



## **Holocene human-nature interaction in NE Lithuania: an example of the vegetation and land-use history in the surroundings of Petrešiūnai Hillfort**

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Due to the scarcity of reliable postglacial environmental and land-use proxy records from the south-eastern part of the Baltic and Lithuania, in particularly, there has been increased interest for multi-proxy studies to detect both local and regional signals of human-nature interaction representing different intervals of Holocene in this area. Humans clearly affected landscapes during the last few thousand years here, while Holocene trends of the human interference were investigated episodically. Even less is known about the palaeoenvironmental changes and human pressure upon environment in the areas laying in the boreo-nemoral ecotonal transition or situated closer to the peripheral zones of the cultural groups.

The north-eastern part of the present Lithuania, including the surroundings of the Petrešiūnai hillfort, situated on the outskirts of the Mesolithic-Neolithic cultural groups and in the boreo-nemoral ecotonal transitional zone serves as a key area to explore the development of Holocene vegetation, human impact on the landscape, the types of agriculture employed, and changes in the local economy in the above mentioned peripheral zones of the human interference.

Lack of the archaeological data corresponds well with the minor representation of human related environmental signals dated back to the Stone Age in area. Nevertheless, the sediments of stand-scale Petrešiūnai basin are revealing small-scale vegetation stress that included short-lasting spread of ruderal taxa and development of open habitats at about 7000 cal BP and between 4700-4200 cal BP i.e. during the Neolithic when dense broad-leaved forest with high input of spruce flourished in the region. Changes of the vegetation structure registered between 3300 – 2800 cal BP prove increasing utilisation of the landscape during the Late Bronze Age only. Formation of the forest clearances and meadows was followed by the occurrence of pastures with *Pl. lanceolata*. Simultaneously, pollen grains of cereals (*Cerealia*-type) were discovered in the sediments pointing to introduction of agriculture that is also confirmed by increasing representation of segetal plants and representatives of disturbed soil. *Betula*-predominating forest took over in the surroundings at that time. Described changes suggest a causal link between recorded environmental fluctuations and prospering of the people groups in Petrešiūnai hillfort at the onset of the 1st millennium BC. Meanwhile, in the absence of archaeological remains culmination of the human-driven environmental changes, including agriculture practices and animal husbandry, was noted between 12-13th c. AD in Petrešiūnai according to palaeoenvironmental record. At that time, that could generally be correlated with the so-called "Medieval Warm Period", a pattern of arable land, pastures and meadows was established in the region according to pollen data though this conclusion not testified by archaeological data. Hitherto, a number of investigated archaeological sites is minor in area. Further palaeobotanical record mirror decreasing intensity of the human interference starting at the end of 13th-c. AD though archaeological data suggests some recovering of the population at the regional scale at least.