



## Faunal remains from the Oldowan site of Muhkai II in the North Caucasus: Potential for dating and palaeolandscape reconstruction



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### ABSTRACT

The results of study of faunal materials unique for the north-eastern Caucasus are published, deriving from layer 80 of the Oldowan site of Muhkai II. Twenty-six specimens of four species of carnivorous mammal and six species of herbivorous mammal were identified in this material. In addition, the remains of small mammals, reptiles and amphibians were identified, which are indicators for the dating of the assemblage and the establishment of the specific characteristics of the natural environment at the time of usage of the Oldowan site. While in the modern day the investigated region consists of a belt of medium high mountains, during the chronological period under study open landscapes of savannah type with small areas of forest vegetation dominated. Based on a combination of data from palaeomagnetic analysis and faunal determinations, the time of existence of the complex is established as no later than the lower limit of the Olduvai episode during the Matuyama palaeomagnetic epoch.

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### 1. Introduction

The multilayered Early Pleistocene site of Muhkai II (Fig. 1) was discovered in 2006 in the central mountaineous area of Dagestan (Amirkhanov, 2007). Since its discovery, ongoing systematic field research has been carried out by teams from the Institute of Archaeology, RAS (Russian Academy of Sciences) and the Institute of History, Archaeology and Ethnography, Dagestan Scientific Centre, RAS. By 2012 the site's section had been nearly fully exposed in an excavation trench, to a total thickness of 72 m.

The site section includes more than 100 lithological units, of which 34 contain archaeological remains (Amirkhanov et al. 2011, 2012a, 2014). In the overwhelming majority of cases, the latter consist only of stone tools. However, four levels can be identified in which faunal remains are preserved alongside artefacts. The most significant level in this respect is that designated as layer 80 of Muhkai II, which lies at a depth of 34 m from the modern-day surface. This level was excavated in 2010–2012 over an area of 49 m<sup>2</sup> (Figs. 2 and 3).

The thickness of the cultural layer, taking into account its post-depositional changes, does not exceed 10 cm, and multiple flint finds occurred here in the form of a single thin horizon. In the depression of an ancient body of water, adjacent to the cultural layer, the vertical dispersion of the archaeological remains reaches 40–50 cm. There are no traces of rolling or mechanical damage on the flint flakes which post-date the creation of the artefacts.

Judging by the make-up and spatial analysis of the archaeological assemblage, the activities of the ancient inhabitants of the site took place on the bank of a naturally dammed pond or small lake. The traces of both manufacturing and domestic activities are found here.

The number of flint artefacts (excluding small trimming and retouch flakes found by wet-sieving the spoil) in the excavated area approaches 900 (Fig. 5, 1–2). Typologically, the finished worked flint artefacts include choppers, picks, and small scrapers. Similar stone tools sets are found in many layers of the site of Muhkai II (layers 24,35,74,82 etc.) (Fig. 5, 3). The raw material used for the stone tools was flint, outcrops of which could be found close to the site.

The collection of bones of large mammals numbers more than 300 finds. Apart from the bones of large mammals, the skeletal remains of amphibians, reptiles, rodents, and the shells of small

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Fig. 1. Location of Dmanisi and Muhkai II sites.



Fig. 2. General view (from the South) on the section of the Early Pleistocene deposits of Muhkai II site. The arrow indicates the location of the excavation at the level of layer 80.

terrestrial mollusks were found. In total there are 80 bones in this part of the assemblage. Palaeontological studies were performed in accordance with the usual approaches used for identification of osteological material based on morphological study.



Fig. 3. Muhkai II, layer 80. The surface of the cultural layer. Flint tool finds are marked by small spots.

## 2. Results

### 2.1. Large mammal remains

The palaeontological finds from the layer were concentrated in clayey deposits, filling some kind of depression of which only a small part was preserved, and which was effectively entirely excavated. The majority of the bones were covered in a crust of fine dense clayey material. This contributed to the preservation of the osseous material under consideration.

Judging by the observed pattern, the bones fell into some sort of shallow (in this area, not deeper than half a metre), evaporating and heavily silted body of water. After the complete evaporation of the water body the palaeontological material was “sealed” in the clayey mass. During further geological processes the clayey layer with bones was itself buried under later-formed layers.

The collection of remains of large mammals of layer 80 of Muhkai II includes 301 bones (Table 1); of those, 181 are identifiable and 120 (39.9% of the total quantity) are unidentifiable. The unidentifiable bones are mostly fragments of long bones.

We did not find any gnawing marks from animal teeth or traces of plant roots on the bones. All the finds (bones and tooth enamel) are white and are fossilized to the same degree. A similarity to the

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