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# Biostratigraphy of the early Middle Pleistocene of the Southern Fore-Urals



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### ABSTRACT

A summary of published and unpublished data on the stratigraphy of the early Middle Pleistocene of the Southern Urals region is presented in this paper. It follows previous reviews about the characteristics of the Pleistocene deposits of the easternmost part of Europe. Deposits of different origin, which constitute the regional stratigraphic units, are characterized. Mammalian data form the base for the (bio)stratigraphical subdivision. Fossil mollusca, ostracoda, mammals and pollen are used for the reconstruction of the palaeoenvironmental conditions and the stratigraphical position of the main localities is discussed.

The beginning of the early Middle Pleistocene (Minzitarovo time) coincides with a stabilization of the hydrographic network. Palaeontological remains from that period are rare. *Pinus–Picea* forests with small admixture of broad-leaved species were spread at the beginning of this interval. Later, the role of forests decreased and the role of herbs and Chenopodiaceae increased. Palynological data indicate that the climate was cool during that time. The landscapes of the Baza time were dominated by herbaceous–*Artemisia* associations and small birch forests with an admixture of broadleaved and coniferous trees and the terminal time was characterized by the wide development of taiga. Ostracods and molluscs are known from those deposits. Ecological composition of the small mammalian faunas indicates forest-steppe conditions for the southern part of this natural zone. Small mammals of that time belong to the Tiraspol faunal assemblage. The climate was warm and dry. The initial Tanyt time was characterized by the development of herbaceous–*Artemisia*–Chenopodiaceae steppes and broadleaved birch forests, which were subsequently replaced by a dominance of taiga associations, which tolerate cold climatic conditions. Molluscs are represented by rare terrestrial and freshwater species. The assemblage of freshwater ostracods includes cold-resistant species. In the Atasevo time, broadleaved birch forests and meadow-steppes characterized the landscape. The presence of stenothermic–thermophilic ostracods species indicates warm climatic conditions. Molluscs are represented by terrestrial and numerous freshwater species. The small mammalian fauna is characterized by the smaller percentage of *Mimomys* voles; it post-dates the Baza fauna. The Atasevo fauna is unique because of the occurrence of *Arvicola mosbachensis* Schmidtgen among the typical early Middle Pleistocene species.

At the end of this period during the Chusovskoi timespan, the herbaceous–*Artemisia*–Chenopodiaceae steppes, which covered spacious open areas, were subsequently replaced by coniferous–birch forests with an admixture of broadleaved trees. Fossil remains are rare. Ostracods represent cold-resistant species indicating that the climate was cold.

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