>

<sup>1</sup>Institute of Botany of the Czech Academy of Sciences (IB CAS) – Institute of Botany AS CR, v.v.i. Department of Vegetation Ecology Lidická 25/27 CZ-602 00 Brno Czech Republic, Czech Republic

<sup>2</sup>Institute of Archaeology and Museology, Masaryk University (IAM MU) – Institute of Archaeology and Museology Faculty of Arts, Masaryk University Arne Nováka 1 Brno 60200, Czech Republic

<sup>3</sup>Department of Botany, Faculty of Science, Charles University in Prague (DB CU) – Department of Botany, Faculty of Science, Charles University in Prague, Benátská 2, CZ-12801, Praha 2, Czech Republic, Czech Republic

<sup>4</sup>Department of Archaeology, Constantine the Philosopher University in Nitra (DA CPU) – Katedra archeológie Filozofická fakulta UKF Hodžova 1 949 74 Nitra, Slovakia

<sup>5</sup>Institute of Botany of the Czech Academy of Sciences (IB CAS) – Department of GIS and RS, Institute of Botany of the ASCR, v. v. i. Zámek 1 CZ-252 43 Průhonice Czech Republic, Czech Republic

## Abstract

The European archaeological record in various regions shows a rapid increase after the beginning of agriculture in the Neolithic. The population boom-and-bust during this period (7000-2000 BC) has been the subject of lively discussion for the past decade. Most of the research on this topic was carried out with help of summed radiocarbon probability distributions. We aim to reconstruct population dynamics within the catchment of a medium sized lake on the basis of information on the presence of all known past human activities stemming from archaeology. We calculated a human activity model based on Monte Carlo simulations. The model showed the lowest level of human activity between 4000 and 3000 BC. For a better understanding of long-term socio-environmental dynamics, we also used the results of a pollen-based quantitative vegetation model (REVEALS), as well as a local macrophysical climate model. The beginning of the decline of archaeologically visible human activities corresponds with climatic changes and an increase in secondary forest taxa probably indicating more extensive land-use, and thus transformation of socio-environmental interactions. In addition, important social and technological innovations, such as the introduction of the ard, wheel, animal traction and metallurgy, as well as changes in social hierarchy emerged.

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