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A Late Paleolithic Housing and Utility Complex at Afontova Gora IV (Ovrazhnaya): New Findings (2020–2021)

The study focuses on a specific area of Afontova Gora IV (Ovrazhnaya)—a newly discovered Late Paleolithic site in Krasnoyarsk. We describe the diversity of cultural and utilitarian traditions at Afontova Gora and tackle the problem of detecting remains of dwellings in the structure of Paleolithic deposits. Brief information on the geomorphology and stratigraphy of the site and on the location of archaeological features in the paleorelief of Afontova Gora slopes is provided. We analyze the surface of the specific part of the site with remains of dwellings. Results of the statistical and typological analyses of lithics and bone artifacts are presented, along with information on microknapping and procession of stone, groups of rocks, species composition of fauna, and resource utilization. We reconstruct activities associated with various zones of the site. Results of surface (intrasite spatial) analysis are outlined. A dwelling with a single hearth and a utility zone are delimited and shown to be contemporaneous. Debitage connections are traced, places of individual activities are located, and directions whereby humans and artifacts had migrated are reconstructed. Ethnographic parallels are discussed; regularities in the distribution of cultural remains around the hearth in a radial fashion, with free deposition in certain places, are assessed. Drop zones, front and back toss zones, and microdeformations of the "floor" are pinpointed. The radiocarbon age of the complex is estimated at ~15.5 ka, based on several ^{14}C dates. It is concluded that habitation deposits with remains of a camp and one dwelling have been detected. Prospects for further studies are outlined.

Keywords: *Middle Yenisei, Afontova Gora, Late Paleolithic, housing-utility complexes, surface analysis, Late Pleistocene.*

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Introduction

Starting from the first excavations in the late 19th century (Savenkov, 1892), investigations of sites at Afontova Gora in Krasnoyarsk occupy a special place in Siberian Paleolithic studies. Archaeological, anthropological, and paleontological data, accumulated during a century and a half and characterizing elements of material culture, subsistence strategies, and environment of humans in the Yenisei part of Siberia, were amply documented in publications (Auerbach, 1930; Sosnovskiy, 1934; Gromov, 1948; Astakhov, 1999; Drozdov, Artemiev, 1997; Artemiev, Drozdov, Makulov, 2013; Derevianko et al., 2017). Before the early 1990s, sites at Afontova Gora, irrespective of the age of cultural layer and its location on the slope, were regarded as a typical "Afontovo" complex (Abramova, 1979; Astakhov, 1999) and as a standard of the eponymous culture.

The new stage in the study of Afontova Gora at the turn of the 21st century was associated with development of Krasnoyarsk infrastructure and construction of Nikolaeysky Bridge over the Yenisei. Rescue excavations, conducted in 2011–2021, encompassed both the already known sites (Afontova Gora I–V) and newly discovered locations: Krutaya, Afontova Gora II-Sklon, and Afontova Gora IV (Ovrazhnaya) (Artemiev, Razgildeeva, Prilepskaya, 2019; Geologiya paleolita Severnoi Azii…, 2020; Pozdnepaleoliticheskaya stoyanka Afontova Gora II…, 2021; Akimova, Novoseltseva, Stasyuk, 2021). The findings attest to the variation of cultural and subsistence traditions at Afontova Gora sites during the Late Karga to Late Sartan interval, allowing us to address the issue of dwelling remains in the surface structure of prehistoric sites.

Remains of Paleolithic dwellings in the Yenisei valley were previously recorded at Kokorevo I, Golubaya I, Nizhniy Idzhir, Maininskaya, Ui I (horizons 1 and 2, cultural layer 2), and Listvenka (cultural layers 16 and 19) (Abramova, 1979; Astakhov, 1986; Vasil'ev, 1996; Paleolit Yeniseya…, 2005). Field studies have demonstrated that in the places of ground frame structures, cultural layer did not always preserve the remains of hearths and outer linings.

As early as the late 1920s, P.P. Efimenko put forward a hypothesis about the presence of dwellings at the Afontova Gora mountain; however, it was not supported at that time (Gromov, 1934). Prospects of detecting structures of that type in the Final Paleolithic deposits became clear only in 2014, during the excavations at Afontova Gora II (Pozdnepaleoliticheskaya stoyanka Afontova Gora II…, 2021: 56–59).

Afontova Gora IV has been included into the cluster of Afontova Gora sites since the 1920s. Till the end of the 20th century, the site's area was provisionally attributed to the right and left slopes of Ivanikhin Log (ravine), "not far from its mouth" (Astakhov, 1999: 166). Modern boundaries of Afontova Gora IV were specified during pilot works in 2011–2019 and registered by the State Service for the Protection of Cultural Legacy of the Krasnoyarsk Territory (Novoseltseva et al., 2020: 24). In 2019, a new archaeological site of Afontova Gora IV (Ovrazhnaya) was discovered in the western part of the area (Akimova, Novoseltseva, Stasyuk, 2021: 106) (Fig. 1).

Rescue excavations at the site were headed by V.M. Novoseltseva (Institute of Archaeology and Ethnography SB RAS, Novosibirsk) in 2020 and by A.V. Barkov (OOO "Krasnoyask Geoarchaeology") in 2021. The total area of excavations exceeded 14 thousand m^2 (Fig. 1, *a*). Concentrations of archaeological remains were revealed on both sides of ravines traceable in paleorelief of the slope (Novoseltseva, Stasyuk, Akimova et al., 2020; Akimova et al., 2021). The findings shed light on specialized subsistence strategies and the structure of living areas of ancient human groups. One of these areas revealed traces of a Paleolithic dwelling.

Methodology

The study was focused on the spatial arrangement of Paleolithic sites within the paleorelief of Afontova Gora, discovery of housing and utility structures, and reconstruction of activity cycles in the life of ancient groups. During the excavations of Afontova Gora IV (Ovrazhnaya), a standard set of archaeological and natural-science methods, including modern recording techniques, was employed. Radiocarbon dating was performed in the Center for Accelerator Mass Spectrometry of the Novosibirsk State University and the Novosibirsk Science Center. The specificity of subsistence strategy and seasonality was revealed by faunal analysis. Skeletal fragments were attributed to specific carcass parts based on methods outlined by E.J. Reitz and E.S. Wing (2008).

Description of artifact assemblages was based on data obtained by techno-typological and morphological analyses (Abramova, 1979). Method of lithic artifacts refitting and analysis of groups of raw materials were employed. Composition of rocks

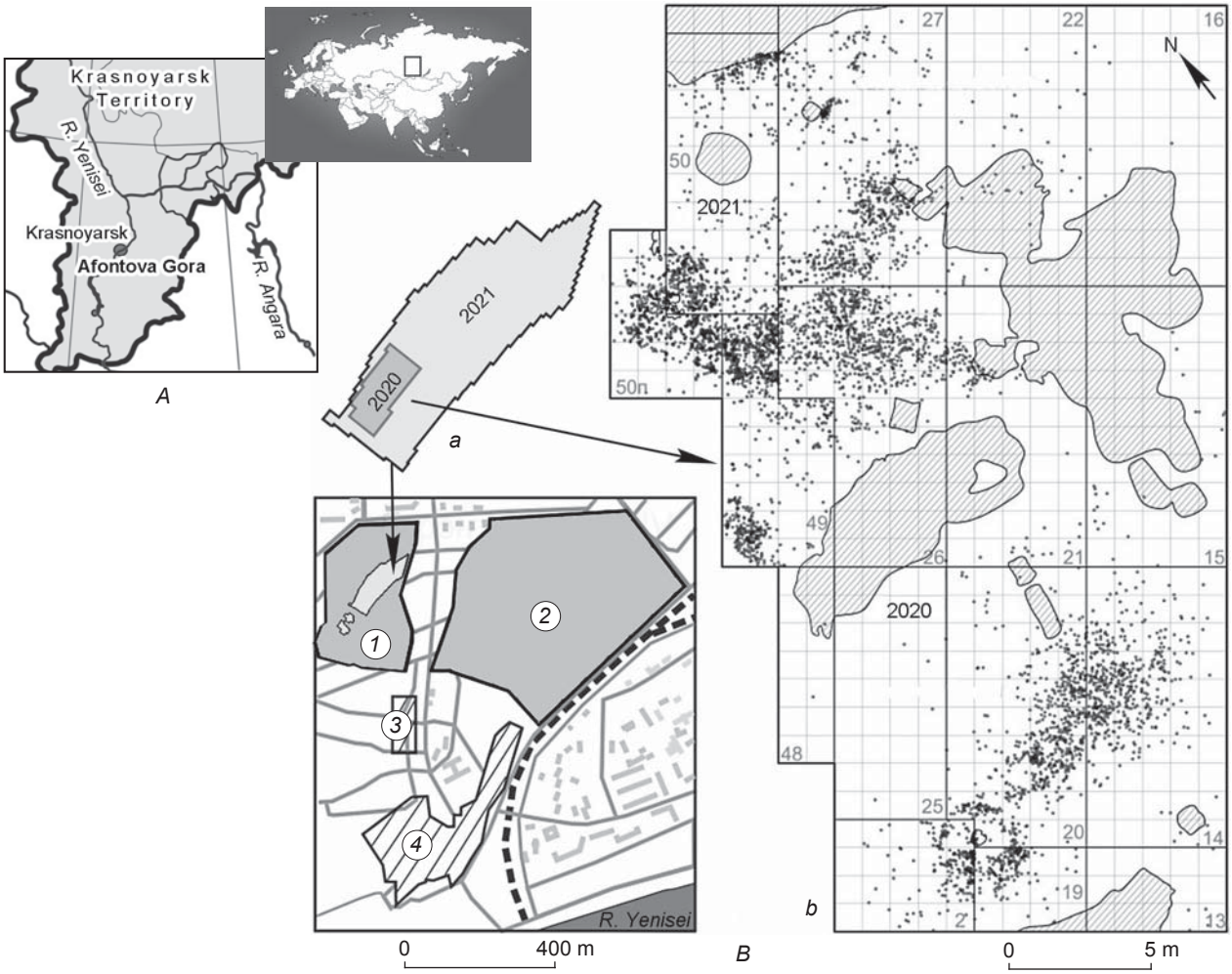

Fig. 1. Location of Afontova Gora IV (Ovrazhnaya).
A – scheme of the study area; *B* – situational plan: *1* – Afontova Gora IV (Ovrazhnaya) site, *2* – territory of Afontova Gora IV in the 1920s, *3* – Krutaya site, *4* – Afontova Gora II site. Boxes: *a* – areas excavated in 2020 and 2021; *b* – plan of excavations 3 and 4 (zones of the southern and northern complexes).

and sources of raw material were identified. Apart from traditional methods, the study of living areas included 3D-modeling of ancient relief and analysis of the concentric arrangement of artifacts (Leonova, 1989; Ineshin, Tetenkin, 2010; Leroi-Gourhan, Brezillon, 1972; Stapert, 1989; Larson, Kornfeld, 1997; Razgildeeva, 2008). Spatial analysis was used to detect housing and utility zones, their relationships, synchronicity or asynchronicity in the formation of features, reconstruction of activities, and cultural contexts with their chronology.

Geomorphology and stratigraphy

The western portion of the Afontova Gora IV (Ovrazhnaya) site is located on the plateau-like top surface of the Afontova Gora mountain, at hypsometric levels of 220–236 m according to the Baltic Height System. The site is situated within the covering sediments of 85–101 m a high Yenisei terrace that transits into a long gentle slope facing the southeast. Ravines, which are hardly visible in the modern city landscape, cross the slope. The streets of Ovrazhnaya, 1st Baikitskaya, and Yubileinaya actually run along the walls of the ancient ravines. Private houses and production facilities of the "Kraslesmash" Plant were also situated there.

During the 20th century, economic utilization of Afontova Gora was accompanied by anthropogenic impact on the slope's relief. As a result, the upper portion of covering sediments was destroyed all over the slope. The modern soil layer includes technogenic remains mirroring the historic construction

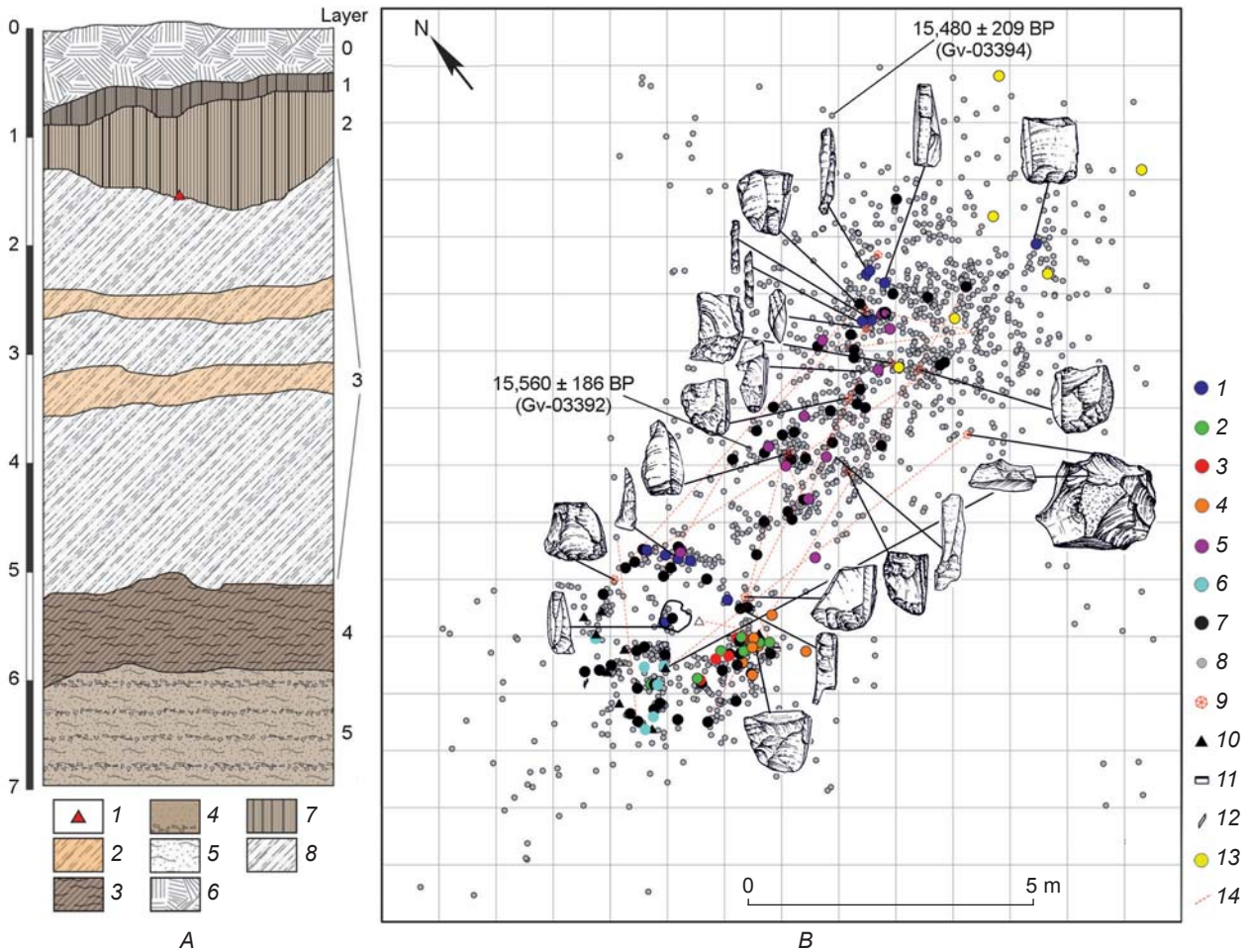

Fig. 2. Stratigraphy of the Late Pleistocene sediments excavated in 2020 (*A*), plan of the southern complex (*B*).
A: 1 – culture-bearing horizon, *2* – loess sandy loams with low humus content, *3* – humic loess loams, *4* – fine rock debris, *5* – stratified sandy loams, *6* – technogenic remains, *7* – humic sandy loams, *8* – loess sandy loams; *B*: *1–7* – groups of raw materials, *8* – find locations, *9* – core, *10* – retouched flakes, *11* – retouched blades, *12* – bladelets, *13* – tusk fragments, *14* – refitting patterns.

development and the subsequent reconstruction of the district.

The excavated covering sediments consist of subaerial sandy loams of deluvial origin (Fig. 2, *A*). Fragments of Middle Holocene soils were preserved in sediments filling the negative landforms. Early Holocene sandy loams with low humus content form a layer up to 0.4 m thick, with a thin bed of paleosol in its base. Sartan loess-like carbonated sandy loams with paleosol horizons lie below (Novoseltseva, Stasyuk, Akimova et al., 2020: 182–184). Late Paleolithic artifacts were found in the upper part of the Final Pleistocene sediments between the light brown and whitish carbonated loams.

At the site of Afontova Gora IV (Ovrazhnaya), a concentration of archaeological remains was recorded in the southwestern part of excavation 3 and in the adjacent portion of excavation 4. It was associated with the northern wall of a large ravine dissecting the slope in the W–NE direction. The examined part of the site measures ~75 m^2. It extends from west to east for 16.5 m (see Fig. 1, *b*).

Lithic and bone artifacts

The collections of archaeological (1315 spec.) and faunal (2257 items) materials are relevant to domestic and hunting-gathering activities of ancient groups, and their environment. Lithic artifact assemblage is dominated by microsized products of flaking: cores, spalls, flakes, chips, complete and fragmented microblades (Table 1). The main source of raw materials (sandstones, aleurites and argillites varying in degree of silicification, jasperoids, rhyolites, flints, fine-grained quartzites, and

Table 1. **Composition of lithic assemblage from Afontova Gora IV (Ovrazhnaya)*, spec.**

Excavation/area number	Cores	Flakes				Blades	Microblades	Flakes	Chips	Graphite	Fragmented pebbles	Tools							Total
		modification of microcores	blade	backed	core trimming							End-scrapers	Side-scrapers	Retouched flakes/blades	Chisel-like	Burins	Tool fragments	Pebble tools	
3-14	2	2	5	11	5	7	14	39	236	–	2	1	2	1	–	–	–	1	328
3-20	8	8	4	10	15	27	41	96	457	–	–	4	1	–	1	1	1	2	676
3-19	1	1	–	6	7	13	7	42	51	–	–	–	1	3	–	–	1	–	133
4-2	–	–	–	–	50	5	12	33	66	6	–	1	–	2	–	–	3	–	178
Subtotal	11	11	9	27	77	52	74	210	810	6	2	6	4	6	1	1	5	3	1315

*Tables 1–3 present the numbers of finds of specific categories from various sectors of the excavated area.

chalcedonies*) were pebbles scattered on the banks of the Yenisei and its tributaries, as well as local exposures of bedrocks (microsyenites) upstream of the Yenisei, near Nikolayevskaya Hill. As the analysis of flakes has shown, stones of at least 22 raw-material categories were used in the production cycle. However, not a single core for large- or medium-sized blades was found.

Negative scars of unidirectional removals and remains of cortex on dorsal faces of blades and blade spalls serve as evidence of primary reduction of single- and double-platform cores with one flaking surface. Refitting of two side-scrapers illustrates the technique of longitudinal knapping (Fig. 3, *10*, *14*).

The process of micro-knapping is characterized by nine wedge-shaped microcores (Fig. 3, *1–3*), complete and broken microblades, ridge and ski spalls. Microcores were manufactured on large flakes and fragments of blades. Microcores are small: the height of flaking face normally does not exceed 2.5 cm; at the stage of preform, core trimming elements are slightly larger than 3 cm. The width of removal negatives is up to 1.0–1.5 mm; the width of microblade-inserts for a slotted antler tool is 3 mm (Fig. 3, *12*).

*Identification of rocks by Y.M. Makhlaeva.

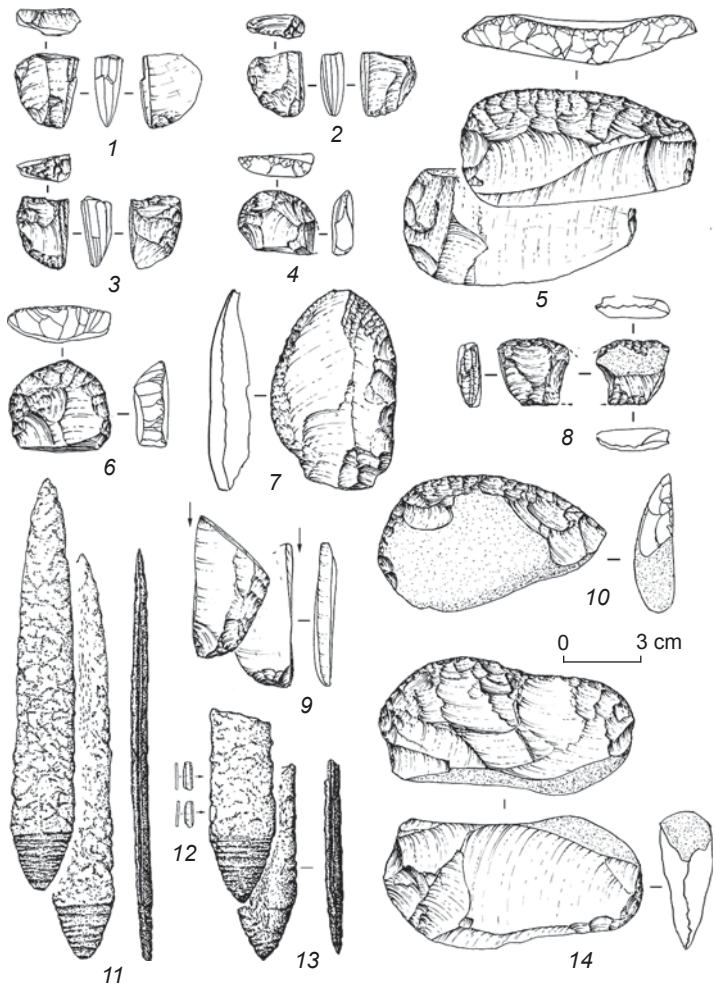

Fig. 3. Stone and bone artifacts from Afontova Gora IV (Ovrazhnaya).
1–3 – microcores; *4*, *6* – end-scrapers; *5*, *10*, *14* – scraper-like tools; *7* – knife-like tool; *8* – chisel-like tool; *9* – burin; *11*, *13* – antler insert tools; *12* – microblade-inserts.

Table 2. **Taxonomic composition of the faunal assemblage from Afontova Gora IV (Ovrazhnaya), spec.**

Excavation/ area number	Rodents	Arctic fox	Extinct horse	Maral deer	Reindeer	Cervidae	Argali	Large ungulates	Medium ungulates	Unidentifiable	Mammoth	Total
3-13	1	–	–	1	4	–	–	–	15	1	–	22
3-14	–	1	–	–	199	37	1	–	853	85	11	1187
3-19	–	–	–	–	27	8	–	–	48	77	–	160
3-20	–	–	–	–	76	28	1	–	488	117	9	719
3-25	–	–	–	–	1	2	–	–	11	3	–	17
4-2	–	–	2	–	33	1	–	3	28	85	–	152
Subtotal	1	1	2	1	340	76	2	3	1443	368	20	2257

Tools were manufactured on spalls of various kinds: side-scrapers and knife-like implements were fashioned on large pieces, including blade-like; end-scrapers were made on flakes and blades. Scalar retouch was most common. Various types of retouch, from scalar multifaceted to narrow elongated, can be observed on one and the same tool. The striking angle determined the sharpness of working edges and the function of tools.

Tools form 2 % of all artifacts (Table 1). Stone tools number 26, including flakes and fragments of retouched blades.

Unifacial end-scrapers (6 spec.) (Fig. 3, *4*, *6*) and longitudinal side-scrapers (4 spec.) (Fig. 3, *5*, *10*, *14*) are typologically distinct. Wedge-shaped sharp working edge of one tool (Fig. 3, *14*) implies its use as a knife. Two other tools are also identified as knives (Fig. 3, *7*). Five implements are represented by fragments. The assemblage comprises a burin on a large blade's fragment (spall) (Fig. 3, *9*) and a chisel-like tool on an exhausted microcore (Fig. 3, *8*). Two planing tools and a hammerstone are included into the group of pebble tools.

A clutch-handle (14.5 × 2.7 × 1.5 cm) and two slotted points (Fig. 3, *11*, *13*) were made of reindeer antler. A complete specimen of an elongate symmetrical shape (15.0 × × 2.4 cm; width of the slot is 2 mm) has a wedge-shaped chipped base (angle ~60) and a series of horizontal straight lines along the both sides. A fragment (7.5 × 2.5 cm) is similar to the complete implement. The bases of the points are 2.3 and 2.5 cm long, respectively. Two inserts (medial parts of unretouched microblades) were found in association with the point fragment.

Spatial structure of the complex

Surface (intrasite spatial) analysis revealed the pattern in the distribution of archaeological remains. A hearth and accumulations of artifacts and fauna remains served as structure-forming elements of the occupation surface (Table 2). At the periphery of the utility zones, fractured bones and antlers (mostly reindeer) were scattered.

The hearth was represented by a round ash spot (0.65 m in diameter) with indistinct outlines. Small charcoals and grayish inclusions were found in the infill of the hearth. The lens with the burnt sediment was 5–7 cm thick. In the center of the spot's surface and near its northeastern boundary, two stone fragments were found. Several flakes and fragments of split bones, including those with epiphyses, lay in the western zone. Rounded coaly spots up to 0.1 m in diameter were detected on the background of light sandy loam, 0.15–0.20 m from the hearth, on three sides. Two of them were located northeast of the hearth, in line with the stones (Fig. 4, *B*).

According to the 3D-model of the layer surface, with generally unsegmented relief smoothly inclining in the southeastern direction, artifacts in the southwestern part of the dwelling area followed the concentric structure pattern (Stapert, 1989: 4–5). At a distance of 3.5–4.0 m from the hearth, in the microrelief of the layer, outlines of a circle with prominent "walls" were recorded. Locations of microdebitage and groups of tools formed a circle with a radius of 1.2–2.0 m from the center of the hearth (see Fig. 2, *B*). Excavations revealed no construction elements that could artificially form the boundaries for the accumulations of finds.

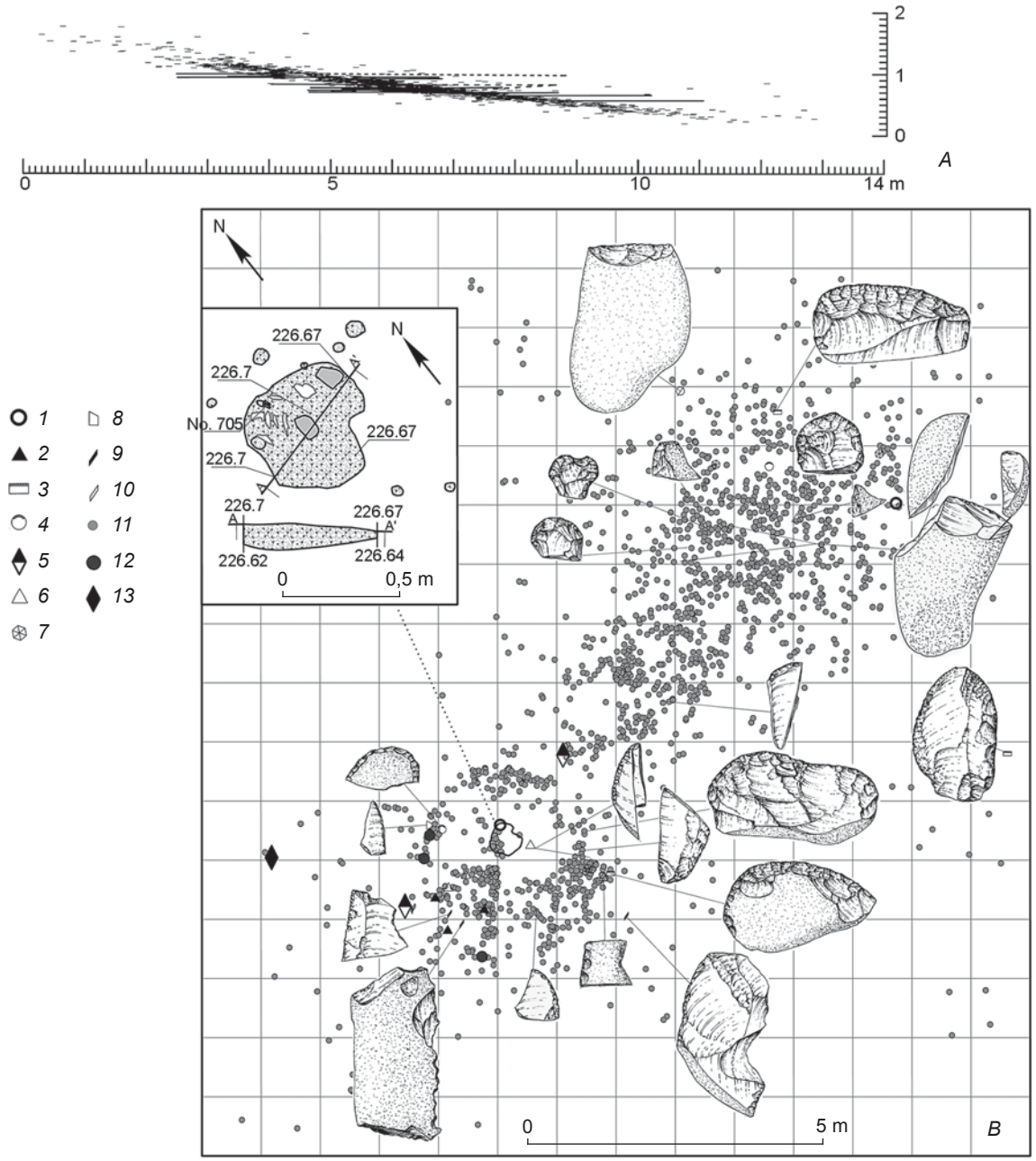

Fig. 4. Profile of find locations and refitting patterns (*A*), plan of housing and utility complex, arrangement of tools (*B*) at Afontova Gora IV (Ovrazhnaya). Box: plan and profile of the hearth.
1 – fragments of pebble tools; *2* – retouched flakes; *3* – retouched blades; *4* – end-scrapers; *5* – slotted tools; *6* – fragments of tools; *7* – cores; *8* – burin; *9* – retouched bladelet; *10* – bladelet; *11* – find locations; *12* – graphite; *13* – antler clutch.

The distribution and nature of finds provide an idea of their formation around the hearth during the domestic and subsistence activities resulting in the formation of toss zones showing radial structures (Binford, 1978; Leroi-Gourhan, Brezillon, 1972; Grøn et al., 1999; Oetellar, 2007). Cuplike microrelief of the "floor" indicates local compaction of the ground—a natural component of the layer.

In the concentration around the hearth, microartifacts prevailed: a chisel-like tool, two microcores, and flakes detached from such nuclei. The analysis of refuse categories* allowed us to detect knapping and utilization zones, including those

*We analyzed rocks differing from those of flakes in hardness, transparency, and color.

Table 3. **Categories of reindeer skeletal remains from Afontova Gora IV (Ovrazhnaya), spec.**

Excavation/ area number	Part of carcass								Joints		
	Antler	Cranium	Axial skeleton	Forequarter	Hindquarter	Foreleg	Hindleg	Hoof parts	elbow	carpal	ankle
3-13	2	–	–	2	–	–	–	–	–	–	–
3-14	41	45	1	8	14	3	83	4	2	–	6
3-19	15	2	–	–	2	–	8	–	–	–	–
3-20	11	10	3	12	8	5	24	3	2	1	3
3-25	–	–	–	–	1	–	–	–	–	–	–
4-2	4	1	2	6	2	6	8	1	–	3	–
Subtotal	73	58	6	28	27	14	123	8	4	4	9

that had not been revealed by excavations. These places, which we believe to be areas of individual activity, are associated with specific groups of tools (see Fig. 4).

In the sectors located to the south and southwest of the hearth, fragments of tools with thin edges prevailed. A part of an antler point with inserts was among them (Fig. 3, *13*). In the northwestern sector, the only fragment of an end-scraper's edge lay under a piece of long bone. A knife-like tool and pieces of graphite (see Fig. 4) were found nearby. East of the hearth, two side-scrapers (see Fig. 3, *10*, *14*), a burin (see Fig. 3, *9*), and a fragment of an implement on a primary blade were unearthed.

Subsistence and domestic activities near the hearth included several kinds of works associated with processing food resources. Judging by the composition of identifiable bone assemblage, meaty parts (fore- and hindquarters) of reindeer were butchered. The intensity of this activity is indicated by the crumbling of working edges and by the fragmentary nature of tools. All the tools found near the hearth, excluding side-scrapers, were broken. Composition of debitage corresponds to the final stage of reduction of flint and quartzite microcores.

Faunal remains found within 3.5–4.0 m from the hearth, at the outer border of depression in the microrelief of the circular structure, included cranial bones (2 spec.), antler fragments (15 spec.), and bones of lower limbs (ankle joints in anatomical order) of reindeer. These bones are associated with the first stage of butchering. The predominance of hind leg bones (Table 3) can be due to a large number of metatarsal bone shaft fragments, which are easily identifiable.

A tail-like accumulation of archaeological remains was recorded northeast of the hearth. Tool categories and refitting patterns suggest a single domestic and cultural context, and the direction in which items and humans involved in working operations had moved—from the hearth zone to the outer area (see Fig. 2, *B*).

Faunal materials correspond to primary processing of carcasses (Table 3). Concentration of antlers can probably be explained by their selection for further processing. Bones of reindeer prevail (92.6 % of attributable specimens); remains of other animals are rare.

Remains of skulls and distal parts of limbs dominate the collection of reindeer bones. They have been traditionally viewed as products valued by those who procured them, and they are heavily fragmented because they had been crudely opened to extract brain and marrow at the butchering place. Axial bones (vertebra and ribs) are few, probably because carcasses were being prepared for transportation. Fore- and hindquarters of carcasses were only partially used for food. It is hard to explain why phalanges are so few while being the most numerous among the distal skeletal parts.

The number of teeth of various categories (seven pd4 and two abraded m3) suggests that they belonged to at least two adult and seven juvenile reindeer. Judging by the attrition of deciduous teeth, individuals below one year of age were hunted from autumn to spring.

The analysis of clusters of faunal remains and associated groups of tools and microdebitage allowed us to locate the zones where apparently one or two persons worked simultaneously. One of them was

located 4.3 m east of the hearth. Faunal remains point to butchering of reindeer. Artifact assemblage comprises flakes detached from microcores of grayish-black and blacky-brown flint, and fine-grained green sandstone. Tools are represented by small unmodified flakes with utilization retouch and use-wear traces. Two wedge-shaped microcores are similar in design (see Fig. 3, *2*, *3*).

The second working place is located 6.3 m from the hearth. This place is characterized by statistical dominance of faunal remains and their irregular distribution. The assemblage contains bones of reindeer (including those of juvenile animals), phalanges of argali, and a fragment of red deer maxilla. Unmatched fragments of mammoth tusk lay compactly together with pieces of antlers (see Fig. 2, *B*). These probably represent the collection of raw material, since no mammoth bones were found there. Analysis of microflakes shows that nodules of black flint were knapped. Resulting microcores demonstrate the final stage of exhaustion.

Eight tools were typologically identified, including two implements on pebbles defined as chopping tools. Flakes refittable to one of them were found in the center of bone accumulation, near two end-scrapers (see Fig. 3, *4*) and a fragment of retouched blade. East of that place, a tool fragment, a rounded end-scraper of brown microquartzite (see Fig. 3, *6*), and a longitudinal side-scraper/knife on a blade-like spall of reddish-brown rock (microquartzite or microsyenite) (see Fig. 3, *5*) were found. A side-scraper/knife (see Fig. 3, *7*) and a fragment of retouched flake were made of the same rocks, though of another tint. Microflakes of these rocks were discovered in the utility zone among bone remains; isolated specimens lay near the hearth together with a burin and a microcore (see Fig. 2, *B*). Fragments of elongate pebbles, including refittable, were found in the bone accumulations. Given the surface wear, fractures, and robusticity of pieces of coarse-grained rocks, it can be suggested that these evidently had different purposes.

Discussion and results

Findings at the Afontova Gora IV (Ovrazhnaya) area are relevant to the functioning of a seasonal reindeer hunting camp. Refitting patterns, groups of raw materials, and spatial distribution of remains suggest a single context of human activities (see Fig. 2, *B*). The intrasite spatial analysis revealed two contextually related features within the habitation zone.

The first feature includes several circular structures, showing ethnographic parallels (Vasil'ev et al., 2007: 12). The heat radiated by the hearth determined the location of resting and domestic activity areas, affecting the formation of toss and drop zones.

Near the hearth, microdebitage contained point clusters of raw material elements corresponding to the places where specific operations were conducted. In the zone to the southeast of the hearth, the toolkit, comprising large side-scrapers, shows high variability. Zones to the south and southwest of the hearth contained more faunal remains and scattered microdebitage than the above one (see Fig. 2, *B*).

The back toss zone was formed by fragments of unidentifiable bones. Only in the outer border of the southwestern sector were the limb bones of reindeer found in anatomical order. An antler clutch-handle and fragmented antlers lay nearby.

The interpretation of the complex with the hearth is debatable. Judging by spatial distribution of the finds, a light above-ground construction (shed) with one hearth, resembling *chum*, could have existed at the site. In distinction from the utility zone, the space around the hearth is "clean" and has a distinct concentric structure. The absence of debitage in the area surrounding the hearth could have been due to a variety of reasons.

The following observations testify in favor of the assumption about the closed above-ground construction: location of the hearth in the center; a relatively regular shape of the infill lens; circular distribution of microdebitage in the front toss zone; proximity of places of individual activities to the hearth; concentration of bone remains representing "kitchen" waste near the hearth; agreement between the direction of the long axis of the outer cluster and the eastern sector of the hearth complex; cuplike depression in the "floor" microrelief, and the placement of refuse in the back toss zone within this depression.

The second feature in the structure of the site—a utility area with two butchering places—is located east of the hearth complex.

The subsistence cycle implied migration of the group to the hunting grounds; selection of place and construction of camp, recreation zone, and hearth; slaughtering of animals, transportation, and butchering of carcasses; preliminary processing of hides and bones; utilization of food resources. Ungulate mammals of at least three species were main objects of hunting. As the tools got worn, they were replaced by new ones.

The tentative interpretation of purpose of the tools is based on their technical and morphological characteristics, as well as on data of use-wear analysis of tools from Late Paleolithic sites in the Yenisei region (Shchelinskiy, 1972; Abramova, Shchelinskiy, 1973).

Slotted antler tools were defined as items of hunting inventory. They lay practically at an equal distance from the hearth (1.8–1.9 m): a point fragment with two inserts and a complete specimen were located to the west and to the east, respectively (see Fig. 4). Stone tools with scraping and cutting edges were used both for butchering and processing of various organic materials.

Fragments of flint and quartzite microcores and small flakes detached from them point to the need for high-quality tools. Judging by the composition of core trimming elements, microcores brought to the site in the finished form were repeatedly modified. The degree of their exhaustion indicates scarcity of resources.

Isolated, relatively large cortex flakes are the result of shaping the pebble tools at the site. River pebbles 10–15 cm long were used as blanks. Size of stones permits their transportation even for a fairly long distance.

The analysis of raw materials indicates the choice of rocks with hardness equaling 6.5–7.0 on the Mohs scale. The assemblage comprises cores and tools made of grayish-black, blackish-brawn, and black flint, as well as of grayish-blackish-orange, white, orange, and milky quartzite. Microquartzites of subdued red color with inclusions of feldspar with dark-colored minerals (pyroxene) are also represented.

The predominance (65 %) of microflakes among the primary knapping products is due to the wear of working edges of tools under a short cycle of primary knapping. An extreme exhaustion of microcores, the use of randomly shaped flakes, and the fragmentary nature of tools testify to intense exploitation. The entire material complex, including faunal remains, indicates a focus on butchering activities.

Faunal materials of the site under study show the composition of game typical of the Late Paleolithic of the Yenisei region (Klementiev, 2021), with the dominance of reindeer (*Rangifer tarandus*) (see Table 2). Bones of extinct horse (*Equus ferus*), red deer (*Cervus* sp.), argali (*Ovis ammon*), and arctic fox (*Alopex lagopus*) point to a wider spectrum of game animals. Bones of animals of these species are sporadic. They were deposited on the periphery of the utility zone. The exception is argali bones found inside the cluster in the utility zone.

Uncalibrated radiocarbon dates were generated on reindeer metatarsal bones: 15,480 ± 209 BP (GV-03394) and 15,560 ± 186 BP (GV-03392). A date of 15,570 ± ± 205 BP (GV-03391) was obtained for a reindeer pelvic bone found northwest of the complex under study, in the neighboring area of the site (see Fig. 2, *B*).

Conclusions

Excavations at Afontova Gora IV (Ovrazhnaya) have revealed a complex spatial structure of habitation areas during the periods of seasonal hunting. The spatial analysis of the cultural layer allowed us, for the first time at this site, to separate two interrelated features: a dwelling with a single hearth and a utility area. Regularities in the distribution of remains, refitting patterns, and the nature of raw material indicate contemporaneity of both features. Artifacts and faunal remains attest to hunting as the primary activity of human groups living on the southeastern slope of the mountain during the Sartan period. The study demonstrates that cultural deposits at Afontova Gora IV (Ovrazhnaya) are preserved *in situ*.

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