PALAEOLOXODON ELEPHANT FROM THE SEA OF AZOV REGION (RUSSIA)

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Finds of ancient wood elephants at the territory of Eastern Europe are rather rare. In the collection of the Taganrog local museum (Taganrog, Rostov Region, Russia) there are 3 isolated teeth of the large wood elephant from a skull of one individual. They were extracted in a coastal part of the Taganrog gulf at northeast part of town Taganrog by means of a dredger. The identical type of safety, a degree of worning, the size of teeth testifies to their belonging to one animal. The exact stratigraphical position of samples is not known. However in this area in the basis of coastal cross-sections of 20-meter Old Evksin's terrace polymictic alluvial-deltaic sands that include abundant freshwater mollusk shells and Middle Pleistocene mammal fauna lie. In coastal cliffs within the limits of Taganrog town remains of *„Archidiskodon wusti", Equus mosbachensis* and *Bison schoetensacki* were found in different years (Lebedeva, 1972). These sands are located below a sea level in some places (Zalenskiy, 1941). Thus, we assume that this form of the elephant was a component of Tiraspol faunistic complex. The degree of fossilization of the findings is similar to a teeth of a skeleton of *Mammuthus trogonterii* from Kagalnik sand pit at Azov on the opposite coast of Taganrog gulf of Sea of Azov (Bajgusheva, 2001) which lays on analogous sands of Middle Pleistocene (Tesakov et al., 2007).

Elephas (Palaeoloxodon) antiquus Falconer et Cautley, 1847

Material. Two M^3 (specimens TKM, NoNo KP 5045 EI-10 sin, EI-5 dex) and right M_3 (specimen TKM, No KP 5045 EI-9); the bay of Taganrog metallurgical factory, early Middle Pleistocene sands; collection of Taganrog local museum.

Description. Upper and lower teeth have the 4 worn coefficient (13 plates are touched upon by erasing). Teeth are narrow crown (Fig. 1). The enamel is wrinkled. Central loop (sinus) on the occlusal surface are weakly expressed. Incipient wear figures on the occlusal surface of trinomial plate are antiquoid ·-·.

The tooth formula of better-preserved upper left M_3 (TKM EI - 10) is t17t. Posterior plates on it are oblique inside. The relation of plate's width to its length is 30.6 %. The height of the first no erased plate reaches 320.0 mm and its ratio to width is 2.82 %. That data emphasizes the narrowness of the crown. The ratio of crown's height to its length is 91.4 %. Enamel is rather thin. Length of separate plate on the average is 18.2 mm. A corner of the tooth eruption is 63˚, and the same of wear - 65˚.

The tooth formula of lower left M_3, (TKM EI - 9) is t16t. The S-outstanding curvature of last five plates is characteristic. The ratio of tooth width to its length is 28.1 %. The enamel is rather thick. Plates are thick - from 32.0 up to 21.3 mm, on the average 25.6 mm. A corner of the tooth eruption is 49˚, and the same of wear - 67˚.

Comparison. To subgenus *Palaeoloxodon* Matsumoto, 1924 findings from Taganrog are attributed due to significant hypsodont teeth. The ratio of M^3 height to crown's length on the average makes 94.05 %, and the relation of its width to height – 33.51 %. At the belonging to *Palaeoloxodon* the antiquoid incipient wear figure and a feebly marked sinus on the occlusal surface are indicate. The number and frequency of plates, thickness of enamel also get in limits of variability of these dental characteristics at representatives of a subgenus.

Large *Palaeoloxodon* from the Sea of Azov Region appreciably differs by size from undersized island wood elephants *E. (P.) falconeri, E. (P.) mnaidrensis, E. (P.) melitensis* and *E. (P.) nanus. E. (P.) naumanni* from sites of China and Japan also has smaller sizes of teeth.

Parameters of teeth crowns get in a limit of variability of $M^3/_3$ of *E. (P.) antiquus* from Middle Pleistocene of Western Europe (Palombo, Ferreti, 2005), except for crown's height for the upper teeth and lamellar frequency for lower ones.

Teeth of the Asian form of wood elephant *P. namadicus* in comparison with findings from the Sea of Azov Region are wider and also have greater lamellar frequency.

Remarks.

From our point of view the reference of wood elephants to subspecies of *Elephas,* accepted in last years, is unreasonably. Features of a skull structure

and several dental features allow to attribute these elephants to separate genus *Palaeoloxodon*.

All palaeoloxodon elephants of Pleistocene of Europe are attributed to one species *E. (P.) antiquus* with the numerous insufficiently outlined subspecies: *E. (P.) antiquus antiquus, E. (P.) a. ausonius, E. (P.) a. italicus, E. (P.) a. germanicus* and *E. (P.) a. meridionaloides* (Dubrovo, 1960). The reason of such situation is the absence of serial collections from one locality and data on limits of specific and subspecific variability.

To determine to what of them the finding from Taganrog concerns is not possible. However it is possible to note some differences of teeth from the Sea of Azov Region from the same of specified forms of European wood elephants. The bigger height of the crown and smaller lamellar frequency distinguishes described findings from those at *E. (P.) a. germanicus*. At Early Pleistocene *E. (P.) a. ausonius*, in contrast to the Taganrog samples, upper teeth are smaller, but with the greater frequency of plates; and the lower teeth have higher crown and its smaller width. Teeth of *E. (P.) a. italicus* are smaller and also possess smaller height of the crown and the greater lamellar frequency.

The ratio of height to length of M^3 crown at *E. (P.) antiquus* cf. *antiquus* from Taganrog makes 91.4 % that exceeds limits of that parameter of all known findings of representatives of this subgenus. These data allow to assume the difference of remains from Taganrog from other European forms on ~~subgenus~~ level. However, from our point of view, the description of new subspecies on the basis of the available material is inexpedient.

From the European part of Russia there are another finds of wood elephants. V.I. Gromova (1932) described finds of *„P." a. meridionaloides* from the Lower Volga Region near Nikol'skoe village. I.K. Ivanova (1948) found *„P."* cf. *antiquus* in travertines of Mashuk mountain near Pyatigorsk town. Both finds are dated by the Middle Pleistocene.

L.I. Alekseeva (1990) pointed out separate remains of *„P." antiquus* in the stuff of the early Late Pleistocene associations from sites the Girey (Krasnodar Region) and Shkurlat 1 (the Voronezh Region). I.A. Dubrovo (1960) marks the presence of a tooth of the wood elephant in the collection of Armavir local museum from an unknown site of Krasnodar Region.

In the funds of the Krasnodar museum there is the left lower M_3 (coll. No KM 4568/13 P-277) of *E. (P.) antiquus* cf. *antiquus* with the features similar to the Taganrog one (tab. 1, fig. 1). Unfortunately, the data about its locality are lost. But it is similar by the preservation with mammal remains from the lower layers with fossils of career Girey, where bones and teeth of Middle Pleistocene *Mammuthus trogontherii* were met also (Vereschagin, 1959).

In Mariupol local museum (Nothern Sea of Azov Region, Ukraine) there is the fragment of left M_3 (coll. MKM, No 3723) from the sand pit No 3600 from the left bank of Kalmius river (tabl. 1). It was found at a

Table 1. The comparison of $M^3/_3$ parameters of some representatives of *Palaeoloxodon* from Eastern Europe. The data in brackets – mean data.

	E. (P.) antiquus cf. *antiquus*			*E. (P.) antiquus meridionaloides*	*E. (P.) a. germanicus*
Measurements, mm	Taganrog	sand pit Girey	sand pit No 3600	Nikol'skoe	Roumania, Tangau
	TMZ EI-10, EI-5 / EI-9	KM 4568/13 П-227	MKM 3723	Dubrovo, 1960	Dubrovo, 1960
Number of plates with talon	17; 18	-	-	14-15	16-20
	>15	20	>12	14-15	17-18
Length of a crown	350; 300	-	-	325	261-340
	345	373	>260	300	330-425
Width of a crown	107; 97	-	-	85	70-98
	97	89	88	76	76-85
Height of a crown	320; 290	-	-	238	190-240
	>160	170		153	128-175
Lamellar frequency, mean	5-(5.25)-5.75	-	-	5	6
	3-(3.8)-4.5	4.5-5	4.5	4.5	5-6
Enamel thickness, mean	2.1-(2.37)-2.8	-	-	2.5	2-2.5
	3.0-(3.1)-3.3	3.4	2.8-3.2	2.5	2-2.5
Hypsodonty index: The ratio of height to weight of crown	2.99; 2.98	-	-	2.8	-
	1.64	1.91		2.0	

depth of 11-12 meters in the sand bed with remains of animals of late Early – early Middle Pleistocene type. The elongated form of crown, antiquoid incipient wear figure allow to ascribe it to *E. (P.) antiquus*. It has feebly marked sinus on central loop on the posterior enamel crest of what, one to two acute enamel folds are frequently present.

Alekseeva (1977) pointed at some another findings of „*P.*" *antiquus* from Middle Pleistocene of Eastern Europe: Belayevka (Dniestr River Region), Romankovo (Dnepr River Region), Krasnoholmskiy most (Moscow Region), Novogeorgievskaya (Stavropol Region), Raygorod (Lower Volga River Region), Engidja (Armenia).

The analysis of palaeloxodont elephants' samples from the south of Russia specifies that there were 2 stages of their existence. First of them attributed to the period of existence of early Middle Pleistocene Tiraspolian faunal complex, most probably to its early stage. In the Sea of Azov Region there are widely distributed fluvial deposits, containing rich fauna of molluscs and rodents and allowing attributable to the local biostratigraphical zones MQR6-5 (Tesakov et al. 2007). This time corresponded to the ending of the Don glaciation and the subsequent Roslavl' interglacial period which were accompanied by the expansion of a forest zone. In the East Europe during this period paleoloxodon elephants has penetrated up to Ural, into a lower stream of Volga River and to Transcaucasia (Alexeeva, 1990). The second migration has been fixed in the beginning of Late Pleistocene during the Mikulino interglacial period.

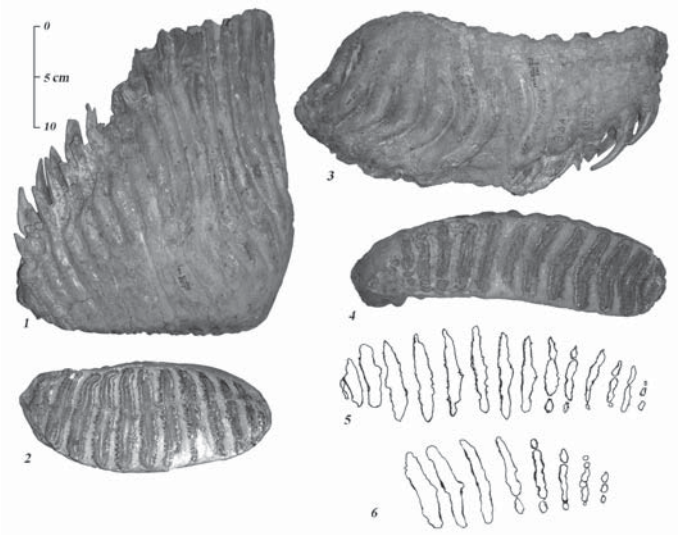

Fig. 1. *Elephas (Palaeoloxodon) antiquus*: 1-2 specimen TMZ EI-5, upper right M^3, 1 –lingual view; 2 – occlusal view; 3-4 specimen TMZ EI-9, lower right M_3, 3 – lingual view; 4 – occlusal view, the Sea of Azov Region, Taganrog, Middle Pleistocene; 5 – specimen KM 4568/13 П-227, lower left M_3, the print of occlusal view, Krasnodar Region, career Girey, Middle Pleistocene; 6 – specimen MKM, No 3723, lower left M_3, the print of occlusal view, sand pit No 3600 on left bank of Kalmius River, Ukraine, Early-Middle Pleistocene.

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