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Fossil Bone Implements in the Industry of the Early Paleolithic Site Bogatyri/Sinyaya Balka (Taman Peninsula)

We describe three processed fossilized bones of sea mammals of the Miocene age, discovered in various years, but in similar stratigraphic and planigraphic contexts, at the Early Paleolithic site Bogatyri/Sinyaya Balka, on the northern coast of the Taman Peninsula. We provide information on the age, stratigraphy, and planigraphy of the site, interpreted as a place for butchering carcasses of elephants and rhinoceroses (elasmotheres). Results of traceological analysis suggest that two fossilized seal bones had been split by the counterstrike technique on soft (wooden or bone) anvils, while the third bone had been more thoroughly processed. All three specimens may have been collected from coastal deposits. Fossilized seal bones were evidently used as raw material along with rocks and animal bones of the Taman faunal complex. Small and inconvenient as they are, such bones provided the hardest isotropic material available at the site. That their use was not incidental is convincingly demonstrated by artifact No. 1, found in 2005. The point made on this bone is situated in the middle of an intentionally prepared blade, in a notch fashioned by shallow retouch. This bone tool is quite similar to other points in the Early Paleolithic industry of Bogatyri/Sinyaya Balka. Tools of that category differ in shape and size, but are similar because of a special morphological element—a point (bec, borer, etc.) shaped by a combination of retouch and small encoches at any suitable place in the blank such as jointing or spall.

Keywords: *Early Paleolithic, Northern Eurasia, Bogatyri/Sinyaya Balka, Paleolithic industries, fossilized bone artifacts, morphological and traceological analyzes.*

Introduction

The Early Paleolithic site of Bogatyri/Sinyaya Balka, which is part of the Taman Paleolithic complex (Fig. 1, 2), was discovered in 2002 at the paleontological locality Sinyaya Balka, a typical site of the Taman faunal complex (Gromov, 1948), in the course of its examination by members of the Ilskaya Paleolithic Expedition of

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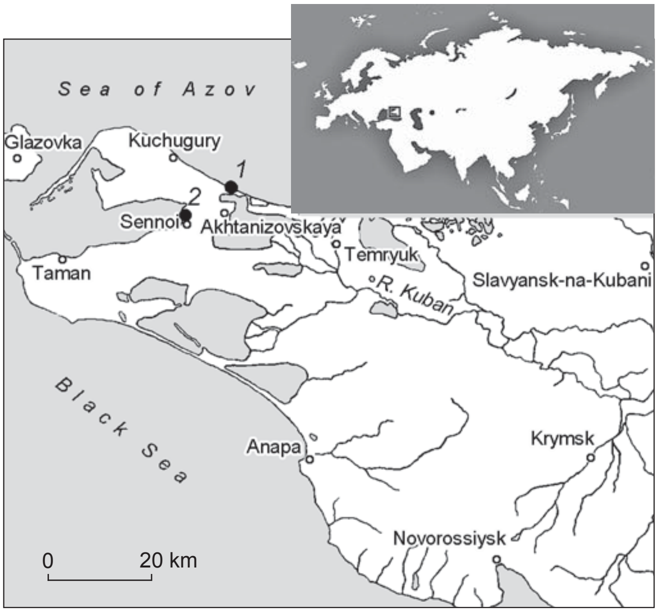


Fig. 1. Location of sites of the Taman Paleolithic complex.
1 – the Early Paleolithic sites of Bogatyri/Sinyaya Balka, Rodniki-1, -2, Kermek; *2* – Tsymbal locality.

the Institute for the History of Material Culture of RAS (Shchelinsky, Bozinski, Kulakov, 2003; Shchelinsky et al., 2004). Systematic excavations of the site, which began in 2003 (Kulakov, Shchelinsky, 2004), have been carried out (with interruptions) until today (Kulakov, 2018b; Kulakov, 2019b).

In 2007, during excavations in sq. 59/2, the processed bone of a marine animal was first found here. It was located in the lower part of layer 4, at the boundary with the sand layer. It must be admitted that as long as this artifact was the only one of its kind, we interpreted it with the utmost caution. In 2018, during excavations at Bogatyri/Sinyaya Balka in sq. 61/4, also at the boundary of the sands of layer 3 and the bone-bearing lens (layer 4), a second processed fossilized bone of a marine animal was discovered. In 2020, in Bogatyri/Sinyaya Balka excavation area 01, in sq. 60/4, also at the contact of layers 3 and 4, a third processed fossilized bone of a marine animal was found.

The discovery of such rare artifacts in the same excavation-area in the same stratigraphic and planigraphic context suggests that the skills of processing various raw materials had been developed already in the ancient, Oldowan, tool-making technologies.

General information about the site

The Early Paleolithic site of Bogatyri/Sinyaya Balka is a generally accepted evidence of the initial human dispersal from the African continent (Amirkhanov, 2016; Derevianko, 2009). Materials from studies conducted in 2003–2008, 2011, 2016, and 2018–2020 allow us to consider the site as a unique example of the adaptation of the most ancient collectives, presumably *Homo erectus*, to the specific conditions of the temperate zone of Northern Eurasia in the Early Pleistocene (Kulakov, 2018c).

The age of the site, as well as of the Taman faunal complex itself, is 1.2–0.8 million years (Trubikhin, Chepalyga, Kulakov, 2017; Kulakov, 2019b; Shchelinsky et al., 2010). However, in recent years, paleontologists have considered it possible to shift its lower boundary to 1.4–1.6 million years (Sablin, 2010; Titov, Tesakov, 2009).

Stratigraphy and planigraphy of Bogatyri/Sinyaya Balka (Fig. 3, 4) represent a clear picture of the processes

Fig. 2. Location of the Early Paleolithic sites on the northern coast of the Taman Peninsula.
1 – Bogatyri/Sinyaya Balka; *2* – Rodniki-1; *3* – Rodniki-2; *4* – Kermek.

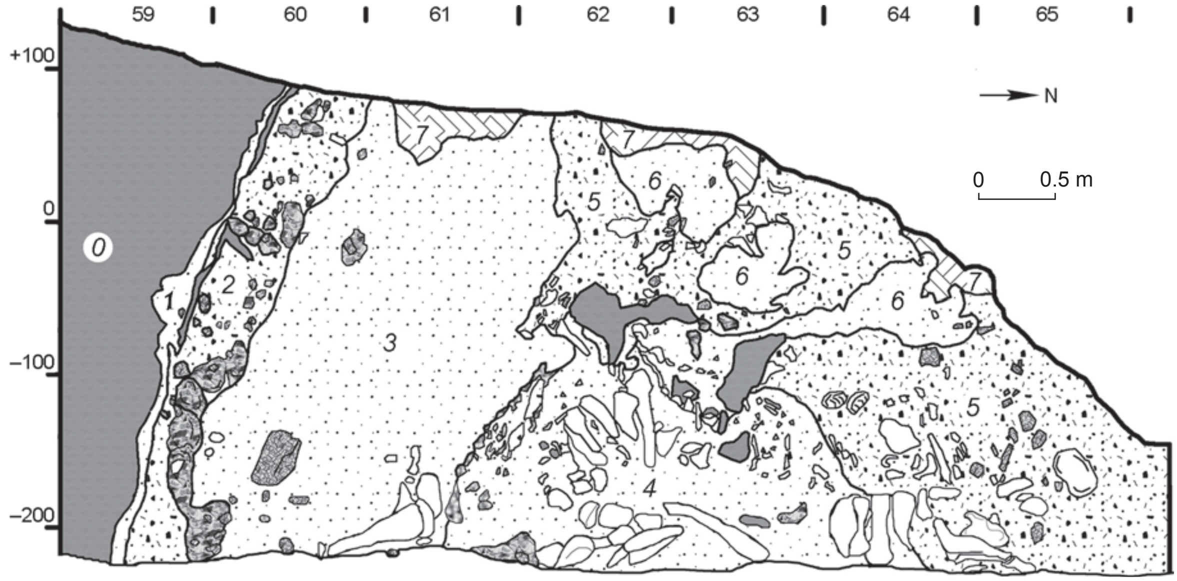


Fig. 3. The stratigraphic sequence on the western wall of the excavation at the Early Paleolithic site of Bogatyri/Sinyaya Balka. Numerals correspond to the numbers of layers.

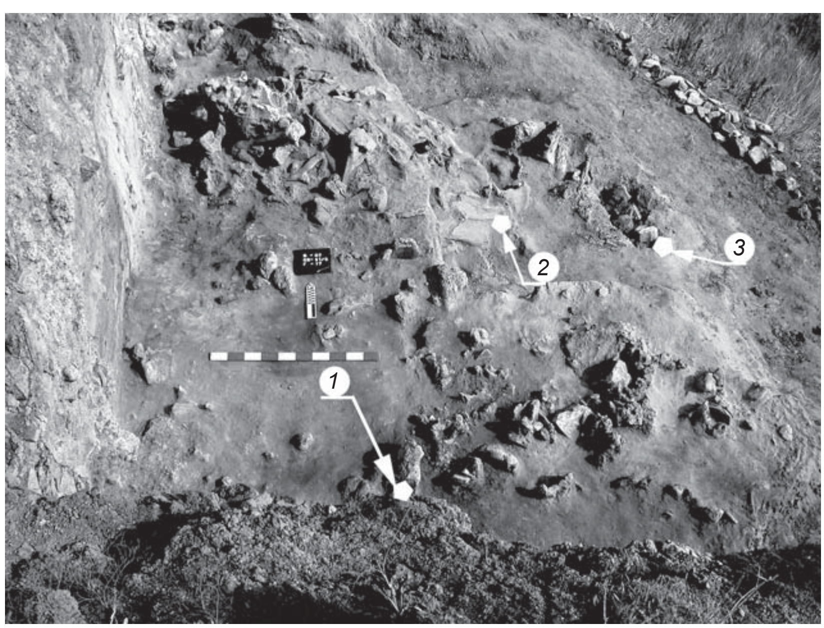


Fig. 4. Cultural layer of excavation 01 at the Early Paleolithic site of Bogatyri/Sinyaya Balka. Arrows indicate the places of discovery of the bone implements: *1* – No. 1 (2007); *2* – No. 2 (2018); *3* – No. 3 (2020).

of formation and accumulation of cultural deposits, as well as their post-depositional changes as a result of mud volcanic processes, tectonics, and coastal abrasion. All artifacts and faunal remains are concentrated only in dislocated, but not redeposited sand and gravel deposits of the Early Pleistocene uncovered during the excavation. According to modern concepts (Kulakov, 2012, 2018b, 2020a; Kulakov, Timonina, Titov, 2017), undisturbed sandy-gravel deposits directly overlie continental layer 0 of the "Kuyalnik" Pliocene clay (see Fig. 3). Layers 1 (marine beach sand layer) and 2 (towpath) cemented to breccia were formed directly in the beach zone of the reservoir. Layer 3 is a stratum of uneven-grained grayish-yellow and red sand containing artifacts and animal bones that do not form concentrations; this layer was also formed on the shore of the reservoir. Layer 4 is a "bone-bearing" stratum (a lens in the upper part of the sandy sediments of layer 3); it is clogged with fragments of various sizes, small bone fragments and intact bones belonging only to elephants and rhinoceroses-elasmotheres. In this cluster of bones, artifacts were found that made up the main part of the site's collection. Detritus layers 5 (coarse gravel stratum) and 6 (fine gravel stratum) are traces of the activity of mud volcanoes; redeposited faunal remains and artifacts have been found here. Layer 7 is multi-temporal "enclosures"—blocks of various sizes, which appeared as a result of the destruction of coastal sediments in the area of the site, and gradually slipped into the sea; they belong to the period from the Pleistocene to the Holocene (Nesmeyanov, Kulakov, 2013). All cultural layers of the site were subject to such partial destruction; therefore, artifacts and faunal remains are sometimes found in these "enclosures".

The lithic industry of the site totals 514 specimens. All the artifacts are made of silicified dolomite; this is brittle, but splits well enough and produces fragments with sharp edges. This local raw material lies in layers in clay and sand in the form of blocks and tablets of various sizes. The toolkit includes 329 items or 63.5 % of the total collection, which may be due to the industry specialization. The rest of the collection consists mostly of flakes and their fragments (159 spec., 31 %), mainly primary; these are different in size; small spalls predominate absolutely. Among the 12 core-like products, only 2 specimens can indicate intentional flaking from cores. Analysis of this part of the collection gives good reason to believe that flaking of dolomites was carried out for the purpose of making choppers and coarse chopping tools; this category contains a series of "gigantoliths"—very large items weighing more than 2.5 kg (Kulakov, 2018a). Many spalls that appeared during the manufacture of large tools were used without special working or served as the basis for the manufacture of the so-called light-duty tools. The tool composition of the industry confirms this conclusion (see *Table*). Intentional tools—choppers—account for 30 %. The rest of the collection includes a variety of end-scrapers, points, side-scrapers, spalls, and fragments with utilization retouch. Thus, our analysis suggests that the Bogatyri/Sinyaya Balka lithic industry specialized in butchering the carcasses of large animals: thick skins were probably cut through with choppers, and flesh was cut off with side-scrapers, points, and end-scrapers.

In order to reconstruct the natural environment and the lifestyle of the primeval communities of the Bogatyri/Sinyaya Balka site, it is necessary to imagine the site during the period of human habitation, i.e. turn the western wall of the excavation counterclockwise by 90° (see Fig. 3, 4). Everything happened on the shore of a brackish reservoir. The watershed areas were dominated by forest-steppe vegetation; the region was inhabited by relatively heat-loving animals of the Taman faunal complex (Shchelinsky et al., 2010). The materials of layers 1 and 2 correspond to the first rare appearances of the most ancient humans on the beach at the very edge of the water. The presence of stone tools in the thick layered subaqueous sandy stratum (layer 3) indicates a long presence of human groups on the shore of the reservoir. This assumption is supported by the bone-bearing lens in layer 4; it was formed, probably, in the crater of lake depression of a mud volcano, which for a long time attracted both animals and ancient people. Then the time of cataclysms came: the swamp lake containing bones and artifacts flowed out onto the sands and was immediately covered by a thick layer of breccia from hills and slope deposits, which conserved the site. Tectonics and volcanism continued their destructive activities, which led to a tectonic fault—overturning "on the side" (by about 90°), to the northeast, of a huge block of the ancient coast, which included this multi-layered site (Shchelinsky et al., 2008; Nesmeyanov, Leonova, Voeikova, 2010; Kulakov, 2012, 2020a; Nesmeyanov, Kulakov, 2013; Izmailov, Gusakov, 2013; Izmailov, Shchelinsky, 2013).

On the basis of the derived data, the site is considered as an elephant and elasmotheres butchering place. Most likely, the Taman elephants *Archidiskodon meridionalis tamanensis* and the Caucasian elasmotheres *Elasmotherium caucasicum*, like modern elephants and rhinoceros, liked to take "mud baths". The caldera of the ancient mud volcano with a fresh-water lake in the middle and marshy shores was a popular place among

Distribution of stone tools at the Early Paleolithic site of Bogatyri/Sinyaya Balka by layers, spec.

Layers	Choppers	Coarse chopping tools	Side-scrapers	End-scrapers	Points	Notched-denticulate tools	Becs	Spalls with retouch	Fragments with retouch	*Total*
1, 2	3	–	1	1	–	–	–	–	–	5
3	24	2	7	16	17	3	1	1	14	85
4	29	2	18	25	17	2	4	3	16	116
5, 6	15	–	12	9	5	1	–	1	6	49
Talus	29	–	7	14	9	4	–	10	1	74
Total	100	4	45	65	48	10	5	15	37	329

elephants and elasmotheres. Submerging in mud, the big animals lost their mobility and could become the prey of large predators, such as saber-toothed felines and hyenas *Pachycrocuta*, and possibly the ancient *Homo*. Some of the elephants and rhinoceroses probably died, because they could not climb the swampy and steep banks (for young and broken animals these were a natural trap) or because of the toxic gases released by the mud volcano. Ancient people probably removed carcasses from the mud and butchered them to provide themselves with protein food. This assumption explains the occurrence of stone tools between the bones.

The prehistoric people most likely did not live directly at the butchering sites; they inhabited more convenient places in the nearest vicinity. Did *Homo* themselves actively hunt large mammals in the Taman Peninsula in the Early Pleistocene? There is no answer to this question yet, since no direct evidence of hunting has yet been found; the Bogatyri/Sinyaya Balka site has not yielded any remains of hunting weapons or traces of their use (Kulakov, 2018b, c, 2019a, 2020b).

Implements made of fossil bones from layer 3

Direct evidence of the active life of the most ancient *Homo* on the shore of one of the bays of a large Early Pleistocene reservoir are three fossilized bones of marine mammals, with signs of processing by ancient man, found in the undisturbed sediments of the site (see Fig. 4, 5).

In their state of preservation, these finds differ considerably from the numerous bones of elephants and elasmotherian rhinos from various layers of the site, which are characterized by extreme softness and friability. The differences are determined by the degree of fossilization—the substitution of siliceous rock for the bone-tissue. The bones of the marine mammals are much older than the bones of the Taman complex animals; during the formation of the cultural layers of the site, these bones were stones. Solitary remains of marine mammals (vertebrae and ribs of whales, dolphins, seals, etc.), whose state of preservation is typical of Miocene deposits, were found in various layers at Bogatyri/Sinyaya Balka. The remains of the Miocene marine mammals washed out from the older layers were often exposed on the shore of the ancient reservoir, and could have attracted the attention of ancient hominids by their appearance. At present, solitary bones of such animals occur in layers of sea sands and on the modern coast in the area of all the sites of the complex.

To determine the suitability of fossilized seal bones from the coastal deposits of the Sea of Azov for splitting, we carried out a series of experiments: the samples were used as cores for bipolar knapping (on an anvil). The results have shown that in all the fossils, the bone-fiber had been completely replaced by siliceous rock, relatively homogeneous, hard and brittle, producing step fracture.

The find No. 1 of 2007 is a well-preserved seal femur, silicified, with a missing distal end fractured at the level of the lower third of the diaphysis (Fig. 6). The length of the fragment is 48 mm, which is approximately 2/3 of the length of the whole bone. The color of the fossil is dark brown. By its size and morphology, the bone can be attributed to the species *Monachopsis pontica* (Eichwald, 1850), which is typical of Upper Sarmatian–Meotian deposits in the Black Sea region (Koretsky, 2001). Judging by its degree of fossilization and the nature of silicification, the bone was originally located in the Upper Miocene deposits, which were exposed in some places on the shores of the Taman Peninsula, on its northern coast in particular. Fossilization of the natural relief did not damage the surface of the seal bone; all the natural *in vivo* protrusions and depressions (from large to the smallest) are clearly visible on it. The natural surface shows traces of various kinds of changes that occurred in different periods of the "life" of the bone before and after its fossilization. Undoubtedly, traces of roots, as well as parallel, partially preserved grooves and scratches on the inner surface of the diaphysis in the left distal part, emerged before fossilization, but after the death of the animal (Fig. 7, *1*). We interpret them as the predator's gnawing-marks that emerged at the time when this bone still contained an organic component and its tissue was tenacious. Traces of such a change in the bone's surface were studied by the authors on the bones with ancient hyena gnawing-marks from Trlica Cave in Montenegro (excavations by M.V. Shunkov, determination by A.K. Agadjanyan) (Fig. 7, *2*). Traces of the plants' roots are presented in the classical form—thin winding and branching grooves (Fig. 7, *1*). Most likely, the ancient seal was washed ashore and eaten by a terrestrial predator, because animal bones and traces of roots appeared on the seal bone before fossilization, before the bone-fibers were replaced by siliceous rock.

The traces of the third group we associate with processing (Fig. 8, *1*). These emerged after the complete fossilization of the bone, when it acquired all the qualities of a brittle isotropic material producing a shell-like fracture. In this case, a solid siliceous substance was substituted for the bone-tissue; the negative scars of removals (flaking traces) were analyzed. Negative scars of small removals are observed; these have a conical and non-conical bulb and a stepped and/or loop-shaped ending as a rule. The negative scars are concentrated at the distal end of the bone; in fact, these are the result of the recurrent transverse splitting. Judging by the intact scars and those truncated by the subsequent flaking, at least seven removals were made. The concave ventral surface of the bone served as a striking platform. The relatively small

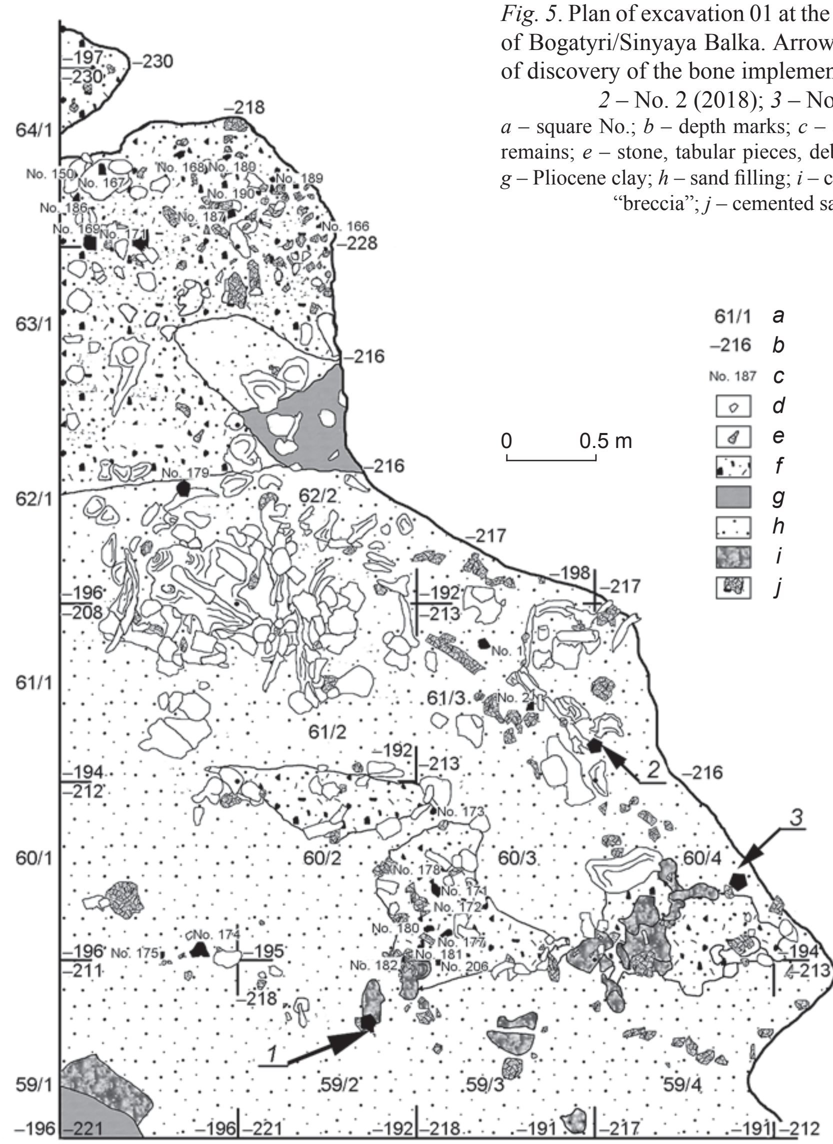


Fig. 5. Plan of excavation 01 at the Early Paleolithic site of Bogatyri/Sinyaya Balka. Arrows indicate the places of discovery of the bone implements: *1* – No. 1 (2007); *2* – No. 2 (2018); *3* – No. 3 (2020).
a – square No.; *b* – depth marks; *c* – artifact No.; *d* – faunal remains; *e* – stone, tabular pieces, debris; *f* – detrital filling; *g* – Pliocene clay; *h* – sand filling; *i* – cemented detrital filling, "breccia"; *j* – cemented sand filling.

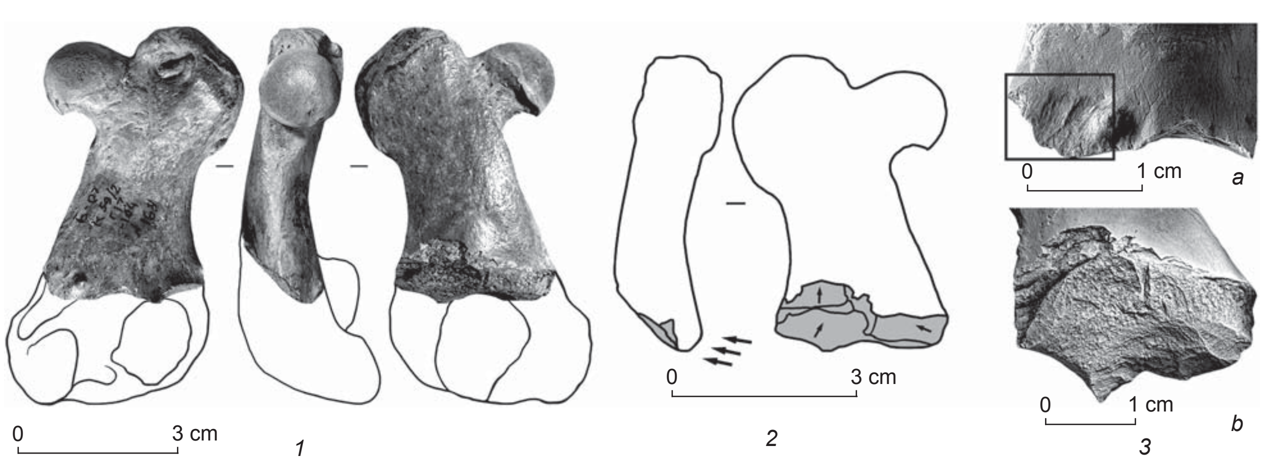
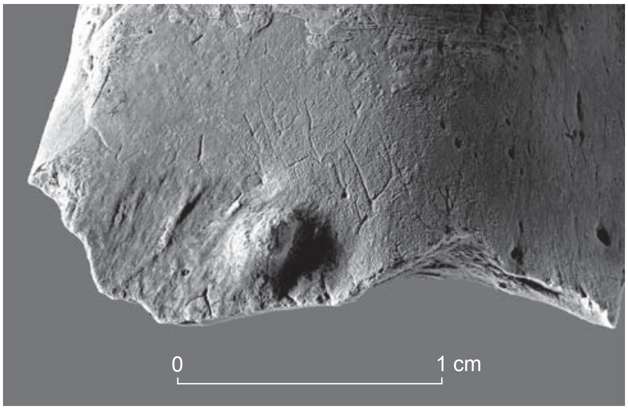


Fig. 6. Artifact made from fossilized bone No. 1 (2007) from the Early Paleolithic site of Bogatyri/Sinyaya Balka.
1 – general view; *2* – drawing of the treatment zones; *3* – macrophotographs of gnawing-marks (*a*) and traces of treatment (*b*). *Photos by E.Y. Girya, drawings by A.N. Trishkin.*



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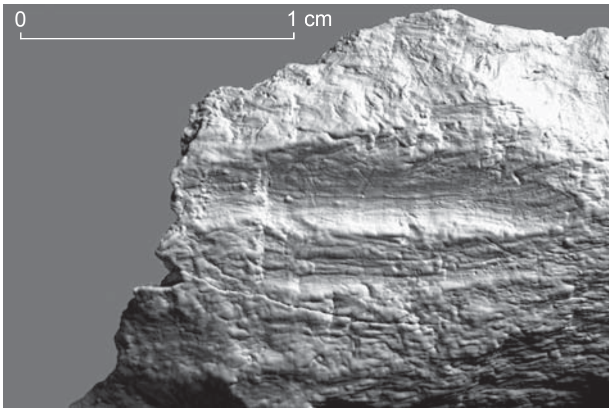
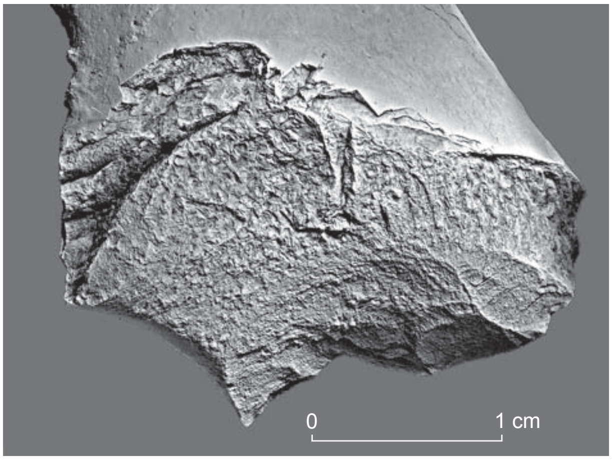


2

Fig. 7. Surface with traces of natural damage on bone implement No. 1 (2007) from the Early Paleolithic site of Bogatyri/Sinyaya Balka (*1*), traces of natural damage on the bone from Trlica Cave in Montenegro (*2*). *Photos by E.Y. Girya.*



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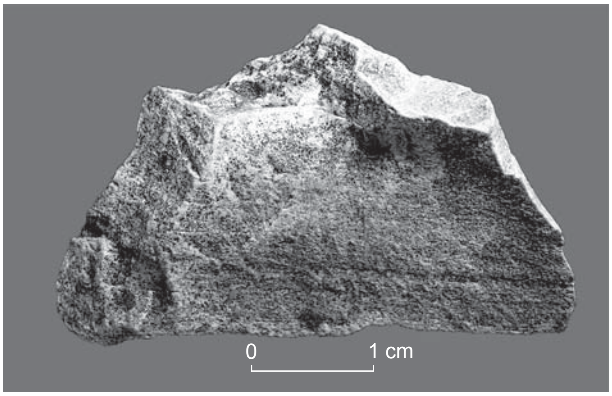

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Fig. 8. Bone point No. 1 (2007) (*1*), stone point (*2*) from the Early Paleolithic site of Bogatyri/Sinyaya Balka. *Photos by E.Y. Girya.*

size and mass of the nucleus suggest that the splitting was carried out on an anvil. Some angular item probably acted as a hammerstone, since the negative scar of one of the last spalls shows a very narrow, almost punctiform, conical bulb (see Fig. 7, *1*).

Despite the relatively good preservation of the spall's surfaces, no use-wear signs similar to those on a tool could be traced on this item. The presence of sharp protrusions on the retouched edge indicates clearly that the product was not used for processing any hard material. However, the working edge of the artifact is quite suitable for processing soft materials, so the possibility of its short-term use for cutting meat and/or skin cannot be excluded.

The absence of well-developed, well-marked traces of use-wear does not contradict the assumption about the intentional processing (splitting) of this fossil bone and its interpretation as a manifestation of the intelligent activity of the most ancient human ancestors.

The find No. 2 of 2018 is a right humerus with a missing distal end, broken off at the level of the lower third of the diaphysis (Fig. 9). The palmar-lateral (posterior-lateral) part of the proximal zone and diaphysis are also missing. The length of the fragment is 45.2 mm, the diameter of the bone's head is 30 mm. Judging by its size and morphology, the seal bone was assigned to the species *Cryptophoca maeotica* (Nordmann, 1860), typical of the deposits of the Middle Sarmatian in the Black Sea region (Ibid.).

The state of preservation of the antemortem (original) surfaces of this fossilized bone fragment fully corresponds to that of the fragment described above. No predator's gnawing-marks are recorded on the item; weak root traces are present. Hence, it can be concluded that both fragments of the fossil bones likely come from the same source—coastal deposits.

Unlike the previous one, this fragment of the fossilized seal humerus bears traces of longitudinal, rather than

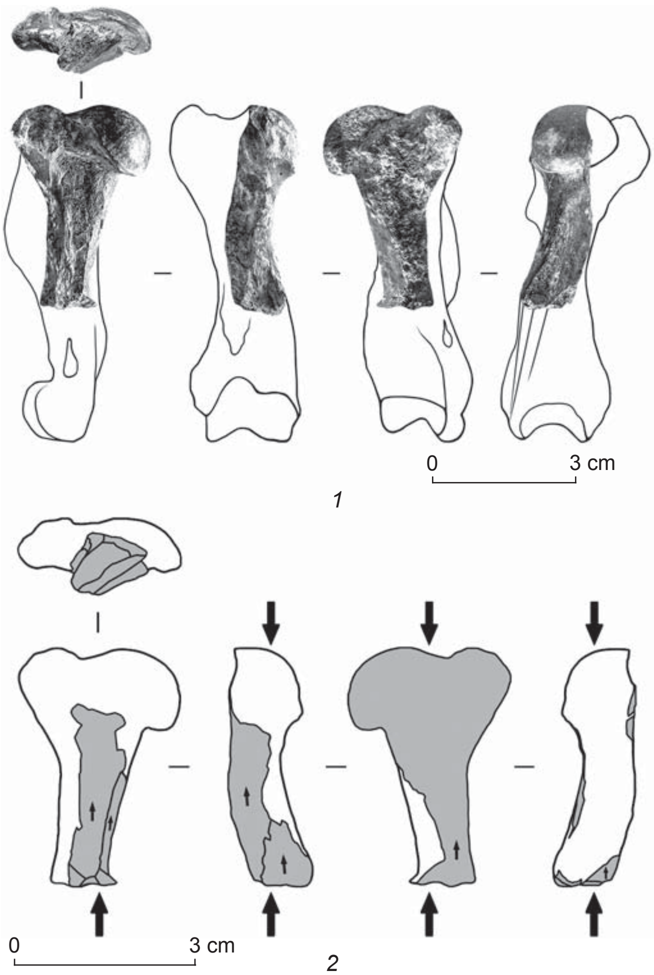

Fig. 9. Artifact made from fossilized bone No. 2 (2018) from excavation 01 at the Early Paleolithic site of Bogatyri/Sinyaya Balka. *Photos by E.Y. Girya, drawings by A.N. Trishkin.*
1 – general view; *2* – drawing of the treatment zones.

transverse, splitting. The size and orientation of the flaking scars, as well as the relatively small size and mass of the core itself, suggest that this item, like that described above, was split on an anvil. It is noteworthy that the counter-strike splitting of the fossilized bone, which served as a nucleus, was carried out in one direction—from the platform on the fracture of the diaphysis. The bone was cut almost to its full length vertically and was fragmented across. A few more elongated spalls were detached from the bone core during splitting from other sides. The platform was damaged in the same way as on all other counter-strike cores; and a sharp and uneven edge was formed (as in *pieces esquilles*). It is difficult to judge how many blows were delivered, since in counter-strike splitting, such fragmentation of the nucleus can occur as a result of one excessively strong blow. Noteworthy is the absence of traces of the same damage on the edge at the opposite side. A similar morphology is characteristic of counter-strike nuclei that were split on soft (wood, bone) anvils.

Find No. 3 of 2020 is the lower part of the diaphysis of the tibia of a small seal (Fig. 10). The proximal and distal ends are missing. This item represents the remains of a fairly long bone (about 1/4 of its total length). The smallest width of the diaphysis is 12.2 mm. The approximate dimensions and the slenderness index of the diaphysis allow us to make a preliminary identification of the bone as *Cryptophoca maeotica*.

The surface of this fragment of the diaphysis, as well as those described above, shows a very good state of preservation and similarity with the relief of

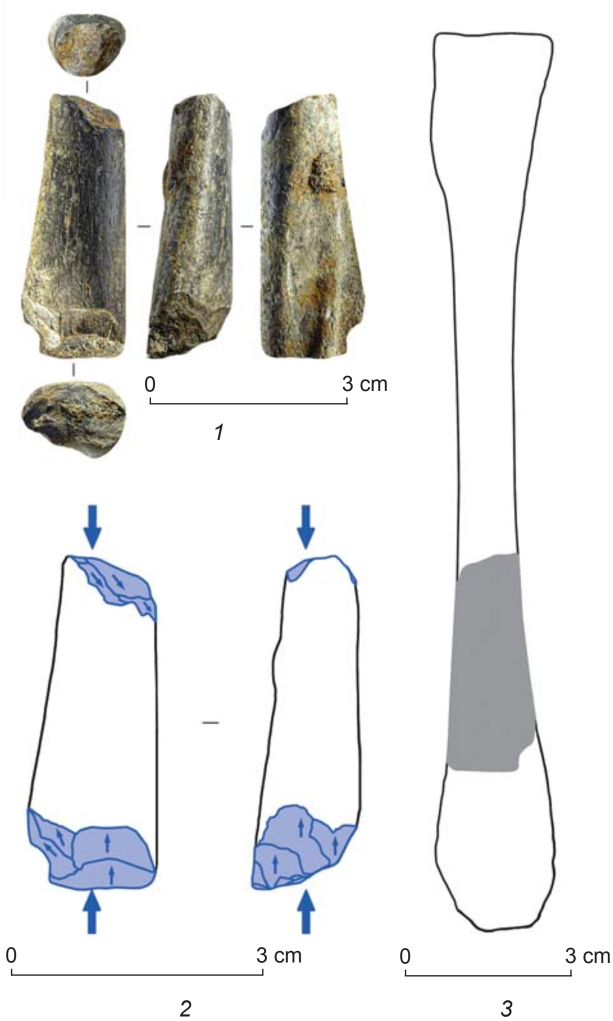

Fig. 10. Artifact made from fossilized bone No. 3 (2020) from excavation 01 at the Early Paleolithic site of Bogatyri/Sinyaya Balka. *Photos by E.Y. Girya, drawings by A.N. Trishkin.*
1 – general view; *2* – drawing of the treatment zones; *3* – drawing of location of the fragment.

the Miocene bone. No gnawing-marks or vegetation root tracks were found. There is no doubt that this fragment of fossil bone and the two fragments of seal humerus bones mentioned above were of common origin. Both ends of the product bear negative scars of flaking, the morphology of which corresponds to counter-strike flaking technique. One of the ends is formed by the negative scar of the transverse fracture, the other shows signs of bilateral linear damage, similar to that in *pieces esquilles*. That is, despite the distinctions in shape in general, this fragment of the fossil bone is similar in flaking pattern to the two items described above.

Thus, all three processed Miocene animal bones were found in the same stratigraphic and planigraphic context (see Figs. 4, 5). They occurred in sandy layer 3 in the zone of contact between the bone-bearing lens (layer 4) and the enclosing sands (see Fig. 3). All the artifacts (bones 1–3) were found in cultural deposits in association with stone tools, and bones of elephants and elasmotheres.

For all three bones, we exclude the possibility of appearance of traces of knapping as a result of their occurrence in the cultural layer. All surfaces of the negative scars are relatively "fresh", undamaged, and unrounded; there are also no traces of damage in the form of surface wear, grinding, or rounding of the ridges. The edges of the scars are sharp, without traces of damage and rounding.

Discussion

During the operation of this hunting camp or butchering site, it might not have been easy to find raw materials for the manufacture of stone tools. According to the results from many years of excavations, three types of raw materials were used. The main material was silicified dolomite represented by fragments of various shapes and sizes in coastal outcrops.

We have good reason to believe that bones of large animals, which became tools through knapping, were also used as raw materials at the site. Solitary fragments of diaphyses of tubular bones from the excavation show poorly preserved signs resembling the negative scars of bifacial working. N.K. Vereshchagin also reported processed bones of ungulates from the chronologically similar Tsimbal site (village of Sennoy, Taman Peninsula) (see Fig. 1), which contained numerous osteological remains of animals of the Taman faunal complex (Formozov, 1965). However, we believe that the available information is still insufficient for a convincing interpretation of the discussed items because of the very poor state of preservation of the bone-tissue, as well as the difficulty of clearing the bones and their fragments in the cemented deposits of the Bogatyri/Sinyaya Balka site.

The third type of raw material for the manufacture of tools was likely fossilized seal bones. It was small, awkwardly shaped, but also the hardest isotropic material available at the site. The small size of these implements is not something special in the industry in question. Along with massive and large tools, small products are also present (Kulakov, 2018a, b; Kulakov, Timonina, Titov, 2017; Kulakov, 2019b).

Prehistoric *Homo* picked up the fossilized seal bones on the shore and processed them like stones, with the help of various technical operations.

Bone No. 1 is the most interesting specimen; it was designed as a point. The artisan skillfully used the edge of the bone's fracture on the left side of the working edge. The right side was retouched more carefully than the left, possibly to make it even and give symmetry to the edge of the tool. At the final stage of processing, the working element—the point—was fashioned almost in the middle of the cutting edge with a small retouched notch (see Fig. 8, *1*). Apparently, such a treatment of fossilized bones was an intentional act. The lithic industry of the Bogatyri/Sinyaya Balka site contains a numerous category of points—one of the most important components of the set of so-called light-duty tools (see *Table*). Various types of stone points (side- and end-scrapers) dominate in the toolkit of the main cultural layers 3 and 4 (Kulakov, 2018b, c; Kulakov, Timonina, Titov, 2017; Kulakov, 2019b). The category of points in the Early Paleolithic "Bogatyri" industry comprises items of various morphology and size, the common feature of which is a special morphological element—a point (bec, borer, etc.), i.e. a sharp protrusion that was formed by a combination of retouch and small encoches, and was fashioned on any suitable area of the original blank (jointing, spall). Therefore, the points of the Bogatyri/Sinyaya Balka Early Paleolithic industry are not exactly what is meant by the point tool-type in the industries of the Upper Paleolithic, Mesolithic, and Neolithic (Vasiliev et al., 2007: 163–165). It would be interesting to analyze these morphological elements from the point of view of their purpose as "working elements" (Korobkov, Mansurov, 1972), but, unfortunately, it is almost impossible to conduct a microtraceological analysis of stone products from the Early Paleolithic Taman industries owing to the very poor state of preservation of their surfaces. As for the bone point in question, it seems that the situation was as follows: the artisan made a tool from a fossilized bone and, perhaps, even tried it, but the product did not suit him for some reason, and was discarded.

In terms of morphology, the point on a fossilized bone is quite similar to the lithic points from the collection: a stone point on a flake, found in sq. 63/3 in 2011, shows the same reduction sequence (see Fig. 8, *2*). The natural fracture surface was preserved on the right side of the transverse edge of the flake, while on the left half, a notch was fashioned through a series of small removals and retouch, which formed a double point in the middle of the transverse edge and on the left corner of the blank.

Conclusions

Artifacts made from fossilized bones of Miocene marine animals found in layer 3 of the Early Paleolithic site Bogatyri/Sinyaya Balka may indicate that the ancient *Homo* used as raw materials not only stone (silicified dolomite), which is abundant in the area of the site, but also animal bones. It is quite probable that the ancient artisans processed and used the bones of contemporary animals. The availability of fossilized animal bones in the area made it possible for the ancient humans to master a new type of raw material in tool manufacturing.

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