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Newly Discovered Remains of a Late Upper Paleolithic Dwelling in the Northern Baikal Area: Cultural Horizon 3/2 at Kovrizhka IV on the Vitim River

We describe a new complex of remains in cultural horizon 3/2 of the Kovrizhka IV site on the Vitim River in the Baikal-Patom Highlands. This feature is a cluster of archaeological remains near the hearth, enclosed by an oval pavement 4.7 m by 3.2 m, consisting of eight slabs. The feature is interpreted as the remains of a dwelling. The spatial arrangement of finds is described. Rather than taking a central position, the hearth is shifted to the probable entrance in the northeastern part. Under one of the slabs of the pavement, an ochre spot was found. Qualitative and typological characteristics of the artifact assemblage are provided. The feature yielded about 2400 lithic artifacts. On the basis of the use-wear study of selected artifacts, four retouched and unretouched flakes are identified as knives. Other tools include a biface-wedge-shaped core, a bifacial scraper-knife, two fragments of unifacial scraper-like tools, a cutting tool, and retouched flakes (altogether 12 spec.). There are also three wedge-shaped narrow-faced microcores, one of which was knapped from a bifacial preform, and two from flakes. The comparison with two dwellings and a hearth complex previously discovered at Kovrizhka IV, the results of AMS-dating (the age of the complex is estimated at ca 18.9–18.6 ka BP), and the analysis of lithics have shown that the site belongs to the early stage of the Late Upper Paleolithic of the Lower Vitim. Anthracological data indicate a tundra-steppe landscape with islets of shrubs (dwarf or shrubby willow). We conclude that the dwelling evidences a short-term occupation episode. Along with the previously excavated features of Kovrizhka IV, the complex in cultural horizon 3/2 gives an idea of the culture and subsistence strategies of the Late Upper Paleolithic people at the end of the Last Glacial Maximum.

Keywords: *Late Upper Paleolithic, Last Glacial Maximum, dwelling, hearth, microblade knapping, ochre.*

Introduction

Among the most informative Late Upper Paleolithic (LUP) sites are those with remains of dwellings with hearths. These were centers of the key human activities such as manufacture and use of tools, resource processing, preparation of food, eating, symbolic behavior, etc. The study of dwellings, therefore, contributes to the knowledge of various aspects of prehistoric culture.

In the LUP archaeology of the lower Vitim, the first discovered representative site of this sort was the site of Bolshoi Yakor I, referred to the period of ca 11.7–12.7 ka BP / 13.5–15.0 ka cal BP (Ineshin, Tetenkin, 2010). In the 2010s, the study of LUP horizons of Kovrizhka IV was initiated. These are dated to ca 18.5–19.1 ka cal BP and are the earliest well-stratified archaeological complexes in the Vitim River basin. Archaeological remains from horizons 6, 2Б, and 2Г were successively excavated and introduced into scientific circulation (Tetenkin, Henry, Klementiev, 2017; Tetenkin, 2017a, 2019; Tetenkin et al., 2018, 2021). Cultural horizons 6 and 2Г contained remains of dwellings. The totality of data received makes it possible to characterize the early LUP culture of the Vitim area (19–17 ka BP) in terms of building and functioning of dwellings, hunting activities, lithic production, seasonal mobility, exploitation of mineral and plant resources, symbolic behavior, and art. The objective of this paper is to present results of the study of the hearth and dwelling complex discovered in cultural

horizon 3/2 at Kovrizhka IV in 2015 and excavated in 2020 and 2022.

Description of the site

The site of Kovrizhka IV is located in the central part of the Baikal-Patom Highlands (Bodaibinsky District of the Irkutsk Region), on the right bank of the Vitim River in its lower reaches, on an 11-meter high erosion terrace (Fig. 1). Archaeological remains were found on an erosion cuesta delimited by gullies.

Cultural horizon 3 was recorded in the upper portion of alluvial deposits, at a depth of approximately 0.45–0.70 m from the ground surface, within deposits of dark gray aleurite. In the northern part of the excavation adjoining a gully, cultural horizon 3 had been flooded out and compressed. Slope solifluction movements of a subareal cycle resulted in the partial compression of the alluvial layer, which remained after the flood erosion event, and influenced the underlying alluvial deposits. This process affected cultural horizon 3. In the southwestern direction, the culture-bearing aleurite deposits separate; two large dark gray sublayers comprise cultural horizons 3/1 and 3/2. The eastern part of the excavation demonstrates traces of the flood erosion event that destroyed the upper portion of the alluvial deposits. After this event, there started the deposition of alluvial flood-plain sediments that incorporated cultural horizons 2A–2Д. According to the radiocarbon dates (ca 15.32–15.36 ka BP / 18.5–18.6 cal BP), this sedimentary unit was formed during a rather short period of time and is chronologically close to the previous one.

In the southwestern portion of the site, the excavation comprises a well-stratified sector of cultural horizon 3/2, where it is not mixed with cultural horizon 3/1, being separated from it by a 5–10 cm thick sterile sand sublayer (Fig. 2, 1). A test-pit made there revealed a hearth complex. Cultural remains lay in the upper part of the dark gray aleurite approximately 5 cm thick (Fig. 2, 8), overlain by light gray fine-grained sterile sand. This complex, accumulating cultural remains, was split by a cryogenic crack running from above, followed by the break-off and flexure of the adjoining parts. In



Fig. 1. The site of Kovrizhka IV.



Fig. 2. Photographs of cultural horizon 3/2 of Kovrizhka IV.

1 – stratigraphic section along D-C line; 2 – southern (rear) arc of slabs of the outer contour; 3 – spot of ochre under the slab of the southern arc; 4 – hearth; 5 – bone artifact with a hole in the center; 6 – wedge-shaped core on a biface; 7 – section of the cultural horizon near hearth slab No. 3, with a knife under it; 8 – accumulation of charcoals behind slab No. 8 and a macroblade west of it.

other areas, artifacts were found *in situ*. Bones were recovered in a poor state of preservation.

Archaeological methods

A traditional and basic set of archaeological methods applied in studying the complex included the analysis of spatial distribution, as well as morphological and morpho-techno-typological analyses. Selected specimens were visually examined with regard to use-wear traces (these findings are tentative). The petrography method was used to identify rocks and the composition of the ochre. AMS-dating was applied to determine the age of the complex.

The analysis and attribution of the hearth complex were based on previous studies in LUP archaeology. The earliest of such studies in Eastern Siberia were those at Malta and Buret in the Cis-Baikal region (Gerasimov, 1935; Okladnikov, 1941). After the discovery of dwellings at Sanny Mys, Studeny-1 and -2, Ust-Menza-1 and -2, and Sukhotino in the Trans-Baikal region (Okladnikov, 1958; Kirillov, 2003), studies of such complexes have been extensively developed, and criteria for identification of dwellings have been formulated (Konstantinov M.V., 1994; Konstantinov A.V., 2001; Razgildeeva, 2018). Over the past 50 years, in Eastern Siberia, dwellings have been discovered and attributed in the Angara area, on the Yenisei, upper Lena, and in Kamchatka (Vasiliev, 1996; Paleolit Yeniseya..., 2005; Aksenov, 2009; Dikov, 1993). Some archaeologists attempted to locate dwellings not enclosed by stone pavements around the perimeter (Lezhnenko, 1991; Aksenov, 1974; Ineshin, Tetenkin, 2010). One of the successful attempts was the discovery of a dwelling at Afontova Gora IV (Razgildeeva et al., 2022).

Radiocarbon dating

For the site of Kovrizhka IV, the first radiocarbon date of $14,290 \pm 35$ BP (UGAMS-27447) was generated on bioapatite of tooth enamel of snow sheep from cultural horizon 3 in the northern part of the terrace adjoining a gully. In that place, owing to compression, the horizon was not separated into upper and lower levels. A date of $15,310 \pm 160$ BP (Poz-106965) was obtained for the hearth in cultural horizon 3/2. It is close to that of the later horizon 2Д, the lowermost in a sequence of deposits in the eroded part of the terrace: $15,350 \pm 150$ BP

(Poz-106968). One more date of $19,810 \pm 220$ BP (Poz-131669) was generated on charcoals collected 1.6 m north of the hearth, immediately behind slab No. 8 of the contouring pavement (Fig. 3). In the zone of the charcoal accumulation (2.5×1.0 m), neither traces of fire nor concentration of cultural remains were found (see Fig. 2, 8). This date is much older than the previous ones; it stands out from the series of radiocarbon determinations. Two other dates that “fall outside” of the context were generated on charcoals from cultural horizon 2Б: $31,000 \pm 400$ BP (Poz-106961) and $31,200 \pm 400$ BP (Poz-106960) (Tetenkin et al., 2021). At the same time, cultural horizon 2Г yielded two other dates: ca 15,360–15,320 BP / 18,871–18,376 cal BP. Several assumptions can be made about the old age of the charcoals. They could have been transported by the river flood. It is also possible that inhabitants of the dwelling used ancient wood washed out and redeposited by the Vitim. Possibly, the charcoal was washed off the hearth by the flood and deposited nearby. Alternatively, it might have been carried away by people. A date of $15,520 \pm 150$ BP (Poz-131812) is available for underlying cultural horizon 3Б. Thus, taking into account the results of radiocarbon dating and stratigraphic observations, the age of cultural horizon 3/2 can be estimated to be ca 15.47–15.36 ka BP / 18.9–18.6 ka cal BP.

Results of the anthracological analysis

Two samples of sediments were taken from the hearth and sifted through a dry sieve with meshes of 0.5 and 1.0 mm, which led to the extraction of 23 fragments of wood charcoal. The fragments were observed following three sections of the wood: transversal, longitudinal tangential, and longitudinal radial. They were examined using an optical reflected-light microscope with $\times 100$ to $\times 500$ magnification. Fifteen fragments measuring from 0.5 to 1 mm were identified as willow. Judging by some indicators of the anatomical structure of the wood, willow was represented by shrubs and subshrubs (Benkova, Schweingruber, 2004). Eight fragments remained unidentified because of their small sizes.

Findings

In the complex, the hearth occupies the central place (Fig. 3). It is a washed out coaly spot of irregular

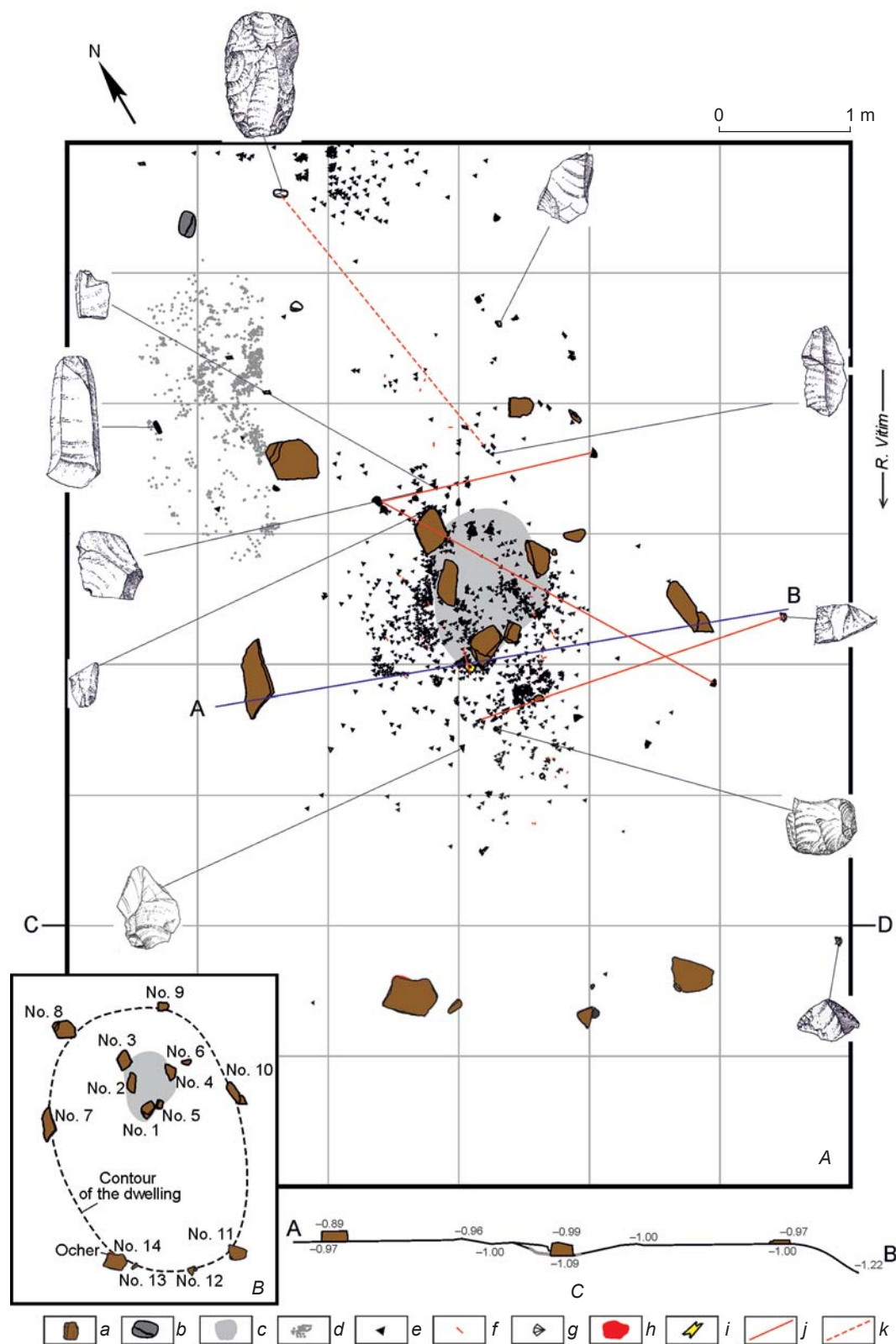


Fig. 3. Plan of location of dwelling remains (A), cultural horizon 3/2, scheme of location of slabs in the pavement (B), and profile along A–B line (C) of Kovrizhka IV.

a – gneiss slab; b – boulder; c – spot of ash; d – charcoals; e – flake removed from a stone; f – microblade; g – core; h – spot of ocher; i – fragment of bone; j – refitting relations; k – relationship between the finds, reconstructed from imported raw material.

oval shape, stretching from SW to NE and measuring 1.3×0.90 m (see Fig. 2, 4). Five hearth slabs were placed on the coals. At the western edge of the hearth, along the north-south line, three tubular fragments of amphibolite gneiss up to 35×25 cm large were found. The fourth hearth slab (amphibolite gneiss) lay at the eastern edge. The fifth slab (No. 5) was discovered at the western edge, near the first one (No. 1) (see Fig. 3).

Nearly all debitage products, forming a compact agglomerate, were located near the southern, western, and northern edges of the hearth. The density of the artifacts near the southern edge was 230 spec. per 0.25 m²; near the northern edge, it was up to 108 spec. (including chips found during water screening). Outside this concentration of debitage and slabs, the number of finds drops sharply up to 1–7 spec. per 0.25 m².

At the outer contour of the complex, four slabs of amphibolite gneiss (No. 7–10 (see Fig. 3, B)) are spaced around the circumference, 0.75 – 1.3 m west, north, and south-east of the hearth. They are 18 to 60 cm long, and 15 to 30 cm wide. The distances between the slabs are 1.3, 1.5, and 1.9 m. The southern part of this quasi contour is formed by an arc composed of two large gneiss slabs (No. 11, 14), measuring 30 – 35×25 cm and lying at a distance of 2.4 and 2.7 m from the hearth, and small tabular fragments (No. 12, 13) between them. Under the southwestern slab (No. 14), an ocher spot measuring 17×10 cm was recorded (see Fig. 2, 2, 3; 3, B). This is the only spot of ocher in the complex. One flake was found under slab No. 7 of the contouring pavement.

Outside the contour of the dwelling, the periphery of cultural horizon 3/2 was relatively clean, containing only rare artifacts. An increased concentration of debitage was noted 2.3 m north of the hearth. Possibly, it was another cluster of finds, running into the wall of the excavated area. The density of artifact distribution there increased up to 222 spec. per 0.25 m². Near the hearth (1.6 m NNW of it), right behind slab No. 8 of the outer enclosure, there was a charcoal accumulation 2.5 m \times 1.0 m without traces of fire and with just a few artifacts (see Fig. 2, 8). According to radiocarbon dates, these charcoals, as noted above, are much older than those from the hearth.

Bones show poor preservation. Only isolated fragments were recorded, and it was impossible to preserve them. However, near the southwestern hearth slab, a bone artifact of subrectangular shape was found, measuring 10.5×5.4 cm, with a 2.3×2.0 cm

hole in the center (see Fig. 2, 5). Conservation attempts failed at its preservation.

Characteristics of the lithic assemblage

The assemblage collected near the hearth comprises 2384 lithic artifacts: 2282 flakes (including 1937 chips (85 %)), 85 complete and fragmented microblades, 2 macroblades, 3 microblade wedge-shaped narrow-faced cores, 3 morphologically distinct side-scrapers (fragmented and complete), 8 flakes with irregular marginal retouch, and 1 cutting tool. On the basis of the use-wear study, three retouched and unretouched flakes, as well as two scraper-like tools, are identified as knives. This group also includes a formal side-scraper (Fig. 4, 22) recovered from the northern cluster, not yet completely excavated. Fragmented and complete microblades form 19 % of the debitage (excluding chips). Tools and cores (without chips) amount to only 3 %. Most artifacts (99 %) were made of effusive argillite, or of light green or light gray effusive rocks. Artifacts manufactured of clear or vein quartz form less than 1 %. A side-scraper and two flakes were made of effusive rock represented by brown-colored trachydacite.

The toolkit from the hearth complex is small. It includes flakes with irregular marginal retouch (Fig. 4, 9–12, 16, 17). A fragment of a scraper-like tool with a working edge formed by regular unifacial retouch (Fig. 4, 14) was found at the southeastern periphery; a fragment of a tool with two retouched working edges converging at a right angle (Fig. 4, 13) was discovered at the southern periphery. At the northern periphery, an elegant tool was found near a partly unearthed cluster. It is suboval and was manufactured from a brown trachydacite (Fig. 4, 22). Two flakes of the same rock lay near the northern edge of the hearth. The tool has a convex working element, fashioned on the longitudinal edge of the dorsal face and thoroughly retouched. The narrow ends of the artifact are rounded and thinned on the ventral face. Formally, it can be described as a side-scraper. Its closest analogue is a side-scraper from cultural horizon 6 (Tetenkin, Henry, Klementiev, 2017: Fig. 7, 2). The resemblance is all the more apparent owing to narrow ends trimmed along the ventral face, rendering the tool bifacial, a convex outline of one of the long edges, and a concave outline of the other. At the northwestern periphery, a 10 cm long macroblade with regular trihedral faceting of the dorsal surface was found (see Fig. 2, 8; 4, 18).

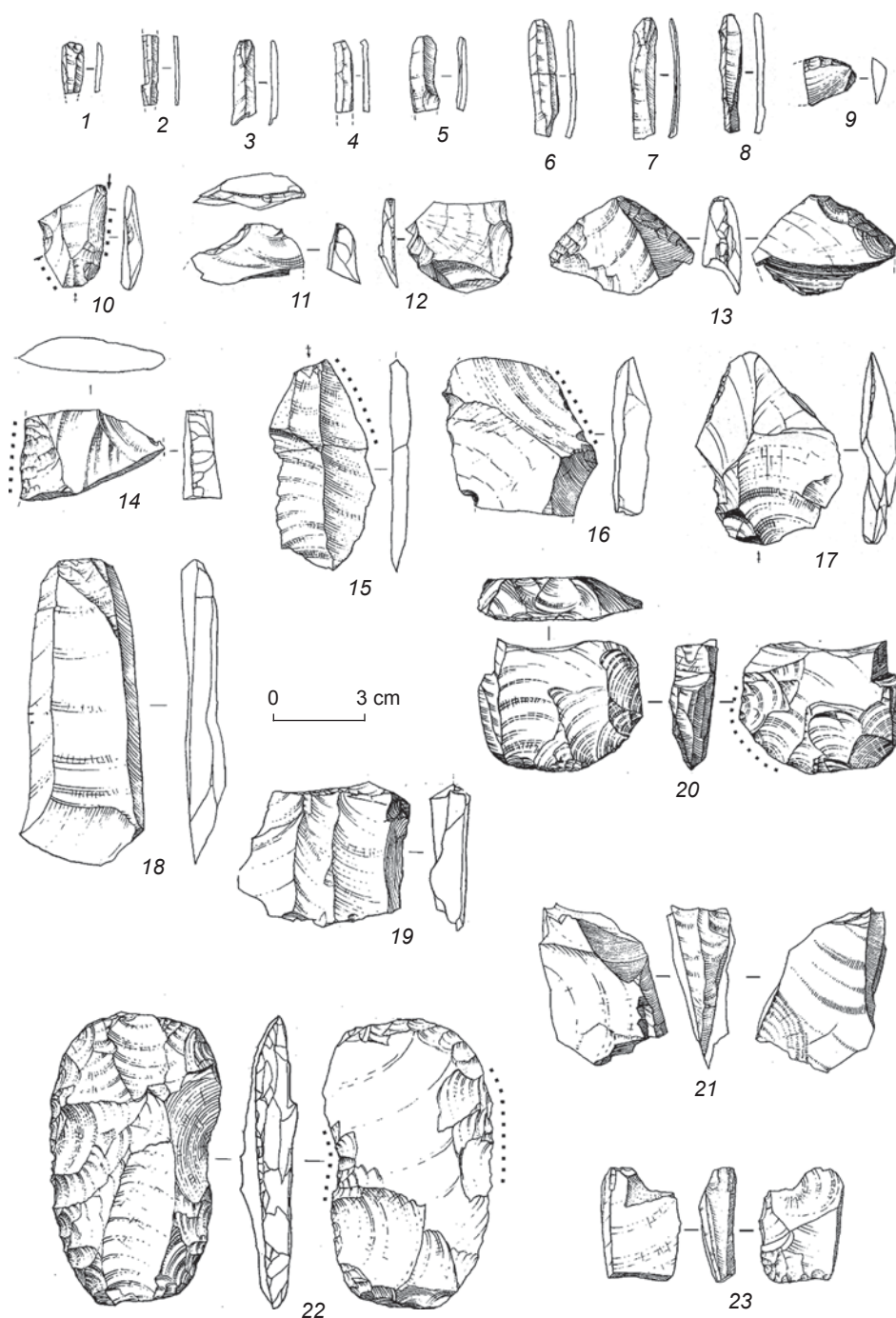


Fig. 4. Artifacts from cultural horizon 3/2 of Kovrizhka IV.

1–8 – microblades; 9, 11, 12, 17 – flakes with marginal retouch; 10 – knife-burin; 13 – fragment of a tool with two converging retouched working edges; 14–16 – knives; 18 – macroblade; 19 – frontal flake removed from a core; 20, 21, 23 – microcores; 22 – bifacial scraper-knife. 1–21, 23 – effusive argillite (?); 22 – trachydacite. Dot lines indicate working edges reconstructed by use-wear analysis.

There are only three specimens of microcores. One of these was fashioned on an oval biface (see Fig. 2, 6; 4, 20). Judging by the retrieved fragment of the frontal flake, the fractured flaking-surface was repeatedly rejuvenated. The last time, the

platform was shaped by lateral blows; it is slightly concave and, in general, typical of the cores from Kovrizhka IV (Tetenkin, 2017b). Two other cores show no traces of preparation of the keel; they can be defined as narrow-faced cores (see Fig. 4, 21, 23).

Given the nature of the rock from which microblades are made, it can be assumed that the complex included one or two more microcores.

Discussion

The paucity of lithics testifies to small amount of tool production and microblade manufacturing (see Fig. 4, 1–8). It is also indicative of knapping (mostly by facial treatment) of a limited amount of prepared stones. Judging by the distribution of cultural remains, some manufacturing operations were conducted outside the hearth complex. Excavations of level 3/2 suggest that the site was generally large, and the hearth complex was only a part of it. The studied artifact assemblage is smaller than those collected from the previously excavated dwelling (cultural horizon 6) and hearth (cultural horizon 2B) complexes: 2.4 thousand spec. (including chips) vs. 9.9 thousand spec. in the dwelling complex of cultural horizon 6 and 7.2 thousand spec. in the hearth complex of cultural horizon 2B; 85 fragments of microblades vs. 392 spec. in cultural horizon 6 and 233 spec. in cultural horizon 2B. Neither morphologically distinct end-scrapers typical of cultural horizons 3/1 and 6, nor chisel-like tools of

pièce esquillée kind typical of cultural horizons 2B and 2Г were found within cultural horizon 3/2.

The use-wear analysis demonstrated that knives were made on flakes with straight thin edges, mostly without trimming: that is, morphologically inexpressive (see Fig. 4, 10, 15, 16; 5). One unifacial tool, represented by a fragment, had a regular retouch (see Fig. 4, 14). Traces of cutting on the flake (see Fig. 4, 10) correspond to initial stages of its utilization as a tool, before remodification by a burin-blow. The biface on which the wedge-shaped core was made shows traces of wear on the counter-front, suggesting that it had been used as a tool before the striking platform was formed (see Fig. 4, 20). The scraper-like implement of trachydacite was used both as a knife and as a scraper (see Fig. 4, 22). On this tool, one series of notches runs in parallel to the edge and thus indicates the cutting movement, while the other series is perpendicular to the edge, which is typical of the scraping movement. This tool and a macroblade without use-wear traces (see Fig. 4, 18) were brought to the site in their finished form. Waste by-products resulting from their making are absent.

The presence of two bifaces (see Fig. 4, 20, 22) in cultural horizon 3/2 serves as a basis for correlation of this assemblage with the LUP Dyuktai

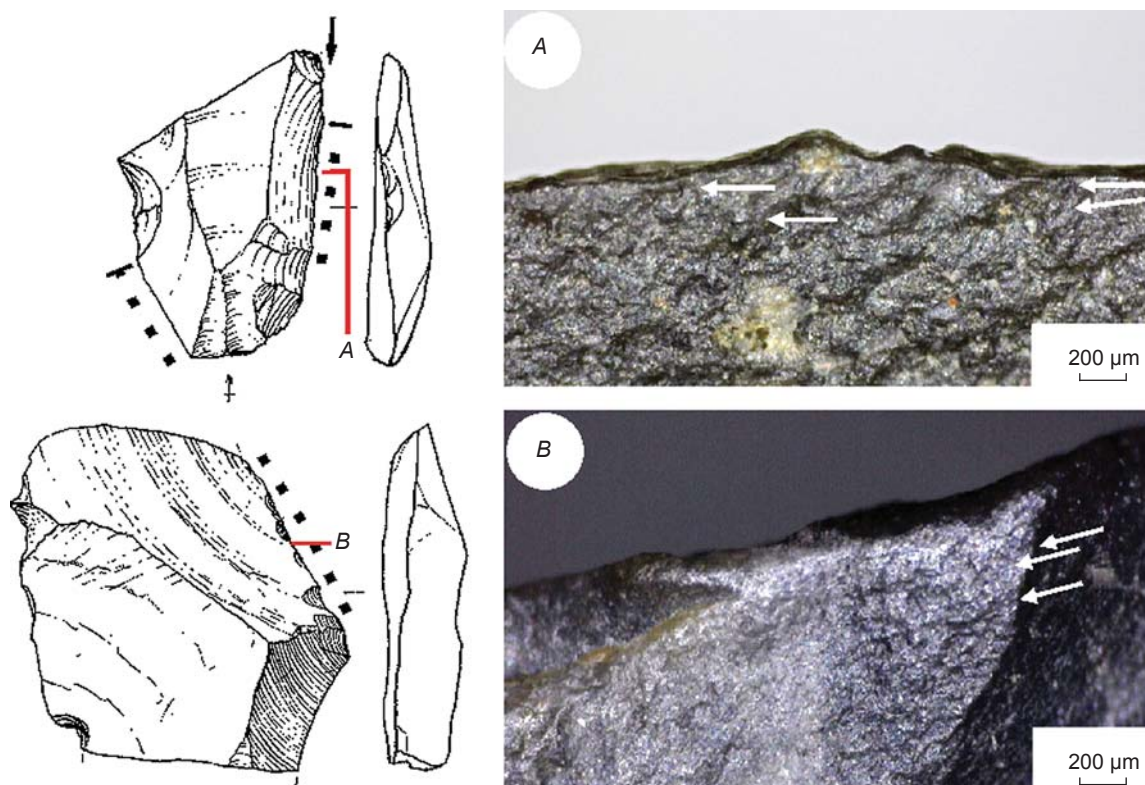


Fig. 5. Microphotographs of working edges of knives made on flakes.

culture of Northeast Asia (Mochanov, 1977). In terms of microblade knapping and the manufacture of macroblades, flakes, unifacial and bifacial scraper-like tools, the industry of cultural horizon 3/2 is typical of the early phase of LUP of the Lower Vitim, as shown by the lower (2Б–6) cultural horizons of Kovrizhka IV. The lack of end-scrapers, chisel-like implements, pebble tools, and cores for flakes and blades probably implies the absence of activities associated with such tools and thus characterizes the functional specificities of the dwelling during the certain episode of habitation.

To assess the function of the dwelling with the hearth, one should pay attention to the surrounding stones (see Fig. 3). The complete enclosure, approximately equal spaces between slabs encircling the hearth from NW to SE, and the absence of artifact clusters near the slabs suggest that the stones were arranged along the perimeter of the dwelling construction, which was approximately 4.7 m long and 3.2 m wide, stretching along the river in the SW to NE direction. Elements of the construction include: 1) hearth, 2) encircling stone pavement, 3) cluster of cultural remains near the hearth, within the outer circle of slabs and out of it—in the area interpreted as an entrance zone (Konstantinov A.V., 2001). Obviously, the stones reinforced the entrance-hearth northern part of the wall and the opposite southern one. The hearth was located not in the center of the dwelling, but rather closer to its entrance. The slabs were placed around the dying fire. This is evidenced by numerous cultural remains, including burnt bones, found under the slabs. At Kovrizhka IV, this is the third accumulation of archaeological remains recorded near the hearth and interpreted as a dwelling, after the recognition of dwelling complexes from cultural horizons 6 and 2Г, identified in the same way. In contrast, archaeological remains from cultural horizon 3/2 were associated with a smaller and, probably, simpler living space for a short-term occupation, i.e. a light dwelling reinforced with stones. The dwellings associated with cultural horizons 6 and 2Г are interpreted as winter houses (Tetenkin, Henry, Klementiev, 2017; Tetenkin et al., 2021). Notably, in cultural horizon 3/2, the spot of ocher was found under only one slab of the outer contour (lining of the dwelling), in distinction from cultural horizons 2Б, 2Г, and 6, rich in ocher. If ocher had been intentionally put under the slab (indeed, none of it was found elsewhere in the complex), then this place had a special status. According to this logic, the absence of artifacts in the southern area outside the hearth would suggest that this was

a sleeping area, and the alternation of empty areas around the hearth and those replete with artifacts may have been due to a short-term occupation. Judging from the distribution of cultural remains, the entrance was located in the northeastern part and was oriented toward the Kovrizhka spit, the same as the entrance in the dwelling of cultural horizon 6. In the dwelling considered here, the entrance faced a large utility zone, which was partially washed-out and mixed with archaeological remains of cultural horizon 3/1. From the distribution of the slabs in the outer perimeter and the location of the hearth north of the center, the above-ground construction probably had an asymmetric shape (Razgildeeva, 2018: Fig. 3.6). The fact that the artifacts (macroblade and two fragments of tools) lay at some distance from each other outside the contour lining can suggest that they were either by-products relating to activities at the hearth, or results of activities conducted outside the dwelling, or an outcome of taphonomic processes (natural postdepositional scattering).

Judging by the findings resulted from the study of cultural horizons 2Б, 2Г, and 6, the source of the ocher was a natural mineral (hematite). The ocher was obtained by crushing and friction of the rock that contained up to 94 % of hematite (Tetenkin et al., 2020).

The anthracological analysis of charcoals from the hearth revealed the remains of willow (*Salix*), which generally agrees with the conclusion based on the study of earlier cultural horizon 6 and later horizon 2Б: the late Last Glacial Maximum vegetation was of the shrub and tundra type and the environment was tundra-steppe (Henry et al., 2018). Since only this taxon is present in cultural horizons 2Б and 6, it can be conjectured that willow was the most accessible firewood on the river bank.

Taking into consideration the situation common for all alluvial cultural strata of Kovrizhka IV (location on the beach near the water edge), we can assume that the site was inhabited by people during the non-flood season, i.e. from autumn to late spring.

Conclusions

The accumulation of artifacts found in cultural horizon 3/2 near the hearth, encircled by an oval pavement of eight slabs, 4.7 × 3.2 m in size, is interpreted as a dwelling. This is the third object of this kind discovered at Kovrizhka IV; two other objects were found during previous excavations in

cultural horizons 6 and 2Г. The sparse lithic finds indicate small-scale activities, mainly focusing on the manufacture of tools (mostly butchering knives, which were then used at the site) and microblades, and on the splitting of the initially prepared stones. Despite the absence of several tool types, the appearance of the assemblage from horizon 3/2, showing microblade knapping, manufacture of macroblades, flakes, unifacial and bifacial scraper-like tools, is typical of the LUP of the Lower Vitim. The bifaces correlate with the LUP Dyuktai culture of Northeast Asia. The industry of Kovrizhka IV evidences yet another episode of human presence in the tundra-steppe landscape of the late stage of the Last Glacial Maximum, extending our knowledge of the LUP of that area. Also, like other materials from the site, the finds from cultural horizon 3/2 indicate the seasonal mobility of prehistoric hunters and characterize the river-bank settlement as repeatedly visited. The study of dwellings helps to reconstruct their layout, heating, and functioning as the key adaptive cultural tradition.

Acknowledgments

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