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Late Upper Paleolithic of the South Minusinsk Basin and its Mountain Surroundings: Research Results and Problems

This paper briefly reviews the main Late Upper Paleolithic sites of the Upper Yenisei—in the South Minusinsk Basin and in the adjacent highlands of the West Sayan. Known sites mostly date to the Late Sartan period. They concentrate on the Upper Abakan River, in the Yenisei valley between Maina and Sayanogorsk, and on the Upper Tuba River. Information is provided on the composition of fauna and on pollen data, indicating the predominance of mosaic landscapes with alternating forested and open steppe spaces. Climate fluctuations of the Final Pleistocene were reflected in the alternation of phases of herbaceous and forest vegetation. The association of most sites with deposits of the second and third terraces has been established. Certain sites, however, are associated with cover deposits at high elevations, on the one hand, and with the first terrace lowered to the level of the high floodplain, on the other. In recent years, the Late Paleolithic of the Upper Yenisei has been considered in the context of the original version of catastrophic floods, which presumably occurred repeatedly in the Late Pleistocene. The nature of the stratigraphic sections of the multilayered sites of the Maina group on the Yenisei, however, disagrees with this hypothesis, and indicates continuous alluvial sedimentation in the Sartan Age. A conclusion is made about the predominance of remains of seasonal hunter-gatherer habitation sites on the riverbanks. But there are also traces of a lithic workshop near the quartzite outcrops (Kuibyshevo II). Unfortunately, no sites earlier than the Late Upper Paleolithic are known in the region, and Mesolithic ones are extremely rare.

Keywords: Yenisei, Abakan, Minusinsk Basin, Sartan Age, Late Upper Paleolithic, site location.

Introduction

The vast area of the South Minusinsk Basin and the surrounding mountainous areas is one of the main centers of Late Upper Paleolithic sites in Siberia. Over the past decades, the known Paleolithic sites in the Yenisei and Abakan valleys (Paleolit..., 1991) have been supplemented with information on previously unexplored areas—the basins of the Upper Abakan (Zubkov et al., 2019), and the lower (Kharevich et al., 2018; Akimova, Kharevich, Stasyuk, 2020) and upper (Vasiliev et al., 2019) reaches of the Tuba

River (Fig. 1). The purpose of this publication is to discuss briefly some controversial issues of the paleogeographic situation in the region in the Late Pleistocene in connection with the prehistoric human development.

Paleolithic humans and the natural environment

The South Minusinsk (or Abakan-Minusinsk) Basin is enclosed by the ridges of the Kuznetsky Alatau in the

Fig. 1. Location of the mentioned Late Upper Paleolithic sites of the South Minusinsk Basin and its mountain surroundings.

1 – Mozharov Uval I; 2 – Kuibyshevo II, Krivoi Chistobai I; 3 – Bolshiye Arbaty I, Matros I; 4 – Kongure; 5 – Ulugbil; 6 – Sosnovoye Ozero I; 7 – Smirnovka; 8 – Oznachennoye I; 9 – Maina, Uy I, II; 10 – Golubaya I–IV; 11 – Bystraya II; 12 – Pritubinsk I; 13 – Irba II, Gora Veselovskaya; 14 – Kachulka.



west, the West Sayan in the south, and the East Sayan in the east. In the north, it is separated from the Sydo-Erba Basin by the spurs of the Batenevsky Ridge. The central part of the basin (the interfluvium of the Yenisei and Abakan) is the expanse of the Koibal steppe, with sandy blowouts and numerous lakes. The foothill Uibat steppe stretches along the Abakan valley. The main groups of Late Paleolithic sites are concentrated near the junctions of the mountain-taiga and steppe zones where the Abakan and Yenisei flow into the Minusinsk Basin, and in the upper reaches of the Tuba River.

The time of the last (Sartan) glaciation is characterized by the development of glacial activity in the mountain systems surrounding the Basin. In the mountains of the Kuznetsky Alatau, this activity had a local character. As for the West Sayan, here the last (Karakhol) glaciation covered the central part of the Sayan and Shapshal ranges, the sources of the Alash, Khemchik, and Kantegir rivers, and led to the formation of cirque and mountain-valley glaciers, reaching up to 15–20 km in the maximum length phase (Efimtsev, 1961: 139–142). In the mountains of the East Sayan, the Sartan (Azas) glaciation was of a mountain-valley character; its traces are recorded in the upper reaches of the Kazyr and Kizir rivers, as well as in the Todzha Basin (Matsera, 1993).

South Minusinsk Basin can hardly be classified as a “mammoth steppe” or “tundra steppe”. No mammoth remains have been found at any locality in the region. Data on the paleogeography of the sites of the Maina group indicate the mosaic nature of landscapes of the Sartan glaciation, with alternation of steppes with forests along the river valleys. Cooling periods are reflected in the predominance of herbaceous vegetation in the palynological spectra and the increase in the proportion of bison remains in faunal materials. In interstadial conditions, on the contrary, flora was dominated by forest vegetation (mainly pine-birch forests including

fir, spruce, larch, and Siberian pine), and fauna by red deer. The combination of open-space animals (bison, horse) and forest dwellers (red deer, and in the Final Pleistocene also elk and roe deer) suggests the mosaic nature of the landscape. The remains of reindeer are found at the sites in the lowland and foothill parts of the region. The extreme southern point of distribution of this species is the site of Oznachennoye I, located directly at the junction of the West Sayan mountains and Koibal steppe. No remains of reindeer have been found at any of the numerous sites located near the Maina to the south, in the northern part of the Sayan canyon of the Yenisei (Vasiliev, 1996: 15; Vasiliev et al., 2005).

The geological and geomorphological settings of the Late Paleolithic sites make it possible to describe the living conditions of prehistoric humans. Cultural layers of the majority of the sites are confined to thin-layered strata of sandy loamy-sandy alluvium of low above-floodplain terraces. Judging by the data on terrestrial mollusks, prehistoric habitations were located in places near water with high herbage and shrubs. The alternating locations of habitations at levels of various heights (the second and third terraces), known from the materials of Maina, can be explained by the peculiar hydrological regime of the rivers of the periglacial zone, with frequent and prolonged high floods (Yamskikh, 1991).

Most of the Paleolithic sites in the Abakan valley (Mozharov Uval I, Matros I, Bolshiye Arbaty I, etc.), on the Yenisei (Maina, Uy I, II, etc.), and on the Tuba (Gora Veselovskaya) are associated with deposits of the second and third terraces (Fig. 2, 2). New research problems arose with the discovery of Paleolithic sites on the Upper Yenisei, located in unusual geological and geomorphological settings as compared to traditional ideas about the altitudinal location of sites. On the one hand, sites associated with cover deposits of high



Fig. 2. Late Upper Paleolithic sites located at different hypsometric levels in the Upper Yenisei basin.
 1 – section at Golubaya I; 2 – site on the second above-floodplain terrace (Gora Veselovskaya at the Tuba River); 3 – site at high elevations (Kuibyshevo II on the Dzhebash River); 4 – site on the first above-floodplain terrace, lowered to the level of the high floodplain (Irba II at the Tuba River).

hypsometric levels have been recorded. An example of this is the large workshop-site of Kuibyshevo II in the Upper Abakan basin. The cultural remains were deposited in thin bed of upper loams overlying the weathering crust at a level of 70–75 m (there are finds confined to the elevations of 60–65 and 90 m; Fig. 2, 3). At Krivoi Chistobai I, a Paleolithic cultural layer was found on a 35–40 m terrace in stratigraphic conditions similar to those of Kuibyshevo II (Zubkov et al., 2019). On the other hand, Paleolithic sites have been discovered at unexpectedly low hypsometric marks corresponding to the level of a high floodplain. Such is the site of Irba II, where Paleolithic remains occurred in the sediments of the first terrace lowered to a level of 3.5–4.0 m (Fig. 2, 4) (Vasiliev et al., 2019).

Sartan Age in the Basin: were there any catastrophes?

Recently, discussions about the nature of the Late Upper Paleolithic on the Upper Yenisei have taken an unexpected turn: there emerged an original version of the repeated flooding of the South Minusinsk Basin in the Late Pleistocene because of catastrophic outbursts of the waters of the Darkhat and Todzha paleolakes, reconstructed in the area of the headwaters of Big Yenisei (Biy-Khem) in Tuva and Mongolia (Arzhannikova et al., 2014; Komatsu et al., 2009). The remnants of the ancient riverbed of the Yenisei are considered as runoff valleys in the South Minusinsk Basin. Since the time of D.A. Klemenets, it has been known that in the Middle

Pleistocene, the Yenisei, after leaving the mountain gorges of the West Sayan, flowed in a northwestern direction to the modern stream of the Abakan River, and the lake depressions in the Koibal steppe are traces of the gradual displacement of the Yenisei to the east (Zyatkov, 1973: 48).

Krasnoyarsk archaeologists (Akimova, Kharevich, Stasyuk, 2020) attribute the absence of Paleolithic traces in a number of the South Minusinsk Basin valleys to hypothetical flooding. Even though I am not a specialist in Quaternary geology and paleogeography, I will consider some contradictory points of this hypothesis.

First of all, catastrophic descents of a large mass of water should have led to the erosion of low terraces, especially in mountainous conditions. However, no traces of such phenomena were found in the Sayan canyon of the Yenisei. Notably, all low terraces and floodplains here are composed of loose sandy/sandy loam deposits, and are easily eroded. As an example, I will give the results of the survey of the Maina hydroelectric power station reservoir, undertaken by V.S. Zubkov in 2013 in an assignment for the Lenhydroproekt Institute. Owing to the changes in the level of the reservoir's surface, we were instructed to examine the Neolithic to Bronze Age sites discovered here earlier by S.N. Astakhov (1989). Unfortunately, not even traces of the sites could be found; all low levels had been swept away by the river. The reason is clear: the accident that occurred in 2009 at the dam of the Sayano-Shushenskaya hydroelectric power station and the subsequent release of a huge mass of water. It was a kind of human-made analog of the hypothetical natural disasters of the Pleistocene.

As a proof of the water flow into the valleys of the Yenisei tributaries during a catastrophic breakthrough, the authors repeatedly reproduced photographs of the stratigraphic section at the Golubaya River (Arzhannikova et al., 2014: Fig. 5; Komatsu et al., 2009: Fig. 9). In reality, this was the outcrop of the back-slope part of the second terrace, which included Golubaya I studied by Astakhov in 1972 (1986: Fig. 23) (Fig. 2, 1). At present, this part of the terrace is destroyed by erosion. In an unexplainable way, in the thickness of deposits, which presumably were formed as a result of "catastrophic flood", the remains of the Late Paleolithic habitation unit, with a hearth in the center, were perfectly preserved, without any traces of disturbance of the cultural layer. The age of this stratum can hardly be correlated with the hypothetical water breakthrough 17 ka BP, since for the main third cultural layer of Golubaya I, a series of radiocarbon dates was obtained in the range of 13–12 ka BP.

In general, the stratigraphic sections of the multilayered sites of the Maina region show uninterrupted cultural development in the period from 19–18 to 10 ka BP. They lack traces of erosion, abrupt breaks in sedimentation, intrusion of lenses or layers of coarser

material (Vasiliev, 1996: 18–23, 107–112, 145–149; Vasiliev et al., 2005).

The idea that the entire lowland of the South Minusinsk Basin is a "blank spot" on the map of the Late Upper Paleolithic sites (Akimova, Kharevich, Stasyuk, 2020: 4) is not quite correct. First of all, in the valley of the middle and lower reaches of the Abakan, which, according to researchers (Arzhannikova et al., 2014: Fig. 4), was sometimes covered with water, stratified sites are known—Kongure, Ulugbil, and Sosnovoye Ozero I (Abramova, 1975; Lisitsyn, Hudiakov, 1997: 9–11, 14–16, 24–26; Lisitsyn, 2000: 94–101). In the central part of the Koibal steppe, at the Smirnovka locality, the remains of a cultural layer were found; and near Minusinsk, a stratified Paleolithic site of Bystraya II was discovered (Paleolit..., 1991: 61, 64).

According to the researchers, flooding of the Minusinsk Basin explains the absence of traces of the Paleolithic in the Oya River valley, the right tributary of the Yenisei (Akimova, Kharevich, Stasyuk, 2020: 5). This fact has been known since the time of I.T. Savenkov (1887). It should be noted that the distribution of Late Paleolithic sites in the region is clearly asymmetric. On the right bank of the Yenisei, there are much fewer of them. Many years of exploration show that here, traces of Paleolithic humans are sometimes absent even in well-developed river valleys, with a complex of Late Quaternary low terraces. An example would be the valleys of the middle reaches of the Us River (within the Us intermountain basin) and its left tributary, the Idzhim River. In the Amyl River valley, during explorations along the route of the future Kyzyl-Kuragino railway, for more than 70 km, only one destroyed Paleolithic site (Kachulka) was found; moreover, it was located in the lowest section of the river, near the formation of the Tuba River at the confluence of the Amyl and Kazyr (Vasiliev, 2020). Notably, this area contains abundant remains of Late Quaternary fauna. Examination of finds stored in the local history, factory, and school museums of the towns of Kuragino, Karatuzskoye, Berezovskoye, Bolshaya Irba, and Verkhniy Kuzhebar showed the complete absence of traces of prehistoric human impact. Probably this territory was uninhabited by humans in the Sartan Age, which may be because of the proximity to the areas of glaciation in the East Sayan.

Conclusions

To date, during many years of excavations, primarily at the sites of the Maina group, materials have been accumulated that make it possible to describe prehistoric habitation sites and to reconstruct the lifestyle of Paleolithic hunter-gatherers. Most of the sites show traces of seasonal camps near open water, with hearths

and accumulations of chipped stone scattered over the area, sometimes with the remains of light aboveground dwellings. Nearby pebble gravels served as the main source of raw material, although cases of the long-distance transportation of products made from high-quality rocks have been recorded. The exception is the workshop-site of Kuibyshevo II, confined to the outcrops of veined quartzite.

As for the cultural affiliation of the sites, the vast majority of the Late Paleolithic assemblages of the region belong to the Afontova culture. Furthermore, the latest discoveries significantly expand the area of the Kokorevo culture in the southwestern (Krivoi Chistobai I) and southeastern (Pritubinsk I) directions. The blade industry of the third cultural layer of Golubaya I stands apart. The number of variants of the Late Upper Paleolithic culture of the Yenisei is increasing, as evidenced by the discovery of a peculiar industry with foliated bifaces, represented by the materials from Kuibyshevo II (Vasiliev, Zubkov, 2021).

Despite the more than a century-long study of the Old Stone Age of the region, the Upper Yenisei basin has been studied extremely unevenly. Almost all the known sites belong to the Late Glacial, Sartan period. The collections from some sites (Oznachennoye I, Irba II) contain rare corroded artifacts, suggesting the presence of older (probably pre-Upper Paleolithic) assemblages in the region; but the sources of collection of such items by the Late Paleolithic inhabitants of the sites are unknown.

The fate of the Late Paleolithic population of the Upper Yenisei in the Holocene also remains unclear. The main unresolved problems of the archaeology of the Minusinsk Basin include the extreme rarity of Mesolithic finds, although palaeoenvironmental data do not indicate catastrophic changes in the natural environment at the turn of the Pleistocene and Holocene.

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