

## Interactions between humans and environment in Middle Holocene: comparative study of two Chalcolithic sites to the East of Carpathians

Mihaela Danu<sup>1\*</sup>, George Bodi<sup>2</sup> and Luminita Bejenaru<sup>1,3</sup>

<sup>1</sup> Alexandru Ioan Cuza University of Iași, Faculty of Biology, Iași, Romania, [danum2007@yahoo.com](mailto:danum2007@yahoo.com)

<sup>2</sup> Institute of Archaeology, Romanian Academy - Iași Branch

<sup>3</sup> Department of Anthropological Research, Romanian Academy - Iași Branch

Archaeobotanical, archaeozoological and archaeological studies carried out in Chalcolithic sites to the East of Carpathians (i.g. Poduri-Dealul Ghindaru, and Hoisești), contributed to reconstruct the environmental context of the settlements, and to evidence diverse human activities in the area.

The Chalcolithic site of Poduri-Dealul Ghindaru, located in eastern Romania, in Subcarpathians (Bacău County), has levels belonging to Cucuteni Chalcolithic culture (approx. 4800-3600 cal. BC). During the excavation campaigns, large quantities of artefacts (pottery, grindstones, cereal remains, animal remains, etc.) have been discovered. Archaeobotanical researches emphasized a productive environment, with sustenance strategies based on cereals cultivation – especially wheat and barley. Palynological analysis testified the presence of cereals pollen (*Triticum*-type and *Hordeum*-type). Macro-remains of some other cultivated and spontaneous plants (e.g. *Pisum sativum*, *Coriandrum sativum*, *Rumex acetosella*, *Prunus domestica*) have been identified in archaeological sediments. The majority of animal remains are from domestic mammals, with the predominance of cattle (*Bos taurus*), sheep (*Ovis aries*) / goat (*Capra hircus*), and pig (*Sus domesticus*). Hunting of wild mammals was quite important in the settlement economy, and as game species, red deer (*Cervus elaphus*) and wild boar (*Sus scrofa*) were dominant.

Hoisești site (Iași County) is located in NE Romania, within the Moldavian Plain, to the left of the lower course of the Bahlui River. The settlement belongs to Cucuteni culture (4350/4325-4050 B.C.). Pollen analysis highlights the salinity of the soils from this area (very high percentage of Chenopodiaceae pollen). Cereal pollen is absent but the presence of certain ruderal taxa indicates an anthropic context. Pollen of deciduous trees taxa (e.g. *Quercus*, *Tilia*), is present suggesting the proximity of the forest. Archaeozoological data show the animal husbandry was an important occupation; the pig remains (*Sus domesticus*) are dominant, while cattle (*Bos taurus*) and sheep/goat (*Ovis aries/Capra hircus*) come on the second place.

The main results converge to conclude that these two Chalcolithic settlements are different in terms of human activities and influences on environment. Agricultural activities (cereals cultivation and animal husbandry) were an important component of settlement economy at Poduri-Dealul Ghindaru. Chalcolithic settlement from Hoisești most probably was situated in a forested, humid and fragmented area, with alkaline soil, inappropriate for cereal cultivation. The wild resources constitute a significant part of the diet, so we consider the Chalcolithic community from Hoisești as a group of small-scale agriculturalists.

### Acknowledgements

This work was supported by grant GI-2015-01 from Alexandru Ioan Cuza University of Iași.