DISTRIBUTION OF *ELASMOTHERIUM* IN KAZAKHSTAN

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Elasmotherium is the peculiar group of terrestrial vertebrates of very large sizes, with specific structure of skull and jaw, strongly plicated enamel of hypsodont teeth, reduced or absent roots. Its representatives, as quite formed group of perissodactyls, have appeared in late Pliocene, but reached the highest growth in early and middle Pleistocene of Eastern Europe, Povolzhie, Middle Asia and China. To the present time, on the territory of Kazakhstan are determined 30 localities with remains of *Elasmotherium sibiricum* (Kozhamkulova 1969; 1981; 2000). B.S. Kozhamkulova (1977) has distinguished Kazakhstan – South – Ural zoogeographic province on the basis of these data. Existence interval of genus *Elasmotherium* in Eastern Europe is within 2 m years; they appeared in late Pliocene and disappeared in the period of maximum glaciations. And as truly mentioned A.K. Shvyreva (1988), the geographic centre of Siberian elasmotherium at that time should be considered the Southern Ural and Kazakhstan where it met together with typical representatives of early Pleistocene fauna: *Elephas wusti, Equus (Equus) mosbachensis, Dicerorhinus mercki, Paracamelus (Paracamelus) gigas, Bison (Bison) schoetensacki*. *Elasmotherium* finds are of significant stratigraphic value, parallel with other animals, for paleontological basis of deposits age. Therefore, we have studied in detail, the collection of elasmotherium teeth from the known localities. As a result, are received the interesting data that in Kazakhstan, genus *Elasmotherium* was presented in by different species during its existence.

The most early representatives of genus *Elasmotherium* in Kazakhstan are found in the deposits of Podpusk – Lebjazhie complex on the Irtysh river (village Lebjazhie). Earlier, the tooth found by Kozhamkulova (1969) was attributed to M2 (N60–13g/1962) of *Elasmotherium sibiricum*. However, the morphometric indices, such as more rhinoceros – like appearance of tooth surface; well differentiated crown and root; weak plication and wavy of tooth enamel and its small sizes (length – 44.4, width – 25.0; enamel thickness – 1.38 mm) are corresponded to indices for P4 and with characteristic diagnosis for *Elasmotherium peii* (Chou Minchen, 1958; Shvyreva, 1988). This species of elasmotherium is marked, for the first time, for early and middle Pleistocene of China, late Villafranchian of Odessa faunistic complex of Eastern Europe (Minchen, 1958; Shvyreva, 1988) and also for early Pleistocene locality Salcia, Moldova (David, Eremeiko, 2003).

In Podpusk – Lebjazhie complex in Pavlodar Priirtyshie, in common with Elasmotherium, are found the remains of *Mimomys pliocaenicus, M. coelodus, Trogontherium minus, Equus* cf. *stenonis, E. livenzovensis, Archidiskodon gromovi, A.* cf. *meridionalis, Paracamelus* cf. *gigas, Eucladoceros* sp., *Antilospira* cf. *gracilis, Gazella* cf. *sinensis* and many others (Vislobokova, 1996). By Vislobokova's (1956) data, on the basis of bone extremities is defined the presence of *Elasmotherium* sp, with reserve, that it is similar to *E. sibiricum* by sizes. We have studied elasmotherium P4, which by its morphometric characters, is the most similar to that of *Elasmotherium peii* Minchen. Shvyreva (1988) is noted, that *Elasmotherium peii* and *Elasmotherium*

sibiricum are practically similar by sizes Therefore, on the basis of tooth morphological characters, we have defined *Elasmotherium peii,* that was find with *Equus* cf. *stenonis*. This complex is the analogue of middle Villafranchian fauna of Eastern Europe.

The distribution of Koshkurgan complex representatives (analogue of Tiraspol) with remains of Elasmotherium, that were found in Turkestan region within the south – western Karatau ridge, near Koshkurgan settlement is characteristic for early Pleistocene. The type locality for complex is Koshkurgan. Bone remains of complex, in common with stone artifacts ancient Paleolithic epoch were deposited in water – bearing lens of gravel – pebbly sands (Aubekerov, 2000). Earlier, in composition of this complex was defined one species Elasmotherium sibiricum (Kozhamkulova, 1969, 2000; Kochenov, 1989). Detailed study of collection materials by teeth from Koshkurgan locality allowed us to establish the presence of two species of genus *Elasmotherium*. One of them, *Elasmotherium sibiricum*, with characteristic for its teeth pattern and strongly plicated enamel of surface, with opened roots and proper sizes. The second species is also defined by morphometric teeth characters. This elosmotherium is similar to Eopleistocene *E. caucasicum* and early middle Pleistocene *E. peii*, by development of weak enamel plication, presence of closed back valley but differed from them by small sizes, opened roots of tooth. It is differed from *E. sibiricum* by more small sizes; weak enamel plication and presence of closed back valley. Lower teeth are also small and have more simple and thick enamel. Similarity is observed in the presence of opened roots. From *E.* cf. *peii* (Moldova) is differed by significantly smaller tooth sizes and opened root. They are similar in that paracone is stretched forward and teeth have rhombic form. In spite of small sizes, the permanent teeth of Koshkurgan species are hypsodont. Unfortunately, the lack of bony material, is not allowed to attribute it with confidence to any definite species Nevertheless, the existent material is indicated to the presence of small size elasmotherium, relative to known species of this genus. As is generally known, during the period of Singil fauna distribution, *Elasmotherium sibiricum* was differed by more small sizes and more strong plication of teeth enamel, especially lower ones (Shvyreva, 1984). But Koshkurgan elasmotherium is differed from Singil one by more simple plication of teeth. One the basis of these morphometric characters, we assume, that in Koshkurgan fauna is presented the new species of elasmotherium, which is more archaic and was found in section base. We, tentatively, attribute it to *Elasmotherium* sp. (probably new species). In common with elasmotherium are found the remains of: *Archidiskodon trogontherii, Equus (Equus) mosbachensis, E. (Hemionus) hydruntinus, Dicerorhinus kirchbergensis, Paracamelus (Paracamelus) gigas, Bison (Bison) schoetensacki, Praeovibos* sp. and others (Kozhamkulova, 2005). As it was already noted, fauna discovered in Koshkurgan I and II, is heterogeneous by evolutional level and composition (Foronova, 2000), that gives the base to establish within this fauna and, correspondingly, within the deposits, of several layers with fauna of different age. Therefore, we suppose that new species of *Elasmotherium* may stratify the lower layers of section and fauna, with remains of *Elasmotherium sibiricum*, is bedded higher. Earlier, were received EPR – dates by bones from bone – bearing lens; data of Russian Academy of Science gave the following meanings: 500± 23; 487±20; data on EPR of *Paracamelus gigas* teeth enamel gave 800 thou of years (in press). Therefore, in Koshkurgan, may be supposed the presence of bone – bearing horizons of different age, corresponding to the levels of Eopleistocene upper part and the beginning

of early Neopleistocene, with new species of archaic *Elasmotherium* sp., *Paracamelus (Paracamelus) gigas*, *Archidiskodon* elaphant the upper limit of which is restricted by first half of lower Neopleistocene; horizon of the end of lower Neopleistocene and middle (at the level 500 thou years) with remains of *Elasmotherium sibiricum, Equus (Equus) mosbachensis, E. (Hemionus) hydruntinus, Dicerorhinus kirchbergensis* and others, the upper limit of which is covered middle Neopleistocene and some elements were widely distributed in upper Neopleistocene. For middle Plestocene is characteristic the distribution of *Elasmotherium sibiricum*.

We have studied the skull, lower jaw of *Elasmotherium sibiricum* Fisch., found in the Akmolinsk region in 75 km of north – east of Astana town, in dry channel of Akzhar river (right tributary of Selekty river), for which is characteristic the development of more strong plication of teeth enamel and molars have opened roots in contrast to more early species. Besides, its sizes are corresponded to those of middle Pleistocene elasmotherium. M2 from locality Kapchagai (=Novoiliisk), lower M_1 from Aktuybinsk region (near Emba station), upper M^3 from East-Kazakhstan region are characterized by morphometric indices, specific for *Elasmotherium sibiricum*.

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QUATERNARY STRATIGRAPHY AND PALEONTOLOGY OF THE SOUTHERN RUSSIA: connections between Europe, Africa and Asia

Abstract volume
2010 annual meeting INQUA-SEQS

Rostov-on-Don, Russia
June 21–26, 2010

Rostov-on-Don
2010

Supported by INQUA, by RFBR, grant nos. 10-05-06045-r and 09-05-00307a, by the Programme for basic research of the Presidium of RAS "The origin of the biosphere and evolution of geo-biosystems" and by the Programme for basic research of the RAS Department of Earth Sciences "The condition of environment and forecast of its dynamics under the influence of quick global and regional natural and socio-economic modifications"

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Quaternary stratigraphy and paleontology of the Southern Russia: connections between Europe, Africa and Asia: Abstracts of the International INQUA-SEQS Conference (Rostov-on-Don, June 21–26, 2010). Rostov-on-Don, 2010. 228 p.

The book presents the materials of the International Conference held in Rostov-on-Don (Rostov Region, Russia). Reports concern a wide spectrum of issues connected to the study of Quaternary marine and continental deposits of Eastern and Western Europe, Asia, and Africa. Paleobiological record of the Eastern Europe, faunal connections with Asia, Africa, and Western Europe are considered. The special attention is given to questions of paleogeography, climatic changes in the Quaternary, stratigraphy and sedimentology of Eastern Europe. Also presented are the newest data on the tectonics and climatic record. Questions of distribution and chronology of Paleolithic sites, adaptations of the ancient people to paleoenvironment are discussed.

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Materials are published with the maximal preservation of the authors' texts

ISBN 978-5-902 982-83-8

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Материалы международной конференции
INQUA-SEQS 2010

Ростов-на-Дону, Россия
21–26 июня 2010 г.

Ростов-на-Дону
2010