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Palaeoecological caracterisation of the mammoth steppe at Final Pleistocene in Central Ukraine from zooarchaeology, stable isotope analyses and direct radiocarbon dating

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In the Central Ukraine area of the Middle Dnipro Basin, including the Desna river valley, there are exceptional Upper Palaeolithic open air sites with mammoth bone dwelling structures. Mezhyrich is one of these settlements, which are attributed to the Epigravettian cultural facies and occurred in a periglacial environment, during Oxygen Isotope Stage (OIS) 2. Mammoth bone buildings are surrounded by pits, which are filled with archaeological material (tools, hunting weapons, ivory and bone ornaments) and bones of mammoth and other large mammals such as hare, fox, wolf, horse. A new site Buzhanka 2 has yielded a pit which could be related to an expected dwelling structure.

These Final Pleistocene sites are particularly appropriate to shed new light upon the relation between man and environment at the time of the mammoth steppe disappearance.

Multidisciplinar studies have been carried on, to cross results from zooarchaeology of the pit contents, carbon and nitrogen stable isotope (13C and 15N) analyses of bone collagen, direct 14C dates on mammal bones and microstratigraphic analyses of the loessic sediment.

With almost twenty 14C dates available, from mammoth and wolf bones and from charcoals, Mezhyrich is the best dated Epigravettian mammoth bone dwelling site: around 14 500 years BP.

Mammoth treatment is zooarchaeologically evidenced in Buzhanka 2, but limited excavated areas do not allow to interpret their procurement yet. In Mezhyrich, consumption of mammoth meat is evidenced from the pit contents, coming from a few juveniles and young adults, probably hunted. The bones used in the dwelling structure no. 4, which are attributed to at least 37 individuals, have two different origins: mostly isolated elements gathered from other deposits, natural accumulations or previous kill sites; a few skeletal portions in anatomical position taken from at least one quite freshly dead mammoth body, for instance a hunted individual.

From the stable isotope analyses, it appears that a modification of the regional plant and climatic context may have inferred a change of food resource for mammoths, which could have been put into food competition with horses. Mammoths from Central Ukraine at late OIS 2 may have formed an isolated local population, under the pressure of modified ecological conditions, compared to the period of maximal extension of the mammoth steppe.

Thus, thanks to a combined approach of zooarchaeology, stable isotopes and radiocarbon dating, in the stratigraphic context, a better knowledge of the palaeoecological context of the last mammoths at late Pleniglacial in Central Ukraine is expected.