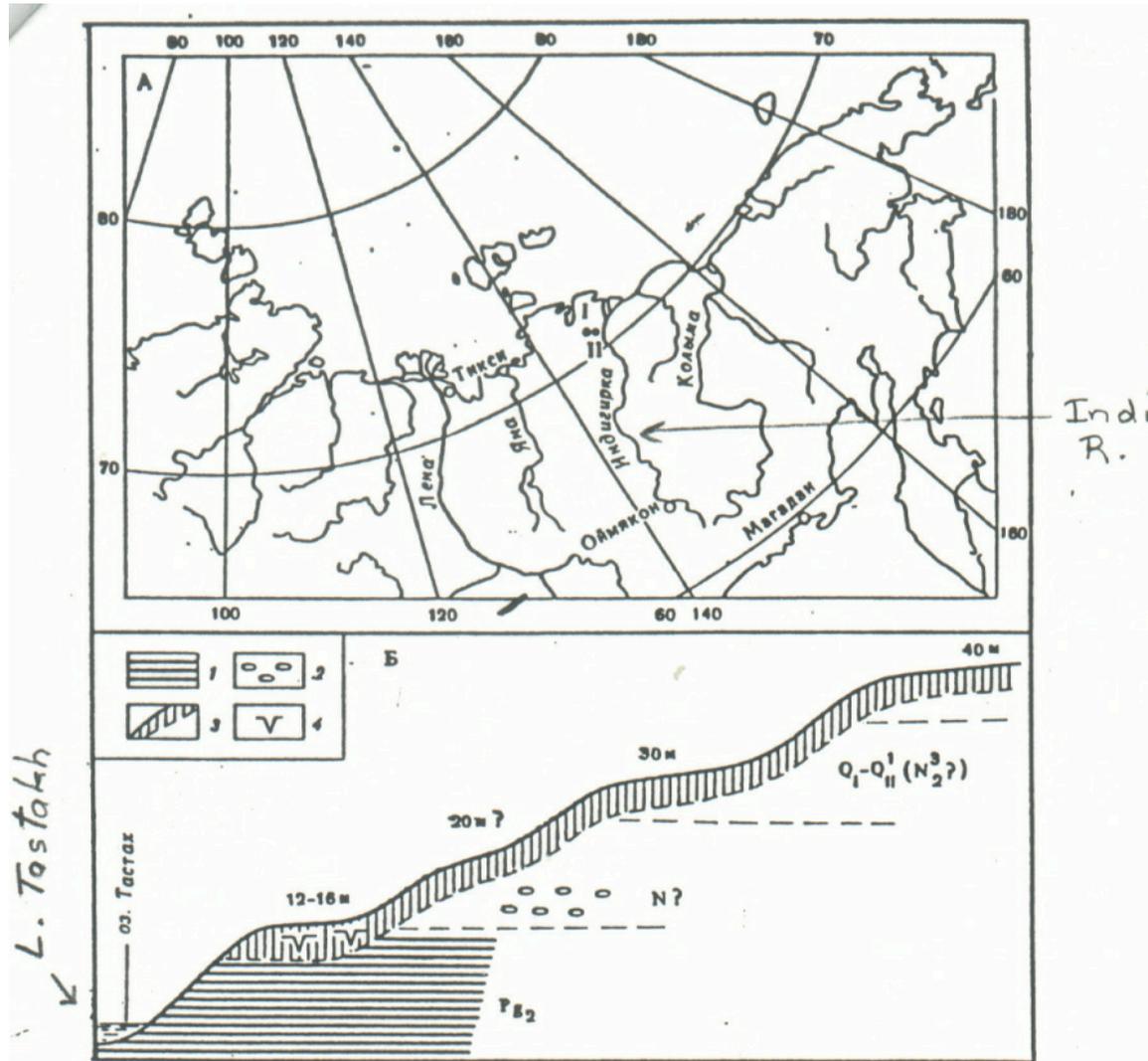


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**FINDS OF LATE CENOZOIC MAMMALIAN FAUNA AT LAKE TASTAKH
AND DZHELON-SISÈ PLATEAU (BETWEEN THE KHROMA AND
INDIGIRKA RIVERS)***

During the examination of key sections of the Paleogene of the northeastern USSR, observations were made of the Quarternary deposits that had developed there at Lake Tastakh and in the region of the Dzhelon-Sisè Plateau along the Berelëkh River valley (drawing) in the summer of 1979, and a large collection of osseous remains of mammals were collected: more than 150 examples, kept now in the

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Indigirka River
(arrow)

Localities of fauna at Lake Tastakh (I) and in the Dzhelon-Sisë Plateau (II) – A, structure of the slope of the southern shore of Lake Tastakh – B.
 1 – Paleogene sediments; 2 – Neogene sediments; 3 – Gray, icy-sandy soil and mixture of sand and clay; 4 – veins of ice.

Paleontological Institute of the Academy of Sciences of the USSR (PIN). The Quarternary deposits in the investigated regions are relatively poorly exposed, and practically all of the remains have been collected on beaches. Nevertheless, a brief survey of the collection and of the region where it was collected is of definite interest.

In the basin of the Berelëkh River, fossils finds of the remains of mammals were often noted. That is, here, in the region of the Dzhelon-Sisë Plateau, the first find in Siberia above the Arctic Circle of a fragment of a tooth of an archaic elephant, descended from the Wusti elephant [Viusta in Russian text] was made [Kulakov, 1958 and Vangengeim, 1961]. Subsequently it was found, that similar elephants are typical of the Olërskiy complex, which existed at the end of the Pliocene and beginning of the Pleistocene. Here the separate finds of animals have been shown to be specimens of a late Paleolithic complex. In 1947, the famous Berelëkh burial-ground of mammals was discovered, and it was studied in 1970-1971. This burial ground was situated on the left bank of the Berelëkh River, higher on its course than the region of our collection [Vereshchagin, 1977]. The northernmost late Paleolithic encampment is exposed here [Mochanov, 1977]. The ossified layer of the Berelëkh burial-ground of mammoths, as well as the encampment, has been dated to the upper horizons of the alluvium of a

List of fossil mammals from the Berelëkh River and Lake Tastakh (the quantity of identified remains)

Species	Berelëkh R.	Lake Tastakh	Species	Berelëkh R.	Lake Tastakh
Canis sp.	-	1	Praeovibos sp.	-	2
Mammuthus primigenius (Blum.)	14	3	Ovibos sp.	2	1
Mammuthus sp.	-	7	Bison priscus Boj.	37	21
Coelodonta antiquitatis (Blum.)	4	1	Bison sp.	-	5
Equus (cf. Plesippus) sp.	-	11	Undetermined fragments	13	8
Equus caballus L.	11	0	All other remains	88	67
Rangifer tarandus (L.)	7	3			
Ovibovini gen.	-	4			

12-meter terrace, which, judging from a series of radiocarbon datings, has a late Sartanskiy Age.

The mammalian remains in the Berelëkh River Valley have been collected below the mouth of the Ary-Mas River, where the Berelëkh passes along the northeastern slope of the Dzhelon-Sisë Plateau. Most of the bones come from the towing path of the right bank of the Berelëkh River up to 5.2 km NEN of mark 102 and on stretches 2 km higher along the course of this river. The Dzhelon-Sisë Plateau is formed of sediments of the Paleogene and Neogene. Here and there a terrace with a height of 6 – 7 m, devoid of outcrops, is leaned against it. An even lower terrace (2 – 3m, up to 5 m) has developed along the left bank of the river. The quantity of bones of mammals increases near the mouths of large ravines, which cut through the slope of the Dzhelon-Sisë Plateau; therefore most of the remains apparently come from deposits inclined or buried under them.

Here about 90 remains have been collected; almost half of them belong to bison (table). There a quite a few of bones of mammoths and horses; the remains of reindeer, woolly rhinoceros and musk ox are not numerous. All remains of horses belong to the small caballoid form. Several last {final} molars of a mammoth, available in the collection, indicate its belonging to a late type. Since the collection is sufficiently uniform in the nature of preservation of the bones, on the whole it is possible, to consider it {the collection} to be of the same age. The characteristics of the mammoth and horse permit one to date it to the Late Pleistocene. The rest of the species are also common in Late Pleistocene deposits. The ratio of the number of remains of various species is close to the typical one for Late Pleistocene localities, although as a rule, the role of the horse in the fauna is more visible.

The outcrop at Lake Tastakh is basically formed of Paleogene sediments, which have been studied for more than 100 years. Many geologists have visited them, and the results of their research are reflected in many publications [Gedenstrom, 1830, Vollosovich, 1930, Kaïialaïnen, 1967, Baranova and others, 1968, Grinenko, 1968 and others]. Nevertheless, the finds of mammalian remains here were not noted previously.

Lake Tastakh is surrounded by a low (2 – 3, up to 5 m) alas surface; only a neotectonic projection with a height of about 40 m, formed of Paleogene deposits (see drawing) approaches the southern shore. The lake washes this projection on a strip 3400m long, with which all finds of mammalian remains are connected at the waterline and on a shore-side sandbar. The slope of the block is terraced, with terraces of heights of about 12 – 16, 30 and 40m above the waterline being clearly revealed, and a terrace with a height of about 20m begins to show. A 40-meter terrace approaches the lake roughly one km from the western end of the outcrop;

on the remaining strips, it is remote from the lake. Four large ravines intersect the slope of the projection. Since accumulations of bones have not been observed at the mouths, it is impossible to connect the main part of the fauna with the efflux from these ravines. In addition, more than 50 small ravines (the upper reaches of which end at the surface of a terrace with a height of 12 – 16m or on the ledge of the 20-meter and 30-meter terraces), cut through the outcrop.

The outcrop, a ledge washed by the lake and with a height of 10-11 m, reveals only Paleogene sediments. Gray, icy, and sandy soil is deposited above the edge of the lake. In all places it covers again the surface of the 12 – 16 meter terrace and the higher ones, and here and there also the slope of the projection which is exposed in the fragments of mudslides and landslides. Here and there in these fragments, powerful icy veins are revealed, and at the depth of 1 – 2 m lens are encountered with accumulations of branches, sometimes with the trunks of trees.¹ The mudslides and landslides of gray sandy soil descend into the exposed ledge, where they intermingle with Paleogene sediments and reach the waterline of the lake. Probably, the soil and sediments in addition to the efflux from the small ravines are the suppliers of the osseous remains on the beaches.

All of the remains of mammals are gathered at the waterline of the lake and on the lakeside sandbar {sandbank} up to a depth of 1 m. Most of the large accumulations of bones have been noted on a stretch of 300 m. from the western edge of the outcrop. The preserving of the bones (color, density, nature of the surface) is fairly diverse: in the present case, undoubtedly depending on the length of stay on the beach and in the littoral zone of the lake. Many osseous remains are badly rounded.

In all about 70 remains have been collected here; the bones of bison form 40% of them; 15% are small caballoid horses. On the whole, the collection is dominated by the remains of animals common for the Late Pleistocene of this region: primitive bison, small caballoid horses, mammoths of a late type, reindeer, and woolly rhinoceros; that is, the same ones which are in the collections from the Berelëkh River. However, in contrast to the Berelëkh collection, on the shore of Lake Tastakh bones of more ancient animals (large archaic horses, *Praeovibos* musk ox, and gigantic bison) are also found.

Thus, the metacarpal bone of a horse (Collection PIN, No. 3915-153) has large dimensions (the full length is 252mm.), although it gives way to the largest specimen of subgenus *Plesippus*. However, in comparison to the metacarpal bones of horses of subgenus *Plesippus*, including the type of the series of metacarpi of *Equus (Plesippus) verae* [Sher, 1971], the present example differs from the highly visible fine proportion of outlines. The bone from Lake Tastakh belongs to a rather archaic form; most likely, it is attributed to subgenus *Plesippus*, but a more exact determination of it is impossible because of the roundness of the ends of the bone.

¹ Today Lake Tastakh is situated substantially to the north of the forest line.

The metacarpal bone of a musk ox (Collection PIN No. 3915-162), by its dimensions and proportions, is closely related to *Praeovibos* from the Olërskiy suite from the Chukoch'ya River and attributed by us to the same genus. It also cannot be ruled out, that a second, badly damaged metacarpus (No. 3915-163) belongs to the same form.

A slightly rounded metatarsal bone of a musk ox (No. 3915-161) belongs to a comparatively small form with well-proportioned extremities. In general outline it is sufficiently close to the metatarsi of *zorgelia*. However, since the ends of the bone are rounded, it is impossible to rule out that this is a small form of the genus *Praeovibos*.

Of two fragments of radii of a musk ox, one is "freshly" preserved, and, judging by its measurements and structure, belongs to *Ovibos*. The second fragment is badly rounded, and its identification is difficult. An astragal of a musk ox has average dimensions, but its generic identification is impossible, since it is also badly rounded.

Among the numerous remains of bison are found two metacarpal, one metatarsal and a large tibial bone, and a fragment of an astragal which belongs to a very large form. Some of them, at least a gigantic metacarpal bone (No. 3915-168), exceed the limits of variability of size of *Bison priscus* from deposits of the second half of the Pleistocene of the coastal lowlands. Taking into account the fact, that a distinctive form of bison with exceptionally large and massive extremity bones exists in the Olërskiy fauna, it is possible to assume that a portion of the remains of bison from Lake Tastakh belongs to this form.

A group of remains of more ancient animals in the collections from Lake Tastakh probably includes, in addition to those listed above, some fragmentary remains (specifically bison and elephant), which are difficult to identify precisely. To distinguish ancient remains by the state of preservation, as is sometimes done, does not succeed in the present case because of the significant transformation of osseous matter in the littoral zone of the lake.

The prevalence in the Tastakh collection of bones of animals of the Late Paleolithic complex does not leave doubt on the broad development of Upper Pleistocene deposits on the shores of the lake. At the same time, it is possible to ascertain the presence in this region of more ancient sediments of the Upper Cenozoic. The lack of material does not permit one to judge the precise geological age of these sediments. Since the remains of horses of subgenus *Plesippus* and musk oxen of *Praeovibos* are known in the coastal lowlands mainly from deposits of the Olërskiy Suite, dated currently to the end of the Upper Pliocene [Sher and others, 1979], then it is possible to think that the analogues of age of this suite are part of the structure of the Tastakh neotectonic projection. On the other hand, it has not been ruled out, that the group of "ancient" remains is not uniform in age and includes younger (Lower Pleistocene) components. The absence in the section {pit, open excavation} of an uncovered geological body, with which it would be possible to connect the remains of ancient fauna, makes a more precise determination of this conclusion difficult.

One should address the circumstance, that practically all of the remains of ancient forms have been collected in the western part of the outcrop, where a higher, 40-meter terrace closely approaches the shore of the lake. Thus, the ancient fauna can be connected with either the deposits of the terrace, which seems less likely, or with covered {concealed} sediments which lie between the roofs of the Paleogene and the deposits of the 40-meter terrace (see drawing). Nevertheless, although the supposition concerning the presence here of Upper Pliocene deposits is very well-founded, the question about the conditions of their beds remains open until further excavation and elucidation of the structure of the concealed {covered} western part of the Tastakh neotectonic projection {prominence}.

The described faunal deposits of the end of the Pliocene - beginning of the Pleistocene on the Kolyma Lowlands [Sher, 1971; Sher and others, 1979] have been studied with a fair amount of detail. Only isolated finds of animal remains, specimens of the Olërskiy faunal complex, are known in the more western regions of the coastal lowlands. However, the number of such finds grows each year, which is evidence of the sufficiently broad diffusion of Upper Pliocene sediments, hidden under a strong cover of younger deposits. In the collection of the Paleontological Institute of the Academy of Sciences of the USSR there are remains of the Olërskiy fauna from several points of the right bank of the Indigirka River and the area between the Indigirka and Kolyma Rivers. Thus, in 1971 a find of Olërskiy fauna was made by A. V. Lozhkin in the valley of the Bol'shoy Khomus-Yuryakh River; in 1975-1977 V. V. Kolpakov collected fauna and uncovered analogues of the Olërskiy suite in the valleys of the Badyarikh and Ogorokh Rivers. Separate bones of the Olërskiy mammals were found even earlier by A. V. Artemov in the valley of the right tributary of the

Indigirka, the Keremesit River. On the left bank of the Indigirka, finds of Olërskiy fauna were not known, with the exception of the find of Iu. N. Kulakov already mentioned. Extensive collections of osseous remains, gathered in the central stream of the Khroma River by K. A. Kondrat'eva and M. V. Piotrovskii in 1970, by A. V. Sher in 1971 and by M. G. Ovander in 1978, did not present convincing proof of the presence there of analogues of the Olërskiy Suite. Apparently, the fauna of the so-called Khromskiy Suite is somewhat younger than the Olërskiy.

The study of the Olërskiy fauna and its locations introduces an important contribution to both the development {elaboration} of stratigraphy and paleogeography of the vast region of coastal lowlands, and to the solution of problems, such as the history of the Bering dry land area {land bridge} and migration of mammals, the origin of cold-resistant biocoenosis and so forth. From this point of view, each new find of this ancient fauna, including as well the description here of the finds on Lake Tastakh, deserves attention.

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