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Palaeoenvironment of the Middle and Upper Neopleistocene at the Gornovo Upper Palaeolithic site (Southern Ural foreland, Russia)



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ABSTRACT

Complex biostratigraphical methods and radiocarbon dates were used to reconstruct the Middle (late Middle Pleistocene) and Late Neopleistocene (Late Pleistocene) palaeoenvironments covering the Palaeolithic period in the western foreland of the Urals. The Gornovo Palaeolithic settlement is located on the lowest terrace of the Belaya River. From the base to the top, this terrace consists of fluvial and lacustrine deposits of the Belaya horizon (Middle Neopleistocene; 427–364 ka), alluvial and lacustrine deposits of the Larevka horizon (Middle Neopleistocene; 364–334 ka), fluvial and lacustrine deposits of the Tabulda horizon (Late Neopleistocene; 57–24 ka), water-slope deposits of the Kudashevo horizon (Late Neopleistocene; 24–11 ka) and chernozem soil of the Holocene. The small and large mammals, insects, molluscs, and ostracods discovered in the deposits complete the palaeoecological characteristics of these periods. A diverse herbaceous steppe vegetation dominated during the Belaya Interglacial (a mixed coniferous forests with broad-leaved trees occurred in wet areas). The ostracoda species clearly indicate a cooling at the end of this time span. Molluscs inhabited the rivers and shores of freshwater ponds. The large mammals belong to the Middle Pleistocene fauna complex. During Larevka time span vegetation and fauna indicate cold climate conditions. The cold steppe communities typical of the beginning of this period changed gradually into communities that show an increasing role of the taiga. The ostracoda species confirm these cold conditions. Forest-steppe landscapes dominated during the second part of the Tabulda time span. Numerous ostracods as well as molluscs populated the lakes and floodplain basins. Entomological data show that the palaeoenvironment conditions were somewhat cooler than modern environment existing in the Southern Ural foreland. The large mammals of the Gornovo site belong to the Late Palaeolithic complex with the specific presence of *Camelus* sp. The Gornovo forest-steppe small mammalian fauna developed in cool continental climate conditions when coniferous forests grew in the river valleys and when forest-steppe landscapes dominated in the water interfluvies. The artefacts are characteristic of the beginning of the Late Palaeolithic (32–24 ka). The Kudashevo time is correlated with the late Valdai (late Late Pleistocene; 24–11 ka). The herbage-*Artemisia*-Chenopodiaceae grassland-steppe association covered most of the territory and a *Picea* forest with *Betula* and a small quantity of broad-leaved trees grew in wet depressions. The climate at the end of this period became colder. Freshwater and terrestrial molluscs were represented by rare widespread species while the ostracoda species indicate cold conditions.

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1. Introduction

The Palaeolithic settlement of Gornovo is located on the left bank of the Belaya River, 1 km upstream from the village of Gornovo (Bashkortostan Republic, Russia) ($54^{\circ}54'27.30''\text{N}$, $55^{\circ}52'48.26''\text{E}$) (Fig. 1). The studied area is situated at the eastern border of the Russian platform and of the Fore-Uralian depression. Nowadays, it represents the southeastern part of the Eastern European Plain. The settlement and the lower reach of the river valley are “by means of geomorphology” located in the Kama-Belaya low plain, surrounded by the Bugulma-Belebei Highland in the west, the Obzhyi Syrt Highland in the south, the Southern Uralian mountains in the east and the Ufimian Plateau at the north and northeastern sides. The lower reaches of the Belaya River and its tributaries cut across Permian sedimentary rocks. The relief of the high banks of the Belaya River valley reaches 160–200 m above the sea level. While the uppermost third terrace is ascribed to the late Middle Neopleistocene, the intermediate and lowermost are dated to the Late Neopleistocene and Holocene. Middle and Late Neopleistocene de-

posits result from fluvial, water slope sedimentations and soil are widespread in the southern forelands of the Ural mountains. These deposits can be only well dated if the alluvial terrace deposits contain plant and animal remains and archaeological artifacts.

There are more than 15 Palaeolithic sites in the Southern Urals region, and most of them are located in the mountain area, especially in karst cavities. In the lowlands, Palaeolithic sites are extremely rare. The Gornovo settlement is one of the two unique sites located in the middle part of the first overflood plain (lowest) terrace.

The Palaeolithic site near the small village of Gornovo was discovered by A.P. Shokurov who carried out the archaeological investigations in the valley of the Belaya River in 1959. He found, below 13 m of “reddish” loams, a horizon of grey loams with large mammal remains and two stone artefacts exposed along the river over a length of 100 m. Later in 1959, the locality was investigated and described by the archaeologist O.N. Bader and the stratigrapher V.L. Yakchemovich (Shokurov and Bader, 1960). In 1983–1987 scientists of the Institute of Archaeology (St.

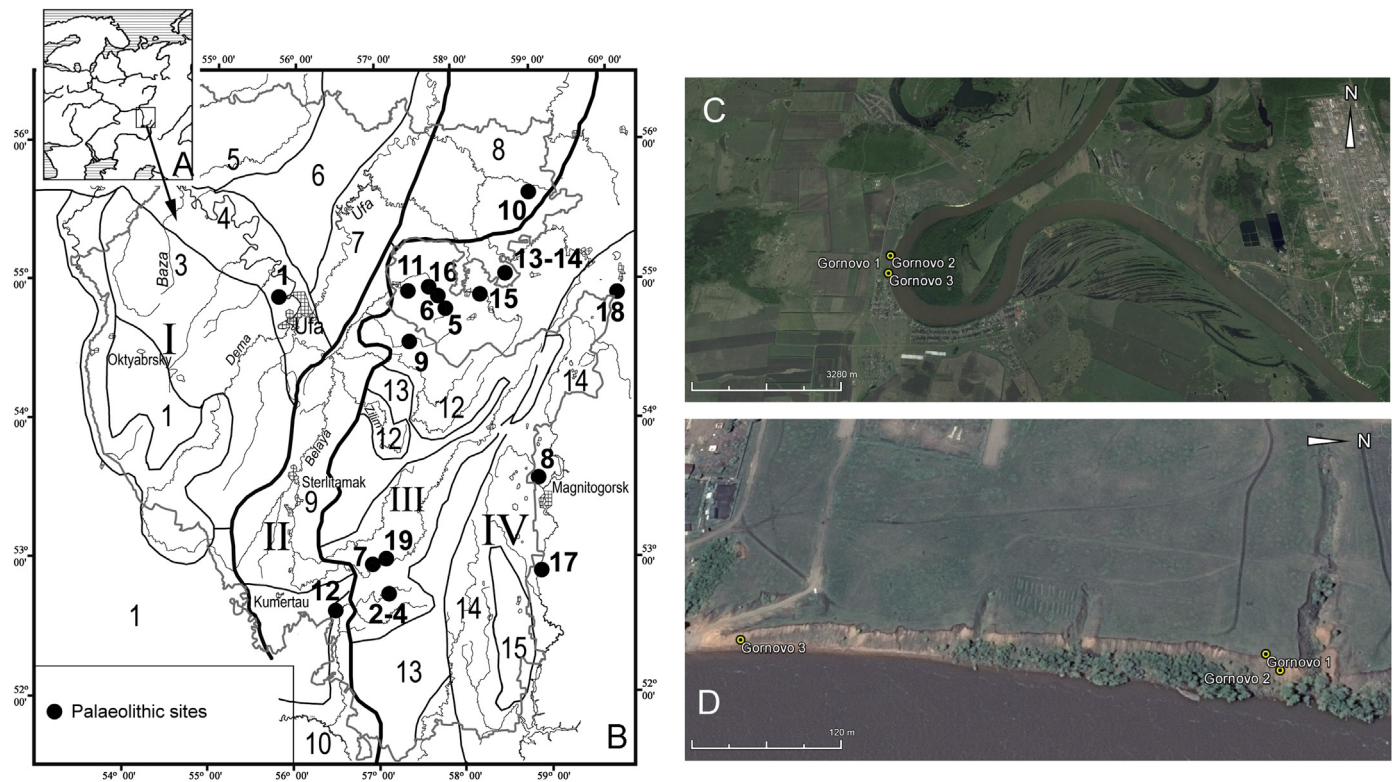


Fig. 1. (A) General scheme of the territory, (B) topographic map with Palaeolithic sites of the Southern Urals and (C, D) Google maps of the investigated area showing the location of the Gornovo site. Legend for the map (B): I–IV: I – South-East of the Russian platform; II – Fore-Uralian; III – Uralian; IV – Trans-Uraltau; 1–11 – regions: 1 – Bugulma-Belebei Highland, Obshyi Syrt Highland (eastern part); 2 – Ik and Dema (upstreams) Rivers Basin; 3 – High left bank of the Belaya River (Syun’ and Baza Rivers); 4 – Belaya River Basin between Ufa town and the river mouth; 5 – High right bank of the Belaya River (Bui and Bystryi Tanyp Rivers); 6a – Ufa River Basin (between Krasnoufimsk city and the river mouth); 6b – western slope of the Ufimian Plateau; 7 – Yuryuzan and Ai Rivers Basin (56° – 55° N); 8 – Belaya River Basin (including high right and left banks of the river) (55° – 53° N); 9 – Sakmara and Ural Rivers Basin (53° – $52^{\circ} 30'$ N); 10 – Interfluves; 11 – Belaya River Basin with tributaries (between the upstream of the Belaya River and the Nizhnebbikkuzino village); 12 – Interfluves; 13 – Uj, Sakmara, Ural Rivers Basin (from the upstream of these rivers to Kuvandyk town); 14 – Interfluves. Palaeolithic sites of the Southern Urals region: 1 – Gornovo, 2 – Bajslan-Tash cave, 3 – Maksyutovsky grotto, 4 – Balatukay, 5 – Serpiyevskaya 2 cave, 6 – Ignatievskaya cave, 7 – Shulgan-Tash (Kapova) cave, 8 – Smelovskaya 2 cave, 9 – Zapovednaya cave, 10 – Novobelokatai, 11 – Asha 1 cave, 12 – Muradymovskaya 2 cave, 13 – Sikiyaz-Tamak 7, 9, 14 – Nikol’skaya cave, 15 – Ust’-Katsvskaya cave, 16 – Prizhim 2 cave, 17 – Syrtinskaya, 18 – Ustinovo, 19 – Kuljurt-Tamak.

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