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# EARLY PALEOLITHIC OF EURASIA: NEW DISCOVERIES

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**Early Paleolithic of Eurasia: New Discoveries:** Abstracts of the International Conference (Krasnodar – Temryuk, September 1–6, 2008). Rostov-on-Don, 2008. 208 p. Fig.: 16. Tab.: 2.

The book presents the materials of the International Conference held at Temryuk (Krasnodar Region, Russia) and devoted to the latest investigations in the Early Paleolithic of Eurasia. The papers cover a wide range of topics related to the initial peopling of Eurasia. Special attention is given to the distribution and chronology of the Early Paleolithic sites, and to the problem of human adaptations to different paleoenvironmental conditions.

Addressed to archaeologists, paleontologists, geologists, paleogeographers.

Fig. – 16. Tab. – 2.



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## THE TAMAN FAUNA TYPE LOCALITY OF SINYAYA BALKA: NEW DATA ON ITS GEOLOGY AND BIOSTRATIGRAPHY

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The locality of Sinyaya Balka, situated east of the homonymous ravine on the northern shore of the Taman Peninsula, is one of the richest and most famous Early Pleistocene burials of fossil mammals. It was its study that led to the recognition of the Taman faunal complex with Sinyaya Balka as the stratotype (Gubkin, 1914, 1950; Belyaeva, 1925; Gromov, 1948; Vereshchagin, 1957; Dubrovo, 1963; Lebedeva, 1972, 1978; Vangengeim et al., 1991). This locality is one of the key objects for of Quaternary geology in the south of Russia. New materials concerning the biostratigraphy of Sinyaya Balka (=Bogatyri) have been obtained in course of the fieldwork in 2006-2007.

The Upper Pliocene and Quaternary deposits east of the Sinyaya Balka ravine mouth occur in dislocated position and complicated by diapir folds. Structurally, this is the left limb of the Tizdar brachyanticline. The dislocated occurrence of the Upper Cenozoic deposits is mainly caused by mud volcanism and diapirism, which is characteristic for the whole of the Kerch-Taman region (Shnyukov et al., 1992). At the locality of Sinyaya Balka, the bed containing remains of large mammals is dislocated by a diaper fold in the central part of the exposure (Fig. 1, A). The bone-bearing breccia is overturned to the north and has a tectonic contact with the dark-gray brecciated Kujalnik clays. The reconstruction of the original position of these strata shows that they formed in the littoral part of a shallow basin. The subaqueous type of sedimentation is evidenced by the lamination of the bone-bed, the presence of dark-gray clay balls and dinoflagellates, and the occurrence of shell detritus in the basal part of these layers. The sedimentary conditions were associated either with a small lake or a shallow part of a lagoon.

Three main scenarios were put forward to explain the burial conditions of the Sinyaya Balka mammal remains. According to one of them, the bone-bed formed in a lake-like basin and was originally situated at the top of the present day sea cliff, and then was displaced downslope by an ancient landslide for some 20 m (Vereshchagin, 1957). According to another hypothesis, the bone material is contained in mud-stone breccia that filled an erosional depression (Dubrovo, 1963; Lebedeva, 1972; Vangengeim et al., 1991). According to the third scenario, prior to the deformation of the entire bone-bearing member, bones accumulated in a shallow basin of the lagoonal type (Shchelinsky, Kulakov, 2007).

It is necessary to note, first, that the concentration of bone materials is very dense, and second, that only bones of large mammals are present. Archaeologists suggest that ancient human activity might have been an important factor of bone accumulation (Shchelinsky, Kulakov, 2007).

However, taking into account the geological structure of the given region and the role of mud volcanism, a different scenario can be proposed. The high concentration of bones may be accounted for their initial accumulation in a crater lake depression of a mud volcano. Large mammals used this lake as a watering place and, probably, as a sort of "mud-bath". The volcanic mud dragged them in and they died. As a result of eruptions, the mud with bones flowed to the nearest lake or lagoon and accumulated there in the brecciated form. The position of this volcano is uncertain and it could be located seawards from the modern shoreline.

Screen washing operation produced rodent remains from seven sites (fig. 1) (Pevzner et al., 1998; Tesakov, 2004). The studied associations of small mammals can be divided into three groups. The first and oldest one includes faunas of Tizdar-1 and the "fish" lens. They are characterized by a combination of *Allophaiomys deucalion* with *Borsodia* and *Mimomys*, with the presence of *Lagurodon arankae*. The second group includes Tizdar-2. It is dominated by *Allophaiomys deucalion* and *Lagurodon arankae*, while a strongly reduced role of *Borsodia* and *Mimomys*. Faunal associations of Vostochnaya and Rodniki-2 are similar in composition to this group too, as well as the fauna of the basal layer of Sinyaya Balka. The first two groups of small mammals date to the Late Pliocene – Early Pleistocene. The third group includes the fauna of Rodniki-1 and likely also that from the bone breccia of Sinyaya Balka. Preliminary data show the presence of *Allophaiomys* ex gr. *pliocaenicus*. The third group seems to be not younger than the mid Early Pleistocene. In this connection let us remind that the Taman faunal complex was dated to the period of 1.1–0.8 Ma (Vangengeim et al., 1991).

The pollen spectra obtained for the section of the Sinyaya Balka/Bogatyri excavation pit reveal the presence of redeposited Pliocene pollen, which is particularly characteristic of the bone breccia. N.Yu. Filippova (personal communication) has also noted the presence of dinoflagellates, which are characteristic of shallow brackish-water basins.

The pollen spectra from the basal part of the section are dominated by *Asteraceae* and *Chenopodiaceae*. Arboreal plants are represented by single grains of *Pinus, Tsuga, Abies, Quercus, Betula, Salix, Corylus,* and *Carpinus*. These spectra are indicative of forest-steppe and steppe landscapes, with herbal coenosis on water divides and pine/small-leaved forests (supplemented with some broad-leaved species) in river valleys.

The spectra from the bone breccia are dominated (up to 90 %) by the redeposited Pliocene pollen (*Pinus* sp., *Tsuga*, Taxodiaceae/Cupressaceae, *Podocarpus, Picea* sp, *Abies, Ulmus pumila, U. suberosa, U. foliaceae, Juglans, Pterocarya, Platycarya, Engelhardtia, Fagus, Tilia*).

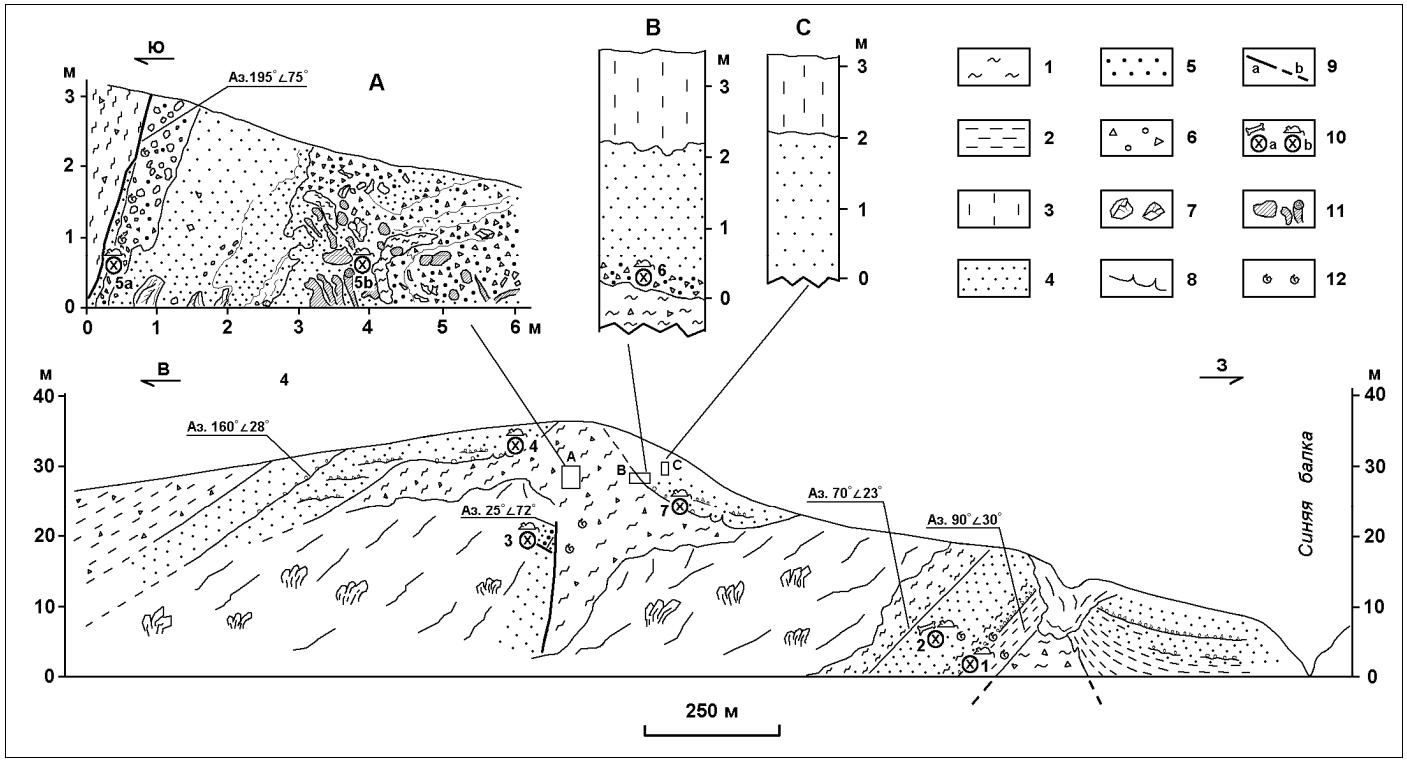


**Fig. 1.** Geological profile along the seashore in the vicinity of Sinyaya Balka, northern coast of the Taman Peninsula.

A. excavation area with the bone breccia, western wall; B. archaeological trench (Rodniki-1); C. archaeological test-pit.

Sites of fossil rodent remains: (1) Tizdar-1; (2) Tizdar-2; (3) “fish” lens; (4) Vostochnaya; (5a) Sinyaya Balka, basal layer; (5b) Sinyaya Balka, bone breccia; (6) Rodniki-1; (7) Rodniki-2.

1. brecciated dark-gray clays; 2. clays; 3. loess-like sandy loams; 4. sands; 5. gravels; 6. rock debris, beach gravel; 7. rock fragments; 8. lithological boundaries with manifestations of diapirism; 9. tectonic faults: (a) established, (b) supposed; 10. bone remains: (a) large mammals, (b) small mammals; 11. large bone fragments; 12. shells of mollusks

The analysis of the newly obtained data allows us to conclude, that the large mammal bones found at Sinyaya Balka were buried as a result of mud volcanism and sediment accumulation that took place in the subaqueous conditions. The small mammal fauna is indicative of the Early Pleistocene (=Eopleistocene) age of the bone-bearing bed, suggesting at the same time that the chronological limits of the Taman faunal complex could be broader than it had been believed before. Judging from the palynological and microtheriological evidence, the Taman fauna was primarily associated with steppe and forest-steppe landscapes.

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